Total Comment #	Agency/ Company Comment #	Government Department / Company	Section of EIS	DFO Comment /Information Request (March 2012)	Corridor Resources Response (March 2013)	DFO Response July 2013
39	1	DFO	General	The quality of French in the French version of the environmental assessment report is lacking and many sentences are difficult to understand. For example, the French translation is sometimes technically inaccurate, even truncated compared to the English version, making the text incomprehensible. Incomprehensible paragraphs should therefore be reviewed for content or edited by an individual fluent in French and with scientific knowledge.	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
40	2	DFO	General	Overall, the quality of scientific content presented in the environmental assessment (EA) varies across the sections. While the potential environmental impacts of exploratory drilling regarding drilling fluids and cuttings is well-covered and conclusions are in line with many reviews and individual studies dealing with the effects, much of the preceding content relating to Valued Ecosystem Components (VECs) is inconsistent among the various sections. Substantial inaccuracies and omissions here can threaten the ability to properly assess potential effects.	Comment noted. Significant effort has been made to address reviewer comments and the report has been revised substantially. Although it is recognized, in spite of this additional work, the original impact analysis, mitigation, and conclusions remained valid for environmental assessment and decision-making.	Adequate
41	3	DFO	General	The environmental assessment does not indicate what time of year the project will occur. While the duration is identified, the season of activity is not. This information is particularly important in terms of assessing potential impacts on the ecosystem and its components.	The Environmental Assessment included the possibility of drilling in any month of the year that is ice free. The spud date of the well would likely be no earlier than March and no later than November.	Adequate - However DFO would like to advise that in order to minimize potential impacts, activities should be timed to avoid sensitive periods for fish and marine mammals and species at risk.
42	4	DFO	General	In general, modeling pertaining to assessing the behavior and trajectory of oil spills that might occur during exploration drilling activities requires significant reconsideration of many of the inputs (e.g. currents, winds, tides, outflows, timing, etc.), as well as the models in some cases. Scenarios were also often not clearly described (e.g. for blowouts), and overall, modeling results were not clearly presented. Information gained from the Gulf of Mexico spill should also be considered for informing this exercise.	These general concerns are addressed in the specific questions / concerns of DFO below.	Adequate
43	5	DFO	General	The environmental assessment should undergo appropriate and specialized quality control of content for translation, relevancy, agreement between text and figures and tables, and the appropriate use of up-to-date information and references.	Comment noted. The report has been edited substantially to address reviewers' comments.	Adequate

44	6	DFO	General	The Study Area, the area that could be potentially affected by Project activities, has been defined by the furthest extent of the drill cutting deposition modeling, oil spill trajectory modeling results and supply vessel/helicopter activity to coastal Newfoundland. The parameters of these activities limit the spatial scope (i.e. geographical area) of the assessment. For example Cohasset oil (i.e. light oil), was used as a surrogate for spill modeling purposes. This directly impacts the spatial extent of any accidental spill event modeling and in turn the assessment of impacts on the VECs, in particular fish, fisheries, sensitive areas, marine ecosystem and coastal areas. Should the nature of the oil discovered be different (i.e. heavier) than that used in modeling the potential impacts and significance of the impacts to the VECs may be different than what has currently been assessed. It may have been more appropriate to consider other oil heavier types during modeling.	The justification for the selection of Cohassett condensate as a surrogate for the oil likely to be found at this location has been provided in Appendix A of the SL Ross report "Oil Spill Fate and Behaviour Modelling in Support of Corridor Resources Old Harry Exploratory Drilling Environmental Assessment" (SL Ross 2011a, updated 2012). The type of oil selected for oil spill modeling was based upon detailed scientific work completed by a world renowned geochemist with Global Geoenergy Research Ltd. The work involved assessing the organic material in the shale source rocks at the Brion Island No.1 well, the closest well to Old Harry. These studies identified the source rocks to be derived mainly from a mixed lacustrine or fluvial oil prone amorphous lipids or terrestrial liptinite (plant suberin, resin, and cuticle) rich organic matter. These organic rich zones contain oil and gas prone Type II-III kerogen that generate hydrocarbons (mainly oil) at an early stage of thermal maturation. During later stages, they will generate mainly natural gas.	Adequate
					Petroleum system modeling was conducted to determine the type of oil likely to be produced from the source rocks; the models predict the presence of hydrocarbons in the liquid (oil) and vapour (natural gas) phases. No oils were identified that were heavier than 50 degrees API. Therefore, Corridor asserts that the selection of a Cohassett-Panuke oil with an API gravity of 47 degrees API is conservative selection of a surrogate oil.Finally, the Carboniferous Magdalen Basin is generally a gas prone basin. Natural gas has been encountered in those wells that contain hydrocarbons. In fact, the only discovery to date in the Gulf of St. Lawrence (East Point E-49) is a natural gas discovery. Based upon a scientific evaluation, Corridor's view is that the Old Harry structure is not likely to contain a heavier oil.	Adequate
45	7	DFO	1.3 Regulatory Context, p. 4, 1st paragraph	Fisheries and Oceans Canada (DFO) has been identified as a Responsible Authority in this section. Please note DFO is not a Responsible Authority for this environmental assessment as an Authorization under the *Fisheries Act* is not required for this project. Rather DFO is a Federal Authority offering expert specialist advice during the environmental assessment review.	Section 1.3 has been edited substantially and DFO's role has been corrected as a federal authority.	Adequate
46	8	DFO	2.6	While the anticipated duration of work is indicated (20-50 days) the season is not. This is information is particularly important in terms of assessing potential impacts on the ecosystem and its components (i.e. fish, marine mammals etc…).	The Environmental Assessment included the possibility of drilling in any month of the year that is ice free. The spud date of the well would likely be no earlier than March and no later than November.	Adequate - However DFO would like to advise that in order to minimize potential impacts, activities should be timed to avoid sensitive periods for fish and marine mammals and species at risk.

47	9	DFO	Section 2.6	It is advised that the proponent should plan the activity around important and sensitive time periods for fish, marine mammals and species at risk.	Drilling will not occur earlier than March or later than November. Specific timing will depend on a variety of variables including but not limited to rig availability and regulatory approvals. Mitigation measures, including wildlife observers and adherence to regulatory guidelines (e.g., Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment, Offshore Waste Treatment Guidelines) will reduce effects on marine species.	Adequate - However DFO would like to advise that in order to minimize potential impacts, activities should be timed to avoid sensitive periods for fish and marine mammals and species at risk.
48	10	DFO	2.12.2	The parameters used in the models take into account the seasonal averages of oceanographic and atmospheric conditions recorded for the Gulf of St. Lawrence as well as the properties associated with light hydrocarbons. Should characteristics of the hydrocarbons found differ (i.e. heavier crude oil) from those expected, modeling and assessment of potential impacts may be different.	Corridor Resources experts identified that the oil from this operation would most likely match the Cohassett light oil/condensate product (see response provided for DFO-6). Known physical properties of this oil were used in the spill fate modelling.	Adequate
49	11	DFO	3.0 Stakeholder Consultation	A key concern that has been raised repeatedly by stakeholders to DFO is the need for additional consultation with fishery stakeholders including the commercial, recreational, Aboriginal Fisheries and the Aquaculture sector within the Gulf Region. The consultation program focused primarily on the “geographic region”, most likely to be affected by the project and included Western Newfoundland and the Magdellan Islands. It should be noted that the proposed exploratory well is near the border of NAFOzones 4R, 4S, 4T and 4VN, where Gulf Region fish harvesters participate in fisheries within close proximity to the proposed well location.	A summary of Corridor's public consultation is included in the Environmental Assessment document. Corridor conducted consultations in NL and the Magdalen Islands with key stakeholders, including fisheries groups. Corridor also obtained fisheries information from DFO. Any information on fisheries data that arose from the consultations conducted by Corridor and its consultants was included in the draft EA document. Consultation appropriate for a screening level EA of a single, short duration exploration well has already been conducted. Additional consultation is unlikely to result in information that would enhance the Old Harry EA or that would substantively change its conclusions. Fisheries effort in the vicinity of the proposed Old Harry well location show that minimal to no fishing activities are conducted within 30 km of the proposed well (see Figures 5.67-5.70 in the EA). In addition, the C-NLOPB has undertaken a public consultation process for the Strategic Environmental Assessment (SEA) update of the Western Newfoundland offshore area and fisheries stakeholders will be able to provide input on their activities in relation to proposed drilling activities in the Gulf of St. Lawrence. The updated regional fisheries information will be included in the SEA Update.	Adequate
50	12	DFO	3.1, p. 64 par 1	The focus on western Newfoundland and Magdellen Islands implies that fish harvesters from other areas of the Gulf are not participating in fisheries in areas close to the proposed well, which is not the case. The C-NLOPB was provided a list of Gulf and Quebec region stakeholders in April 2011 to assist in consultations.	Consultation appropriate to a screening level EA has been conducted. The Project is one exploration well and it will be completed within 50 days. Fisheries effort in the vicinity of the proposed Old Harry well location show that minimal to no fishing activities are conducted within 30 km of the proposed well (see Figures 5.67-5.70 in the EA).	Adequate

51	13	DFO	3.4, p. 66, bullet 1	DFO attendees at the meeting included: -A/Regional Manager - Environmental Assessment and Major Projects NL Region - Environmental Assessment Analyst - Environmental Assessment and Major Projects NL Region -Regional Manager - Environmental Assessment and Major Projects Gulf Region -Senior Advisor for Oil and Gas, Ecosystem Management Branch – Gulf Region - Analyste principale, Évaluation environnementale – Québec Région	Section 3.4 has been updated to reflect DFO attendees as indicated.	Adequate
52	14	DFO	4.1.5	Although the volume measure (3,553 km^3) is from Dufour and Ouellet (2007), it is incorrect. The volume is about 35 000 km^3 (see for example Dufour et al. 2009).	Text revised to include the volume listed as per Dufour et al. 2010.	Adequate
53	15	DFO	4.1.7	While the EA acknowledges that "Knowledge of ocean currents is essential to the planning of oil and gas related operations in any area", the section on ocean currents simply states broad facts and shows maps from different sources without any proper interpretation or comparison. The currents that the EA uses in the report are cited but are never shown (i.e. Surface water current fields developed by the Ocean Sciences Division, Maritimes Region of DFO (Tang et al. 2008) were used in the spill trajectory modeling).	The section on ocean currents properly describes the currents of the Gulf. The currents are shown in Figures 4.13, 4.14, and 4.16-4.19 with citations (SLGO 2011; Galbraith et al. 2011; LGL 2005b). Tang et al. 2008 was not referenced in Section 4.1.7. For more information on oil spill modeling, trajectories and the currents used to create these, please refer to the stand alone report conducted by SL Ross.	The section on ocean currents adequately describes long-term averages, but not sporadic wind-driven currents that can be much larger. The point was that the report acknowledges this by using a completely different source of currents in the modelling section, yet it is not presented.
54	16	DFO	4.1.7	The statement, *"Driven by wave and tidal movement, cold, dense water flows into the Gulf through the Strait of Belle Isle from the Arctic via the Labrador Current."* is incorrect. The inflow through the Strait of Belle Isle is not driven by waves or tides and it isn't from the Arctic (although contains some dilution of Arctic waters) or from the (deep) Labrador Current. It is noted that this text is out of context in the Ocean Currents section.	Comment noted and incorporated into the EA.	Adequate
55	17	DFO	4.1.7	Figure 4.13 – panels for M2 and K1 are not identified.	Unclear what is being referred to in this comment.	Adequate
56	18	DFO	4.1.7	Figure 4.19 – surface currents in the Gulf of St. Lawrence (top: February 4, 2011@ 1100 hours and bottom: September 29, 2011 @ 0800 hours) - there is no bottom panel in the EA	The bottom panel has been added to the EA.	Adequate
57	19	DFO	4.1.7	Figure 4.12 – the caption indicates two panels; only one panel shown (French version).	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
58	20	DFO	4.1.8	It is not evident that tides were used in spill trajectory modeling within the EA. If this is the case, why not?	Tides were not used in the modelling because their inclusion would not have significantly altered the overall spatial footprint of the oil from the spill scenarios modelled.	The authors could have compared the predicted tidal displacement in the area to the modelled results. The very small footprint of 6 km (Fig 2.12-2.15) is based on the assumption that only 6 hours are required to completely disperse or evaporate the oil, otherwise they would have to factor in accumulation over longer times. At that point precise maximal instantaneous currents would be important to know. As it is, Figs. 2.12-2.15 do not show a month-long release (as stated), but a series of independent 6-hour releases, with no accumulation between them (resetting conditions to pristine after each one).
59	21	DFO	4.1.8	Sources of water current estimates are included (p.101) in the EA, but are out of context here. This information should appear in Section 4.1.7 and be	The section on Tides (previously 4.18) has been edited in the revised EA Report.	Adequate

				compared with other results shown.		
60	22	DFO	4.1.11	Fig. 4.23 – this is unreadable with insufficient resolution.	Figure 4.23 has been split into four different Figures (25-28) to improve resolution.	Adequate
61	23	DFO	4.1.11	Fig. 4.34 – legend = 2009; figure shows 2010 and not 2009.	Figure 4.34 caption has been updated to 2010.	Adequate
62	24	DFO	4.1.11	Regarding the statement, "*All sea ice in EL1105 is first-year ice, ranging in its un-deformed thickness from 30 to 120 cm (SLGO 2011; Figure 4.20).*" Figure 4.20 does not actually show ice. It is not obvious what is meant by *un-deformed thickness* here, but ice thickness in the Gulf has been known to exceed 2 m in places by rafting during heavy ice years. Ridges can be much thicker still (> 10 m). As such, these extremes should be mentioned in the assessment rather than showing median quantities such as average thickness. Based on the above, the reader might surmise that since bathymetry, currents and tides are very predictable, then so is ice cover. However, the premise of the initial statement is misleading: the thermodynamics of the ocean surface layer are not even mentioned here. To produce ice, the winter mixed layer must first be cooled to the freezing point over a large layer (a typical thickness of 75 m was mentioned on Page 92).	The section on Ice has been rewritten with reviewer comments in mind.	Adequate
63	25	DFO	4.1.11	The EA states (p.108), *"The Project Area is located in an area that ranges from 51 to 84 percent 30-Year frequency for the presence of sea ice (green and purple color bands) depending upon the month."* However, Figures 1.27 to 4.28 do not have any green as mentioned. Caution should also be used in interpreting these three figures. For example, the March figure shows the average probability of encountering sea ice over the entire month, and not the probability of encountering ice at least once during the month.	Refer to response provided for DFO-24.	Adequate
64	26	DFO	4.1.11	The EA states, *"EL1105 is located in the area that has an average ice freeze up date of January 29 (Figure 4.31). The normal ice free period for EL1105 extends from April 9th to February 12th of the following winter…"* However, this seems in contradiction. If the average ice freezup date is January 29, then the area cannot be ice-free after break-up until the following February 12th.	Refer to response provided for DFO-24.	Adequate
65	27	DFO	4.2	For the circulation subsection, Han et al. (1999, Journal of Physical Oceanography) provided detailed seasonal mean circulation fields in the Gulf of St. Lawrence, especially in terms of the gulf-shelf interactions, including the inflow from the Labrador Shelf through the Strait of Belle Isle, as well as the outflow on to the Scotian Shelf and the inflow from the Newfoundland Shelf, both through Cabot Strait. This paper should be included in the review under 4.2.2 (p.55).	Galbraith 2006, Dufour and Ouellet 2007, Galbraith et al. 2011, Saucier et al. 2003, provide detailed and up-to-date information as seasonal mean circulation fields in the Gulf of St. Lawrence including the inflow from the Labrador Shelf through the Strait of Belle Isle, as well as the outflow onto the Scotian Self and the inflow from the Newfoundland Shelf, both through the Cabot Strait. Figures 4.16-4.18 taken from Galbraith et al. 2011 depict seasonal ocean currents during 2010, which closely mimic the mean currents found in Han et al. 1999 (Figure 11). The description of the circulation found in Section 4.2 of the Environmental Assessment portrays the same message as Han et al. 1999, with more up to date information.	Adequate
66	28	DFO	4.2.1	Average daily temperatures in the vicinity of EL1105 could be misinterpreted. Those presented are not the true range of observations, but rather the 30-year monthly average temperature minimum and maximum. Far colder and warmer temperatures have been recorded. Therefore variability is missing on the monthly scale, and also at the inter-annual scale.	Comment noted and extreme maximum and minimum temperatures have been added to showcase variability on a monthly scale.	Adequate

67	29	DFO	4.2.1	Reference in the EA to *"…average monthly air temperatures for several land-based weather stations surrounding the Gulf…"* does not add much long term context. Instead, Galbraith et al (2011) show mean winter air temperatures at these land stations since 1971, which should be used to describe interannual variability.	Interannual variability and historical climate of EL1105 is described in section 4.2.1 in regards to the Port Aux Basques weather station (closest station to EL1105). Galbraith et al. 2011, is used to describe the recent trends in variability and climate compared to historical data for the area.	Adequate
68	30	DFO	4.2.1	The EA describes (p.114) sea surface temperatures such that *"…the minimum mean temperatures for February and March are approximately -0.8°C."* However, in years of maximum ice year such as 1993, the winter mixed layer was near-freezing at -1.7°C in the area of EL1105. The area also borders the warm waters (T > 0°C) seen in many winters entering the Gulf on the Newfoundland side of Cabot Strait (see Galbraith 2006).	Comment noted. This is logical, in years of maximum ice it would be expected that the surface ocean temperatures would be colder than years with less ice. It is possible to have mean minimum temperatures of -0.8 °C, and years with maximum ice with temperatures of -1.7 °C.	Adequate
69	31	DFO	4.2.2	It is unusual that the MSC50 reanalysis shows no winds above 20 m/s (90 km/h) between June and November, and extremely rarely in other months. The EA presents that the highest winds are less than 2% in winter; however winter interpreted as Dec-Jan-Feb is in fact 0.02%, and the highest as occurring in spring (Mar-Apr-May) at less than 0.2%.	Wind speeds over 90 km/h during the summer months would be rare and would still be rare during the winter months. During the months of June to November average wind speeds at Port Aux Basques range from 17.5 km/h to 27.4 km/h. The number of days with winds > = 63 km/h range from 0.2 to 4.1. As a result we can see that wind speeds are relatively low during the summer months as indicated by the MSC50 results.	Adequate
70	32	DFO	4.2.2, page 100	Habituellement, le mouvement de l'eau suit le détroit de Cabot, coulant dans le sens trigonométrique autour du Golfe […]. Incorrect translation of "counterclockwise"	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
71	33	DFO	4.2.2, page 100	Incomprehensible translation – French version Le courant de débordement du fleuve Saint-Laurent produit un fort courant côtier qui coule le long de la péninsule gaspésienne (le courant de Gaspésie), en direction de la mer et dispersant l'écoulement de surface du Saint-Laurent en direction nord-ouest et du sud du Golfe (Dufour et Ouellet 2007). This excerpt of the document comes from an article by Dufour and Ouellet 2007, which reads as follows: La caractéristique principale du débit sortant du Saint-Laurent est un courant côtier fort le long de la péninsule gaspésienne (courant de Gaspé) qui disperse l'eau du Saint-Laurent dans le nord-ouest et le sud du golfe. (original text)	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
72	34	DFO	4.2.2, page 107	*Incorrect Translation – French version* *Les marées se propageant au-dessus des filons-couches à la tête du chenal Laurentien […].* *Incorrect translation of "sill"*	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
73	35	DFO	4.2.6, page 118	Incomprehensible translation – French version Le PP 1105 est situé dans le secteur dont la date moyenne de congélation de la glace est le 29 janvier (Figure 4.25).	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate

