

Permitting Requirements and
Procedures for use of Seismics in
NSF Research on UNOLS Ships:
Update and Current Status

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Environmental Assessments – NEPA Requirements

- ‘Major Federal Actions’ with anticipated impact on the environment must have an Environmental Assessment (EA) completed.
- Since 2002, NSF has considered seismic surveys to require an Environmental Assessment to address impacts of sound on marine mammals.
- Normally, unless there is a finding that an activity will result in significant impact, or will have ‘substantial public controversy,’ this completes the NEPA requirements. To date, all NSF seismic activities have been issued a ‘Finding of No Significant Impact,’ or ‘FONSI.’

Environmental Impact Statement – NEPA Requirements

- If significant impact is anticipated, need to proceed with an Environmental Impact Statement (EIS), a substantially larger undertaking. NSF has just initiated a contract to produce a Programmatic Environmental Impact Statement, or PEIS, on the topic of impact of NSF-funded seismic activities on marine mammals, endangered species, and other fauna and habitats. We anticipate that this process will take approximately 15-18 months, involving public hearings in a number of cities, and extensive public comment.

Endangered Species Act (ESA)

- If “Listed Species” are likely to be impacted, then NSF will initiate a formal consultation with NMFS Office of Protected Resources (OPR), who will consider issuing NSF a ‘Biological Opinion’ that includes an ‘Incidental Take Statement.’
- In practice, nearly every seismic project has the potential to impact Listed Species, which includes all the large cetaceans that are wide-ranging in the world ocean (e.g. blue, sperm, humpback, sei, gray and right whales, among others).

Endangered Species Act (ESA), cont' d

- The Biological Opinion is based on NSF's Environmental Assessment, the 'Finding of No Significant Impact' (FONSI), issues raised in the formal consultations between NSF and NMFS under Section 7 of the ESA, as well as independent research into issues by OPR.
- Minimum time to meet ESA requirements is 135 days from receipt of complete application. It does not involve public comments, and it is normally issued in coordination with an IHA under the MMPA (next slide).

Marine Mammal Protection Act (MMPA)

- If it is anticipated that marine mammals will be close enough to the vessel to experience a ‘behavioral disturbance’ from seismic sources, then it is necessary to obtain an Incidental Harassment Authorization (IHA) from OPR.
- This regulation applies to all US citizens in both US waters and on the ‘high seas,’ which is interpreted to include the EEZ of foreign nations. Unless operations are strictly within the territorial waters (e.g. within a few miles, usually) of a foreign country, the MMPA applies.
- The IHA is requested by the seismic operator, not by NSF.
- An acoustic ‘behavioral disturbance’ is presently defined as a received sound level of 160 dB re 1 microPascal for cetaceans (whales), and 170 dB for pinnipeds (seals). These levels are independent of frequency, and are referred to as ‘Level B takes.’

MMPA, cont' d

- *IHAs prohibit an operator from causing injury or death to marine mammals.* They do allow the operator to 'disturb' animals. Standard mitigation protocols include continuous observation by qualified observers, and shutting down seismic operations if animals approach within a 'safety zone' in which sound exceeds 180 dB (cetaceans) or 190 dB (pinnipeds), which are referred to as 'Level A takes.' The intent is to prevent injury, although there is no actual evidence of physical injury until significantly louder sounds are used, and frequency is a significant component that is not addressed in the regulations.
- NMFS is aware of the shortcomings of the existing regulations, and is developing a new set of acoustic criteria that includes frequency, sound intensity and duration, and groupings of animals according to their sensitivity to different frequencies (much like the noise standards applied by OSHA for humans). It is unclear when these will become effective, however, and they are very likely to be challenged when they are released.

MMPA, cont' d

- Other mitigation protocols can be mandated in the IHA. Examples include limiting operations in coastal waters, or where special concentrations of animals might be anticipated (migration or breeding areas, or over slopes where beaked whales might congregate).
- Mitigation can include restricting or prohibiting some or all seismic operations at night or in poor visibility, and on some occasions, acoustic monitoring has been required. In some cases, post-survey aerial or vessel-based observations may be required to check for injured animals.
- A report summarizing operations and marine mammal observations is required 90 days after project completion.
- Minimum time to meet MMPA IHA application requirements is 120 days from receipt of complete application. This includes time for public comments based on 30-day publication in the Federal Register.

Other Domestic Requirements

- There are a few mammals (manatees, dugongs, sea otters, polar bears and walruses) for which MMPA compliance is regulated by FWS rather than NMFS. Procedures for obtaining approvals for behavioral disturbance of these animals is somewhat more complicated.
- State regulations under the Coastal Zone Management Act (CZMA) can impose additional restrictions, and can require consultation with local organizations, state government agencies and native groups, depending on the nature and location of the project.
- Other federal regulations can impose requirements as well – working in marine sanctuaries, national parks, and regulations related to impacts on fisheries and fish habitats often need to be considered, especially in inshore regions.

Foreign Requirements

- Finally, for projects in waters regulated by foreign countries, relevant laws and regulations must be complied with. NSF has recently produced a memorandum of guidance to prospective investigators for projects involving seismics in foreign waters, which is available on the Division of Ocean Sciences website. Most of the costs and responsibilities for working with foreign governments are handled via the research program that funds the science and the ship operator, interacting with US Department of State, as part of the standard clearance procedure for operating in a foreign EEZ.

Costs of Assessments and Application for Permits

- NSF provides support for preparation of seismic Environmental Assessments and applications for Incidental Harassment Authorizations to the UNOLS vessel operator that will be supporting the seismic operation (either the ship operator, or if portable seismic system, the seismic system operator.) To date, LDEO, SIO and U Alaska have undertaken this effort for NSF research. This support is provided via the annual Oceanographic Technical Services (OTS) award.
- Costs of Marine Mammal Observers (MMOs) are also provided via the OTS award, as are funds to support preparation of the post-cruise report.
- Costs associated with compliance with foreign regulations are handled via the relevant research program, in coordination with the vessel operator and US Department of State, which manage the research clearance process. See NSF policy at:
- http://nsf.gov/geo/oce/pubs/seismic_reflection equip_policy.jsp

Seismic Projects in 2004

- R/V Ewing:
 - Southeast Caribbean, Levander
 - Gulf of Alaska, Mix
 - Blanco Fracture Zone, Christeson
 - Pacific Central America, Fulthorpe
 - *Foreign clearance denied: Yucatan, Gulick and Barton*
- R/V Revelle:
 - *Foreign clearance denied: Gulf of California, Lonsdale*

Seismic Projects in 2005

- R/V Ewing
 - Yucatan, Gulick and Barton (clearance reinstated; deferred from 2004)
- R/V Melville
 - South Pacific, Lyle
- R/V Thompson
 - Western Aleutians, Yogodzinski
- USCGC Healy (Office of Polar Programs)
 - Trans-Arctic, Alaska to Norway via North Pole

Seismic Project Plans, 2006

- R/V Langseth
 - Science test cruise
 - Bermuda, McNutt (deferred from 2003; if clearance approved)
 - Several NE Pacific and equatorial E Pacific cruises remain possible, depending on when ship refit is completed.
- R/V Revelle
 - South Pacific, Lyle
 - SW Pacific, D' Hondt
 - Louisville Ridge, Lonsdale
- R/V New Horizon
 - Gulf of California, Lonsdale (if clearance approved)
- USCGC Healy (OPP)
 - Additional cruise possible.