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June 27, 2014

Mr. Darren Hicks
Environmental Analyst
Canada-Newfoundland and Labrador Offshore Petroleum Board
140 Water Street, 4th Floor
St. John's, NL
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Re: Environmental Assessment of MKI Southern Grand Banks Seismic Program, 2014-2018 – Consolidated EA Addendum Review Comments

Dear Mr. Hicks:

This letter contains responses to reviewer comments on the MKI Southern Grand Banks Seismic EA Addendum.

Fisheries and Oceans Canada (DFO)

Original Comment: **Table 4.13 SARA Schedule 1 and COSEWIC-listed Marine Species with Reasonable Likelihood of Occurrence in the Study Area, page 124** - Atlantic salmon should be listed as separate populations with their respective COSEWIC status.

MKI Response: The populations for SARA-listed species in Table 4.13, p.124, were in reference to populations that occur within the Study Area. In cases where there is more than one population for a particular species within the Study Area, it was noted in parentheses with the species name (e.g., Beluga whale [St. Lawrence population]). Atlantic salmon is an exception, as there are many populations of this species within the Study Area. In this particular case, Atlantic salmon is noted to contain "various populations" which includes: the Labrador population, northeast Newfoundland population, Quebec eastern north shore population, and more. Since Atlantic salmon may migrate long distances and different populations may intermingle with one another, the populations have been consolidated for the purposes of listing the status of Atlantic salmon under SARA and COSEWIC.

DFO Response: While the response provided in the Addendum is acceptable in the interest of clarity it is felt that footnotes should be added to each respective COSEWIC status noting which populations of Atlantic Salmon are considered Endangered, Threatened and/or Special Concern accordingly. This information is available from the COSEWIC website and may be added at the bottom of the table.

MKI Response: The following COSEWIC status information pertaining to Atlantic salmon populations that have some likelihood of occurrence in the Study Area should be added to Table 4.13, page 124 of the EA.

(http://www.cosepac.gc.ca/eng/sct1/searchresult_e.cfm?StartRow=11&boxStatus=All&boxTaxonomic=All&location=All&change=All&board=All&commonName=Atlantic%20salmon&scienceName=&returnFlag=0&Page=2)

“Atlantic salmon (Labrador population) – COSEWIC Status: ***Not at Risk***

Atlantic salmon (Northeast Newfoundland population – COSEWIC Status: ***Not at Risk***

Atlantic salmon (South Newfoundland population) - COSEWIC Status: ***Threatened***

Atlantic salmon (Southwest Newfoundland population) - COSEWIC Status: ***Not at Risk***

Atlantic salmon (Northwest Newfoundland population) - COSEWIC Status: ***Not at Risk***

Atlantic salmon (Quebec Eastern North Shore population) - COSEWIC Status: *Special Concern*
Atlantic salmon (Quebec Western North Shore population) - COSEWIC Status: *Special Concern*
Atlantic salmon (Anticosti Island population) - COSEWIC Status: *Endangered*
Atlantic salmon (Inner St. Lawrence population) - COSEWIC Status: *Special Concern*
Atlantic salmon (Gaspé-Southern GStL population) - COSEWIC Status: *Special Concern*
Atlantic salmon (Eastern Cape Breton population) - COSEWIC Status: *Endangered*
Atlantic salmon (Nova Scotia Southern Upland population) - COSEWIC Status: *Endangered*
Atlantic salmon (Outer Bay of Fundy population) - COSEWIC Status: *Endangered*
Atlantic salmon (Inner Bay of Fundy population) - COSEWIC Status: *Endangered*
Atlantic salmon (Nunavik population) - COSEWIC Status: *Data Deficient*

Environment Canada

The proponent should be reminded that results from the onboard seabird observation program should be sent to EC-CWS on an annual basis.

MKI Response: MKI will send all results from the onboard seabird observation program to EC-CWS on an annual basis.

Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB)

Original comment: **Section 2.0 Project Description, 1st para, line 3, pg 6** – If 2D and 3D programs using two different vessels are proposed for the same year, then the cumulative effect should be assessed.

