

Meeting Minutes

**UNOLS Marcus Langseth Science Oversight Committee (MLSOC)
Ewing Replacement Oversight Conversion Committee (EROCC)
Joint Meeting March 19 and 20, 2007
Texas A & M at Galveston
Sea Aggie Center, Galveston, TX 77553**

Executive Summary:

The UNOLS Marcus Langseth Science Oversight Committee (MLSOC) and the Ewing Replacement Oversight Conversion Committee (EROCC) met together in Galveston, Texas at the campus of Texas A&M. They also visited and toured the Research Vessel Marcus Langseth, which was berthed at pier 14E in Galveston. The main issues addressed during this meeting were the status and remaining tasks for conversion of the Langseth to an oceanographic research vessel, the plans for the shakedown and calibration cruise and the levels of staffing and data processing support that will be provided by Lamont-Doherty Earth Observatory (LDEO), the operator of the Langseth. The committees also reviewed plans for lab outfitting and Paravane configurations, providing recommendations where appropriate.

Action Items:

<i>Action Item</i>	<i>Assigned to</i>
Send recommendations regarding shakedown/calibration cruises to NSF	MLSOC and EROCC Chairs
Review future changes to shakedown/calibration cruise.	LDEO prepare, MLSOC review
Determine efforts needed to get community input and to define MLSOC ombudsman role.	MLSOC
Review proposed changes to onboard staffing and make recommendations	LDEO propose staffing, MLSOC review
Provide input on support to be provided ashore/online and onboard for data acquisition planning, collection and processing	LDEO provide proposed support levels, MLSOC review

Appendices

- I. [Agenda](#)
- II. [Participants](#)
- III. [LDEO Overview of issues](#) (200 kb pdf)
- IV. [R/V Langseth Conversion status](#) (1.5 mb pdf)
- V. [Paravane Options](#) (396 kb pdf)

- VI. [Archive Media & Data Process Flow](#) (824 kb pdf)
- VII. [Main Lab Layout](#) (232 kb pdf)
- VIII. [Integration Management Team](#) (120 kb pdf)
- IX. [R/V Langseth Technical Staff](#) (1.3 mb pdf)
- X. [Requests, Schedules and Cruise Tracks](#) (800 kb pdf)
- XI. [Cruise Planning and Data Process Flow](#) (1.4 mb pdf)
- XII. [Shakedown and Calibration Cruise](#) (872 kb pdf)
- XIII. [Photos of R/V Langseth](#)

Meeting Summary Report

Introduction – The two Committee Chairs, Steve Holbrook (MLSOC) and Tom Shipley (EROCC) introduced themselves and welcomed everyone to the meeting. Introductions were made around the room. A list of participants is included as Appendix II. Paul Ljunggren, Marine Superintendent for Lamont Doherty Earth Observatory (LDEO), welcomed the committees. He then reviewed some changes to the LDEO Staff. Robert Steinhaus, senior science officer has left for another position, but will continue to help part time during the conversion. Jeff Rupert, the marine science coordinator will take care of the back deck outfitting, which is what he did in his industry jobs. Jay Johnstone is filling the senior scientist role on an interim basis. Michael Polokow will work as a marine engineer as Al Walsh's assistant. Eli Troychansky will serve as a computer systems engineer. Al Walsh will continue to serve as project manager.

Rick DiNapoli of Fisher Maritime will provide project oversight and management to make sure that the over all process proceeds on time.

Agenda items that LDEO would like to address during the meeting include:

- Outstanding Conversion Issues
- Budgets and Deferred Items
- Paravanes - potential for a swap with a more intermediate size set.
- Archive Media/Seismic Process flow - Want to consider a new media for archiving.
- Real Time Stacks/Seismic Processing - What will a science party expect for QC?
- Open Starboard Side - what are the concerns.
- Seismic Lab Layout.
- Integration Management - Fisher Maritime to cover this.
- Science Support Staffing by LDEO.
- Cruise Process Flow (Plone)
 - o Request Branch
 - LOI 2007
 - LOI 2008
 - o Outreach Branch
 - Data Management Policy
 - List of Sensors
 - o Cruise Planning Process

- Information Exchange

- o Cruise Parameters Set
- o Welcome Aboard
- o Seismic Operations Manual QC
- o Data Products and QC

Outstanding Conversion Items

Al Walsh gave an overview of the work items that are needed to complete the conversion along with budget estimates and priorities. ([Appendix IV](#))

Shipyards items remaining

- Lab Overhead in Seismic lab - needs to get done before other things are done.
- A-Deck Aft Passageway - These two items are leftover Shipyards jobs that they have money set aside for.
- Accommodation HVAC - was not completed at the shipyard, about 50% of the staterooms need the chilled water piping and fan units in. This has caused them to open up the accommodations area.
- Hydraulics, HP Air and Turning Block are being redone due to the structural modifications.
- Pipe insulation and drains for HVAC in lab.

