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Conservation Officer  
Canada-Nova Scotia Offshore Petroleum Board  
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### **Draft Strategic Environmental Assessment for the Sydney Basin and Orpheus Graben Areas**

Dear Ms. MacDonald,

The Sydney Basin and Orpheus Graben Areas being considered for seismic encompass the best fishing grounds in Eastern Nova Scotia and should not be allowed to proceed. The largest MPA is being proposed for this area, the St. Anns Bank, thus testifying to its unique ecosystem which the Department of Fisheries deemed as deserving protection from exploitation.

Snow crab areas of Southern and Northern Eastern Nova Scotia, located in the proposed seismic zone, are one of the most lucrative snow crab fisheries in which half of the Maritimes Region snow crab is caught with landings (in 2012) of 6,348 Metric tons worth over \$30 million. This figure demonstrated the importance of the Snow Crab industry, and does not account for landings in Shrimp, Groundfish, Sea Cucumber, Whelk, Tuna, or other commercial fisheries in that area. Lobster landings in LFA27 alone amount to almost 4 million kilograms worth over \$20 million in landed value.

There has been very little science done to analyze the effect of seismic activity on marine species, but research does speculate that damage does occur and such activities should be curtailed until the evidence is clear. Engås *et al.* (1996)<sup>1</sup> demonstrated that “seismic shooting with air guns affected fish distribution and caused trawl and longline catch rates of cod and haddock to fall. This effect of seismic activity was demonstrated within the region in which shooting occurred and also in surrounding areas, and the effect appeared immediately after seismic shooting started and continued after it ended.”

More recently, a team of researchers from the Scottish Oceans Institute at the University of St Andrews, Scotland, the University of La Laguna, Canary Islands and the University of Auckland, New Zealand, found that noise exposure during larval development produces body malformations in marine invertebrates. “Between shipping, construction and oil explorations, we are making more and more noise in the oceans. There is already concern about the possible

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<sup>1</sup> Engås, A.; Løkkeborg, S.; Ona, E. & Soldal, A. V. 1996. Effects of seismic shooting on local abundance and catch rates of cod (*Gadus morhua*) and haddock (*Melanogrammus aeglefinus*) Can. J. Fish. aquat. Sci., 53:2238–2249.

effects of this on whales and dolphins. Our results show that even small animals could be affected by noise. It is important to find out what noise levels are safe for shellfish to help reduce our impact on these key links in the food chain?”<sup>2</sup>

The 2011 snow crab stock assessment by DFO, although provides no answers to the question of seismic effects on the species, does list 7 potential effects of these seismic methods of exploration upon vulnerable components of the snow crab population and uncertainties associated with the long-term effects of drilling and extraction<sup>3</sup>.

The 3 reviewed documents indicate the likelihood that seismic activity produces negative effects on marine resources, shellfish and groundfish and, using the precautionary approach, seismic activities should be avoided until more research is undertaken. Even the EIA does admit to lack of science work on the effects of seismic on marine species:

*The potential effects of seismic survey activity on fish catch rates therefore appear to vary by species and gear type (Hirst and Rodhouse 2000, Worcester 2006, Lokkeborg et al. 2012, Vold et al. 2012), but in general remain poorly understood.*

In the proposed area of exploration also lies a major proposed Marine Protected Area of St. Anns Bank. Soon to be named a Marine Protected Area, it was chosen for its unique ecosystem, location and species. Seismic activity is proposed right up to the lines of this MPA. We recommend a wide buffer zone be protected from seismic around the area of the MPA. If we are to protect this area from exploitation, no seismic noise should reach the area in order to protect that unique ecosystem.

Our resources have been, and are, exposed to many sources of stress, some which we can control and others that we have no control over:

- **Overfishing** in the 1970s and 1980s has decimated our groundfish stocks and they have not yet recovered from this stress. We have learned our lesson and are much more vigilant of stock health – using the precautionary approach (in the case of snow crab, precautionary exploitation strategies were adopted in the early-2000s<sup>3</sup>), we monitor our stocks and adjust our fishing to avoid repeating history. DFO’s stock assessments and Integrated Fisheries Management Plans are part of the process.
- **Climate change** (ocean warming and ocean acidification) is a new threat to our resources that we have no control over. Our only recourse to this stress is to reduce other sources of stress allowing them to adapt and recover from the changes that the future will bring<sup>4</sup>.

Can we afford to expose our resources to yet another round of seismic testing? We believe we can not afford this. We are not only putting our marine resources at risk, but are also jeopardizing our fishing industry, our coastal communities that rely on this industry and our

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<sup>2</sup> Natacha Aguilar de Soto, Natali Delorme, John Atkins, Sunkita Howard, James Williams & Mark Johnson. 2013. Anthropogenic noise causes body malformations and delays development in marine larvae. SCIENTIFIC REPORTS 3 : 2831. <http://www.nature.com/srep/2013/131003/srep02831/pdf/srep02831.pdf>.

<sup>3</sup> Choi, J.S., Zisserson, B.M., and Cameron, B.J. 2012. Assessment of Scotian Shelf Snow Crab in 2011. DFO Can. Sci. Advis. Sec. Res. Doc. 2012/024. iv + 95 p.

<sup>4</sup> Hutchings, J.A., Côté, I.M., Dodson, J.J., Fleming, I.A., Jennings, S., Mantua, N.J., Peterman, R.M., Riddell, B.E., Weaver, A.J., and D.L. VanderZwaag. 2012. Sustaining Canadian marine biodiversity: responding to the challenges posed by climate change, fisheries, and aquaculture. Expert panel report prepared for the Royal Society of Canada, Ottawa. <http://www.rsc-src.ca/en/expert-panels/rsc-reports/sustaining-canadas-marine-biodiversity>

consumers. As our global population increases, we need to secure more sources of protein and not jeopardize existing resources.

In conclusion, the LFA 27 Management Board requests that the Canada Nova Scotia Offshore Petroleum Board NOT allow any seismic activity in the Sydney Basin and Orpheus Graben Areas, until there is scientific evidence that no risk to species, habitat, and sustainability will occur.

Thank you for your attention,

David Ferguson  
President, LFA27 Management Board