74	36	DFO	5.1, page 131	Incomprehensible translation – French version Cela en raison du fait que le Golfe est séparé partiellement de l'Atlantique Nord, recevant un apport en eau douce de la part de rivières importantes, et aussi par un chenal orienté sur toute sa longueur, une saison des glaces, plusieurs types de masses d'eau, incluant une couche intermédiaire froide, des zones a plateaux et d'eaux peu profondes ainsi qu'une productivité et une diversité biologique élevées (MPO, 2005a). Ces zones biologiques bonifiées sont le résultat de facteurs physiques reliés à la topographie particulière du plancher océanique, des vents et courants océanographiques, laquelle, combinée a des facteurs chimiques tels des eaux riches en nutriment, donne naissance a des processus physiques comme une remontée des eaux de fond, des fronts horizontaux ou verticaux entre deux schémas de circulation distincts et des masses d'eau, ainsi que des zones de convergence et des gyres.	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
75	37	DFO	5.1	This section indicates that Section 5.2 will cover species at risk from both the St. Lawrence Estuary and the Gulf of St. Lawrence. Section 5.2 states that Table 5.2 covers all species in the Gulf that are designated at risk by COSEWIC. The following Atlantic salmon populations are assessed as at risk by COSEWIC (2010), but are treated neither in the text of Section 5.2 nor in Table 5.2: Quebec Eastern North Shore population - special concern; Quebec Western North Shore population - special concern; Inner St. Lawrence population - special concern. In general, the migration routes of these populations are unlikely to take them close to EL1105 for an extended period of time. However, if it is the intent of the assessment to exclude these populations from consideration, it should be explicitly stated why.	The Quebec Eastern North Shore Atlantic salmon population has been addressed in the text. The Quebec Western North Shore population as well as the Inner St. Lawrence population has been added to Table 5.2.	Adequate
76	38	DFO	5.2	The data on which many of juvenile/adult fish distribution figures are based is often dated – and only a single or several years of RV data compiled into figures is also common. As such, updated and additional years are required indicate the current distribution of these species as RV surveys referenced are likely stratified-random surveys and any one year may not yield any sets within the Old Harry project area. Figures are also lacking the location of the exploration licenses covering the Old Harry area superimposed on distribution maps for reference. Information on the size and/or age of juvenile fish should be included with figures and descriptions.	Species distribution maps have been extracted from primary and/or secondary literature and without georeferenced digital data files that can be easily manipulated to include the Project Area, the EL1105 area cannot be easily overlaid onto distribution maps. For the purpose of environmental assessment, the level of detail presented is sufficient to make a determination of species presence/absence in the general Study Area.	Adequate
78	39	DFO	5.2, Table 5.1, p. 122-123	For the 3 wolffish species the table indicates that there is a low potential for occurrence in EL1105, yet in the first paragraph of Section 7.2.2.1, p.343, it is indicated that wolffish are included with the species which have a moderate to high potential to occur in the project area (same as EL1105?). The information presented should be consistent between sections.	The wolffish is indeed a species that has a low potential for occurrence and the two sections have been made consistent.	Adequate
385	40	DFO	5.2, Table 5.1, p. 122-123	Northern and Spotted Wolffish - "Non-migratory spawning occurs" – based on current information it is unknown if Northern and Spotted wolffish do or do not have spawning migrations. Northern wolfish also occurs in waters shallower than 500m.	Information pertaining to northern and spotted wolffish spawning migrations and depth range has been updated in the EA.	Adequate
387	41	DFO	5.2, Table 5.1, p. 122-123	Atlantic Wolffish – This species occurs in waters greater than 350m.	Information regarding the depth distribution of the Atlantic wolffish has been updated	Adequate
77	42	DFO	5.2, Table 5.1, p. 122-123	White Shark (added to SARA Schedule 1 on July 6, 2011) should be included in the table.	Table 5.1 has been updated to include White Shark.	Adequate
79	43	DFO	5.2, Table 5.2, p. 124	Requires explanation of how potential for occurrence is defined and calculated and what metric is used.	The criteria for occurrence is based on professional judgment taking into account available catch records, survey maps, habitat type and species behaviour.	Adequate

386	44	DFO	5.2, Table 5.2, p. 124	Laurentian South Cod : There are problems with this characterization. Should state that there is a high potential for occurrence. Distribution maps exclude September survey information and winter distribution patterns. The statement, “Eggs and larvae may be present in the upper water column May to April” is inaccurate. There are two populations in this designatable unit; the population of concern here is the southern Gulf of St. Lawrence population. This population is distributed throughout the southern Gulf in summer and overwinters along the side of the Laurentian Channel, with dense aggregations typically occurring in the Laurentian Channel north of St. Paul Island. Cod use two migration routes between these overwintering grounds and summer grounds in the southern Gulf, the Cape Breton Trough and the southern slope of the Laurentian Channel (north of the Magdalen Islands). Essentially the entire population moves through this area in proximity to EL1105 each spring and fall.	Additional information regarding the Laurentian South cod population has been updated in the EA .	Adequate
388	45	DFO	5.2, Table 5.2, p. 124	Striped bass: The statement the “Gulf population is considered extirpated” is incorrect and should state that the St. Lawrence estuary population is considered extirpated; the Gulf population is designated threatened as previously stated in same text block. This should be clear and as it reads now it is confusing.	Information regarding Striped bass populations has been noted and changes have been made to the EA.	Adequate
80	46	DFO	5.2, Table 5.2, p. 124	The population of Killer Whale being referred to is the Northwest Atlantic/Eastern Arctic population. White Shark should be removed from the table. This species was added to SARA Schedule 1 on July 6, 2011.	Comment noted, changes have been made to the SARA table.	Adequate
81	47	DFO	5.2, Table 5.2, p. 124	Deepwater Redfish - species name is *Sebastes mentella* (not *mentalla*). Spawning does not occur in fall. Mating between males and females occurs in fall but female extrude larvae (=spawn) from April-July.	Comment noted and details regarding the deepwater redfish have been changed in the EA.	Adequate
82	48	DFO	5.2, Table 5.2, p. 124	Acadian Redfish (Atlantic) – spawning does not occur in fall. Mating between males and females occurs in fall but female extrude larvae (=spawn) from May-August.	Comment noted and details regarding the Acadian redfish have been changed in the EA.	Adequate
83	49	DFO	5.2, Table 5.2, p. 124	Winter Skate (Southern Gulf of St. Lawrence population) – the description is inaccurate. This population occurs just within the Gulf (are distinct from populations on the Scotian Shelf and Georges Bank). Winter Skate lay egg cases and emerge as juveniles. The seasonality of “spawning” is not well known.	The description of winter skate has been updated.	Adequate
84	50	DFO	5.2, Table 5.2, p. 124	American plaice (Maritime population) – the description is inaccurate. This population overwinters in deep water in the Laurentian Channel.	The description of American plaice (Maritime population) has been updated.	Adequate
85	51	DFO	5.2, Table 5.2, p. 124	Table 5.2 should consider Swain et al. (1998); and Chouinard and Hurlbut (2011) as sources of information.	Comment noted. This data on species distributions in the Gulf (Chouinard and Hurlburt (2011) is only for the month of January during the years from 1994-1997. Although the publication is new the data is not.	Adequate
86	52	DFO	5.2.1	In this and other sections on fish species (e.g. 5.2 Species at Risk) the EA reproduces a number of juvenile fish distributions from RV surveys. The data on which many of these figures is dated (at least 6 years old) and only a single year of RV data compiled into figures is common. Updated and additional years are required to indicate the distribution of juveniles for these species as RV surveys referenced are likely stratified-random surveys and any one year may not yield any sets within the Old Harry site. It would also be useful for figures to have the location of the exploration licenses covering the Old Harry area superimposed on distribution maps for reference. CSAS Docs are available for porbeagle, mako, basking sharks, spiny dogfish and blue sharks (all can be downloaded from the Publications page of the Shark website) and should be consulted and cited as such within the assessment.	The species distribution maps have been updated with current data where deemed appropriate for many species. Life history information pertaining to porbeagle, mako, basking sharks, spiny dogfish, and blue sharks has been updated using the latest information from CSAS documents.	Adequate

87	53	DFO	5.2.1.1	References for depth distribution of northern wolffish are not provided – which also contradicts Table 5.1 content. However, for the Newfoundland and Labrador region, the densest concentrations of northern wolffish tend to be found at 400-900 m (Kulka et al. 2004, Simpson et al. 2011). Fecundity/number of eggs and parental care of northern wolffish are not known in Canadian waters, yet the EA states that northern wolffish can lay up to 27,000 eggs and guard their eggs. References are required for this information.	Comment noted and references for depth distributions and fecundity have been added to the EA.	Adequate
389	54	DFO	5.2.1.1, p. 127, 2nd paragraph 5.2.1.1, p. 131, 2nd line at top of page	There is a reference given as SARA (2010). Does this mean the Species at Risk Public Registry? In the reference section, the Public Registry shows up as Species at Risk Public Registry 2010 and SARA Public Registry 2010. There should be consistency in the use of references within the document and within the reference section itself. It would be preferable to reference the COSEWIC status report or Recovery Strategy documents, rather than the website itself.	SARA (2010) means the Species at Risk Public Registry. Where applicable the COSWEIC status reports have been referenced.	Adequate
88	57	DFO	5.2, Figure 5.2	Potential for occurrence of northern wolffish is listed as low in Table 5.2, yet based on this figure its distribution in the Gulf is centered on the EL1105 area	Figure 5.2 does not depict that the distribution of the Northern wolffish is centered on the EL1105 area. If one were to overlay the EL1105 area, the maximum relative occurrence of the Northern wolffish would be 0. The wolffish prefers substrate types that are not found within EL1105 and thus the project area is not a suitable habitat for the species in question.	Adequate
89	58	DFO	5.2.1.1, p 128	Depth discussion of Spotted wolffish contradicts Table 5.1 content	The depth discussion in Table 5.1 and Section 5.2.1.1 has been made consistent.	Adequate
90	59	DFO	5.2, Figure 5.2 to 5.11	The information presented here is dated. More recent data exist from the study area. The data from 2003-2011 should be presented to illustrate current distributions - not the distribution from a decade ago.	Although the data is more than 10 years old, the published source from which it was obtained was published in 2010 and it is still considered relevant and appropriate.	Adequate
390	60	DFO	5.2.1.1	Figures 5.6, 5.7 and 5.8 clearly show that highest densities of both juvenile and adult Atlantic wolffish are observed within 50-100 km of EL1105 (off western Newfoundland); but Table 5.1 indicates a low potential of occurrence in relation to EL1105	Adult and Juvenile Atlantic wolffish can be found from 50-100 km from EL1105. Within EL1105 and within the immediate vicinity of EL1105 the likelihood of encountering an Atlantic wolffish is quite low. The species prefers a habitat consisting of rocks, boulders, and sand where they can find shelter and protection. The area in which EL1105 is located has a muddy and soft bottom substrate which does not coincide with the preferred habitat of the Atlantic wolffish. The preferred depth of the species is 150-350 m. The EL1105 license is located at a depth which is greater than this (400-500 m). As a result the project area is situated in a habitat which is not preferred by the Atlantic wolffish, while the area where the majority of the species is located is favorable habitat. It is unlikely that the species would leave favorable habitat to inhabit less favorable conditions situated in EL1105.	Adequate
91	61	DFO	5.2.1.2	The seasonal distributions and migrations need to be described for Atlantic Cod. This should use distribution information from summer surveys in both the southern and northern Gulf (i.e., September survey of the southern Gulf and August survey of the northern Gulf; Summer sentinel trawl surveys in both areas). Migration routes and timing and overwintering distributions should also be described.	Seasonal movements and migrations of each of the Atlantic Cod populations has now been described and incorporated into the EA.	See general comment #1

92	62	DFO	5.2.1.2	An increasing proportion of the southern Gulf stock occurs on summer grounds in the region between the Magdalen Islands and northwestern Cape Breton, including waters along the southern slope of the Laurentian Channel. The entire stock migrates through the Cape Breton Trough or along the southern slope of the Laurentian Channel (past EL1105) each spring and fall. The entire stock overwinters in dense aggregations along the south side of the Laurentian Channel, in particular north of St. Paul Island.	Information on the Laurentian South Cod migration movements has been updated.	See general comment #1
93	63	DFO	5.2.1.2	The EA refers to the four populations identified by COSEWIC in this section. However, there are only two residents (Laurentian North and South). Incursions of two other Atlantic populations are possible, but this should be distinguished.	Comment noted and resident cod populations have been identified	Adequate
94	64	DFO	5.2.1.2	The legend of Figure 5.10 shows "Atlantic Cod Distribution in the Gulf of St. Lawrence from 1990 to 2002," however, only the result of the August survey in the northern Gulf is presented. The results of the September survey in the southern Gulf should be added with the result representing the two cod stocks in the Gulf. This mistake occurs in several maps of other species.	The most up to date maps from the St. Lawrence Global Observatory have been added to the EA.	Adequate
95	65	DFO	5.2.1.2	The spawning area for cod in the northern Gulf (3Pn, 4RS) that was identified some time ago off St. George's Bay (west coast of Newfoundland) is not mentioned in the EA. This area is closed to all fishing from April to mid-June and occurs approximately thirty miles east of the drilling area. This information is significant as fertilized eggs of cod are at surface and are therefore very vulnerable to any oil spill.	The Laurentian North Population of Atlantic Cod's spawning area has now been incorporated into the EA.	Adequate
96	66	DFO	5.2.1.2	Some key sources of information include: Swain et al. (1998); Chouinard & Hurlbut (2011); Comeau et al. (2002); Benoît et al. (2003); Darbyson & Benoît (2003); and recent CSAS Science Advisory Reports and Research Documents coming from stock assessments.	Up to date Canadian Science Advisory Reports and research documents coming from stock assessments have been reviewed and incorporated into the EA where deemed appropriate.	See general comment #1
97	67	DFO	5.2.1.2, p. 132, par. 4	First sentence is incomplete "Atlantic cod eggs and larvae are planktonic during and are primarily zooplankton feeders…" Needs editing.	The sentence regarding cod eggs and larvae has been completed.	Adequate
98	68	DFO	5.2.1.3	Only general information is presented in this section; not information focused on winter skate in the Gulf. Information is available from Swain et al. (1998); Chouinard & Hurlbut (2011); Comeau et al. (2002); Benoît et al. (2003); Darbyson & Benoît (2003); and recent CSAS Science Advisory Reports and Research Documents coming from stock assessments, as well as CSAS Res Docs 2006/003; 2006/004; Swain et al. 2009 (and the associated supplementary material).	Up to date Canadian Science Advisory Reports and research documents coming from stock assessments have been reviewed and incorporated into the EA where deemed appropriate.	See general comment #1
99	69	DFO	5.2.1.3	It should be noted that winter skate in Gulf are primarily distributed in the southern Gulf, where they are distinct from winter skate elsewhere.	The differences of winter skate in the gulf compared to other populations has been noted.	Adequate
100	70	DFO	5.1.2, p. 135	The legend does not correspond with the figure; lower panel shows distribution in 2005-2009. RV catch rates are not shown for the Newfoundland and Labrador continental shelves and not for the study area and no units (kg/tow?, number of fish/tow?) are shown in this and other figures (Section 5.2).	The figure title has been updated to reflect the 2005-2009 trawl data. There are no units (kg/tow or number/fish/tow) or references to catch located in the DFO 2010 paper on Roundnose Grenadier. As a result, we cannot assume what it is or put a unit in the legend. The figure is still relevant as it shows relative catch data.	Adequate

101	71	DFO	5.2.1.5	The EA notes the Porbeagle shark as having a low potential for occurrence in the study area. However, relative to its overall population size, the likelihood of occurrence is moderate or high, although not in large numbers. As such, Table 2 needs to be amended to reflect this. A distribution map should also be presented.	For this EA, the potential for occurrence was based on the likelihood of encountering an individual from a species, not on the likelihood of occurrence related to species population. As a result, the likelihood of encountering a Porbeagle in relation to EL1105 is low.	Adequate
102	72	DFO	5.2.1.5	Porbeagle shark mating occurs off southern Newfoundland and at the entrance to the Gulf, between late *August* and November. Pregnant females are present in this area from late *August* through to December and are seldom seen from January through to June (Jensen et al 2002).	Information pertaining to porbeagle shark reproduction has been updated from Campana et al. 2003.	Adequate
103	73	DFO	5.2.1.6, p. 136	It mentions that White Shark is designated as endangered by COSEWIC. This should be updated to say that it is listed under Schedule 1 of SARA as endangered.	The recent updated Species at Risk status of the White Shark has been updated in the EA.	Adequate
104	74	DFO	5.2.1.6, p. 136	Criteria for low occurrence need to be stated clearly. A distribution map should also be presented.	The criteria for occurrence is based on professional judgment taking into account available catch records, survey maps, habitat type and fish behaviour. The species has been recorded in Atlantic Canadian waters 32 times in the last 132 years. This would be deemed as having a low probability of occurrence in relation to EL1105.	Adequate
105	75	DFO	5.2.1.7,	The EA states *"…The deepwater redfish has declined by 98 percent since 1984 and the Acadian redfish has declined by 99 percent…."* References to "declines" should be clarified that declines are in mature abundance as per the COSEWIC criteria.	Declines in redfish abundance have been clarified.	Adequate
106	76	DFO	5.2.1.7,	The three recent scientific advices on redfish require mentioning in the EA: Stock Discrimination (CSAS SAR 2008/026), Stock Assessment of Units 1 and 2 (CSAS SAR 2010/037) and Recovery Potential Assessment (CSAS SAR 2011 /044).	Recent scientific advances on redfish have been revisited and incorporated into the EA where deemed appropriate.	Adequate
107	77	DFO	5.2.1.7,	Figure 5.13 The information is dated. More recent data exist from the study area. The data from 2003-2011 should be presented to illustrate current distributions.	Information pertaining to the Magdalen Shallows water temperature has been added to the EA.	Adequate
108	78	DFO	5.2.1.7, page 147	Incomprehensible translation – French version Ces espèces sont d'apparence similaire et sont associées de leur gestion.	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
109	79	DFO	5.2.1.8	Criteria for low occurrence need to be stated clearly. A distribution map should also be presented.	The criteria for occurrence is based on a professional judgment taking into account available catch records, survey maps, habitat type and fish behaviour.	Adequate
110	80	DFO	5.2.1.9	Information on seasonal distributions is lacking (see sources listed under cod for information). Winter distribution for plaice that spend the summer on the Magdalen Shallows and move into deep water in the Laurentian Channel is particularly relevant, and is not mentioned within the EA.	The seasonal distribution of American plaice has been added to the EA.	See general comment #1
111	81	DFO	5.2.1.10,	The paragraph on Striped bass should be re-edited to reduce confusion. It starts by speaking about extirpated estuary population, and then it states the harvest restrictions put in place in 2000 seem to have assisted in recovery. Confusion exists between Estuary and Gulf populations. Please consult the recovery strategy on the SARA public registry. COSEWIC's (2004) assessment for striped bass is not a good reference nor is it used properly.	The Striped Bass section has been reworded to reduce confusion and update its relevance with the Project area.	Adequate - However the paragraph now conflicts with Table 5.2
112	82	DFO	5.2.1.10,	If indicating spawning in the St. Lawrence estuary, reference should also be made to spawning in the Miramichi. The introduction of these two populations should set up the rest of the text as they pertain to EL1105. Further, mention of St. Lawrence striped bass requires St. Lawrence striped bass be introduced in Table 5.1.	Reference to spawning of the Southern Gulf population has been incorporated into the EA.	Adequate

