

ExxonMobil Orphan Basin Controlled Sources Electromagnetic Survey Program Environmental Assessment Review Comments

1. In the seabird/marine mammal observation report, it should be noted if there is any noticeable change in seabird numbers or distribution, especially during operations in shallower areas (when approaching the minimum depth of 500m) when the extent of the electromagnetic field will approach the surface of the water.
2. Table 4.12 refers to the abundances of seabird species as Common, Uncommon, Scarce and Very Scarce. These designations should be quantified so that the number of seabirds using the area in a given month or season is apparent.
3. In Table 4.14, Murre species are listed as diving up to a maximum depth of 100m, however Murres have been recorded as diving to a maximum of 180m.¹
4. Section 5.10, Effects on Seabirds, addresses only two adverse effects on seabirds: stranding and accidental oiling. Other impacts on seabirds could occur include the following: (1) disruption of foraging (e.g., disturbance to prey and displacement from important foraging areas); (2) discarding of both inorganic waste (e.g., plastics and paper) and organic wastes (e.g. food scraps) into the marine environment. Organic wastes attract gull species which may in turn lead to increased predation on a number of smaller bird species. These issues should be taken into consideration in this section, and mitigation measures should be discussed in the EA.
5. In Section 5.10, it is stated that no significant effects on seabird populations are predicted because the number of animals affected will be small. It should be noted that as stated in the EA document, nearly 5 million pairs of seabirds nest and feed in the waters off eastern Newfoundland in addition to millions of migrants from the southern hemisphere who make use of the area as well. Many of these species migrate or feed in large groups in the area, making their populations susceptible to even small spills of oil or other substances such as Isopar or hydraulic fluid. As well, any known effects of Isopar and hydraulic fluid spills on seabirds should be addressed in this section.
6. Because small spills of oil or other harmful substances can have very serious effects on migratory birds, every effort should be taken to ensure that no oil, Isopar or hydraulic fluid spills occur in the area. The proponent should ensure that all precautions are taken to prevent fuel leaks from equipment, and that a contingency plan is prepared in case of a spill. Furthermore, the proponents should ensure that contractors are aware that *section 5.1* of the *Migratory Birds Convention Act* prohibits persons from depositing harmful substances in waters or areas frequented by migratory birds.
7. In order to minimize the number of birds becoming stranded on vessels, CWS recommends use of only white strobe lights on tall structures at night, at the minimum intensity and minimum number of flashes per minute (longest duration between flashes) allowable by Transport Canada. The use of solid-burning or slow pulsing red warning lights at night should be avoided.

¹ Piatt, J.F. and Nettleship, D.N. 1985. Diving depths of four alcids. *Auk* 102: 293-297.

8. Should storm-petrels or other species become stranded on vessels, the proponent is expected to adhere to the protocol described in Williams and Chardine's brochure entitled, *The Leach's Storm Petrel: General Information and Handling Instructions*. Proponents should be aware that a permit is required from the CWS to implement this protocol.
9. In order to prevent gear conflicts and to minimize disruption of natural fish behavior and/or distribution prior to and during research surveys, DFO-NL Region has requested that seismic operators maintain a buffer of 30-40 km around research survey set locations for 7 to 10 days prior to arrival of DFO research vessels.
10. Some species in Section 4 (corals, cod, Greenland halibut, snow crab, northern shrimp) are more extensively documented than others. It is recommended that species be covered more evenly. Also, the proposed project survey area is approximately 1,500 m - 2,700 m within the Orphan Basin. DFO surveys only cover to about 1,450 m in autumn (3KL) and to 730 m in spring (3L). There is ample information from these surveys listed in the EA but little of the study area is actually covered. Therefore, there is a vast area with little information on which to base the EA. This fact should be highlighted in the document.
11. Page 8, Figure 3.5: This figure appears incomplete as there is no legend provided and labels are truncated.
12. Page 11, 1st paragraph: Will there be one or more observer(s) on board? Last paragraph: Ideally the EO personnel qualifications specified by CWS and DFO should be listed here as they are not apparent to all readers.
13. Page 12, 1st paragraph: In the EA Report, the need to evaluate potential effects of the CEM program on lower trophic levels is dismissed based upon 1) the lower trophic levels of the Orphan Basin are "not unique" and 2) that no effect of CEM is anticipated. These conclusions are not documented to the extent of existing information. While there is only limited information available for lower trophic levels for the Orphan Basin, this component of the ecosystem should not be ignored simply due to lack of information. Also conclusions of no effect of seismic and/or drilling programs would not necessarily hold for CEM. As such, this aspect should not be considered a factor in determining VEC selection.
14. Page 12, Sec. 4.1, 3rd paragraph: First sentence should be changed to: "Schedules 2 and 3 of SARA identify species that were designated "at risk" by COSEWIC but *have yet to be considered for addition to Schedule 1...*"
15. Page 12, Sec. 4.1, last paragraph: Wolffish and leatherback turtle strategies are more advanced than that for blue whale and this should be reflected in the order given.
16. Page 13, Table 4.1: The comment on leatherback turtle and its association with the slope of the banks more so than the shelf is inaccurate and unreferenced and should be removed. Also, striped Wolffish should be added to the species list.
17. Page 14, Section 4.2: The statement "*Benthos is not strictly speaking a VEC...*" is only in context of the definition used historically by various EA reports. The statement "*there do not appear to be any published studies on benthic communities...*" suggests an incomplete literature search, and should be revised accordingly.

