



P.O. Box 5667
St. John's, NL A1C 5X1

Your file Votre référence

April 13, 2016

Our file Notre référence
PATH #15-HNFL-00546

Darren Hicks
Canada-Newfoundland and Labrador Offshore Petroleum Board
140 Water St., 4th Floor
St. John's, NL A1C 6H6

Dear Mr. Hicks:

Re: Review of Environmental Assessment of CGG's Newfoundland Offshore Seismic Program 2016-2025

I am writing further to your March 1, 2016 letter requesting review of the February 2016 Environmental Assessment (EA) Report prepared in relation to the above noted offshore seismic program proposed by CGG Services (Canada) Incorporated covering the timeframe 2016 – 2025.


Based on review of the above noted EA Report the following comments are offered for your review and consideration.

- Section 2.1 Spatial and temporal Boundaries (page 4) and Section 2.4.1.1 Physical Environment and Potential Effects on the Project (page 10) – Both sections describe water depths as ranging from “...<100 m to > 4000 m...” which implies all water depths. Reference to water depth should be corrected to indicate that it ranges between 100 and 4000 m this should be clarified accordingly.
- Section 4.2.2 Fish – Northern Shrimp 2nd sentence 3rd paragraph (page 54) - the reference to “....*snow crab*....” in this sentence should be removed and replaced with “...northern shrimp...”
- Section 4.2.3 Fish and Fish Habitat Data Gaps Identified in Relevant SEAs (page 60) - regarding the last sentence in this section “*Any new information that has been made available since the three SEAs were completed...*” there are two SEAs referenced in this section, as such the last sentence be amended to make reference to “...*two SEAs*....”.
- Section 4.3.4 Traditional and Aboriginal Fisheries (page 85-89) – there are a number of sentences (e.g. 3rd sentence 1st paragraph (page 85), 1st sentence 1st paragraph and last sentence 1st paragraph (page 89) that incorrectly reference “....*DFO, Resource Management and Aboriginal Affairs*.....” These sentences should be amended to refer to “...*DFO, Resource Management and Aboriginal Fisheries*.....”
- Section 5.5 Mitigation Measures (page 136) – the 4th bullet should also include reference to the *Species at Risk Act*. This section should also note that the *Marine Mammal Regulations (MMR)* under the *Fisheries Act* is currently undergoing amendment. While public consultation on proposed amendments have only just recently ended it should be noted that Schedule 11



of the proposed amended *MMR* provide approach distances for marine mammals based on species, vehicle (vessel, aircraft, etc), area and timing. Given that the proposed seismic survey(s) are scheduled to run from 2016 to 2025 it is recommended that the proponent be aware of any potential implications that may arise if any proposed amendments to *MMR* are accepted during the timeframe covered by the proposed survey program.

- Section 5.5 Mitigation Measures (page 137) – the last sentence of Section 5.5 (page 137) notes that “*Details of the seven mitigation categories are provided in in § 5.5 of LGL (2015a, b).*” It should be noted however that six (not seven) mitigation categories are listed on page 136 and described in LGL 2015a and b, as such this sentence should be corrected appropriately.
- Section 5.7.4.1 Sound (page 141-144) – The 2nd sentence 3rd paragraph (page 143) which notes that “*Available experimental data suggest that there may be physical impacts on the fertilized eggs of snow crab and on the egg, larval, juvenile and adult stages of cod at very close range*” requires an appropriate reference. The 1st sentence 4th paragraph (page 143) which notes that “*Snow crab, thought to be sensitive to the particle motion component of sound only..*” requires an appropriate reference and since this is the first mention of particle motion a definition / description should be provided. The 1st sentence 6th paragraph (page 143) which notes that “*The physical effects of exposure to sound with frequencies >500 HZ are negligible, based on the available information from the scientific literature*” requires an appropriate reference.
- Section 5.7.4.1 Sound (Fish and Fish Habitat VEC) (page 141-144) – this section should include a short summary discussion (similar in detail to that provided for physical effects) of the potential behavioural effects in fish in relation to seismic sound (e.g. startle response; change in swim speed, depth and direction; schooling; reproduction; recruitment; feeding) that are reported in literature including among others - Popper and Hawkins 2012 *Advances in Experimental Medicine and Biology Vol 730* - and other project EAs and applicable SEAs. This will also provide support to the linkage to discussion on effects of seismic sound on Fisheries VEC noted in Section 5.7.5.1 of the EA Report.
- Section 5.7.7.1 Sound (Marine Mammals and Sea Turtle VEC) (page 159-163) – with respect to the discussion of Masking while it is safe to say (see 4th sentence on page 160) that “*Based on past and current reviewed research, the potential for masking of marine mammal calls and/or important environmental cues is considered low...*” it is felt that this section should provide a short summary (similar to that provided on pages 161 and 162 for Disturbance, Hearing Impairment and Non Auditory Physical Effects) of some of the potential effects on masking that are provided within among others Erbe *et al* 2015 and Guan *et al* 2015.
- Section 5.7.7.1 Sound (Marine Mammals and Sea Turtle VEC) – Disturbance (page 161) – the last sentence on page 161 “*Based on available data, it is likely that sea turtles would exhibit behavioural changes and/or localized avoidance near a seismic vessel*” requires a reference as well a very brief summary / description of “behavioural changes” that are likely to occur in sea turtles should be provided in this paragraph accordingly.
- Section 5.7.7.1 Sound (Marine Mammals and Sea Turtle VEC) Hearing Impairment (page 162) – Regarding the 2nd sentence of the 5th paragraph examples of the “*Several aspects of the planned monitoring and mitigation measures for this project are designed to detect marine mammals and sea turtles occurring near the airgun array*” should be provided either here or more likely in the discussion of project mitigations and monitoring (Sections 5.5 and



5.9). If monitoring other than visual monitoring of the 500 m safety zone is planned then the EA Report (e.g. Sections 5.5 and/or 5.9) should specify same and a linkage provided in the above noted 4th paragraph.

- Section 5.9 Mitigation Measures and Follow up (page 180-183) – the 6th and 7th sentences of the 3rd paragraph on page 182 note that “...*observers will watch for marine mammals and sea turtles when the air gun array is active ..*” and that “...*the array will be shut down whenever endangered and/or threatened marine mammals or sea turtles are sighted within the safety zone*”. That being said it is not clear what measures will be employed to monitor for SARA listed endangered and/or threatened mammals and sea turtles during periods of darkness and/or low visibility. This should be clarified accordingly.

Thank you for providing the opportunity to review and provide comment on this project EA Report. If you have any questions or comments with respect to the above or if you require anything further please contact me.

Sincerely,

Senior Fisheries Protection Biologist – Marine, Coastal, Oil and Gas Development
Fisheries Protection and Regulatory Reviews
Ecosystems Management Branch