



Fisheries
and Oceans

Pêches
et Océans

Pacific Region
Suite 200 - 401 Burrard Street
Vancouver, B.C.
V6C 3S4

August 4, 2009

Bob Houtman
National Science Foundation
4201 Wilson Blvd.
Room 725
Arlington, VA 22230
USA

Dear Mr. Houtman:

Subject: August 17 – September 22, 2009
Endeavour Seismic Survey, R/V Marcus G. Langseth

The Fisheries and Aquaculture Management Branch of Fisheries and Oceans Canada has a legal obligation to protect marine mammals under the *Fisheries Act* for any project that could harmfully alter, disrupt or destroy fish habitat and to protect aquatic species at risk and their habitats under the *Species at Risk Act* (SARA).

We have reviewed your seismic survey proposal scheduled August 17 to September 22, 2009, in an area comprising an 80-km-long section of the Endeavour segment of the Juan de Fuca Ridge, which is approximately 250 km southwest of Vancouver Island. We understand the survey is to use the R/V Marcus G. Langseth to tow a 36-airgun seismic array with a total airgun volume of 6600 in³ and that this array would have a sound output of 265 dB re 1 μ Pa-m_{p-p}, which is roughly equivalent to 250 dB re 1 μ Pa-m_{rms}. This is well above the sound pressure levels considered to potentially cause temporary threshold shift in marine mammals (180 dB re 1 μ Pa_{rms}). It is likely that a variety of cetacean species, including SARA-listed species such as blue, fin and sei whales, may be found in the area of the survey. It is also probable that beaked whales, which are known to respond adversely to intense pulsive anthropogenic sounds, occur in the area.

The Environmental Assessment report describes the monitoring and mitigation measures proposed to be undertaken during this study. These are generally consistent with current standards including those outlined in the Statement of Canadian Practice with Respect to the Mitigation of Seismic Sound in the Marine Environment (SCP). However, given that mitigation measures outlined in the SCP are intended as minimum requirements and considering the large size of the airgun array to be employed and the likely presence of SARA-listed cetaceans it is imperative that the following mitigation measures be followed to minimize the probability of injury to marine mammals.

Marine Mammal Mitigations Measures:

1. Marine Mammal Observers:

Three trained DFO-approved marine mammal observers (one being Canadian) dedicated to maintaining constant observations for marine mammals during daytime operations in the ship's vicinity prior to and during seismic array operations. The marine mammal observers shall submit a written report containing the following information within 90 days of research completion to the Marine Mammal Coordinator:

- a. Date, time and position of seismic operations of each seismic array at start-up and shut down;
- b. Date, time, position, species and numbers of all marine mammal sightings;
- c. Date, time, and position of all seismic array shut-downs or start-up delays required because of marine mammals in the area of study; and the species and numbers of marine mammals causing the shut-down or start-up delay.
- d. Detailed description(s) of all observations of marine mammal disturbance or other impacts in the area of study.

2. Exclusion Zone:

A marine mammal exclusion zone having a radius of 1,220 m, based on the estimated 180db re 1 μ Pa_{rms} isopleth around the airgun array, shall be used when 2 or more units of the air gun array are in operation. When only one air gun array unit is in operation a marine mammal exclusion zone having a radius of 500 m shall be used.

3. Pre-Operations Monitoring:

The exclusion zone is to be monitored for a minimum of 60 minutes prior to initial start-up of the airgun array or resumption of operations following a shut-down due to a marine mammal sighting within the exclusion zone.

4. Power-down and Shut-down Triggers:

A complete shut-down of the array, including the single 40-in³ airgun, will take place should a marine mammal be observed within or about to enter the exclusion zone (1220 m for 2 or more units of the airgun array or 500 m for a single airgun). If the array is powered-down for maintenance or other operational reasons, use of the single 40-in³ airgun should be continued until ramp-up of the full array takes place.

5. Start-up Procedures following Shut-downs and Power-downs:

Airgun operations are not to be ramped-up following a shutdown unless the zone is visible and monitored by marine mammal observers for at least 60 minutes.

Should a complete shut-down be required for maintenance or other operational reasons when the exclusion zone is not visible (e.g., in thick fog or at night), array ramp-up will not be initiated until the zone is visible. If an array power-down takes place for maintenance or other operational reasons but operation of a single 40-in³ airgun is maintained, then a ramp-up of the array is permissible even if the exclusion zone is not visible. The only exception would be if an animal was

observed in the exclusion zone and the array is powered down and the animal is then later observed out of the 1220 m exclusion zone. In this case the array may be powered up upon confirmation the animal is outside the exclusion zone.

6. All participants should be reminded of their obligation to comply at all times with Section 7 of the *Marine Mammal Regulations*, which specifically prohibits the disturbance of marine mammals.
7. These mitigation measures are valid for this survey as proposed. After this time, if the subject works have not been completed, this letter will be void. This will ensure that the proposed project will conform to current management policy, guidelines, and legislation.
8. It is understood that by proceeding with the proposed seismic activities, you, your contractors, agents or partners have indicated you understand and have agreed to the foregoing mitigation measures. In addition, a copy of this letter is to be available on board the vessel for the duration of the project.
9. All materials and equipment used for the purpose of project completion shall be operated in a manner that prevents any deleterious substances (e.g. petroleum products, etc.) from entering the water.
10. Any variances must be submitted to the DFO Marine Mammal Coordinator's office for review and approval, prior to any changes being implemented.

Please note that this Letter of Agreement does not absolve the proponent from the responsibility of securing any other permits as may be required by federal or provincial legislation. If a disturbance occurs as a result of a change in the plans for the proposed activity, or failure to implement the mitigation measures specified above, contravention of Subsection (7) of the *Marine Mammal Regulations* or SARA could occur.

If you wish to discuss the mitigation measures, or you have any other questions, please contact the undersigned at (604) 666-9965. Please confirm you will undertake the above marine mammal mitigation measures by signing and returning a copy of the Letter of Agreement that is attached to this letter.

Sincerely,



 Paul Cottrell
A/Marine Mammal Coordinator
Fisheries and Aquaculture Management
Fisheries and Oceans Canada – Pacific Region

CC: J. Ford, L. Nichol DFO

Fisheries and Aquaculture Management – Pacific Region
Marine Mammal Program
Suite 1420 - 401 Burrard Street
Vancouver, BC V6C 3S4

Attention: **Paul Cottrell**

Subject: August 17 – September 22, 2009
Endeavour Seismic Survey, R/V Marcus G. Langseth


LETTER OF AGREEMENT

I, Bauke H. Houtman, having authority to commit funds and activities on behalf of the **National Science Foundation** have read and understood correspondence from DFO dated August 4, 2009 outlining recommended marine mammal mitigation measures for the proposed seismic research.

Response:

(X) I agree to the recommended mitigation measures in the above-referenced correspondence and commit to apply them during the proposed work or undertaking.

Signed



Title

Section Head, Integrative Programs Section

Dated

August 4, 2009

Note: Failure to show due diligence in the protection of Marine Mammals could result in violation(s) of the *Fisheries Act* or the *Species at Risk Act*. In addition, this correspondence addresses only the concerns of DFO-FAM. It is the obligation of the proponent to meet any other regulatory requirements.