18. Page 16, Sec. 4.2.1: “Deep-water corals are reviewed in detail in LGL 2005, 2006”. The pertinent information from these reports should be included in this EA. “There has been increasing interest in deep-water corals in recent years because of...other factors”. What are these factors – other than those stated?
19. Page 21, Sec. 4.3: Atlantic cod is not a SARA listed species.
20. Page 24, Sec. 4.3.3., 2nd last paragraph: Section 4 is intended to describe the environment and not how efficient surveys may be at capturing various species. Trawl surveys are stratified-random, multispecies in nature, and conducted with a standardized protocol. They are intended to monitor relative changes in abundance and distribution from year to year, no matter how efficient they may be for individual species.
21. Page 27, 2nd paragraph: “Wolffish Recovery Plan” is now “Wolffish Recovery Strategy and Management Plan”. Also: “DFO (2004e) conducted an allowable harm assessment on northern and spotted wolffish...”. Finally, the commercial fishery was not deemed the greatest threat to northern and spotted wolffish. Rather, the commercial fishery is the greatest source of human induced mortality for these fish and mortality is also expected to decline.
22. Page 28, Sec. 4.3.4.2, Atlantic Cod, 3rd paragraph: The information provided for cod is generally accurate, however, the following statement is simplistic and misleading: “*The total allowable catch doubled between 1978 and 1984 due to an overestimation of stock size during this period.*” The stock was indeed overestimated during the early and mid-1980s, but sequential population analysis not only detected the overestimation but also indicated that the 3+ biomass almost doubled from 1977 to 1983 and the spawner biomass tripled. That is, during the early 1980s, the stock did experience a partial recovery from its much reduced state in the late 1970s.
23. Page 29, 2nd paragraph: The statement that the Minister of DFO decided not to place Atlantic Cod on the SARA legal list is inaccurate. The Minister can only make a recommendation to the Governor in Council and the final decision is made by the GIC. Also, only northern cod was classified as endangered; the Laurentian stock was classified as threatened.
24. Page 29, Sec. 4.3.5: It is stated that <15% of the CSEM Study area has water depths <1,500m. Perhaps it would be clearer to state that the Study area will occur in depths > X meters.
25. Roundnose grenadier (*Coryphaenoides rupestris*) is missing from the “other notable fish species” list. There were once significant fisheries for this species in 3K. The last assessment of this species was in 1999 conducted at NAFO see: Power, D. 1999. Roundnose Grenadier (*Coryphaenoides rupestris*) in NAFO Subareas 2+3. NAFO SCR Doc. 99/51, Ser. No. N4110.
26. The last paragraph makes a statement that the roughhead grenadier in the Northwest Atlantic is exhibiting severe declines and references Devine *et al.* 2006. There are alternate views to this publication and DFO refers to: Murua *et al.* 2006. Roughhead Grenadier in Flemish Cap and Flemish Pass. e-J. Northw. Atl. Fish. Sci. , Vol 37.
27. Page 39, Sec. 4.4.5: The fishing pattern described at the top of this page may no longer be true. Due to warmer temperatures, there is less ice cover and the ice season is shorter, therefore the vessels have greater flexibility in their abilities to move north. As well, since 2003 the fishing season changed from a calendar year to a fiscal year. This also has an impact upon seasonality of the fishery.

28. Page 78, Sec. 5.0: This section would be improved by inclusion of a table with comparison of the magnitude of the electromagnetic effects of the CESM program with other magnetic anomalies and fluctuations.
29. Page 99, Sec. 5.5: This section refers to modeling by the ExxonMobil Upstream Research Company, however, it is not referenced. Can this report be made available to DFO?
30. Page 100, Sec. 5.7: The CSEM will probably have a low impact upon shrimp, however, once again we will never know, with certainty, what the impacts are until they are studied.
31. Page 101, Sec. 5.8: "*Fish eggs do not contain magnetite and, after numerous research studies,...*" If there are numerous studies then a selection of those references should be listed here.
32. Page 106: "*Most of the fishes listed above occur in shallower water than the project area...and thus will not be exposed to any electromagnetic fields from the proposed survey*". The project depth described is 1500m to 2700m depth. Six of the 19 species listed previously are reported to be found within these ranges. Although the statement "*most occur in shallower water*" is accurate, the statement is dismissive of the others which do occur there.
33. Page 109, Sec. 5.12: "*The distribution of the above-named species is unknown in the Study Area but they may only occur there very rarely.*" This statement should be removed as there is no substantial evidence to support this claim and the fact that these species are rare should not be used as an argument for diminished potential effects. Additionally, two years of observation data is likely not sufficient to support the statement that leatherback sea turtles are expected to be uncommon in the Orphan Basin area.
34. Page 110, Sec. 5.15: Residual effects are those occurring after all possible mitigations are in place. In other words, if no mitigations for an effect are in place, then there are project effects, not residual effects. The list of mitigations on page 7 (10) do not include those presented in Table 5.6 for domestic waste, atmospheric emissions or accidental spills. In addition the columns for probability of occurrence and scientific certainty should not be left blank. In particular, from what is presented in the document, it appears that scientific certainty is low.
35. Page 112, 2nd last paragraph: It is assumed that no overlap in project activities equates to no cumulative effects. This is incorrect as it is possible for sequential activities in the same to result in cumulative impacts.