113	83	DFO	5.2.1.10,	There is some evidence that there may be more than one striped bass population in the Bay of Fundy. It is relevant that Miramichi bass are genetically isolated from populations further south. However, Fundy striped bass are not relevant to the assessment and therefore it is not necessary to give any information on their biology.	Information pertaining to Bay of Fundy Striped Bass will be limited to introductory information as they are not found within the Gulf.	Adequate
114	84	DFO	5.2.1.10,	Spawning of Striped Bass does not occur primarily in freshwater. This occurs near the fresh-salt boundary at the head of estuaries.	The spawning of Striped Bass can occur in freshwater or brackish water depending on the location of the population.	Adequate
115	85	DFO	5.2.1.10,	The Bay of Fundy (Shubenacadie River) does not occur in the southern Gulf.	Refer to response provided for DFO-83.	Adequate
116	86	DFO	5.2.1.10,	"school to fish" requires clarification. This may refer to predatory schooling behavior, in which case should also be qualified by "CAN cover tens…..	Information pertaining to Striped Bass predatory schooling behaviour has been updated.	Adequate
117	87a	DFO	5.2.1.10,	Contrary to the EA, striped bass DO currently exist and spawn in the St. Lawrence Estuary. While extirpated there in the 1960s, they were re-introduced in 2002 and have potentially established a successful spawning population (DFO 2010).	Information pertaining to the St. Lawrence Estuary population of Striped Bass has been updated.	Adequate
391	87b	DFO	5.2.1.10,	Striped bass are highly mobile and range very widely around the edge of the southern Gulf. However, they stay close to land, and hence are very unlikely to be in the area of proposed drilling. Therefore the most obvious omission in the text is the link between the striped bass populations and their 'low potential of occurrence' at EL1105.	Comment noted, low occurrence of Striped Bass and the fact that they area a coastal/estuarine species has been taken into account in the revised EA Report.	Adequate
118	88	DFO	5.2.1.10,	At a minimum, coastal behaviour at all life stages should be identified, but could be strengthened within the EA easily for the sGSL population by either COSEWIC's (2004) evaluation of Extent of Occurrence and/or its proposed refinement in Douglas and Chaput (2011).	Behaviour at various life stages has been incorporated into the EA Report.	Adequate
119	89	DFO	5.2.1.16	Use Salmo (genus) instead of salmo.	Text updated to *Salmo*.	Adequate
120	90	DFO	5.2.1.16	Much of the material in the 1st paragraph, 1st three sentences is incorrect or only partly correct. Most Atlantic salmon are anadromous, but not all. Many salmon spend two years in fresh water, but many do not. Many salmon migrate to the Labrador Sea, but some also migrate to Greenland. Pertinent literature on Atlantic salmon should be consulted and accurately summarize key points of their life history. In insular NL most Atlantic salmon remain in fresh water for 2 to 5 years. Atlantic salmon over winter in the waters off the Grand Banks, Labrador and west Greenland.	Information pertaining to Atlantic salmon has been updated.	Adequate
121	91	DFO	5.2.1.16	Atlantic Salmon migration timing and routes need to be reviewed and summarized. Reddin (2006) summarizes the broad pattern of migration routes followed by post-smolts out of the Gulf and returning adults into the Gulf. However, routes are generally not known at a detailed level, which leaves some uncertainty as to how often salmon pass through or near EL1105. Recent unpublished studies using acoustic pingers indicate that post-smolts from a variety of Gulf rivers pass through the Strait of Belle Isle during a short period in early July (http://www.asf.ca/projects.php?id=4)	Updated information pertaining to Atlantic salmon migration patterns has been included in the EA.	Adequate
122	92	DFO	5.2.1.16	Although the relative importance of the Strait of Belle Isle and Cabot Strait as salmon migration routes is not clearly understood, it seems likely that use of the Belle Isle route would be highest in salmon from the northern Gulf, including those from Anticosti Island.	Refer to response provided for DFO-91	Adequate
123	93	DFO	5.2.1.16	*"All of these populations are considered to have a low potential for occurrence within EL1105, with any presence being transient in nature"* should be replaced with *"All of these populations are considered to have a moderate potential for occurrence within EL1105 during their post-smolt and returning adult migrations."* "Transient" should not be used to describe these migrations.	The text referring to Atlantic salmon occurrence has been updated	Adequate

124	94	DFO	5.2.1.17, p. 140	This section requires additional information and revision. Most significantly, the assessment does not include bluefin tuna as a potential species at risk based on COSEWIC's recent determination that the Western Atlantic population is endangered. Accordingly, this species should also be included in Table 6.1., and much more consideration of the possible impacts on this high-profile stock is required in the EA. The western population of Atlantic bluefin tuna relies heavily upon the Gulf of St. Lawrence for critical foraging opportunities; and the largest and oldest individuals, typically comprising breeding adults, are found in the southern Gulf of St. Lawrence.	The Atlantic bluefin tuna is currently not listed under SARA and therefore is not listed in Table 5.1. It is considered endangered by COSEWIC and is listed as such in Table 5.2. Potential or candidate SAR species are not listed in Table 5.1, only officially designated species are listed. Information pertaining to Bluefin tuna life history and biology has been updated to reflect the most recent literature.	Adequate
125	95	DFO	5.2.1.17, p. 140	It is incorrect (p141) that both the western and eastern populations can occur in the southern Gulf of St. Lawrence. More recent studies have shown convincingly that the fish occupying the southern Gulf of St. Lawrence are almost exclusively western origin fish (Schloesser et al. 2010).	Information pertaining to bluefin tuna stocks in the Gulf has been updated.	Adequate
126	96	DFO	5.2.1.17, p. 140	Since the new and evolving recreational fishery for bluefin tuna in the southern Gulf has huge potential for economic development, the EA should include this information and completely examine this in the context of recreational fisheries.	Detailed descriptions of recreational and/or commercial fisheries are not discussed in Section 5.2. Please refer to Section 5.8 for commercial and recreational fishery information.	Adequate
127	97	DFO	5.2.1.17, p. 140	Please refer to the 2011 COSEWIC report and DFO Recovery potential assessment (http://www.dfo-mpo.gc.ca/csas-sccs/Publications/Pro-Cr/2011/2011_049-fra.html).	Information from the 2011 COSEWIC status report and the DFO recovery potential assessment has been referenced where applicable.	Adequate
128	98	DFO	5.2.3	The EA cites the TNASS 2007 inventory (Lawson and Gosselin, 2009) as the sole source of data to determine the probability of meeting of various species in the study area and the Gulf of St. Lawrence. However, there are other significant sources of information which should be included; Kingsley and Reeves (1998) and Lesage et al. (2007).	Information on blue whales cited in Kingsley and Reeves (1998) and Lesage et al. (2007) is in line with what has been presented in section 5.2.3. Lesage et al. (2007) depicts three combined studies showing no blue whales near or within EL1105.	Adequate
129	99	DFO	5.2.3	Additionally, the level of information provided on the various marine mammal species is very uneven and inconsistent. The following information should be provided for each species: structure of the stock, seasonal movements, reasons for their presence in the Gulf of St. Lawrence, abundance, probability of meeting in the Gulf and the sector of EL1105, and threats to their recovery identified by COSEWIC or SARA.	A thorough review has been undertaken and text updated as appropriate to improve consistency of the information provided.	Adequate
130	100	DFO	5.2.3.1	The presentation of current knowledge on distribution of blue whales does not consider the bias in observation effort / sampling of blue whales. Most past effort has been concentrated in the Northwest of the Gulf.	Text has been updated to reflect the bias of observation effort/sampling of blue whales which has been concentrated in the Northwest of the Gulf.	Adequate

131	101	DFO	5.2.3.1	A pattern of seasonal migration following a North-South axis is not only unrecognized, but is in fact challenged by recent data. Below is a more accurate description of the state of knowledge on seasonal migration by V. Lesage et al., extracted from a research document in prep: *The agreement that blue whales follow a general north-south movement to warmer and less productive waters is not fully supported by current data (CETAP 1982; Charif and Clark 2009, Mitchell 1991, Reeves et al., 2004, Sears 2002, Sergeant 1977). Recent monitoring studies of whale vocal activity over long periods suggest that blue whales and fin whales are still present in winter (December to Jan or February) in the Davis Strait (Simon et al., 2010: fin), off the Grand Banks (Clark 1995: blue whale), as well as west of the British Isles in the north-east Atlantic (Charif and Clark 2009), but some migrate farther south (Nieukirk et al., 2004: fin and blue whales). The ratio of winter and spring catches of blue whales by whaling station south of Newfoundland from December to May (Dickinson and Sanger 1990), mortality in the ice in March-April in southwestern Newfoundland (Stenson et al., 2003), and anecdotal observations in the lower estuary of the St. Lawrence and Gaspé (Sears and Calambokidis 2002, Archives of www.baleinesendirect.com) confirm that at least part of the population of blue whales remains at our latitude throughout the year.*	Text has been updated to acknowledge uncertainty surrounding migration patterns and to confirm at least part of the population of blue whales remains at our latitude throughout the year.	Adequate
132	102	DFO	5.2.3.1	It is incorrect to report this population has 250 mature individuals since its size is actually unknown. Sears and Calambokidis (2002) was the source report for designation of the blue whale as endangered by COSEWIC. In this review of the available scientific information, there is no mention of such a figure (250 mature individuals). In fact, a maximum of 250 mature individuals is the COSEWIC assessment threshold for designating a population as endangered.	Text revised to indicate that likely no more than 250 mature blue whales are present in the Northwest Atlantic population (Beauchamp et al. 2009).	Adequate
	103	DFO	5.2.3.2, page 162	Incomprehensible translation - French Version. Le programme de retablissement de la baleine noir de l'Atlantique Nord de 2009 mentionne que bien que les connaissances soient limitees quant a l'abondance a long terme ne peuvent etre determinees. Cependant l'objectif visant a atteindre une augmentation continue de l'abondance de la population a ete identifie.	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
133	104	DFO	5.2.3.3	Loggerheads are opportunistic feeders. Therefore, while squid and zooplankton are known prey items, it may be misleading to reference only thoseprey (i.e., maybe preface with “including”). Finfish should also be included as prey as this can contribute to	Text revised to include recent data on beluga whales.	Adequate
134	105	DFO	5.2.3.5, p. 154	Fin whale – A draft management plan is under review and will be available for public comment in 2012 as part of SARA recovery process.	Text has been updated to acknowledge the preparation of a draft management plan for the fin whale.	
135	106	DFO	5.2.3.5, p. 154	The abundance data cited for this species is incorrect. The estimated abundance is 462 individuals (270−791) for the Gulf of St. Lawrence and Scotian Shelf combined (Lawson and Gosselin, 2009, Table 10) or 1,352 individuals (above 821−2226) for the portion of eastern Canada identified during the TNASS (Table 11). The estimate of abundance was 380 individuals (SD = 300) in 1995−1996 (Kingsley and Reeves 1998).	Text has been updated to include the estimated abundance of 380 individuals (Kingsley and Reeves 1998)	Adequate
136	107	DFO	5.2.3.7, p. 154	The population of Killer Whale being referred to is Northwest Atlantic/Eastern Arctic.	Text has been updated to clarify the specific population of killer whale.	Adequate
137	108	DFO	5.2	General comment for Section 5.2 – certain subsections refer to the COSEWIC designation and/or SARA status for the species, while other sections do not. It would be good to be consistent among sections.	Text in Section 5.2 has been updated to improve consistency regarding mention of COSEWIC/SARA designations.	Adequate

138	109	DFO	5.2.4	In general, the EA relies heavily on citing dated literature documents (e.g. COSEWIC report and Recovery Team documents) rather than the available primary scientific literature for sea turtles. The EA contains only slight reference to studies that have specifically focused on leatherback movements in and around the proposed development site and the most recent information available on the biology and distribution of sea turtles in Canadian waters is not integrated into the assessment. Direct consultation of the primary literature is recommended. Notably, the exploration licenses overlap directly with important foraging habitat for leatherbacks – including an area currently being considered critical habitat for the species. Moreover, the exploration site lies directly in line with the route many leatherbacks take in and out of the Gulf of St. Lawrence.	Primary literature has been consulted and Section 5.2.4 has been updated as applicable.	Adequate
139	110	DFO	5.2.4.1	The COSEWIC document referenced for this section is outdated and precedes most directed research on leatherbacks in Canada. Information of the distribution of leatherbacks in Canadian waters has been published in several articles (e.g., James et al. 2005; James et al. 2006; James et al. 2007).	Section 5.2.4.1 has been updated with primary literature references on the distribution and behavior of, and threats to, leatherbacks in Canadian waters.	Adequate
140	111	DFO	5.2.4.1	References should include James et al. (2005; for source of mortality in Canadian waters) as well as to recovery documents as posted on the SARA public registry.	Section 5.2.4.1 has been updated with primary literature references on the distribution and behavior of, and threats to, leatherbacks in Canadian waters.	Adequate
141	112	DFO	5.2.4.1	Specific mention of leatherback sightings in the Bay of Fundy can be misleading – while the species has been recorded there, it is conspicuously rare in this area.	Section 5.2.4.1 has been updated with primary literature references on the distribution of leatherbacks in Canadian waters including the Bay of Fundy.	Adequate
	113	DFO	5.2.4.1	It is now known that leatherbacks forage in the vicinity of EL1105 – amend “may occur” to “occurs”.	Text has been updated to confirm occurrence of leatherbacks foraging in the Study Area.	Adequate
142	114	DFO	5.2.4.1	A long lifespan does NOT contribute to species decline as stated in the EA.	COSEWIC (2001) cites long lifespan as one of the factors leading to the leatherback’s vulnerability. The sentence has been revised to cite “a number of factors contributing to their vulnerability…”.	Adequate
143	115	DFO	5.2.4.2	More recent references exist and are available for loggerhead population size – see recent NMFS Loggerhead Turtle Expert Working Group stock assessment.	Text has been updated to incorporate population estimates for loggerhead turtles in the North Atlantic waters.	Adequate
144	116	DFO	5.2.4.2	Most loggerhead nesting in the North Atlantic does *not* occur at “near-equatorial nesting areas”, and instead occurs in the states of Florida, Georgia, and, to a lesser extent, the Carolinas.	Text has been updated to reflect up to date information on nesting locations.	Adequate
145	117	DFO	5.2.4.2	The size distribution (and therefore life history stage) of loggerheads in Canadian waters has not been reported, although sampling in adjacent areas suggests those that forage in Canada are mainly juveniles.	Text has been updated to describe known population distribution in Atlantic Canada waters.	Adequate
147	118	DFO	5.2.4.2	Loggerheads are opportunistic feeders. Therefore, while squid and zooplankton are known prey items, it may be misleading to reference only thoseprey (i.e., maybe preface with “including”). Finfish should also be included as prey as this can contribute to vulnerability of loggerheads hooking in pelagic longline fisheries.	Text has been updated to reflect the variety of prey that loggerheads consume.	Adequate
148	119	DFO	5.3	It is not accurate that “...fish habitat is divided into two areas, the shelf areas and the deep channels. The shallow waters along the shelf areas are characterized by warm, high productivity waters in the summer...” In fact, the bottom over much of the Magdalen Shallows is within the Cold Intermediate Layer (CIL), so that bottom waters are colder than those in the deeper waters of the channels.	Information pertaining to the Magdalen Shallows water temperature has been added to the EA.	Adequate
149	120	DFO	5.3	DFO 2007a is cited but is not listed in the References.	The DFO 2007a is listed in the references.	Adequate

150	121	DFO	5.3 p. 156; par.2.	The western Newfoundland SEA (LGL 2005b) and the amended SEA (LGL 2007) cited in this paragraph only cover the NAFO sub-division 4R portion of the Gulf. Given that this project has implications for the entire Gulf of St. Lawrence, this EA should reference SEA documentation for other parts of the Gulf as well. For example, the SEAs for the Baie des Chaleurs, Anticosti and Magdalen basins (see http://www.ees.gouv.qc.ca/english/documents/chapter/sea2_information.pdf).	The scope of the Old Harry Prospect Exploration Drilling Program EA is to assess a specific Project in a specific study area which has been defined as the likely extent of potential Project-environment interactions from the Old Harry Project which is covered adequately by the western Newfoundland SEA (LGL 2005b) and the amended SEA (LGL 2007).	Adequate
151	122	DFO	5.3.1	Rocky shores do not characterize the whole Gulf of St. Lawrence. Both PEI and New Brunswick shorelines are characterized by highly erodible shorelines including barrier beaches, salt marshes and other geographical features.	The shoreline information of PEI and New Brunswick has been updated, although there is no predicted Project interation with these shorelines.	Adequate
152	123	DFO	5.3.1.1	Tables 5.3 and 5.4 are based upon a book by G.R. South entitled 'Benthic Marine Algae'. However, the taxonomy of seaweeds has changed since that publication in 1983[1]. There are also many more species of algae found in western Newfoundland than are listed in the associated tables. A more appropriate and up to date listing can be found in 'NEAS Keys to Benthic Marine Algae of the Northeastern Coast of North America from Long Island Sound to the Strait of Belle Isle' (Sears 2002). [1] For example, Saccharina is now the genus name for a number of species of kelps formerly associated with the genus Laminaria.	This level of detail is not necessary for the EA Report, therefore these tables have been removed from the text and a reference to the Sears 2002 report has been added.	Adequate
153	124	DFO	5.3.1.1	Table 5.3 and 5.4 – some of these species are not algae (maritime lichens, *cyanophyta?, Balanus, Mytilus, Zostera marina, Spartina sp., Plantago sp.).* Add *Laminaria digitata.*	Refer to response provided for DFO-123.	Adequate
154	125	DFO	5.3.1.1	Table 5.4 – *Ascophyllum*, *Fucus*, *Ahnfeltia* and *Chaetomorpha* are not typically found associated with sand or mud. The listing infers that they may be common on this substrate.	Refer to response provided for DFO-123.	Adequate
155	126	DFO	5.3.1.1	Note: *Agarum cribropsum* (in the french version) should be *Agarum cribrosum* (correct in the English version), but is now called *Agarum clathratum. Lamninaria longicruris* is now called *Saccharina longicruris* Pophyra should be Porphyra	Refer to response provided for DFO-123.	Adequate
156	127	DFO	5.3.1.2;	It should be noted in the text that, Eelgrass (*Zostera marina*) in eastern Canada has characteristics which meet the criteria of an Ecologically Significant Species. This means that if the species were to be perturbed severely, the ecological consequences would be substantially greater than an equal perturbation of most other species associated with this community (see DFO 2009d).	Section 5.3.1.2 has been updated to include reviewer's text.	Adequate
157	128	DFO	5.3.1.2;	This section states that "eel grass is also protected by law under the *Fisheries Act."* While eel grass is characterized as an important type of fish habitat it is important to note that all fish habitat is protected under the *Fisheries Act.*	Comment noted.	Adequate
158	129	DFO	5.3.1.2;	The eelgrass beds described in this section are large and dominate soft bottoms in the shallow subtidal – they are considered extremely important habitat for the region.	Comment noted.	Adequate
159	130	DFO	5.3.1.2;	Add sea urchin to the list at the end of the first paragraph (p.157).	Text updated to include sea urchin.	Adequate
160	131	DFO	5.3.1.3	The high and low salt marsh communities described are also extensive and important habitat for the region. Should an oil spill reach coastlines salt marshes are likely to be impacted.	Oil spill modeling has been conducted to describe and depict worst case scenarios. None of these scenarios are predicted to affect salt marsh communities. The closest salt marshes are located on the Magdalen Islands and the western tip of Newfoundland which are located well outside of the impact zone. Refer to Figures 2.12-2.24 for spill modeling.	Adequate
161	132	DFO	5.3.2; Page 160; Para 2	It should be noted in the text that, Cabot Strait is an important migratory corridor for marine mammals moving in and out of the Gulf of St. Lawrence (see http://www.dfo-mpo.gc.ca/CSAS/Csas/DocREC/2001/RES2001_115e.pdf).	Hammill et al. (2001) has been cited to acknowledge the importance of the Cabot Strait for migration of marine mammals.	Adequate

162	133	DFO	5.3.2; Page 160; Para 2	It should also be noted that, the Esquiman Channel is the main migration corridor for entire populations of ground fish, including cod and redfish (see DFO 2007b).	Comment on fish migration has been noted and incorporated in the EA.	Adequate
163	134	DFO	5.3.3	In general, the main source of information for the corals and sponges section of the EA is Cogswell et al (2009), which focuses on the Maritimes region. Additional important data that is available on coral and sponge distributions has not been included in the report – this includes 2010 and 2011 data from the Gulf (mostly for sea pens) and some of the more recent NL records. As a result, the conclusions that EL1105 location is likely not suitable habitat for corals and sponges (p.155) may not be the case. Kenchington et al. (2010) show significant abundances of sea pens in the Gulf and Laurentian channel that could be considered near EL1105. Sponges also require further consideration and relevance somewhere in this general section of this report.	The main source of information has been updated with information and mapping from Kenchington et al. 2010. Significant locations of corals do occur within the Gulf; however they occur outside of EL1105 on the western Laurentian Channel slope. Information and updated mapping relating to the most recent literature on Sponges has been added to the EA.	Adequate
164	135	DFO	5.3.3	The following is offered as an opening paragraph for this section: Deep-water corals are sessile or sedentary, largely colonial animals that can occur individually at low density or in significant concentrations, depending on the taxa considered and ecological conditions. They are generally slow growing, and may represent decades or centuries of growth. They are considered suspension feeders, but not a lot of attention has been given to food and feeding in the scientific literature. Numerous species of deep-water coral are present in the Gulf of St. Lawrence, with significant areas of coral concentrations occurring in the Gulf and Laurentian Channel (Cogswell et al. 2009; Kenchington et al. 2010). At least six species of sea pen occur (*Pennatula borealis*, *Pennatula borealis*, *Anthoptilum grandiflorum*, *Crassophyllum* spp., *Funiculina* quadrangularis, *Halipterus finmarchica*), including significant concentrations located adjacent to EL1105, on the western flank of the Laurentian Channel (Cogswell et al. 2009; Kenchington et al. 2010). Soft corals, especially *Gersemia rubiformis*, but also including *Duva Florida* and *Anthomastus grandiflorus*, are also common, especially in the western Gulf. However, they are not considered as vulnerable to disturbance as other types of corals, including sea pens (Fuller et al. 2008; Kenchington et al. 2010). At least two species of large gorgonian corals occur, *Primnoa resedaeformis* and *Paramuricea* spp., as well as the solitary stony cup coral, *Flabellum alabastrum*, but these do not appear to be nearly as common or abundant in the Gulf as either of the other types of coral.	The information presented by the reviewer has been incorporated into the EA where appropriate.	Adequate
165	136	DFO	5.3.3	Orders Stolonifera and Heliporacea are not present in Canadian waters – as such this reference is irrelevant.	Orders Stolonifera and Heliporacea were not referenced as being present in Canadian waters. The two orders were being referenced as part of the Octocorallia subclass for background information. As such reference to the two orders is deemed appropriate to the subject matter.	Adequate
166	137	DFO	5.3.3	The EA comments on sea pens hundreds of km away off Baffin Island, but ignores other significant records in the Gulf.	The EA has been updated to reflect sea pens in the Gulf.	Adequate
167	138	DFO	5.3.3	It is incorrect that *Pennatula phosphora* is not observed near the Project - Pennatula phosphorea has been observed “near” the project in great numbers (Kenchington et al. 2010). The EA also needs to define “near”.	Areas of significant sea pen concentrations have been updated in the EA.	Adequate

