

# MARCUS LANGSETH SCIENCE OVERSIGHT COMMITTEE

## Terms of Reference

**Revised September 8, 2005 Accepted October 14, 2005**

### INTRODUCTION

The R/V Marcus Langseth will provide the U.S. academic community with the resources to acquire state-of-the-art, two-dimensional (2-D) and three-dimensional (3-D) marine seismic-reflection data. No other ship in the UNOLS fleet approaches the seismic acquisition capabilities of this vessel, and consequently the Langseth represents a unique national resource. Furthermore, the Langseth provides capabilities in addition to those already available in the UNOLS fleet for marine geophysical data collection and general oceanographic research. The Marcus Langseth Science Oversight Committee (MLSOC) is charged with overseeing the scientific operation of this vessel as a National Oceanographic Facility (NOF). First and foremost, MLSOC fulfills an ombudsman role for all scientific groups in need of high-quality geophysical images, with the goals of providing state-of-the-art seismic acquisition capabilities, lowering the threshold of expertise needed to use the facility, and increasing the quality and accessibility of archived data. Second, the MLSOC is charged with maintaining and enhancing the Langseth's capabilities for general geophysical and oceanographic research, thereby insuring the most cost-effective operation of this unique asset.

The efficient operation of the Langseth in its capacity as the premier UNOLS seismic vessel involves some unique challenges. In overseeing the operations, outfitting and utilization of the Langseth, the MLSOC will need to factor in environmental and regulatory issues on account of concerns over the impact of artificial sound sources on marine mammals. The task of setting the schedule for the Langseth will be more complex than for the typical UNOLS ship. Scheduling challenges arise from the usefulness of the Langseth's airgun array for seismic refraction experiments, which requires coordination with both the marine (OBSIP-Ocean Bottom Seismograph Instrumentation Pool) and land-based (PASSCAL-Program for Array Seismic Studies of the Continental Lithosphere) seismometer facilities. The MLSOC will be capable of providing expertise and advice during the process of coordinating these activities.

The technological capabilities of the seismic exploration industry evolve rapidly. MLSOC will therefore need to identify and recommend hardware and procedure upgrades that will ensure that this national facility remains at the cutting edge of exploration capability. MLSOC will need to be proactive with the user community, federal sponsors and the operator of the national facility, Lamont-Doherty Earth Observatory/Columbia University (LDEO), to encourage geophysical research worldwide. Additionally, MLSOC will also encourage the advancement of cooperative international programs for the enhancement of multidisciplinary geophysics-based science throughout the global academic community.

## AUTHORITY

The MLSOC shall operate pursuant to appointment by UNOLS and in accordance with Annex II to the UNOLS Charter. In addition, each funding agency will be invited to designate an official observer to the committee. The MLSOC is empowered to identify and establish subcommittees to explore and advise the committee on specific issues relating to the operation and use of the Marcus Langseth. These subcommittees may draw on expertise outside of the committee itself.

## MEMBERSHIP

The MLSOC membership shall be comprised of up to nine individuals who can represent the various oceanographic and geologic disciplines required to fulfill the committee tasks as outlined below. For example, in addition to members of the academic geophysical community, the committee shall include individuals with significant technical background in seismic data acquisition and one or more (industry) representative(s) with expertise in the areas of 3-D geophysical surveying (including related permitting and navigation issues), borehole imaging, and related technologies. The MLSOC will also need to include a representative with expertise in marine mammal biology and permitting and at least one non-seismic, general oceanography representative. The Facility Operator, LDEO, may only be represented by non-voting ex-officio representatives. Ex-officio representatives of the UNOLS RVTEC and RVOC committees may serve on the committee and under normal circumstances the LDEO members of these committees can serve in this role.

## NOMINATIONS

Nominations to the MLSOC and for the MLSOC Chair will be solicited from the research community and other organizations with relevant expertise, such as the offshore exploration industry. Vacancies will be announced in various weekly journals and other venues as appropriate, and candidates will be asked to submit their vitae and letters of interest. Applications for membership to the MLSOC and the MLSOC Chair will be reviewed by the standing MLSOC and voted on by the membership. The UNOLS Chair shall appoint the MLSOC members and the Chair from the nominations put forward by MLSOC. Members of the MLSOC will be appointed for terms up to three years, staggered so that two or three terms begin each year. Individuals may serve not more than two consecutive terms. The operating institution may designate non-voting ex-officio member(s) in addition to those members appointed by the UNOLS Chair. With the Council's concurrence, other standing committees of UNOLS, such as RVOC and RVTEC may also designate ex-officio members as appropriate to MLSOC.