Lab Outfitting ([Appendix VII](#))

- Seismic Lab
- Main Deck Labs
- A-Deck Labs are the lowest priority.

Outfitting and Integration ([Appendix VIII](#))

Tasks include loading gun systems, streamers, seismic systems, computers systems, and installing the network. This work was always planned for this period of time in Galveston. Sandy Shor asked if all the equipment had been purchased. Al said that 99% of the equipment has been purchased. Streamers and a lot of the equipment are stored at Western about 45 minutes away and more is in Houston. About six containers are coming from Shelbourne along with other containers from Lamont.

They also have scheduled Coast Guard inspections, inclining experiment, an NSF inspection, DP calibration and Multibeam calibration before the Testing and Calibration cruises. Need to sail for Mutter by 30 August to meet the schedule.

Al Suchy asked how much of the work needs to be contracted for and what that might cost. They are working with a budget of \$1.6M, which still needs to be firmed up and approved. The budget is broken up into three categories. The first is items they have purchased or have contracts for. The second is the lab outfitting, for which they can't get firm numbers, but they are committed to doing this section on budget with LDEO backing that up. The third category is items that are more questionable, such as dockage fees, reflagging efforts, and some items that don't have firm bids yet. This is about \$500K.

They are still waiting to get approval for the \$1.6M budget. They are working with the items that are shipyard items, which are necessary to get done to not hold up other items.

NSF has given them approval to spend money for the dockage and other real time expenses. NSF needs confidence in the total completion plan to give authorization to spend the existing 800K and for the supplemental proposal to be submitted to provide the remaining funds. One question is whether or not salaries during the conversion need to be in the supplemental request or can remain in the ship ops and technician proposals.

Items for which subcontractors are needed:

- Lab Outfitting
- Minor Hydraulic Pipe Run Modifications
- Minor HP air system modifications
- Assistance in loading and handling science gear (45 reels of streamers)
- Small scale local welding in support of outfitting
- Labor to run wiring

Items that they are not planning to complete

- A-Deck Labs - can be used as is for streamer and bird navigation, for an intensive general purpose cruise, these labs would be fully utilized but would need further outfitting.
- Visualization screens
- Multibeam spares

9:30 - 12:00 Toured the ship, examining all the labs, work deck areas, berthing, pilot house, galley and engine room. (See [appendix XIII](#) for pictures).

Discussion of issues related to completing the conversion

Tom Althouse expressed his concern about the Re-Flagging issues. There are a couple of items where the Coast Guard has yet to say what will be required or not required. For tanks, the question is whether or not they need to install overflow alarms. The second is whether or not they will have to replace the wooden decking material in the wheelhouse.

There was a discussion about how the uncertainty regarding flagging will affect the schedule for completing the project. The plan is to wait up to a month for a definitive answer from Coast Guard at which time they would proceed with re-decking and alarm installation unless they are told they don't have to. This should allow them to stay on schedule either way.

They plan to do another inclining experiment as soon as they are ready. They will be able to do this even after loading some of the equipment as long as they maintain rigid weight control management (know how much weight and where it is).

Sandy asked about the process for getting contractors and work done, would it be done with Columbia purchasing or local purchasing? Answer is they will use local agents to assist with this task; most items are for smaller dollar amounts.

Rick DiNapoli explained his (and his companies) role would be to provide support from an overall project management point of view. He will assist Al Walsh with keeping track of the big picture.

Rick was asked about the reflagging issue. Did he see it as a problem? The only problem is to get the decision making process to its culmination as soon as possible.

Talked about the flexibility in the schedule. There are two ten-day out of service periods and about six days of flex in the Mutter cruise schedule. The Gantt chart developed by Jeff Rupert, Robert Steinhaus and Jay Johnstone was looked at carefully from the point of view of getting the ship rigged and he is confident it can be done. The biggest concern is the number of people available to do the work and their level of experience with rigging of this complexity.

Jeff Rupert's other concern is with the solid core streamers. Until they hit the water, it is hard to know if there will be problems since the streamers have been sitting on reels for some time.

Crewing issues have to do with having funds to bring people on board soon enough to allow for completing the work or getting them trained. They need to find people to hire for handling the equipment. Jeff is sure that they have a chief mechanic lined up, but he won't be available until May.