MKI Response: In 2014, MKI will acquire 2D seismic data only—i.e., 2D and 3D seismic surveys by MKI will not occur simultaneously in the Project Area in 2014. Note that the Project Area is very large ~722,291 km² (see Figure 1.1 on page 2 of the EA). While it is possible that 2D and 3D seismic surveys by MKI could take place in the same year within the Project Area during 2015-2018, it is highly unlikely that these two activities would occur in close proximity to each other. Given the anticipated spatial separation between potential 2D and 3D seismic surveys occurring in the same season, the likelihood of significant residual effects on VECs is considered minimal. Further details on the potential of cumulative effects from concurrent 2D and 3D surveys within the MKI Project Area would be provided in an EA Update submitted to the C-NLOPB when survey details are available.

C-NLOPB Response: The assessment of potential cumulative effects from concurrent 2D and 3D surveys within the MKI Project Area is requested. Any potential activities referred to in Project Descriptions and/or EA Reports must be assessed. EA Updates, by their definition, are updates to project activities of previously assessed activities.

MKI Response: As indicated in Section 2.0 of the EA, 3D seismic surveying during 2015-2018 is not a certainty; rather it depends on the results of the 2D seismic survey proposed for 2014 and any subsequent years. If it is decided that 3D seismic surveying is required at some time during 2015-2018, then MKI will prepare an Amendment to the EA which will include the assessment of potential cumulative effects from concurrent 2D and 3D surveys within the Project Area.

Original comment: **Section 2.2.8, Seismic Streamers, last line, page 9** –It is not evident that both 2D programs with one streamer and 3D programs with up to 16 streamers have been assessed.

MKI Response: MKI have acquired many 3D surveys around the world using spreads of 10 and 14 streamers with a towing depth of 15 to 25 m. We can therefore confidently say that these types of 3D towing configurations have been carefully assessed. The recently introduced Titan Class Ramforms are equipped with 26 streamer reels and have towed configurations of 14 and 16 streamers. As this EA covers the next five years and 3D within this project is not anticipated to take place until 2016 at the earliest, it is not unreasonable to consider that these type

of streamer spreads would become more commonly used. Details on future 3D towing configurations would be provided in an EA Update submitted to the C-NLOPB when survey details are available.

C-NLOPB Response: The assessment of potential effects from 3D surveys within the MKI Project Area is requested. Any potential activities referred to in Project Descriptions and/or EA Reports must be assessed. EA Updates, by their definition, are updates to project activities of previously assessed activities. In relation to this, Tables 5.4, 5.5, 5.7, 5.8, 5.10, 5.11, 5.13 to 5.16, 5.18, 5.19 and 5.21 need to clearly show that the “Project Activity” is either 2D and/or 3D.

MKI Response: As indicated in Section 2.0 of the EA, 3D seismic surveying during 2015-2018 is not a certainty; rather it depends on the results of the 2D seismic survey proposed for 2014 and any subsequent years. If it is decided that 3D seismic surveying is required at some time during 2015-2018, then MKI will prepare an Amendment to the EA which will include an assessment of potential residual effects from 3D surveys within the MKI Project Area.

Fish, Food and Allied Workers

Original Comment: There is a recurring mention within the Environmental Assessment about the utilization of a 7 day temporal pre-research survey separation. It is the understanding of the FFAW|Unifor that this is being accepted by DFO when it comes to their Spring and Fall Research Vessel Trawl Surveys, but it is not feasible to be utilized in connection with the execution of the Industry-DFO Collaborative Post-Season Trap Survey for Snow Crab. If there are further questions on these matters it would be worthwhile to communicate with the shellfish research scientists at DFO. The reviewer would suggest that in the document when there is any mention of the 7 day temporal separation, it **has** to specify what science context this applies. Any possible impact, be it negative or positive, on the Industry-DFO Collaborative Post-Season Trap Survey for Snow Crab cannot be accepted.