## MEETINGS

It is expected that the MLSOC will typically meet twice per year. One meeting should allow for an open forum with the user community to get broad input for long-range planning, user concerns, etc. The second meeting will be generally devoted to equipment and procedural improvements, advice on scheduling, permitting, or specific programs, and other near-term issues, and should occur in the spring or early summer when plans and schedules for the next year are being formulated.

## CHARGE TO THE COMMITTEE

1. Provide advice on scientific programs. The MLSOC will not review proposals, but rather provide advice to the facility operator and supporting federal agencies regarding optimum use of the asset to further marine research in a cost-effective manner.
2. Forecast future operations locations. The MLSOC will work with the user community, federal sponsors and the operator to define general areas of operations approximately two years in advance in order to promote and facilitate geophysical expeditions to remote geographic regions. A preliminary discussion on geographic areas of operations is conducted in an open forum for the user community (e.g., at the December meeting of the American Geophysical Union). At that time, the community is provided with an indication of the potential areas in which the national geophysical asset could feasibly operate with adequate lead time prior to proposal submission deadlines. MLSOC will work with the federal funding agencies to provide timely information regarding funded projects as that information becomes available, so as to enable potential users to cluster proposals for work in geographic areas.
3. Help with short-term scheduling. Ship scheduling is based on funded projects and is done by the UNOLS Ship Scheduling Committee (SSC), including the federal agencies, for projects in the next two fiscal years. The committee will provide feedback and advice to the UNOLS SSC, agency representatives and staff from the operating institution to assist in developing efficient and effective schedules that execute funded seismic imaging field programs in a timely manner.
4. Address user concerns. On a yearly basis, the MLSOC will review and assess comments from scientific users of the national geophysical asset. The MLSOC will identify key areas that warrant attention by the operator and recommend remedial actions as appropriate. As part of this activity, the MLSOC will work with the user community to rethink and redefine the roles of the science party and the technical support group provided by the operator. This task may include reviewing options and recommending solutions for the specialized technical support required for Marcus Langseth operations, e.g., contractor vs. full-time staff for back-deck activities, navigation staff, and marine mammal observers.
5. Review technical capabilities. The technical capabilities of the national geophysical asset will be formally reviewed by the MLSOC, with the assistance of selected outside experts, at least once every two (2) years. The data quality should be compared against some minimum standard set by the MLSOC, taking into account the challenges of working in remote marine environments. The quality, accessibility and preservation of archived data and archival procedures will be included in this review. The results of that review will be provided to the NOF operator, UNOLS and the federal funding agencies.
6. Monitor issues related to permitting. On a yearly basis or more frequently, the MLSOC will review issues relating to permitting of seismic activities and make recommendations to the operator and federal agencies for improving the process.

7. Encourage technology expansion and upgrades. The MLSOC will, on a continuing basis, maintain awareness of new geophysical imaging tools and the needs of the user community for new geophysical equipment to address important scientific questions. Relevant areas for tracking include, but not limited to, sound sources/receivers for through-water/sea-floor - based surveying and on-site (i.e., down hole/observatory-based) imaging. MLSOC will provide this information to the NOF Operator, UNOLS, and the federal agencies. MLSOC will encourage development and promote acquisition of new geophysical sensors and tools, as warranted by the scientific needs of the user communities and as deemed feasible by the pertinent funding agencies. Some of this new equipment may have multidisciplinary use and could be considered, with appropriate resources, for inclusion into the standard suite of scientific equipment for this NOF. Other types of sensors may be task- or research-specific and should be considered Third Party Tools, as formulated by MLSOC, which have been approved by the federal agencies and UNOLS. In carrying out this task, the MLSOC will need to coordinate its efforts with industry oversight groups TBN (To Be Named) as deemed appropriate, marine mammal permitting organizations like the National Marine Fisheries Service, and may need to organize special workshops.

8. Reporting. Reports of activities shall be made to the UNOLS membership on at least an annual basis and to the UNOLS Council at regularly scheduled Council meetings.