168	139	DFO	5.3.3	The October 2010 geohazard survey does not identify the presence of any deep-water corals or sponges – however, sea pens are corals.	Sea pens belong to the Class Anthozoa and to the Octocorallia Subclass and as such share some similar morphological, feeding and reproductive characteristics to true stony and soft corals and therefore are grouped with corals, but are not corals per se and do diverge with respect to some morphological features and growth forms. For example, sea pens have a peduncle at its base to anchor themselves in sandy or muddy substrate, with the exposed portion that may rise up to 2 m in some species and which is atypical of corals. However, it is recognized that sea pens can be present alongside deep water corals and share the same vulnerability as corals towards anthropogenic impacts. Therefore sea pens and corals are grouped into the same vulnerable marine ecosystem of an environmentally sensitive deep-water coral community.	Adequate
169	140	DFO	5.3.3	It is incorrect that there are no data on presence / absence of corals and sponges within the Laurentian Channel outside the Gulf – data are figured in Cogswell et al. (2009).	Comment noted and correction has been made regarding no data on corals outside the Gulf.	Adequate
170	141	DFO	5.3.3	The statement that “water depth may not be a limiting factor in their distribution” is misleading since factors determining distribution include depth, and most others are typically correlated with depth, therefore responding quite clearly to depth, even though it is not just depth itself.	The sentence is depicting that water depth is not the limiting factor when talking about coral distribution. Since these corals do not require light, depth does not limit their distribution. Substrate type, current speed, and prey availability limit the distribution of cold-water corals.	Adequate
171	142	DFO	5.3.3	Many forms and species of deep water coral are not generally found on hard substrate as inferred in the EA.	Research into recent literature tells us that generally cold water corals are found on hard substrate as this serves as an important structure for larval settlement (Campbell and Simms 2009). Nonetheless, corals benefit from areas of relatively high current to deliver food items and the area in EL1105 has relatively slow current speeds. This fact is supported by the lack of dense aggregations of corals or sponges in the Project area. Refer to Figures 5.21-5.24 of the EA Report.	Adequate
172	143	DFO	5.3.3	The report by LGL (2007) indicates that “*In general, the low abundance of corals in the Laurentian Channel (other than the Stone Fence at the southern end of the Laurentian Channel) probably reflects the low cover of cobble and boulder in the area (Mortensen 2006).*” This is out of context (refers to large gorgonians only or is or outdated) See Kenchington et al. (2010).	Kenchington et al. 2010 has been referred to in the revised EA Report.	Adequate
173	144	DFO	5.3.3	Deep-water corals may benefit from rather than require higher water current speeds. It’s also not clear exactly what they feed on, though plankton is probably an important source for some if not many species, at least at shallow to relatively moderate depths. Occurrence along continental slopes and shelves may also be more to do with the availability of food or increased substrate variability at the appropriate depths rather than currents.	Comment noted, refer to response provided for DFO-142.	Adequate
174	145	DFO	5.3.3	The commentary around favorable habitat for deep-water corals and sea pens in reference to EL1105 is confusing.	Coral habitat and abundance has been clarified in the EA.	Adequate
175	146	DFO	5.3.3	Coral and sponge data from NL and the eastern Canadian Arctic is overemphasized, while ignoring or minimizing other relevant information actually from within the Gulf of St. Lawrence and Laurentian Channel. The most recent, peer reviewed, published information is not referenced (e.g. Kenchington et al. 2010). This information is the definitive culmination and summary of all quantitative data concerning coral and sponge from the eastern Arctic to the U.S. border, and should not be ignored. Data is presented within that clearly demonstrates significant concentrations of	Refer to response provided for DFO-134.	Adequate

				both coral and sponge in the Gulf, and must at least be presented and considered as being near the proposed development.		
176	147	DFO	5.3.3	There is apparent ambiguity with classifying sea pens as being corals. Sea pens are considered corals, phylogenetically, biologically/ecologically and by policy makers, including DFO. Sea pens are octocorals, belonging to the subclass Octocorallia, along with gorgonian corals and soft corals. Ambiguously framing sea pens in any way confuses the assessment.	Refer to response provided for DFO-139.	Adequate
177	148	DFO	5.3.3	The term “near” is used often, and proximity is used as potential factor implying mitigation of any impacts. Therefore a clearer definition of “near” should be provided. It is potentially misleading to simply state that corals and sponge are not concentrated “near” the development. Actual distance would be more useful in this context.	The proximity of corals and sponges to EL1105 has been outlined in the EA.	Adequate
178	149	DFO	5.3.3	Kenchington et al. (2010) report that the highest abundances (trawl catch data) of seapens in eastern Canada occur in the Gulf region. The area is certainly suitable habitat for seapens which are found on unconsolidated sediments (p.154). The EA should review Kenchington et al. (2010) and current information on the classification and conservation considerations for sea pens below, including the geo-referenced map summarizing data on the concentrations of sea pens and sponge near the proposed Old Harry development (see attached).	Refer to response provided for DFO-134.	Adequate
179	150	DFO	5.3.3	Figures 5.22 and 5.23 – (coral and sponge records) show high coverage on the Scotian shelf and Gulf regions with almost no occurrences in the Newfoundland region. This is attributable to NL data not being included in the assessment.	Refer to response provided for DFO-134.	Adequate
180	151	DFO	5.3.3	The EA states (p.155), *“These factors suggest that the area for which the Project is planned is not a favourable habitat for deep-water corals and likely for sponges as well, since they too depend on plankton for food.”* The term ‘plankton’ as used here is too general. We know that corals and sponges represent a diverse range of trophic groups including carnivores (feeding on zooplankton) and suspension feeders (feeding on suspended organic particulate matter). Their food sources include organisms and detritus resident near the seabed surface and organic matter sinking from surface layers which is why they can survive at deep depths below the photic zone.	The term plankton covers both phytoplankton and zooplankton. Detritus and other organic matter has been added as a food source.	Adequate
181	152	DFO	5.3.3	Inconsistency exists in the spelling of *Anthoptilum grandiflorum*. This is the correct spelling.	Text updated and consistencies in spelling *Anthoptilum grandiflorum* corrected.	Adequate
182	153	DFO	5.3.3	It would be useful to the EA to recognize that various NAFO working groups concluded that for corals the following taxa formed the conservation units (from Kenchington et al. 2010): Sea pen fields (Pennatulaceans); Small gorgonians (*Acanella arbuscula* was the only species in the NAFO Regulatory Area within this group); Large gorgonians (Sea fans: genera: *Primnoa*, *Paragorgia*, *Keratoisis*, *Paramuricea*; *Radicipes,* etc.); Cerianthid anemone fields; Antipatharians (black corals), and Reef-building corals (e.g., *Lophelia pertusa*).	Comment noted, From Kenchington et al. 2010, the location of significant concentrations of sea pens in the Gulf of Saint Laurence is located within the Study Area and to the South-West of EL 1105.	Adequate
183	154	DFO	5.3.3	Table 5.9 – the record of *Littorina littorea* from a grab sample (GS-02) from a depth of > 400 m is remarkable given that this is primarily an intertidal species extending into the shallow subtidal (< 20 m). This may have been an empty shell that had been transported to deep water.	Comment noted and incorporated into the EA	Adequate

184	155	DFO	5.3.4	The statement (p.165), “The transect line across Cabot Strait (identified as TDC in the AZMP program) is of most relevance because it spans across the Laurentian Channel between Newfoundland and Cape Breton Island and is situated approximately 70 km southeast of EL1105. General water flow through EL1105 and water properties would likely resemble those at Cabot Strait.”, requires second consideration. The continental shelf waters entering the Cabot Strait do not point directly to the EL1105 site. In terms of plankton communities, AZMP transect within the Gulf (especially the center transects - at the eastern tip of Anticosti Island) would be more appropriate in this case.	Based on the water current data, the plankton along the Cabot strait transect of the AZMP is more likely to intercept the Old Harry platform than the plankton from the transect of Anticosti Island to Magdalen Islands shelf in the Southern Gulf of St. Lawrence. This is because the currents entering the Gulf of St. Lawrence, which is across the majority of the Cabot Strait, occurs along most of the Laurentian Channel and Newfoundland coast, and exit along a narrower area of the western Cabot Strait (and away from Old Harry) on the Cape Breton side and along the shelf (see also attached image). Section 4.2.2 shows most of the seasonal currents are flowing northward. So it would not be unreasonable to include plankton data from only the Cabot Strait transect of the AZMP and more likely to be affected by the Project.	Adequate
	156	DFO	5.3.4.2	Incorrect translation - French Version. En retour, plusieurs organismes sous des tropiques eleves, tels des poissons et des mammiferes marins incluent le zooplancton dans leur diete. Incorrect translation of "higher trophic levels".	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
185	157	DFO	5.4.1	The magnitude of the photographic coverage of the sea floor seems low and mainly located in western margin of the area for which the license is applied (Figure 5.26). The determination of animal biodiversity of soft bottoms, particularly the macro-and mega-benthic fauna, must be based on the use of a variety of sampling tools (grab, drag, epi-and supra-benthic sled, beam trawl). One cannot determine the nature of macro and mega-benthic communities simply based on a number of photos and some samples or grab sampler (three, according to Table 5.9).	Comment noted and incorporated into the EA.	Adequate
186	158	DFO	5.4.1	Legend of Figure 5.27 should refer to Figure 5.26 for the position of the stations, NOT to Figure 5.23. In the legend of Figure 5.26 and elsewhere in the text, it refers to the "ocean floor".	The typo on Figure 4.27 has been updated to reference Figure 4.26.	Adequate
187	159	DFO	5.4.1	Table 5.9 – this table does not reflect the extent of benthic biodiversity in the targeted region (see previous comment). At a minimum, the EA report should include an inventory of many benthic species listed in the bilingual document written by Brunel et al. (1998). The study area is included in LCI, historically less well sampled for benthos that LCH, but both areas could have a rather similar fauna.	The Brunel et al. 1998 reference contains every recorded invertebrate species in the Gulf of St. Lawrence which is approximately 2,214 records. The samples collected from the site give a representation of the benthic fauna and not the complete community structure. Information on regional benthic communities can be found in Brunel et al. 1998 or the CNLOPB Western Newfoundland SEA.	Adequate
188	160	DFO	5.4.1	Table 5.9 – *Limacina helicina* is a pteropod (mollusc) epipelagic, not a benthic species. *Littorina littorea* is a coastal species that likes the intertidal and subtidal: although one may occasionally find it in bathyal environment, it is very rare and certainly not representative of the bathyal fauna. Finally, Brunel et al. (1998) and the virtual catalog WoRMS do not report the presence of *Spio limicola* in the Gulf of St. Lawrence. This species is found further south along the coast of North America.	Comment noted and incorporated into the EA	Adequate
189	161	DFO	5.4.2	The structure of the introduction may suggest that the species of shellfish listed in the following sentence (e.g. lobster, rock crab ...) are found in the area of EL1105.	Comment noted and incorporated into the EA	Adequate
190	162	DFO	5.4.2	The document refers to “giant snow crab”. This is not a species.	Text has been updated to omit “giant”.	Adequate

191	163	DFO	5.4.2	The list of other commercially important species in coastal areas around EL1105 does not include the Iceland scallop (*Chlamys islandicus*), sea cucumber (*Cucumaria frondosa*) and sea urchins (*Strongylocentrotus droebachiensis*) which also support established or emerging fisheries in the area.	While licenses for fishing Iceland scallop have been granted in NAFO Division 4R since 1969 the location of the fishery is not within the study area. The identified fishing areas in Division 4R occur in the Strait of Belle Isle north of the project area (DFO 2001, GNL 2002, NAFO 2009, CSAS 2009). The Project Area encompasses coastal sea urchin habitats in NAFO division 4Rd. There were no reported landings of sea urchins within that division from 2004 to 2010 (EA). Sea urchin landings were reported within division 4Vn though the Project is not anticipated to interact with the coastal habitats within that area. Exploratory harvest of sea cucumbers have been initiated along the southern coast of Newfoundland, the Strait of Belle Isle and the southern coast of Labrador (DFO 2007) as well as a commercial fishery on St. Pierre Bank (DFO 2009) neither of these regions are located within the Project Area and as such will not be affected by the Project.	Adequate
192	164	DFO	5.4.2	Northern Stone Crab (*Lithodes maja*) is not mentioned in this assessment. It is not a commercially important species but is present near Old Harry.	Comment noted. As described within the EA methods, life histories of non-commercially viable species were omitted.	Adequate
193	165	DFO	5.4.2	The Atlantic razor is not *Siliqua costata* but *Ensis directus*, caught in eastern Canada.	Text updated to include the proper species name.	Adequate
194	166	DFO	5.4.2.1	The first paragraph contains inaccuracies and should be re-written. The following is proposed: American lobsters are distributed in localized reefs in nearshore areas around the four Atlantic Provinces and eastern Quebec. The spring fishing season removes individuals from the population prior to moulting and spawning. Adult female moulting and mating occurs during one summer, whereas the second summer is dedicated to laying the eggs. With proper conditions, some young females could moult, spawn and lay eggs in the same summer (DFO 2003).	Comment noted and incorporated into the EA.	Adequate
195	167	DFO	5.4.2.1	"Courtship" is not a term that should be applied to Lobsters and crab – *mating* is the appropriate term.	Comment noted and incorporated into the EA.	Adequate
	168	DFO	5.4.2.1	The last sentence of the 2nd paragraph of p192 is incorrect - may be bad translation (French Version)	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
196	169	DFO	5.4.2.1	The statement that one in ten fertilized eggs will grow to become adults is likely incorrect. Also stages I II and III are not at the surface and are next to impossible to find.	Comment noted and incorporated into the EA.	Adequate
197	170	DFO	5.4.2.1	The diet of juvenile lobsters is significantly different from that of adult lobsters (see Sainte-Marie and Chabot 2002)	Comment noted and incorporated into the EA.	Adequate
198	171	DFO	5.4.2.1	Referring to "the coastal zone between the outer Port au Port Bay and Island Shag", these localities are in Newfoundland and Îles-de-la-Madeleine respectively. It is the Laurentian Channel, which separates them, where there are no lobsters, and it is not a ‘spawning’ area.	Shag Islands are a small group of islands in the southern part of Coppett Harbour off the south coast of Newfoundland.The text has been updated to clarify the reference to Shag Island as one of the Shag Islands off the coast of Newfoundland and not off of the Magdalen Islands.	Adequate
200	172	DFO	5.4.2.2	Some descriptions of snow crab are not correct. In the southern Gulf of St. Lawrence, snow crab does not move to shallower water to mate. They do not migrate to shallower waters for speeding up embryonic development. Mating does occur for pubescent females after the terminal molt but multiparous females (terminally molted) do not molt before mating. Females can use stored sperm to fertilize oocytes but it is not a general event. When mating partners are present they mate again. The statement *"Males continue to molt into adulthood and only a portion will recruit into the fishery"* has to be rewritten as it is ambiguous. Adult is the terminally	Comment noted and incorporated into the EA.	Adequate

				molted crabs and a portion of terminally molted crab larger than the minimum size limit will recruit to the fishery when they harden their carapace in a following year. The description of snow crab life cycle/biology has to be re-written.		
201	173	DFO	5.4.2.2	Snow crab distribution is also available from September multispecies survey as well as snow crab annual survey from Gulf Region. A snow crab fishing area (CFA) map in the southern Gulf of St. Lawrence, Eastern Nova Scotia and southwestern NL can be displayed here as it was done for lobster, particularly CFA 12F, 19, 4Vn, and 12A-C which are very close to Old Harry.	Comment noted though the mapping described was not available at the time of publication.	Adequate
202	174	DFO	5.4.2.2	Regarding stock structure, Atlantic snow crab have recently been identified as a single stock complex ranging from Labrador to Gulf of Maine and encompassing the Gulf of St. Lawrence (see recent paper by Puebla et al.). This information should be amended in the text.	Comment noted and incorporated into the EA.	Adequate
203	175	DFO	5.4.2.2	In reference to presence of green crab *in "the waters off Newfoundland…"* does this mean that green crab is in the area EL1105? Green crab (*Carcinus maenas*) is also present around Cape Breton Island and Prince Edward Island. Reference search should be done to include the recent distribution records of this species in the southern Gulf and northern Cape Breton.	Comment noted and incorporated into the EA though discussion on green crab populations in Cape Breton and PEI were not included as the areas are outside the geographic scope of the EA.	Adequate
204	176	DFO	5.4.2.2	Spermatophores are stored in the *spermathecae*.	Comment noted and incorporated into the EA.	Adequate
205	177	DFO	5.4.2.2	Smaller crabs are *not* found *"within the interstitial spaces of harder substrates."* The first benthic stages are furtive and live hidden among woody debris, biogenic structures or buried in the fine silt.	Comment noted and partially incorporated into the EA, woody debris is likely not present on the seafloor within EL 1105.	Adequate
206	178	DFO	5.4.2.3	The following is text is proposed to describe Rock Crab: Rock crabs are decapods crustaceans that congregate in waters typically less than 20 m deep and occupy different substrates from sandy bottom to rocky habitats. There is a sexual dimorphism in the size of rock crab, with males growing to bigger sizes (140 mm) than females (100 mm). Sexual maturity is generally attained at carapace widths of 57 and 75 mm for females and males respectively. Molting peak period for males usually happen in the late winter months to allow carapace hardening before mating with soft-shell females in late summer-early fall. Fertilized eggs are extruded soon after mating and are stored under the female's abdomen for up to 10 months. Larval hatching occurs in the late spring / summer months, with the free-swimming larvae aggregating near the surface. The larvae go through six stages which can take up to three months in total before settling to the seafloor as a benthic crab. Rock crab larvae are omnivorous planktivores.	Comment noted and incorporated into the EA.	Adequate
207	179	DFO	5.4.2.3	Rock crabs play an important ecological role in northern subtidal communities, mainly because of their wide abundance. Their diet includes bivalves, snails, green sea urchins, sea stars, amphipods, sand shrimp, and polychaetes. Rock crab is an important prey item for lobster of all sizes. Adult male rock crabs will reach commercial size (102 mm) at about six years of age.	Comment noted and incorporated into the EA.	Adequate
208	180	DFO	5.4.2.5	Several statements regarding whelk are incomplete or incorrect. Females lay capsules that contain numerous eggs – it is the capsules which are attached to hard substrates, and juveniles emerge from these capsules, not "young larvae".	Comment noted and incorporated into the EA.	Adequate