MKI Response: MKI commits to maintain regular communication with DFO, the FFAW, independent fishers, and managers of other key corporate fisheries in the area throughout survey operations. As stated in Appendix 2 of the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2012):

- a) *Surveys should be scheduled, to the extent possible, to reduce potential for impact or interference with Department of Fisheries and Oceans (DFO) science surveys. Spatial and temporal logistics should be determined with DFO to reduce overlap of seismic operations with research survey areas, and to allow an adequate temporal buffer between seismic survey operations and DFO research activities.*
- b) *Seismic activities should be scheduled to avoid heavily fished areas, to the extent possible. The operator should implement operational arrangements to ensure that the operator and/or its survey contractor and local fishing interests are informed of each other's planned activities.*

The Proponent contacted DFO regarding temporal and/or spatial separation between seismic activity and the Industry-DFO Collaborative Post-Season Trap Survey for snow crab. Avoidance measures previously voiced by the FFAW (e.g., maintaining a distance of ~20 nm from crab survey stations prior to their sampling) may be viewed as a precautionary measure; however, there is currently no indication of official acceptance of avoidance protocols by DFO (E. Dawe, DFO, NL, pers. comm., 2014).

The 7-day temporal buffer associated with the DFO RV surveys is based on the available scientific literature (e.g., Engås et al. 1996; Hassel et al. 2004; Løkkeborg et al. 2012). These studies suggest inter-specific variability in terms of behavioural effects of exposure to seismic airguns. However, the temporary nature of these effects are reflected in all three studies; thus the 7-day temporal buffer.

FFAW Response: FFAW-Unifor indicated that there had to be a direct indication of what fisheries science work was being referred to with the 7-day temporal separation. The Industry-DFO Collaborative Post-Season Trap

Survey for Snow Crab is not a unilateral DFO survey. For example the Fall DFO RV trawl survey is managed wholly by DFO and is conducted by a limited number of vessels, which allows for it to suggest a 7-day temporal separation in that instance.

MKI Response: As stated in Subsection 5.6.3.3 of the EA (Avoidance of Fisheries Science Surveys), MKI commits to the avoidance mitigation measure meaning that MKI will not discharge seismic airguns within 30 km of any particular Industry-DFO Collaborative Post-Season Snow Crab Survey sampling station during the 7 days preceding sampling at that particular station. MKI commits to maintain regular communication with the FFAW, independent fishers, the managers of other key corporate fisheries in the area and DFO throughout the seismic survey operations.

Original Comment: **Section 5.8.5.2 Vessel Presence (including towed seismic equipment), Page 186** - The locations of the Industry-DFO Post-Season Trap Survey for Snow Crab have been fixed for the past decade.

MKI Response: The above comment appears to be in reference to the last paragraph under the *Avoidance* heading in Section 5.8.5.2, p.186. It is known that the station locations for the Industry-DFO Post-Season Trap Survey for Snow Crab are fixed. The reference in this paragraph to “exchange detailed locational information with those involved in the surveying” is in relation to MKI’s commitment to a 7-day pre-research survey temporal separation, as discussed in a previous comment. Information relating to scheduled trap surveying within the Project Area is directly relevant to this mitigation measure.

FFAW Response: In the initial comments to the EA it was adamantly indicated by the reviewer that any mention of a 7-day temporal separation needed to specify what science work was in question. As the proponent is well aware the 7-day temporal separation pre crab survey is unfeasible in the context of what is considered to be active fishing grounds. The harvesters engaged in the Industry-DFO Collaborative Post-Season Trap Survey for Snow Crab cannot undertake scientific and commercial activity concurrently and the scientific licenses for the survey are not issued until around September 1st.

MKI Response: As stated in Subsection 5.6.3.3 of the EA (Avoidance of Fisheries Science Surveys), MKI commits to the avoidance mitigation measure meaning that MKI will not discharge seismic airguns within 30 km of any particular Industry-DFO Collaborative Post-Season Snow Crab Survey sampling station during the 7 days preceding sampling at that particular station. MKI commits to maintain regular communication with the FFAW, independent fishers, the managers of other key corporate fisheries in the area and DFO throughout the seismic survey operations.

MKI hopes that these responses sufficiently address the comments on the EA Addendum.

Sincerely,

LGL LIMITED
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Senior Biologist

On behalf of:

Jerry Witney
Petroleum Geo-Services
Vice President, North America
MultiClient