209	181	DFO	5.4.2.6	It is stated that shrimp are usually hermaphroditic. However, this species is always hermaphroditic.	Comment noted and incorporated into the EA.	Adequate
210	182	DFO	5.4.3	The EA needs to be clear in which species are/are not being presented with species-specific distribution and life history information and why. For example, Thorny skate are presented within the assessment and not Smooth skate. Accordingly, the entire section following table 5.10 should be amended for clarification.	Comment noted and a better explanation of the reasoning behind the inclusion of specific species in the discussion has been provided.	Adequate
212	183	DFO	5.4.3	Atlantic hagfish (also Table 5.10), Thorny skate, Smooth skate, and Black Dogfish are not pelagic species as stated in the text – they are groundfish species.	Comment noted and incorporated into the EA.	Adequate
213	184	DFO	5.4.3	Contrary to that stated in the EA, there are currently moratoria on directed fishing for cod in the Laurentian South DU.	Comment noted and incorporated into the EA.	Adequate
214	185	DFO	5.4.3.1	Overall, the information presented on pelagic fish is incomplete. The most recent DFO CSAS Research documents and Science Advisory Reports pertaining to pelagic fish should be consulted for this assessment. Notably, a section on capelin should be added here.	CSAS research documents and Science Advisory Reports have been reviewed and incorporated as relevant. A section has been added for capelin.	Adequate
215	186	DFO	5.4.3.1	Table 5.10 – for herring, add “spring spawning”; for mackerel, it is not present all year round, but from May to November, and there are also eggs and larvae, not only adults; for capelin, there is also immature. Also, the text mentions spring spawning which is not presented in Table 5.10.	Comment noted and incorporated into the EA.	Adequate
216	187	DFO	5.4.3.1	Table 5.11 – add April to July for herring; and add capelin to the table.	Comment noted and incorporated into the EA.	Adequate
217	188	DFO	5.4.3.1	Figure 5.32 – data from the southern Gulf survey (the southern Gulf is presented for some species) should be added.	There were four criteria that were pursued for obtaining figures outlining fish distribution for inclusion in the EA. These criteria are listed below in order of priority. • The figures must have distributional data to include EL 1105 or the Project Area. • Primary source data collected by DFO, EC, academia, or consultants, for example, must be used to create the figures. • The data should have been collected recently (i.e., within the previous 10 years) and allow for the identification of current distributional patterns to include EL 1105 or the Project Area. • The data should encompass as much of the temporal and spatial boundaries as possible (i.e., large, broad datasets collected over longer durations were preferred). Using these criteria, Figure 5.32 was retained. While it is agreed that this figure does not include the southern Gulf of Saint Lawrence, this area of the Gulf is outside EL1105 and the Project Area boundaries.	Adequate
218	189	DFO	5.4.3.1	Figure 5.33 – the distribution presented for Atlantic mackerel in the Estuary and northern Gulf is incorrect. For pelagic fish such as herring, mackerel, capelin, using data from bottom trawl catches does not provide the distribution of these species as shown here. Other techniques are required to establish such a distribution.	Distribution data on pelagic species is limited. While it is agreed that DFO trawl data is not an efficient means of determining abundance or distribution. The 12 years of trawl data do indicate that Atlantic Mackerel are located throughout the Gulf and within the Project Area.	Adequate
219	190	DFO	5.4.3.1	Figure 5.33 – this should be replaced by maps of eggs and catches from commercial fishing (purse seine) (the fishing positions of herring and capelin catches should also be included).	Maps of fish catches and records of weights are provided in Section 5.8.1 Commercial Fisheries.	Adequate
	191	DFO	5.4.3.1 p. 201	Incorrect - French version. Pendant cette periode les larves survivent sur la vesicule ombillicale […] incorrect translation of "yolk sac"	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate

220	192	DFO	5.4.3.2	Figure 5.40 – information is dated. More recent data exists for the study area. The data from 2003-2011 should be presented to illustrate current distributions as opposed to the distribution from a decade ago. Criteria for low occurrence need to be stated clearly.	There were four criteria that were pursued for obtaining figures outlining fish distribution for inclusion in the EA. These criteria are listed below in order of priority.• The figures must have distributional data to include EL 1105 or the Project Area. • Primary source data collected by DFO, EC, academia, or consultants, for example, must be used to create the figures.• The data should have been collected recently (i.e., within the previous 10 years) and allow for the identification of current distributional patterns to include EL 1105 or the Project Area.• The data should encompass as much of the temporal and spatial boundaries as possible (i.e., large, broad datasets collected over longer durations were preferred).Using these criteria, Figure 5.40 was retained. While it is agreed that more recent data may presently exist. At the time of the report no distributional data was identified which better matched the aforementioned criteria.	Adequate
221	193	DFO	5.4.3.2	Figures 5.42, 5.43, 5.48 – only present one year of data. This should be expanded to illustrate current distribution.	The figures illustrating the 2005 distribution of fish species were meant to be used in conjunction with the figures illustrating the 2009 and 2010 catch data from the summer trawl surveys to provide a recent description of fish species presence within the Project Area.	Adequate
222	194	DFO	5.4.3.2	It is stated (p.156) *"Yellowtail flounder is a demersal flatfish found in the waters from Chesapeake Bay to Labrador..."* However, Yellowtail flounder are at the northern extension of their range on the northern Grand Bank in 3L off eastern Newfoundland.	Comment noted and incorporated into the EA.	Adequate
223	195	DFO	5.4.3.2	Atlantic Halibut – information on distribution is restricted to data from the 2009 and 2010 August surveys of the northern Gulf. There is much additional information available on summer distribution from the sources listed below, including areas not covered or poorly covered by the August survey (information from the 2010 survey appears incomplete, or survey coverage was incomplete). Information on distribution in other seasons should also be presented. Swain et al. (1998); Chouinard & Hurlbut (2011); Comeau et al. (2002); Benoît et al. (2003); Darbyson & Benoît (2003); and recent CSAS Science Advisory Reports and Research Documents coming from stock assessments.	Comment noted and a new figure showing Atlantic Halibut January Distribution in the Estuary and Northern Gulf of St. Lawrence was added. There were four criteria that were used for obtaining figures outlining fish distribution for inclusion in the EA. These criteria are listed below: • The figures must have distributional data to include EL 1105 or the Project Area. • Primary source data collected by DFO, EC, academia, or consultants, for example, must be used to create the figures. • The data should have been collected recently (i.e., within the previous 10 years) and allow for the identification of current distributional patterns to include EL 1105 or the Project Area. • The data should encompass as much of the temporal and spatial boundaries as possible (i.e., large, broad datasets collected over longer durations were preferred). While it is agreed the data collection coverage in 2010 was poor within the lease site, the 2009 data illustrates that Atlantic Halibut are present within EL1105. Further both the 2009 and 2010 data sets illustrate that Atlantic Halibut are present within the project area predominantly located within the offshore habitats.	Adequate

224	196	DFO	5.4.3.2	Haddock – information on distribution is limited to an old ECNASAP map. A considerable amount of more current information is available from the sources above.	Figure 5.32 was changed to include a more recent figure from Environment Canada. No suitable substitution could be identified from the sources provided in the comment. These sources of data from 1986-1992 (Darbyson and Benoit 2003), 1994-1997 (Chouinard and Hurlbut 2011) and sources of data collected prior to 2002 (Swain et al. (1998); Comeau et al. (2002) and Benoit et al. (2003)) were relegated to sources of background information as the information contained was not as complete or recent as the Environment Canada figure.	Adequate
225	197	DFO	5.4.3.2	Turbot and longfin hake – information on distribution is restricted to data from the 2009 and 2010 August surveys of the northern Gulf. This is a particular error since survey coverage was incomplete in 2010 and with the area of greatest interest for this report (the area around EL1105) not sampled.	While it is agreed the data collection coverage in 2010 was poor within the lease site, the 2009 data illustrates that turbot and longfin hake are present within EL1105. Further, both the 2009 and 2010 data sets illustrate that both fish species are present within the Project Area predominantly located within the offshore habitats.	Adequate
226	198	DFO	5.4.3.2	Greenland Halibut –important information, while only recently published, should be included in this assessment. Ouellet et al (2012) present evidence that the project area corresponds to the main site of the spawning population of Greenland halibut in the Gulf of St. Lawrence. The species lays bathypelagic eggs (which grow in deep water) and eggs and larvae will be therefore abundant in the work area at the time of breeding (February-May). Greenland halibut is a major fish species for fisheries in the Gulf of St. Lawrence.	Comment noted and information which became available after the EA document was submitted has been incorporated into the EA.	Adequate
227	199	DFO	5.4.3.2	Monkfish – the text refers to monkfish outside of the Gulf in NAFO areas 3LNOPs. It is likely incorrect that “the Gulf provides habitat for an abundant population [of monkfish] within the warmer shelf waters.”	Comment noted and incorporated into the EA.	Adequate
228	200	DFO	5.4.3.2	Pollock – the text refers to Pollock outside of the Gulf.	The data contained within the life history section on Pollock includes data on stocks from NAFO Area 4V, which includes the Cabot Strait. There is a paucity of Pollock data within the Gulf of Saint Lawrence as the majority of data available on Pollock stocks is due to the localized fisheries on the Scotian Slope and Grand Banks.	Adequate
229	201	DFO	5.4.3.2	White Hake – this section is inadequate. Information from southern Gulf surveys, noting that hake are distributed in either shallow inshore waters or in deep water along the Laurentian Channel in summer, migrating to overwintering grounds in deep waters of the Laurentian Channel should be included in the assessment. Please see: Swain et al. (1998); Chouinard & Hurlbut (2011); Comeau et al. (2002); Benoît et al. (2003); Darbyson & Benoît (2003); and recent CSAS Science Advisory Reports and Research Documents coming from stock assessments.	This pre-spawning aggregation is included in the EA “Witch flounder aggregate in deep channel waters like those found in the Laurentian Channel, just southwest of St. Georges Bay, from January to February prior to spawning”.	Adequate
230	202	DFO	5.4.3.2	Witch Flounder – this section is inadequate. Much of the text is only general in descriptions of species range outside of the Gulf. It should be emphasized that in winter pre-spawning adults appear to be aggregated in the area of EL1105 (Bowering and Brodie 1984).	Upon analysis of the catch data it was determined that witch flounder is not a key commercial fishery within the Project Area and the section has therefore been removed.	Adequate
231	203	DFO	5.4.3.2	The pre-spawning aggregation of witch flounder located within or near EL1105 should be considered as a sensitive/significant area. The overwintering aggregations of southern Gulf cod, and their migration route along the Laurentian Channel, represent other sensitive/significant areas near EL1105.	Refer to response provided for DFO-203.	Adequate
232	204	DFO	5.4.3.2	Thorny Skate – this section is inadequate. Much of the text is only general in descriptions of species range outside of the Gulf (e.g., the Grand Banks). See the above sources for information on the seasonal distribution of thorny skate within the Gulf. See Swain and Benoît (2006) for a description of recent changes in summer distribution, with an increasing concentration in deep water along the south side of the Laurentian	Thorny skate is not a key commercial fishery within the Project Area and the section has therefore been removed.	Adequate

				Channel. Note: Thorny Skate (p.158) has under gone declines and is being considered by COSEWIC as a species at Risk.		
233	205	DFO	5.6	Table 5.16 – The conclusion that the potential occurrence of blue whale in relation to the Project is uncommon is incorrect. This probability of occurrence is unknown, and may be higher in the spring and autumn when the blue whales migrate via the Cabot Strait, or in autumn through the area. Moreover, according to table 5.17 and DFO data presented therein, blue whale is a species that would be at least as common as the fin whale. The text should therefore be reviewed, as well as information at the beginning of p. 216	Text in Table 5.16 has updated to “seasonally common”.	Adequate
235	206	DFO	5.6	The frequency of occurrence of belugas is probably very occasional. However, considering the high numbers recently reported along the West coast of Newfoundland (J. Lawson, DFO, Newfoundland, unpublished data), the characterization of rare does not do justice to their possible exposure to activities related to the project. The text of p. 219 should therefore also be edited.	Text in Table 5.16 and the applicable paragraph has been updated to “uncommon”.	Adequate
236	207	DFO	5.6	Is Ocean Biogeographic Information System(OBIS) appropriate to establish such an inventory? What proportion of existing data does OBIS include? Does it include inventories mentioned earlier in the section on endangered species?	OBIS is a database based on observation data collected from various data providers worldwide. Although it is not likely a complete database, it provides complementary data for assessing what species of marine mammals and sea turtles have been observed in a given area of interest, such as the Study Area for the Project. Further, it is believed that this database has beneficial use over much larger regional databases that generally provide range of species distribution and used for the section on endangered species. It should be noted that in Table 5.17, DFO recorded data are provided in addition to OBIS data, which together is intended to provide an overall indication of the presence of marine mammals and sea turtles in the vicinity of the Project.	Adequate
237	208	DFO	5.6.1	Evaluation of abundance and potential presence of species in the study area should be carried out taking into account not only the study of Lawson and Gosselin (2009), but also that of Kingsley and Reeves (1998). Lawson and Gosselin (2009) estimates of abundance (with standard deviation) differ substantially from those obtained by Kingsley and Reeves (1998) very likely due to a delay in entry of animals into the Gulf. This hypothesis is substantiated by observations made on the Scotian Shelf and in U.S. waters during the survey period (see discussion of the paper). Estimates of distribution and abundance of Kingsley and Reeves (1998) are therefore also relevant and cover the area of the EL 1105.	Text has been updated to include abundance and potential presence using Kingsley and Reeves 1998.	Adequate
238	209	DFO	5.6.3	It is incorrect to state that the four species of seals are hunted commercially in the Atlantic. Harbour seals, hunted to very low levels in the 1960s and 70s, are no longer included on personal sealing licenses. There is no commercial hunt for them anywhere in Canada.	Text has been updated to exclude harbour seal from the commercial hunting reference.	Adequate
239	210	DFO	5.6.3	Harp seal diet data requires updating. Capelin and not Arctic cod now appears its main source of food.	Text has been modified to acknowledge new information on harp seal diet.	Adequate
240	211	DFO	5.6.3	It should be noted that the area of the EL 1105 is part of the highly preferred hooded seal habitat, particularly males, when present in the Gulf of St. Lawrence (Lesage et al. 2007, Fig. 22; Bajzak et al. 2009)	It has been noted that the area of EL1105 is part of the highly preferred hooded seal habitat.	Adequate

241	212	DFO	5.6.3, page 241	Incorrect translation – French version On observe le phoque commun et le phoque gris au même endroit, cependant la répartition est telle que le phoque commun est régulièrement vu dans le Golfe tandis que la population du phoque gris est concentrée au sud (LGL 2005b). In the English version, the sentence formulated below does not present the same information: Both the harbour and grey seals are likely to be common in the western Newfoundland offshore regions, with the distribution of the harbour seal being continuous in the Gulf and that of the grey seal to be more concentrated in the south (LGL 2005b).	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
242	213	DFO	5.6.4	The leatherback is found in the vicinity of EL1105. Therefore “potentially” should be removed within the text.	Text has been updated in Section 5.2.4 to reflect known presence of leatherbacks in the Study Area. Text in Section 5.6.4 has been updated to include discussion of green sea turtle and the sentence in question modified to include Kemp’s ridley and green turtle. Therefore, the reference to “potential” occurrence remains valid since the presence of Kemp’s ridley and green turtle is less likely.	Adequate
243	214	DFO	5.6.4	There are actually four (not three) species of sea turtles that may be found in the area – need to add green turtle (*Chelonia mydas*) to list.	Green turtle (Chelonia mydas) added to the list.	Adequate
244	215	DFO	5.6.4	Include primary publication reference for Kemp’s Ridleys preferring shallow water, and remove “apparently” and repetition of shallow water preference.	Text revised to remove redundancies and a primary reference for shallow water preference provided (Ogren 1989).	Adequate
245	216	DFO	5.7; Page 224; Fig. 5.57	It should be stated in the text that, while the boundary lines depicted on the map represent areas, EBSAs (and species) that are considered, above others, to contribute significantly to the Gulf of St. Lawrence ecosystem, these lines should not be taken as the absolute limits of that particular biological activity or ecological significance which may vary both spatially and temporally over the course of the year. *"The fact that a significant ecosystem component is not included or partially included in an EBSA cannot be considered as an ecologically significant absence. Sensitive populations as well as certain exceptional areas were not – or not entirely/always – included in the EBSA" DFO (2007b).*	Text has been updated as indicated to acknowledge that EBSA boundaries do not signify absolute boundaries in terms of sensitivities or ecological importance.	Adequate
246	217	DFO	5.7; Page 224; Fig. 5.57	Figure should also include the pre-spawning aggregation of witch flounder in EL1105. Although mentioned somewhat in the text of the EA, the overwintering aggregation of cod north of St. Paul Island and the migration paths of southern Gulf cod (and other demersal fish) should also be emphasized, as should the fact that most large demersal fishes in the southern Gulf overwinter in the Laurentian Channel.	This is discussed within the SAR section on Atlantic cod.	Adequate
247	218	DFO	Title of Table 5.11, page 216	Incorrect translation – French version Résumé des périodes de frai et d’éclosion des principales espèces faisant l’objet d’une pêche commerciale avec le potentiel de survenance dans la zone visée par le PP 1105 Incorrect translation of "occurrence"	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
248	219	DFO	5.7.1, p. 225	The title should be Ecologically and Biologically SIGNIFICANT Areas if this is what is meant. Otherwise, EBSAs should not be used as an acronym as it is more commonly associated with SIGNIFICANT areas within the context of ecosystem based management.	Text has been edited to “Significant”.	Adequate

249	220	DFO	5.7.1, p. 225	Considering the extremely complex and dynamic nature of the Estuary and Gulf of St. Lawrence (EGSL), EBSAs and their boundaries are meant to be presented only as a reference. It should also be recognized that EBSAs require re-evaluation over time (DFO 2011). Analyses leading to the identification of the ten potential EBSAs were based on the best scientific data available at the time – in this, several data sets were not included due to either of lack of geo-referencing or suitable electronic versions as well as large areas of the Gulf being poorly sampled. Therefore it should be noted that EBSAs for the ESGL do not cover all the areas or species that contribute in a significant way to the dynamic of the system. For example, only a small proportion (approximately 0.02%) of the benthic invertebrate species known to be present in the EGSL were considered in the EBSA process (Chabot et al., 2007).	Comment noted. Text updated to include information that EBSAs will be re-evaluated over time.	Adequate
250	221	DFO	5.7.1, p. 225	The EA correctly identifies that EL1105 is within several identified important areas – including a wintering area for many demersal fish species; and an area important for marine mammals. However, EL1105 is within an area where the number of overlapping Important Areas (IAs) across thematic layers and dimensions was high (see Figure 17 in Savenkoff et al., 2007). The EA also does not mention the area of interest for the marine protected area surrounding the Les-de-la Madeleine (project under study by Parks Canada).	The AOI surrounding the Magdalen Islands was announced in December 2011. The revised EA now mentions this new AOI. The EA focused on the EBSAs identified in DFO 2007 which are delineated areas of significance. EL 1105 does not fall within any EBSAs.	Adequate
251	222	DFO	5.7.1, p. 225	The EA should also specify that there is a co-occurrence of several marine mammals in the area in winter for feeding – including deep-divers and blue whale (listed as endangered under the Species at Risk Act in 2005; northwest Atlantic population).	Marine mammals use of the area around EL 1105 (including the endangered Blue Whale) is discussed in Sections 5.2.3 and 5.6.	Adequate
252	223	DFO	5.7.1, p. 225	The EA should include that this region is one of the rare significant areas for soft corals and the only area where certain deep water shrimp species are found (Pasiphaea tarda, Sergestes arcticus, Atlantopandalus propinqvus, Acanthephyra pelagica) (Chabot et al., 2007).	Section 5.71 is Ecological and Biologically Significant Areas (EBSAs). Soft corals are discussed specific to the Project area in Section 5.3.3.	Adequate
253	224	DFO	5.7.2 (& in Section 6.2 page 226)	There should be more consideration given to sensitive coastal areas throughout the Gulf. For example, with the exception of seabird nesting sites in section 5.7.3, there is no consideration of sensitive coastal areas of southwestern Newfoundland. Significant coastal and marine Areas, based on traditional knowledge, have been mapped for the Bay St. George/Port au Port area [see http://www.longrange.ca/pages/coastal.html]. Other documentation exists for Bay of Islands and the Northern Peninsula.	The only potential interaction with routine Project related effects would be from supply vessel traffic to and from the Project site. Vessels will follow existing shipping routes and will adhere to Annex 1 of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) and pollution prevention regulations of the Canada Shipping Act. Any interaction with the coastal environment is limited in nature and as a result, sensitive coastal areas have not been assessed in the EA.	Adequate
254	225	DFO	5.8 French Version	To avoid any confusion, we recommend adhering to the official terminology used by Fisheries and Oceans Canada for the names of the following fish species: "Flétan de l'Atlantique" (Atlantic halibut) rather than "Flétan" (halibut) "Flétan du Groenland" (Greenland halibut) rather than "Flétan noir" (black turbot or black halibut) "Chaboisseau" (sculpin) rather than "Chabots" (sculpin) Crabe araignée or "crabe hyas" (toad crab) rather than "crabe lyre" (toad crab or lyre crab)	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
255	226	DFO	5.8, Page 230	Fisheries catch data appear to have been collected independently from the 4 Gulf Regions: Newfoundland and Labrador, Maritimes, Gulf and Quebec. DFO National Headquarters (Ottawa) maintains a compiled database of fishing activity from each region and this may be a more complete source of data. Furthermore, regional data systems capture information on landings only for the respective region. Fish may be caught in a NAFO unit area and landed in another unit area. Please contact Rowena Orok DFO HQ (613) 881-6114 to inquire about the appropriateness of "ZIFF" data for this project.	It is presumed that information collected from the four Gulf Regions would be the same information that Ottawa would collect from the four regions. It is believed that the data collected is complete and accurate. However, updated data (2011) was obtained for the revised EA Report from DFO National Headquarters.	Adequate

256	227	DFO	5.8, Page 230	Inshore fleets are not required to report geocoded landings by latitude and longitude. However, they are required to indicate unit area of their catch. As the fisheries catch information is presented by NAFO unit area it would be prudent to capture all commercial fishing activity, including inshore sectors.	All available catch data from DFO has been requested and has been included in the Assessment. Routine operations will not have any effect on inshore areas. The only effect on nearshore areas will be a slight increase in vessel traffic. All worst case scenario oil spills will remain confined to EL1105.	Adequate
257	228	DFO	5.8.1, Page 230	St. Pierre does have fishing rights in 3Ps. Please revise accordingly.	The text has been updated to include Saint Pierre and Miquelon.	Adequate
258	229	DFO	5.8.1, Page 231	It would appear that the species listed reflect both directed and by-catch. It would be useful have a separate list for directed and by-catch species.	Directed and by-catch fisheries have been have been separated in the revised EA Report.	Adequate
259	230	DFO	Figure 5.58, Page 232	The boundaries for 4Rd and 4Ss are not correct and should be revised. (i.e. 4Rc and 4Sx have been omitted)	The boundaries for 4Ss and 4Rd have been inadvertently extended to include those for 4Sx and 4Rc, respectively. The boundaries have been revised on Figure 5.58, and where required on other figures, to only include 4Ss and 4Rd and which are of relevance to the Study Area for NAFO areas 4S and 4R, respectively.	Adequate
260	231	DFO	Table 5.19 to 5.23	Source should be included in the tables.	The data for the tables were provided by DFO Regions Statistical officers and the source has been updated as personal communications.	Adequate
261	232	DFO	5.8.1, Page 235 & 237	The commercial fisheries data for 4Rd & 3Pn are not consistent with NL Region's Catch and Effort data. For example the Landings (kg) and Landed Value ($) for 4Rd lobster outlined in the EA document are the same value for each year in the series. *See attached NL data (February 2012).*	The commercial fisheries data for 4Rd and 3Pn has been updated to reflect accurate information.	Adequate
262	233	DFO	Figure 5.59 to 5.62	Source should be included in the tables.	The data for the figures were provided by DFO Regions Statistical officers. In the text the information has been updated as personal communcations.	Adequate
263	234	DFO	5.8.2.1, Page 270	This section is titled Aboriginal Fisheries Newfoundland but it includes content for the entire Gulf region. Suggest that this section be titled "Aboriginal Fisheries." Note that as of 26 Sept 2011, the FNI achieved Landless Band Status and changed their legal name. They are now the Qalipu Mi'kmaq First Nation Band (www.qalipu.ca). They are the sole owner of that firm. The QMFNB have a number of licenses with DFO. In total, 8 of their communal commercial licenses are held in the name of the QMFNB and 1 is held in the name of Mi'kmaq Commercial Fisheries. They hold 7 licenses in 4R. Please contact DFO for more up-to-date information.	The title of the Aboriginal Fisheries Newfoundland has been changed. FNI has been changed to QMFNB.	Adequate
264	235	DFO	5.8.1.3	Historical fisheries should include a section on redfish.	A section on redfish has been added to the Historical Fisheries Section.	Adequate
265	236	DFO	5.8.2.2, Page 272	The text references Salmon fishing on the West Coast only (SFA 13 and 14A). As commercial fisheries data are for portions of the south coast and west coast (4Rd and 3Pn) we suggest that to be consistent, information on SFA 12 should also be included.	Information pertaining to Salmon Fishing Area 12 has been updated.	Adequate
266	237	DFO	5.8.2.2 French version of EA Report	The title should be "Utilization militaire" rather than "Les militaires emploient."	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
267	238	DFO	5.8.2.2 French version of EA Report	"Pinfold (2009) a étudié l'estimation de la participation" should read "Pinfold (2009) a estimé la participation."	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate

268	239	DFO	5.8.2.7, p. 278	The Port of Belledune is a major commercial port in Northern New Brunswick operating within a highly industrialized area. The proponent should be aware that the traffic separation scheme is voluntary. Vessels may therefore be directed toward the drilling area if required by the route recommended in winter (open water area in the middle of the ice).	Comment noted. Corridor intends to drill when there is no ice in the Gulf.	Adequate
269	240	DFO	5.8.2.7, p. 278	The VHF coverage available in the Magdalen Islands does not cover this sector. The Newfoundland and Labrador region probably has better coverage starting at Port-aux-Basques and at the Table Mountain site. In this case, tests should be required or provisions be made at the very least for an HF installation (2182).	Comment noted. Based on the nature and duration of the project, testing and provisions of an HF installation is not required.	Adequate
270	241	DFO	5.8.2.7, p. 278	This sector is well covered by the Cape Ray DGPS. However, since the AIS signal coming from vessels is not always received by the Magdalen Islands site, we would suggest that the drilling site have its own AIS site or receiving beacon connected to the shipping traffic management system (Innav).	Corridor will take this recommendation into consideration.	Adequate
271	242	DFO	5.8.2.7, p. 278	The document seems to downplay the impact of shipping traffic in the Old Harry region by indicating that between four and eight vessels, mainly container vessels, pass through this sector daily. Given an average of six vessels per day, that nevertheless equals 2,190 vessels annually, concentrated during the summer and fall. This part would have deserved better documentation.	Comment noted. Based on the duration and nature of the project, we feel the section adequately assesses potential effects on shipping traffic.	Adequate
272	243	DFO	6.2; Page 282	The Marine Ecosystem VEC should have a broader focus than just corals and plankton. These two ecosystem components may represent VECs but do not constitute an assessment of the environmental effects at the marine ecosystem level. The marine ecosystem, in this case, is the entire Gulf of St. Lawrence and could be represented in the EA by the 10 Ecologically and Biologically Significant Areas (EBSAs) identified in DFO 2007b plus any other species or areas considered important at the ecosystem level. EBSAs were identified by DFO as a tool for assessing and managing ecosystem level effects of human activities. Therefore, it is suggested they be used as a way to assess ecosystem level environmental effects in this EA.	The Marine Ecosystem VEC encompasses plankton (water) and benthic communities (corals) as these two factors are the basis for marine life in the ocean. Without plankton abundance, the majority of life in the ocean would cease. As a result, we have assessed how Project activities will affect the health of both plankton and the benthic communities in the Study Area. Outside of this VEC, Species at Risk, Marine Fish, Shellfish, and Habitat, Marine Birds, Marine Mammals and Sea Turtles, Sensitive Areas, and Commercial Fisheries and Other Uses have been assessed. It can be concluded that after assessing these key indicators the entire marine ecosystem and all of its major components have been assessed and taken into account in a Project context. The marine ecosystem in the case of this Project is the Study area. A broader scale Strategic Environmental Assessment (SEA) is currently ongoing to encompass Western Newfoundland. This Assessment will likely take into account the 10 Ecologically and Biologically Significant Areas (EBSAs) identified in DFO2007b plus any other areas considered important at the ecosystem level.	Adequate
273	244	DFO	6.2; Page 282	Coastal systems should be treated as a separate VEC in this EA because the project is situated in a unique ecological area that is almost entirely surrounded by land.	The only potential interaction with routine Project related effects would be from supply vessel traffic to and from the Project site. Vessels will follow existing shipping routes and will adhere to Annex 1 of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) and pollution prevention regulations of the *Canada Shipping Act*. Any interaction with the coastal environment is limited in nature and as a result, Coastal Systems will not be added as a stand-alone VEC.	Adequate

274	245	DFO	7	Literature on the potential environmental impacts of exploratory drilling is covered quite well and conclusions are in line with many reviews and individual studies dealing with the effects of drilling fluids and cuttings (e.g. MMS2000; CAPP 2001; NEB et al 2002; Buchanan et al 2003; Hurley and Ellis 2004; Neff 2005; Mathieu et al. 2005). Discharges associated with the drilling of a single exploratory well would normally be expected to disturb/impact habitat within a few to tens of meters from a drilling site.	Comment noted.	Adequate
275	246	DFO	7.1.1	The EA notes that, *"Such a study has not been done for leatherback turtles; however, this species is recognized as being the fastest reptile 35.2 km/hr (19 knots) when frightened (McFarlan 1992) and might be expected to be better able to avoid a strike."* This is an inappropriate and misleading suggestion, as it is not necessarily the potential top speed of a marine vertebrate which influences its susceptibility to ship strikes. More relevant variables include whether or not the animal is in foraging "mode" versus transiting, as foraging animals are particularly vulnerable. EL1105 is located in key leatherback foraging habitat. It would be prudent to remove this argument from the assessment.	Section 7.1.1 has been updated to highlight the difference between foraging and transiting animals.	Adequate
276	247	DFO	7.1.2	Barium is the main metal in OBM and WBM. Questions have been raised about the potential for chronic toxicological effects in fish. A recent publication reported no health effects as assessed by a variety of indices, in fish chronically exposed to barite for several months (Payne et al 2011).	Comment noted. Section 7.1.2 discuses barium as a dominant component in drill muds and considers health effects associated with barite.	Adequate
277	248	DFO	7.1.4; Page 318	The approximate number of supply vessels that might be used during exploratory drilling operations should be given.	There will be 2 to 3 support vessels for this project - 1 standby vessel and 1 to 2 supply vessels.	Adequate
278	249	DFO	7.1.4; Page 318	Ship strikes and noise and are among the most frequently identified stressors of marine mammals in the Gulf of St. Lawrence.	Comment noted. This is acknowledged in the cumulative effects assessment of marine mammals (Section 9.5).	Adequate
279	250	DFO	7.1.5	For the impact of noise generated by the work, no modeling of the affected area by the different sources of noise, continuous and impulse, is done to provide realistic estimates of noise levels at different frequencies and to map them on vertical and horizontal plane.	The scoping document doesn't require quantification/modeling of noise. Based on the duration and the location of the project, the qualitative assessment further confirms that a quantitative approach is not required. However, Section 7.1.5 has been substantially revised.	Adequate
280	251	DFO	7.1.5	· The exploration well is in relatively deep water (~470m). Sound in deep water will propagate to ranges of kilometers to tens of kilometers with less attenuation than characteristic of shallower more typical areas of the Grand Banks or Scotian Shelf – this would be especially so for sound propagating along the axis of the Laurentian Channel.	Comment noted. Section 7.1.5 has been substantially revised.	Adequate
281	252	DFO	7.1.5	Considerable seasonable variation might also be expected in the amplitude of long-range propagated sound. In summer near-surface originating sound, as from air guns, will tend to be generally refracted downward by the prevailing sound speed stratification leading to substantial interaction with the bottom and rapid attenuation with range. In winter and spring the conditions in the deep water of the Laurentian Channel may be upward refractive (at least this is the case on the Scotian Shelf) and near-surface sound can be trapped in sound channels in the upper water column leading to substantially reduced sound attenuation at long range. While these effects are probably negligible close to a surface sound source at short range where acute effects on organisms might be expected, they could be of some consequence at long ranges where low levels of sound might, for example, exert behavioral effects on marine mammals such as influencing their movement. This would be especially relevant to the time of year the activities are taking place.	The influence of seasonal variation on the propagation of sound and extent of biological effects is acknowledged.	Adequate

282	253	DFO	7.1.5.1	There appears to be some confusion in the EA in referring to VSP and "well site" surveys. For example, within the text, *"A typical well site survey (VSP survey) could..." - However, the "well site survey"* discussed in the quoted reference (Davis et al. 1998) is a conventional 2-D seismic survey conducted using a smaller, higher frequency air gun array to gather detailed geological/geotechnical info on shallow sediment structures around the well in order to plan well initiation and placement of any necessary equipment on bottom. The VSP survey generally looks at deeper geological structures and requires placing the receiving array down the well bore – and appears to be the type of survey proposed for Old Harry given the quoted source level of 242 dB re 1µPa @ 1m is typical for a true VSP survey. This information requires clarification.	Reference to the well site survey has been removed from the section. The Project at Old Harry will be using a VSP survey.	Adequate
283	254	DFO	7.1.5.1	The intent of the sentence "The energy levels emitted from the VSP will be considerably less in source (760 in3)." is unclear. Lower source energy normally implies a lower total volume airgun array. The key point should be that VSP sources have a sound pressure level intermediate between sources intended for shallow, local geotechnical type surveys and sources typically used for deep 2 or 3-D exploration seismic surveys.	Section 7.1.5.1 has been extensively revised and these reviewer comments have been taken into consideration during this rewrite.	
284	255	DFO	7.1.5.1	It has been identified that either a semi-submersible or a drill ship platform may eventually be chosen for the Old Harry exploratory well. As per Table 7.5, semi-submersibles are generally significantly quieter than drill ships. Noise levels emitted by a drill ship are roughly comparable to those emitted by other vessels of similar size; however, a drill ship represents a stationary, long duration noise source (20 – 50 days as per project scheduling) as opposed to a temporary noise source of a passing vessel.	Section 7.1.5.1 has been extensively revised and these reviewer comments have been taken into consideration during this rewrite.	Adequate
285	256	DFO	7.1.5.1	The statement "...low frequency noise from a drilling platform might be detectable no more than 2 km away near a shelf break.." may be best case scenario given that Table 7.5 identifies noise from a moored drill ship will attenuate to 115 to 120 dB (well above quiet ambient noise levels) at distances of 1 to 10 km. This 2 km detection range for drilling is also mentioned (p. 350) in the context of the avoidance of drill platforms by baleen whales.	Section 7.1.5.1 has been extensively revised and Table 7.5 has been updated.	Adequate
286	257	DFO	7.1.5.1	Accurate estimates are required. Also, essential measures are not included here: i.e., the levels of ambient noise, noise from the source at the frequencies considered and the estimated losses by propagation. Moreover, to what depths of the water column do we refer?	Section 7.1.5.1 has been extensively revised and these reviewer comments have been taken into consideration during this rewrite.	Adequate

287	258	DFO	7.1.5.1	Table 7.5 – the “Noise Level (dB re 1µPa)” column contains some error in presentation. Two, and possibly three, quite different acoustic measures are presented in this column without distinction. As such they are misleading for use in making determinations. For example, based on how they are labeled, it is natural to believe these numbers refer to broadband acoustic pressure level measurements at a point in space. However, a numeric level of 60 for “calm seas” appears much too low for a broadband pressure measurement – although is reasonably consistent with a typical power spectral level reported over a 1 Hz bandwidth in the frequency range 10 – 1000 Hz under calm conditions (and the correct units being dB re 1 µPa/Hz1/2. The quantity for “Moderate (not ‘Modern’ sic) Waves/surf” (100 – 700 Hz) seems to be properly labeled as broadband and 102 dB re 1µPa is not unreasonable. The quantity for “Pile-driving” appears to revert to the originally labeled point measurement of broadband noise (given the observation distance of “1 km”). The original literature should be checked to determine how “Fin whale” (probably source level), island drill rigs, or helicopter levels were measured or defined also. This becomes more important if these numbers are used elsewhere in the report to arrive at conclusions about the Old Harry drilling environmental impacts. For example, the EA notes bad weather ambient noise levels are stated in the range 90 to 100 dB re 1µPa – actually less than the moderate wave and surf levels of Table 7.5	Section 7.1.5.1 has been extensively revised and these reviewer comments have been taken into consideration during this rewrite.	Adequate
288	259	DFO	7.1.5.1	It should be understood and noted that broadband levels are quite dependent on how “broadband” is defined. The “jack-up”, “semi-submersible”, “moored drill ships”, and various specialized vessel noise levels would appear to be acoustic source levels where the broadband acoustic noise levels expected from these devices if measured at a (mathematical only) reference distance of 1 m, the correct acoustic units in this case being dB re 1 µPa @ 1m.	Section 7.1.5.1 has been extrensively revised and these reviewer comments have been taken into consideration during this rewrite.	Adequate
289	260	DFO	7.1.5.1	Table 7.5 – the EA presents the frequency at which the intensity of the sound is observed. However, none of the sources presented is limited to a single frequency; the energy spreads on a band of frequencies, which may be more or less wide according to the sources. A presentation of the SPL with frequencies for each of the sources would have been much more informative to evaluate the impacts of each.	Section 7.1.5.1 has been extensively revised and these reviewer comments have been taken into consideration during this rewrite.	Adequate
290	261	DFO	7.1.5.1	Table 7.5 – this should specify whether the levels @ 1 m are for discrete sources or other distances (e.g., fin whales, drilling platform)	Section 7.1.5.1 has been extensively revised and these reviewer comments have been taken into consideration during this rewrite.	Adequate
291	262	DFO	7.1.5.1	Table 7.5 – the statement "Overall broadband sound level did not exceed ambient beyond about 1 km…received levels at 100 m would be approximately 114 dB re 1 µPA." is inconsistent. How can the overall broadband sound level at 1 km be less than ambient levels beyond 1 km, while it is still as high as 114 dB re 1 µPa at 110 km? This reference is probably not applicable here. In the St. Lawrence, the median broadband in the waterway is approximately 112 dB re 1 µPa (Simard et al. 2010).	Section 7.1.5.1 has been extensively revised and these reviewer comments have been taken into consideration during this rewrite.	Adequate

306	263	DFO	7.1.5.2	The exploration well will be drilled in the Laurentian Channel, a major shipping channel, which is already subject to frequent high level ship noise. Therefore, near the well, on a long term average, the incremental noise level increase from support vessel activity as a fraction of the pre-existing ambient background should be less than if similar operations were conducted in other areas further removed from shipping lanes.	Section 7.1.5.2 has been updated to acknowledge pre-existing ambient noise levels from shipping.	Adequate
307	264	DFO	7.1.5.2	Figure 7.5 – there is error in the Y axis and legend. The indication of the Y axis is perplexing. From the English version (OB = octave band), one can deduce that these noise levels in third octave. The English legend indicates 1 m, the French 10 km.	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
308	265	DFO	7.1.5.3	The statement, *"The seismic signals are typically in the range of 10 to 200 Hz (Turnpenny and Nedwell 1994)"* is incorrect. Studies since that time showed that the sounds of airguns are on a broader band (e.g. see Potter et al. 2007).	Section 7.1.5.3 has been updated to correct the acoustic range of seismic signals	Adequate
309	266	DFO	7.1.5.3	The EA uses conclusions of Turpenny et al. (1994). These are questioned in the expert review of Popper and Hastings (2009) who note: Turnpenny et al. (1994) examined the behaviour of three species of fish in a pool in response to different sounds, but results are not useable due to lack of calibration of the sound field at different frequencies and depths and many other problems with experimental design. In enclosed chambers that have an interface with air, such as tanks and pools used by Turnpenny et al., the sound field is known to be very complex and will change significantly with frequency and depth (Parvulescu, 1967; Blackstock, 2000; Akamatsu et al., 2002). As a consequence, responses of the animals in the Turnpenny et al. (1994) study cannot be correlated with any aspect of the acoustic signal, and the findings are highly questionable.	Conclusions from Turnpenny et al. (1994) have been removed from the EA Report	Adequate
310	267	DFO	7.1.5.3	“250 to 255 dB re 1 µPa” is incomplete in units – lacking "a ... @1m".	Text has been updated to include the unit “@ 1m”.	Adequate
311	268	DFO	7.1.5.3	The statement, *“The limited studies available suggest that anthropogenic sounds, even from very high intensity sources, might have no effect in some cases …"* is incorrect and incomplete. This statement does not match current knowledge. See more references from Hastings, Fay and Popper on the effects of noise on fish.	The statement in question was intended to comment on the varying responses of fish to anthropogenic sounds from various studies and has been edited to provide clarity.	
312	269	DFO	7.1.5.3	The statement, *“There are numerous anecdotal observations of fish under noisy bridges or near noisy vessels indicating that adverse effects are not necessarily overt and obvious, but anecdotal observations are unable to indicate whether fish experience any negative consequences related to the noise (Slabbekoorn et al. 2010).”* is an opposite interpretation of the Slabbekoorn et al. 2010 conclusion, and other information that follows (p.325) that show with references to support it the different ways in which anthropogenic noise can significantly affect fish, including: *“(1) Noise-dependent fish distributions…(2) Reproductive consequences of noisy conditions…(3) Masking effects on communicative sounds…impact the ability of fish to communicate acoustically or use the acoustic ‘soundscape’ … (4) Masking effects on predator–prey relationships…ability of fish to find prey (get food) or detect the presence of predators…”*	The opposing comment from Slabbekoorn et al. 2010 has been removed from the EA Report.	Adequate

313	270	DFO	7.1.5.3	The statements, “Available data suggest that they are capable of detecting vibrations but they do not appear to be capable of detecting pressure fluctuations.” and “Crustaceans appear to be most sensitive to sounds of low frequencies (i.e., <10,000 Hz).” require explanation. How does one distinguish the vibrations of pressure fluctuations? These are contradictory. Also, low frequencies are referred to in reference to frequencies up to 10 000 Hz, which is well beyond the usual range of low frequencies.	In water, only those animals can perceive the pressure component of sound which are equipped with pressure to displacement converters. Many species of fish pick up pressure waves with their swim bladder. The pulsation of the swim bladder in the sound pressure field causes a displacement and stimulation of the otocysts, and thus the perception of a sound wave. Most aquatic crustaceans lack any air filled chambers and therefore cannot perceive pressure variation in a sound field. Instead they perceive sound through vibration of mechanorecptors including setae (hair-like) cells on the surface of the body (Wiese 2002). Text in 7.1.5.3 has been clarified.	Adequate
314	271	DFO	7.1.5.3	The statement, “*The rate of injury experienced by macroinvertebrates due to the passage of a seismic survey should be less than indicated for planktonic organisms and fish. Lobsters are similar to crab in that they are thought to be resilient to seismic activity because decapods lack the gas-filled voids that would make them sensitive to changes in pressure.”* is speculative and must be supported by references or removed. The differences in density and sound velocity of various tissues of crabs and lobsters (hepatopancreas, gonad, muscle, eggs, etc.) do not support this speculation that they are insensitive to pressure changes.	A reference for this has been provided (Pearson et al. 1994, Payne et al. 2007). Similar studies (Payne et al. 2007) have supported this reference in that crustaceans are less sensitive to pressure changes than fish.	Adequate
292	272	DFO	7.1.5.3	The developer assumes that *the discontinuous, short duration nature of these pulses is expected to result in limited masking of baleen whale calls.* This is true for short distances. However, periods of silence are reduced as one moves away from the source by the reflection of sound, which increases the potential for masking. Several studies have shown that the propagation effects by multipath have the effect of producing multiple replicas of the pulses, thus increasing the risk of masking over long distances. (e.g. Madsen et al. 2006)	The text has been changed to reflect the masking of sounds over long distances.	Adequate
293	273	DFO	7.1.5.3	Figure 7.7 and 7.8 – a source is required for these figures.	Sources have been added for Figures 7.7 and 7.8.	Adequate
294	274	DFO	7.1.5.3	The statement (p.333), *“Whistles have a fundamental frequency below 20 to 30 kHz plus higher harmonics…plus higher harmonics.”* is inaccurate here; a reference is required and the list of species which have been shown *“…whistling harmonics above 30 kHz "*	For a species list of mammals with whistling frequencies above 30 KHz please refer to Figure 7.8	Adequate
295	275	DFO	7.1.5.3	The statement (p.333), *“Baleen whales communicate using low frequency sounds (generally between 25 Hz…”* is incorrect. This lower limit of 25 Hz excludes the most frequent vocalizations of blue whales and fin whales.	The lower limit of baleen whale communication has been reduced to 10 Hz to reflect those vocalizations produced by blue and fin whales.	Adequate
296	276	DFO	7.1.5.3	The EA notes that “Several species of baleen whales have been observed to continue calling in the presence of seismic pulses, including bowhead whales (Richardson et al. 1986), blue whales and fin whales (McDonald et al. 1995).” Continuation of vocal activity during seismic surveys does not imply a lack of masking as proponents claim (see previous sentence of the EA). Animals that vocalize likely cannot be heard by their conspecifics due to noise generated by the project activities. Masking of vocalizations during a period where the voice activity is used for functions such as the search for partners for reproduction may have non-negligible effects on individuals and these life history patterns. This can be particularly significant during the fall for large whales, when an increase in social activity has been documented in species such as the blue whale (Doniol-Valcroze et al. 2011).	Text has been added to acknowledge that continuation of vocalization during seismic sounds does not necessarily mean masking does not occur.	Adequate

299	277	DFO	7.1.5.3	The effects of seismic surveys on echolocation are discussed for the odontocetes within the project. However, the more likely issue will arise due to the masking of vocalizations for communication, which are broadcast in some odontocetes such as beluga, at much lower frequencies (between 0. 5−16 kHz) than discussed in the EA (Sjare et al. 1986; Lesage et al. 1999), and where the beluga's signal components could be obscured by the higher frequencies of seismic pulses.	The topic of masking has been discussed in the EA. The peak pressure from seismic sounds is in the 5-300 Hz range, with some energy in the 500 – 1000 Hz range. The frequencies of beluga vocalizations (0.5 – 16 KHz) falls outside of the main energy emitted during VSPs.	Adequate
342	278	DFO	7.1.5.3	The statements (p.335 and 337), "…masking effects are expected to be negligible for toothed whales." and "The sounds produced by seismic air guns are in the frequency range of low hearing sensitivity for toothed whales." are incorrect. Madsen et al. 2006 shows that the sounds received by the animals reach frequencies of several kHz, audible by odontocetes.	Madsen et al. 2006 reports that the sounds received by odontocetes can reach frequencies of up to 150 KHz. It is also noted that odontocetes produced echolocation and communication in the frequencies from 1 – 150 KHz. Due to the fact that the majority of the energy emitted from seismic sources is in the range of 5 – 300 Hz, with some energy in the range of 500 – 1000 Hz (Low frequency), it is unlikely that odontocetes will be highly affected (both by masking or injury due to hearing) by VSP sound sources.	Adequate
343	279	DFO	7.1.5.3	The EA notes, "*The impact of both natural and man-made noise is less severe when it is intermittent rather than continuous (NRC 2003)*." However, this conclusion is not obviously stated within this reference – therefore it must be qualified within the EA. This assertion is probably true in the context where the intermittent nature of noise is likely better communication during periods of silence between the pulses. However, to conclude that intermittent noise essentially has less impact on marine mammals is probably not a generality, since a strong impulse noise can have major impacts on an animal rather than a lesser intensity continuous noise.	In the context of our assessment intermittent noise caused by VSP would be much less severe than a constant output of the same pressure level.	Adequate
344	280	DFO	7.1.5.3	Richardson et al. 1995 are cited for *"…limited documented situations…"* This should be updated as it dates back 15 years, and several studies have been conducted since, for many species.	Richardson et al. 1995 are indeed cited for "…limited documented situations…" This is taken out of context as the entire citation is Richardson et al. 1995; Gordon et al. 2004; Nowacek et al. 2007; and Southall et al. 2007. One can see that the statement made by Richardson et al. 1995 is supported by several recent scientific advances from peer reviewed academic journals.	Adequate
345	281	DFO	7.1.5.3	The statement (p.338) *"In addition, baleen whales have often been seen well within distances where seismic sounds would be audible and yet show no obvious reaction to those sounds (LGL 2005b)…"* is incomplete and requires updated references (e.g. Nieukirk, et al. 2012; Castellote, et al. in press; Yavenko et al. 2007).	This text has been removed and new text added acknowledging various avoidance radii depending on species, locations, whale activities, and oceanographic conditions affecting sound propagation.	Adequate
346	282	DFO	7.1.5.3	The EA notes, *"The sound emission associated with the VSP and drilling noise would result in avoidance or temporary displacement, negating any potential positive effect. The Project Area does not represent any known critical habitat for any of the species that may pass through the area... The residual adverse environmental effects are therefore assessed as not significant."* The EA uses the project area as the area of influence. However, in the case of seismic surveys, the area of influence is likely much larger than this. The proponent assumes that avoidance of the area insonified (by drilling activity, dynamic repositioning jets of the platform, or seismic surveys) for a period up to 2 months (50 days) in the case of the drilling, has no impact on the use of the area as migration or feeding area. It is actually likely that, at certain times of the year as in the fall and in the spring, this area is a migration route for blue whales in particular. The use of this area for feeding by turtles or large whales is presumed low, whereas in fact, recent data indicate it is used as a foraging area by leatherback	It is acknowledged that the area of influence extends beyond EL 1105 and that leatherback turtles have been recorded in the Study Area, although it is still maintained that temporary avoidance of this area by the Leatherback would not result in significant adverse effects as the species has been shown to forage over a much larger area in the Gulf and Scotian Shelf.	Adequate

				turtles.		
347	283	DFO	7.1.5.3	The following statements in the EA are misleading: “Avoidance of the Project Area by sea turtles as a result of sound is also not expected to cause any adverse biological effects given that the area is not known to congregate jellyfish, a primary prey item. Jellyfish are transitory, with distributions changing within and between years, so there is no more reason to expect jellyfish within the Project Area than any other area of the Gulf.” Also, “The Project Area offers no unique habitat or feeding areas for sea turtles.” The area corresponding to EL1105 is part of a broader high-use foraging area for leatherback turtles, as demonstrated through satellite telemetry (see James et al., 2005). As leatherback presence in this area is well documented, spanning multiple years of data collection, etc., there is good evidence that jellyfish are concentrated in this areas and that there is a predictable concentration of leatherback prey in the Project Area. At this time, it cannot be concluded that the area of EL1105 does not provide unique habitat or feeding areas for leatherbacks.	Refer to response to DFO-282.	Adequate
348	284	DFO	7.1.5.3	Ketten and Bartol (2005) and other more recent references included in the topic of sea turtle hearing would be useful inclusions in this assessment.	Ketten and Bartol 2005 has been added to the EA Report to provide a reference on the hearing range of sea turtles.	The reference could not be found
328	285	DFO	Section 7.1.5.3, page 359	Incorrect translation – French version […] bien que certaines espèces, en particulier les phoques à oreilles, n'aient pas un aussi vaste champ d'audibilité. Incorrect translation of "otaries"	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
349	286	DFO	7.2, p. 342, 1st paragraph	The statement about Section 32 of SARA is not correct – it is not linked to critical habitat protection. Rather, critical habitat destruction is prohibited under Section 58. Section 32 relates to protection of individuals of listed extirpated, endangered or threatened species.	The statement regarding Section 32 of the *Species at Risk Act* has been updated to remove discussion on habitat as this is covered under Section 58 of the Act.	Adequate
350	287	DFO	7.2.2	The statement (p.343), *“As many Project-related activities are limited to the Project Area, they would only interact with species likely to occur in EL1105.”* is unproven. No simulated noise fields have been performed and it is likely they will extend beyond EL1105. Impacts can also spread beyond the area, for example by pushing organisms outside, modifying, interrupting their migrations, as it is repeated several times that the animals avoid the area because of the noise that will be generated.	The statement has been modified to convey that the zone of influence of most Project-related effects (VSP and drilling) are limited to and within close proximity to EL1105. The effects of VSP and drilling are not expected to impact nearshore species located several kilometres away from the source of disturbance (See Section 7.1.5).	Adequate
351	288	DFO	7.2.4	Table 7.8 – Suggests that mortality resulting in collision with vessel is reversible? Please be advised that it is unlawful to kill harm, harass, capture or take an individual of a species that is listed as Endangered or Threatened under SARA unless permitted. This measure assists in protecting species, as the loss of an individual could be significant for a certain species (e.g. blue whale).	The results of mortality from a vessel collision have been changed to irreversible due to the fact that the loss of an individual from certain species could lead to negative population level effects .	Section 7.2.2.4 was not updated. Neither was Table 7.8

352	289	DFO	7.2.2.5	The potential impacts of drilling noise and duration should also be discussed in this section.	The potential impacts of drilling noise and duration on fish, marine mammals, sea turtles and birds are addressed in Section 7.2.2.5 and Section 7.1.5.	Adequate
353	290	DFO	7.3; Page 352	Corals and plankton are identified even though “deepwater corals and sponges are not considered likely in the area”(see last line on pg 352). Kelp was also identified but eel grass was not although there are significant eelgrass beds in the adjacent coastal areas (see attached) and its importance was noted in section 5.3. Eel grass has been identified by DFO as an Ecologically Significant Species and their sensitivity to oil pollution is well documented, therefore eel grass should be included in the Marine Ecosystem assessment.	The only potential routine effects to eel grass would be from supply vessel traffic to and from the Project site. Vessels will follow existing shipping routes and will adhere to the Annex 1 of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) and Pollution Prevention Regulations of the *Canada Shipping Act*. Therefore, any routine interactions between supply vessels and eel grass would be limited in nature and have not been assessed in the Marine Ecosystem Assessment. Corals and Sponges have been identified because there is the slight possibility that they may be found in the area, although highly unlikely. Eel grass would not be found in the potentially affected area offshore.	Adequate
354	291	DFO	7.1.1 and 7.3.2.1	The total impact of light is not considered in the EA. The effect of light that has not been considered is that on the circadian cycle of diel vertical migrations of pelagic organisms, rising to the surface to feed during the night, and take refuge deep to escape predation by visual predators (e.g., fish, birds). The presence of light around the platform at night will change local dynamics.	The effect of light has been addressed in Section 7.3.2.1 and 7.4.2.1. The effect on pelagic organisms has been added to the assessment and the effect of light on these organisms would be similar to plankton and fish which was previously assessed and concluded that the effects would be localized and temporary, reversing once the drilling period has ceased (20-50 day period).	Adequate
355	292	DFO	7.4.2.1	Regarding the statement (p.330), *“Several benthic sessile species have a very long generation time (e.g. Corals).”* Sea urchins and brittle stars are not sessile.	The text has been edited to acknowledge effects on sessile and slow-moving organisms.	Adequate
356	293	DFO	7.4.2.1	There is a lack of references to support recovery in 3-5 years. This is recognizably much longer for corals and sponges.	Additional references have been added to support the statement that the benthic environment will recover within 3-5 years.	Adequate
337	294	DFO	Section 7.4.2.2, page 389	Incorrect translation – French version Les organismes sédentaires qui ont des capacités motrices nulles ou très limitées, comme le pouce-pied et la moule […]. Incorrect translation of "barnacle" L’endofaune, comme la plupart des polychètes, amphipodes et palourdes, emprunte des espèces […]. Incorrect translation of "burrowing organisms"	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
338	295	DFO	Section 7.4.2.2, page 390	Incomprehensible translation- French version Plusieurs études de terrain et en laboratoire ont été menées sur les effets possibles de la sédimentation et de la boue dans les coraux de forage.	Translation edits will be addressed as relevant during translation of the revised EA Report.	Adequate
357	296	DFO	7.4.2.5	References or examples are required for *“Most available literature indicates…”*, as well as all other statements of fact contained in this section regarding effects on fish and shellfish.	The preceding paragraph in Section 7.4.2.5 refers the reader to Section 7.1.5.3 where additional information and references can be found on the biological effects of sound on fish and shellfish.	Adequate
358	297	DFO	7.6.3	While this section lists the mitigation to be implemented, details of these mitigations should be detailed. (i.e. details on implementation marine mammal observer, mitigations included in the Statement of Canadian Practice on Mitigation of Seismic Noise in the Marine Environment)	Mitigations measures have been listed; however reference has been made to key documents that are readily available to the public, where it was deemed appropriate as to reduce the length of the document. The Statement of Canadian Practice on Mitigations of Seismic Noise in the Marine Environment and other references documents can be easily obtained from their respected Federal Agencies and have been left out to discourage redundancy. Any additional mitigation requirements beyond those discussed in the EA are expected to be developed in coordination with applicable agencies and outlined in work authorizations and the EPP document.	Adequate

359	298	DFO	7.8.2.1, p. 381	The authority to enforce the exclusion zones must be specified.	The Offshore Installation Manager (OIM) has the authority, granted by the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, to enforce the exclusion zones. In accordance with the Offshore Petroleum Drilling and Production Regulations, all reasonable measures will be taken to warn persons who are in charge of vessels and aircraft of the safety/exclusion zone boundaries, of the facilities within the safety zone and of any related potential hazards.	Adequate
360	299	DFO	8.7.1.1	First bullet, second paragraph – the text states that pelagic and benthic fish have low exposure risk because they are highly mobile and able to avoid oiled areas. Larval and early juvenile fish are less mobile than older fish and so may be at greater risk. American eels at the glass eel stage migrate through the EL1105 area. Glass eels may not be able to avoid oiled areas because they cannot swim as rapidly as older eels.	Comment noted. The ability of larval and juvenile fish species to avoid oil slicked areas has been changed.	Adequate
361	300	DFO	8.7.1.1	There is no mention in this section about the potential impact of spilled oil drifting towards adjacent areas where marine fish species at risk are found in high densities. For example, residual surface and deep water currents in the project and adjacent areas tend to move from east to west around the southwest and west coasts of Newfoundland (Figs. 4.6-4.7, 4.9-4.11) where high concentrations of juvenile and/or adult fish occur (e.g. Figs. 5.5 through 5.10).	The potential effect of spilled oil drifting towards adjacent areas where marine species at risk are found in high densities is minor if not non-existent. The worst case scenario for an oil spill (Refer to Figures 2.12-2.24) will not affect areas of high densities of marine species at risk either adult or juveniles.	Adequate
362	301	DFO	8.7.1.1	The EA states (p.402) "…Perhaps the species of greatest concern would be redfish as the Project Area overlaps a potential redfish mating area. Redfish typically mate in the fall; however, eggs are hatched within the female and are not extruded until the following April to July (Section 5.2.1.7). An oil spill would not affect redfish larvae, as the potential larvae extrusion area is outside (to the north, in the Cabot Strait) of the Study Area (Figure 5.56)." However, this paragraph suggests the project area overlaps a potential redfish mating area, then goes on to suggest a potential larval extrusion area is outside the Study area. Is this speculation or is there a publication to reference for these claims? It is also possible that the project area is also a potential larval extrusion area.	A reference has been added to support the redfish larval extrusion area.	Adequate - However the reference provided was from another consultants EA report (i.e., LGL Limited. 2007. Western Newfoundland and Labrador Offshore Area Strategic Environmental Assessment amendment. Prepared for the Canada-Newfoundland and Labrador Offshore Petroleum Board.) This is not an original citation; it is the original citation that should have been provided.
364	302	DFO	8.7.1.3	Sea turtles should be specifically referenced in the title as there is discussion of them in the corresponding text.	The title of Section 8.7.1.3 has been updated to include Sea Turtles at risk.	Adequate
365	303	DFO	Section 8.7.2; Page 405	Eelgrass is addressed, but the likelihood of direct oiling is minimized due to the distance of the project from shore, although it is well known that direct oiling of coastlines is a frequent result of a large oil spill, with surface slicks moving considerable distances. In addition calm, sheltered shorelines, marshes and river estuaries where eelgrass beds thrive are among the most sensitive areas to oil, providing quiet zones where oils can accumulate and bind to suspended particles, forming dense tar mats. Oil pollution can cause acute mortality of eelgrass beds, and other sea grass and seaweed beds by physically coating the plants, blocking sunlight and preventing photosynthesis. In addition, structural habitat provided by eelgrass can be compromised by the accumulation of toxic components of oil. Clean-up operations can also damage eelgrass beds.	The sensitivity of eelgrass is acknowledged, although Corridor Resources maintains that oiling of coastlines from a spill is not likely based on predictive modeling.	Adequate

366	304	DFO	8.7.5	There is evidence following the recent well blow-out in the Gulf of Mexico (Deepwater Horizon) that hydrocarbon spills can be debilitating and lethal for sea turtles. Suggest including technical reports from NOAA, other sources here, as the impact is not negligible and should be recognized within the assessment.	The reviewer's comment is noted in that the environmental effects on sea turtles from oil exposure is not negligible and which is noted in Section 8.7.1.3. Unlike the circumstances of the Deepwater Horizion blow-out and the existing conditions in the Gulf of Mexico where sea turtles are likely more prevalent over the course of a year, the occurrence of sea turtles in the Project Area or Study Area is limited to feeding during the warmer months of the year in the Gulf of St. Lawrence. Therefore the probability of a high risk of exposure from a blow-out combined with the presence of sea turtles at the same time would be much lower than that in the Gulf of Mexico.	Adequate
367	305	DFO	8.7.7, Page 410	The text does not reference seafood market price impacts associated with an oil spill – spills have led to food safety concerns and loss of reputation – these in turn have had negative market impacts.	Section 8.7.7 has been updated to include reference to food safety concerns and loss of reputation.	Adequate
368	306	DFO	9.5	The statement (p.416), *"Richardson et al. (1995) predicted a radius response to noise during development and production activities for baleen and ondontocetes to be less than 100 m."* is erroneous and requires correction. This general source, which contains several hundred pages should not be cited. The authors did not predict a "radious response." The effects of changing the behavior of animals can spread over very large distances (e.g. Risch et al. (2012).	This statement has been removed.	Adequate
369	307	DFO	9.5	Regarding the statement (p.416), *"Limited data suggest that vessels speeds below 26 km/hr (14 knots) may be beneficial in reducing marine mammal vessel collisions (Laist et al. 2001)."* See also: Vanderlaan et al. (2008); and Vanderlaan and Taggart (2007).	Text updated to include the Vanderlann et al 2008 reference which states that vessel traffic should be limited to 10 knots.	Adequate
370	308	DFO	Section 9.6; Page 417	Should consider eelgrass under sensitive areas: Low oxygen levels, typical of sheltered sea grass habitat, limit the biodegradation of oil and result in extremely slow degradation, with oil persisting for as much as ten years or more, depending on the amount and type of oil spilled. Recovery begins rapidly in rocky shorelines, but oil can persist for 6 to 12 years or more in protected soft sediments. When significant eelgrass areas are lost, they can be extremely difficult (or impossible) to re-establish, even with interventions such as transplants or seeding.	Under the worst case scenario for an oil spill/blow-out, oil would not reach any areas where eelgrass would be located. As a result, there is no potential effects on eelgrass and it has not been included under the Sensitive Areas Section.	Adequate

371	309	DFO	Supporting Document - Modeling in Support of Corridor Resources Old Harry Exploratory Drilling Environmental Assessment	In general, the scenarios in this document were not clearly described. The subsurface transport of dispersed oil (majority of the total oil) was not sufficiently modeled. The model only considered the re-entrained oil from surface in a 30m layer and did not consider the dispersion into water column during the rise of oil while oil was released from 470m. Overall, the results were not clearly presented. Notably, the document did not take the expertise gained from the oil spill in the Gulf of Mexico into consideration for the Gulf of St. Lawrence which shares a good deal of similarities. We do not have the specific oil category that is to be extracted in the Gulf of St. Lawrence. However, the indications show that we expect it to be on the lighter side of the crude, close to the category of the one in the Gulf of Mexico. In short, the nature of the crude and the physical setting of both areas, a semi-enclosed sea, make it appropriate to use the expertise gained in the Gulf of Mexico to project the potential risks in the Gulf of St. Lawrence. As such, it is recommended to project the potential risks in the Gulf of St. Lawrence using the results of the oil spill in the Gulf of Mexico.	See Section 2.1.2 in the SL Ross report (SL Ross 2011a, updated 2012) for a description of the behaviour of the oil and gas from a shallow water subsea blowout. In general, significant entrainment of oil in the water column is unlikely during its rise to the surface in the gas bubble driven plume. The behaviour of a shallow water blowout (minimal hydrate formation) will be different from a deep water event (extensive hydrate formation) such as the Deep Water Horizon event in the Gulf of Mexico. The formation of gas hydrates depletes the hydrocarbon plume of the high energy natural gas and the driving buoyancy of the plume is essentially lost. In the case of a shallow water blowout, the gas is preserved in the plume and the high energy bouyancy effect is maintained. The overall impact is that the hydrocarbon plume travels very rapidly to the sea surface with little or no oil dispersed into the water column during its rise to the surface. The expected oil to be encountered at Old Harry is a very light 45-56 degree API oil/condensate (see response for DFO-06), in contrast to the much heavier oil encountered at Macondo (~35 degree API oil). The Old Harry site is located in 470 m water depth, which is much shallower that the 1520 m of water depth at the Macondo site. A subsea blowout at the Old Harry site is expected to behave like a shallow water event with minimal hydrate formation whereas hydrate formation at Macondo was likely extensive.	The use of the top 30 meters of the surface waters to dilute the oil is not warranted by observations: 1. Based on a report from United States Coast Guard (2005) fact sheet on small diesel fuel spills, the authors extended the conclusions to open ocean crude oil spill conditions (see Sec. 8.5 of revised EA); 2. The authors used the mixed layer of the surface waters in the Gulf of St. Lawrence to conclude that the oil would mix over the whole mixing layer. It is true that the surface mixed layer is 30 meters (Drinkwater and Gilbert 2004), but there are two conditions that are not met in case of oil spill. The difference of density of the observed waters over 30 meters is very small. It ranges typically from 1.023 to 1.025 (g/cm3) (SGDO), while the density of oil ranges from 0.790 to 0.837 (g/cm3) (Table 2.14 of revised EA). It is much more difficult to mix a larger difference in density. Mixing oil of density 0.8 (g/cm3) with water of density of 1.023 (g/cm3) would not occur under a typical storm and the oil would reach a shoreline before it would mix thoroughly over 30 meters; 3. The second condition that is not met is that the mixed layer is the result of a number of storms over a season. It is not instantaneous. The top layer of the waters stays on the top until a storm mixes the waters.

372	310	DFO	2. OIL SPILL SCENARIOS AND MODELING INPUTS	Regarding the trajectories of the oil spill, the trajectories presented in the document are unrealistic and do not serve the purpose. They should be redone with realistic winds and surface currents.The model used to generate the surface current fields (Tang et al. 2008) is a good one. However, the oil-spill trajectories are calculated using seasonal mean surface water velocities (2.3.3. Water Currents on page 16). This choice of currents is completely unrealistic. There are no tides, no wind induced currents, and no influence of the surface outflow from fresh water runoff. The latter part is surprising given that the seasonal mean surface currents were used. Since in a typical oil spill, all of these components are present, the trajectories should be calculated with the hourly outputs of the model driven with realistic winds from Meteorological Service of Canada outputs. Within this section, a blow out from the surface is illustrated. However, a blowout from the bottom is not illustrated. The Gulf of Mexico spill did not behave as a text book spill as the blow out was from the bottom; it was not at the surface. Some of the oil did not reach the surface, and a good portion of it stayed near the bottom. There is a need to determine where that oil would go using the hourly bottom currents of the ocean model. The document should therefore track the oil spills using near bottom currents.	The surface water current data utilized provides the seasonal average trends in water movement in the region. When this is combined with the 52 years of MSC50 wind data used in the trajectory assessments the variation in trajectories possible from the drilling location are well represented for the purposes of environmental impact assessment, especially for a spill of non-persistent light oil/condensate. Tidal variations would also not significantly alter the probable footprint of the oil spills. With respect to the wind data used, the MSC50 hind cast wind set used in the modeling is a long term data set with good spatial resolution over the entire Atlantic region. The data was developed by the Climate Research Division of Environment Canada and the Federal Program of Energy Research and Development. In the research paper describing the data set, the authors state that “The wind and wave data are considered to be of sufficiently high quality to be used in the analysis of long return period statistics, and other engineering applications”. As such, we contend that this data set is the best available for offshore spill trajectory and behavior modeling. The use of land-based weather data from a single weather station, suggested by the reviewer, does not necessarily accurately portray the winds offshore. Sub-surface water currents were not considered in the subsea oil release because the strong, buoyant gas-bubble plume that would result from a shallow subsea release (see response to DFO-309) would overwhelm such currents and result in minimal deflection of the developed plume (see page 8 and 9 of full spill modeling report for additional description of the models used). For example, a sea bottom current of 3 kts (~0.15 m/s) is significantly weaker than the vertical velocities that can be acheived in a gas bubble plume (2-10 m/s).A description of the likely behaviour of the oil and gas from a subsea blowout from this project is provided in section 2.1.2 of the SL Ross oil fate modelling report ((SL Ross 2011a, updated 2012) (see also response to Comment #371). A shallow water blowout from the seabed is illustrated in Figure 3 of the report. Due to the strong buoyancy effect of the natural gas in the hydrocarbon plume for a shallow water subsea blowout, all of the oil is predicted to reach the surface.	The trajectories of the oil spill are not calculated under realistic conditions. The main forces are tidal currents and hourly observed winds. Neither was used - only Seasonal mean surface water velocity and climate averaged surface winds (Sec. 2.3.3 (Water Current) and Sec. 2.3.5 (Wind) of Oil Spill Fate Report Update). The assessment that: Tidal currents were not considered in the assessment since their oscillatory movement results in little long-term net movement of surface oil is unrealistic. It is the interaction of hourly winds and tidal currents on the surface oil that provides a realistic trajectory.

373	311	DFO	2.1.2 Subsea Blowouts 5	The name of the model for this study is given here, but a description of the formulation, capability, and limitation of the model is not provided. It is unclear if the processes described in section 2.1.2 have been fully or partially included in SLROSM. Justifications need to be provided on why this model (SLROSM) was used instead of other models (published and probably more advanced models, such as Deep Blow by SINTEF, OILMAPDEEP by ASA, or CDOG by Clarkson University). It is important to demonstrate that the selected model is technically sound for the proposed modeling work. Figure 3 – the illustration of vertical profile is inaccurate. With the presence of currents, the plume will be deflected rather than straight upwards.	SLROSM utilizes the algorithms developed by Fannelop and Sjoen for shallow subsea blowouts as identified in the report on page 10. These are the same algorithms used by SINTEF in their shallow water discharge model and this approach has been validated against the IXTOC blowout event, a more representative blowout for this spill scenario than the Deep Water Horizon event. Supplementary modelling completed by ASA (submitted to C-NLOPB on September 21, 2012) to compare the oil mass balance for surface, evaporated and entrained oil for two different oil specifications (Cohasset crude and diesel) shows that oils with similar properties have similar on-water persistence predictions when using SLROSM and OILMAP. With respect to Figure 3, because of the strong gas bubble plume, the oil would rise to the surface very quickly, and there would be minimal deflection of the plume by subsea cross-currents. Any potential minimal deflection would not result in a significant change in the surface oil footprint (a few hundreds of metres at most).	While the Table provides a brief description of the oil spill model (SLROSM), the related content was not included in the revised document. Regarding the justification for selecting the SLROSM model instead of SINTEF, OILMAPDEEP, and CDOG it is noted that the other models were used for deep waters, whereas the SLROSM is validated in shallow water cases. The authors should point out any limits of the model due to water depth as the water depth at the area is 400-500 m.
374	312	DFO	2.3.2 Discharge Volumes and Flow Rates 15	Blowout scenarios were not clearly described in this section or in Table 3. Only the flow rate was provided but did not state the blowout period (10 days, or 3 months, etc.). Such information is key to the extent of oil covered area.	Descriptions of surface and subsea blowout behaviour are provided in Sections 2.1.2 and 2.1.3 in the SL Ross Report (SL Ross 2011a, updated 2012). These descriptions in the SL Ross report have been expanded upon since the DFO review. The blowout periods modelled are for one month (30 days).	Adequate

375	313	DFO	2.3.3 Water Currents	It was stated that surface water current was used in the modeling. The surface only case is fine for the surface spill scenarios, but it is insufficient in modeling subsurface blowout. Although the 470m depth was classified as shallow in terms of hydrate formation it is deep enough that the subsurface current can play an important role to deflect and affect the plume behaviors. The deep/subsurface currents are particularly important for the study of dispersed oil transport process in the water column. The deep current is important considering the drill site is in a channel.	The extensive experience of SL Ross with oil spill modelling over 25 years indicates that the strong gas bubble plume will bring oil to the surface quickly and there would be minimal deflection of the plume by subsea cross-currents (a few hundreds of metres at most). Any minor deflection of the gas bubble plume by cross-currents will result in only minor changes in the surface foot print of oil. Because of the strong gas bubble plume, the oil would rise to the surface very quickly and there would be little loss of oil to the surrounding waters.	The original comment was that using only the surface current is not sufficient to describe the spill behavior in the water column. The deep current is important as well especially considering the drill site is in a channel. The model calculation should include the current in the subsurface layer. The authors responded that the gas bubble would rise to surface very quickly and there would be little loss of oil to the surrounding waters according to 25-year modelling experience. The response did not answer the velocity, magnitude and implications of ignoring the subsurface current at this study site. The subsurface current may be important because the direction of the surface current is opposite to that at the deep layer at the study site of the report according to numerical results of Wu and Tang (2011). It is recommended that the authors recalculate the model using the deep layer current field.
376	314	DFO	3. MODELING RESULTS	The duration of the trajectories presented in the document is unrealistic. The choice to stop the trajectories at a given level of ppm concentration is not documented. It is implied that all oil spills will be dispersed and absorbed in the environment at that level. In fact, a greater spill would make the oil go further and eventually reach a coastline. The document did not consider this issue which is a serious flaw. It is recommended to use the results from the ocean model under the proper conditions and ensure that the duration is long enough to show the coastline potentially at risk.	The reviewers indicated that the choice to stop the trajectories at a given level of concentration in the water column was not documented. The extent of the sub-surface dispersed oil plumes was stopped at 0.1 ppm (the concentration considered no longer harmful to marine life) as indicated on page 24 along with references for justification. For the batch diesel spills of fixed volume (1000 and 10,000 litres), the dispersed oil in the upper 30 m of the water column was tracked until the oil concentration dropped to 0.1 ppm. For the subsea and surface blowouts, the models were run for one month (30 days) and the dispersed oil in the upper 30 m of the water column was tracked until the oil concentration dropped to 0.1 ppm. The light Cohasset crude oil/condensate will evaporate or disperse to a concentration of 0.1 ppm before impacting any coastline no matter how long the models are run.	See previous comment #371 re: Supporting Document - Modeling in Support of Corridor Resources Old Harry Exploratory Drilling Environmental Assessment

377	315	DFO	3.1 Batch Diesel Spill Fate Modeling	The modeling was conducted in average wind conditions, what about under worst case scenarios without wind? This scenario is missing. It is stated that “The subsurface oil also diffuses laterally as it is moved away from the spill site by the prevailing surface water currents”. Again, this is very confusing that subsurface oil is dispersed by surface current. It is stated that “It has been assumed that the oil will mix in the upper 30 m of water as this is the minimum surface water mixing depth reported in the literature for the region (Drinkwater & Gilbert 2004)”. Why assume the mixing depth while there are models available to simulate the 3D (including vertical) transport behaviors? This simplification (30m mixing) may cause overestimate of concentration in some areas and underestimations in other areas.	Statistical wind data was used for Environmental Assessment purposes. Average weather conditions were modelled to provide the most likely behavior of these small diesel spills to meet the requirements of the EA. As the dispersed oil cloud moves with the prevailing currents, it also diffuses and dilutes as it moves with the water body. The 30 m mixing depth provides a reasonable estimate of in-water oil concentration for Environmental Assessment purposes.	See previous comment #372 re: Oil Spill Scenarios and Modelling Inputs
378	316	DFO	3.2 Subsea Blowout Fate and Behaviour Modeling	Without knowing the blowout period, it is difficult to interpret the results. It was stated that between 16 and 29% will evaporate and the remainder will disperse, but the associated time step was not given as the mass balance will continue to change with continuous blowout (maybe month long). Therefore the results in Table 7 only represent the condition at a given time point but the evolution with time is missing. Furthermore, very little has been presented here about the fate of dispersed oil (84 to 71% of total oil, majority), including the vertical distribution. A contour plot of horizontal and vertical area should be provided, as should the depths where 0.1 ppm concentrations are found. Also, without the use of deep currents, the distances in Table 7 are questionable as the deflection of plumes was not considered. The bathymetry around the site is not provided, which may also affect the behaviors of dispersed oil, but there is no discussion on this subject. One important factor that affects the fate of dispersed oil is the droplet size distribution. What distribution was used and how was it calculated?	The blowout period modelled was one month, or 30 days, and oil was 'released' at 6 hour time steps. Note that releasing the volume of 6 hours of oil flow at one instant will take longer to evaporate and disperse than a continuous flow of oil for 6 hours. The dispersed oil plume will diffuse and dilute as it moves away from the spill site and the zones of influence in Table 7 represent the maximum likely extent of significant surface and sub-surface oiling with a continuous release of oil under average environmental conditions. Therefore, the model does provide for the evolution of a potential spill with time. The dispersed oil was tracked in the upper 30 m of the water column until the concentration dropped to 0.1 ppm. Table 7 shows the maximum likely distance from source for the dispersed oil. Other sections in the SL Ross report describe how the oil footprints may vary considering historical wind data. Deep currents will not affect the dispersed oil in the upper 30 m of the water column. Further, the gas bubble plume will move the oil to the surface very rapidly (as with any other shallow water subsea event) with minimal deflection of the plume and little loss of oil to the water column (see response provided for DFO-309 and DFO-313).The oil was moved to the surface by a gas bubble plume not by oil drop buoyancy so the oil drop size distribution is not required (see response for DFO-309).	Adequate
379	317	DFO	3.3 Surface Blowout Fate and Behaviour Modeling	The document refers to “throughout the blowout period”. How long is the period? This is not provided anywhere. Section (4) provides this information for surface oil trajectory, but it was stated there that “This does not represent a scenario that would actually occur in a continuous blowout situation but rather provides a reasonable worst-case assessment of spill behaviour”, it is unclear if this “every 6-hour batch for a month” release case used in section 4 was also used in section 3.	The blowout period modelled was one month, or 30 days. Additional text has been provided in Section 4.0 to add clarity to that section.	Adequate

380	318	DFO	4.2 Typical Monthly Surface Oil Slick Trajectories	The document states, “Each one of these six-hour quantities of oil has been tracked until the surface oil is completely evaporated and dispersed from the surface.” However, have the emulsification process been modeled? Although this may not be important in summer conditions, it cannot be neglected in winter conditions as a fraction of emulsion may stay on surface much long and transport far beyond the modeled 3-4 km radii (Fig 5).	The light oil/condensate being modelled does not form a water-in-oil emulsion, based on the data in the Environment Canada oil database and previously conducted tests on the Cohassett-Panuke oil. Condensates in general are not susceptible to water-in oil-emulsion formation.	Adequate
381	319	DFO	5.1 Introduction	The title is “dispersed oil plume trajectories”, however, this section only covers the re-entrained oil from above surface release as mentioned in page 33 “In these simulations, the quantity of oil that would be released from six hours of a continuous above sea blowout has been introduced on the surface at the exploration site as a batch spill every six hours over month-long periods” The behaviour of near bottom release and mass in the water column will be entirely different and are not covered here.	As described in the response to DFO-311, all oil released at the seabed for a shallow water, subsea blowout will travel quickly to the surface with the strong gas/water/oil plume (that is driven by the rising gas bubbles) to the surface (i.e. it is likely that no oil would trapped near the bottom or in the water column). All of the oil would rise to the surface and either evaporate or disperse. The dispersed plume trajectories were tracked until the concentration dropped to 0.1 ppm.	The behaviours of the spill near the bottom and even over the whole water column has not been addressed.
382	320	DFO	5.2 Typical Monthly Dispersed Oil Plume Trajectories	The document states, “The initial movement of the dispersed oil plume is assumed to be due to a combination of winds and surface water currents. The prevailing surface water currents alone are assumed to drive the dispersed oil plume once the surface slick is depleted.” As discussed before, once the oil is entrained into water column, surface current should not be used, as the high amplitude of surface current may cause over flushing/dilution and underestimate oil concentration.	Oil concentration estimates based on a completely mixed, upper ocean mixing region provide adequate estimates of in-water oil concentration for Environmental Assessment purposes. Any additional resolution, either temporally or spatially, would be of limited use given the spatial and temporal knowledge of the resources that the dispersed oil could impact.	Information to support using surface water currents to represent the whole water column was not included.
383	321	DFO	5.2, Table 5.1	White shark should be included on this list. Scientific Name:*Carcharodon carcharias* Taxonomy Group:Fishes Range:Atlantic Ocean Last COSEWIC Assessment: April 2006 Last COSEWIC Designation:Endangered SARA Status: Schedule 1, Endangered	Text updated to include White Shark.	Adequate
384	322	DFO		Regarding the statement (p.94), “Tidal mixing is also a permanent and dominant modifier of the intermediate and deeper waters near the head of Jacques Cartier Strait and in the Strait of Belle Isle (Lu et al. 2001; Saucier et al. 2003).”, Lu et al (2001) showed that where bathymetry was sufficiently shallow that tidal mixing should be strong enough to mix the layer (typically around 50 m depth), and therefore should not by cited in relation to modifying deep water masses.	Comment noted and corrected.	Adequate