Showed the Gantt chart with the detail of work items. They have all the tasks worked out, but need to move it all to the right to coincide with the revised later start date.

Onboard Science Staffing ([Appendix IX](#))

A series of charts were shown for different types of science operations. Started by showing the staffing for 2D Technical support.

2D staffing

The 2D watch would include the Science officer and Lead Acquisition Tech standing watch as Data Acquisition. Each watch would have a positioning/IT tech and two handling technicians.

Industry folks did not like the idea of having the science officer included in watch standing. They would like to see two acquisition technicians and have a separate science officer.

For general purpose cruises Jeff and Jay would like to see the ship operate with two full rotations and that if everyone is not needed to support a general purpose cruise they would still be on board for maintenance and repair on the seismic systems.

Sandy felt that a number of these problems would sort out as we get a better feel for the mix of cruises. He felt that the first set of cruises would be overstaffed, primarily to sort out issues and get everyone trained. The idea would be to start off with more and use the time to learn what will work and what the minimum staffing will be. Sandy is giving his permission to start with more staffing, if for no other reason than to get a consistent operation and to train all hands the same way.

Jeff and Jay made it clear that they want to hear from users about how things went, what went wrong and what went well. They want a call and a real post cruise assessment. Also discussed the idea of having MLSOC do the post cruise debriefs.

Discussed the number of Marine Mammal Observers (MMO) needed. It will be a core of five for most seismic cruises. This number would include a lead, two observers and two acousticians. LDEO will have a QC person on shore looking at data coming off the ship for problems.

3D staffing

In this scheme, the Chief Science Officer does not stand a watch. AI asked about the need for data processing versus navigation. You absolutely need to have navigation-merged data that is accurate. The real time requirements are to ensure that the data is collected accurately.

Steve Holbrook said that one of the charges to committee was to lower the bar for using the 2D and 3D data. Getting the navigation collected properly with assurance would have that affect to some extent. On board data processing should also allow for looking at the data to the point that problems can be recognized.

One idea would be to provide some pre-cruise training for PI's and students to do basic data QC when looking at data flows. Another is to have someone on board that has the capability to create a brute stack so that a first cut look at the data is possible by more PIs and students.

Steve felt that one data processor on a 3D seismic cruise might be needed for some PIs but not necessarily for people like himself. Sandy also thought that you could use the data transfer from the ship on High Seas Net, along with a QC person at LDEO and a data processor ashore to help with the data processing.

Discussion about whether providing the capability for data processing ashore or on board is part of what the seismic facility operator provides or do they just provide assistance, training and information about resources. It is not clear how the community feels about this issue. Feedback is needed on what the community needs and what the consensus of the MLSOC is on the subject.

Jeff said that they are looking at navigation packages that would come with training assistance and would be completely covered by LDEO for 3D/2D seismic cruises.

Support for future ship users

Steve asked what steps the committee needs to take to lower the bar for users of 3D seismic work or even 2D seismic work. Some possibilities are:

1. Pre-Cruise training for PIs and Students
2. Available shore side help and processing.
3. Manuals and help guides on board, a record of data flows from each project, what worked, problems, etc.
4. Help with designing proposals and data plans along with other tools that would allow simulating configurations.
5. More complete staffing on board to do more of the processing and data collection.

One goal might be the ability to eventually provide a processed 3D block to a scientist to interpret with the necessary post-cruise processing provided by or arranged by the operator. Obstacles that would need to be dealt with:

1. Planning what the data collection configuration and the survey plan should be.
2. Deciding what level of data processing is needed and how it would be provided.
3. Collection, QC and post-cruise processing to the point of delivering the 3D block.

AI would like to show the data collection and planning process flow and get feedback from the committee on what Lamont needs to provide. This will be addressed on Tuesday.

Steve's Questions

Are shifts two 12-hour shifts? - Yes

Do the science party shifts have to be the same? - No (might even be beneficial to expose the scientists to different shifts)

How many of these people on the staff chart are actually hired? - They will send a list.

What is the difference between 2D and air guns only (OBS) staffing? - Staffing is the same, but costs and risks are higher due to insurance, wear and tear on streamers.

What is the role of the committee in making the community aware of what the flexibility is in operating profiles?

What is the estimate of time for deploying and recovering streamers and other factors over and above the actual running of lines? - Deployment is one day per streamer because you do checks and repairs on the way out, so 4 days to deploy streamers. Recovery takes about six hours per streamer, so 24 hours for recovering all four. Also need to include 15% additional time in the cruise plan for in fill of holes in the data and 10% additional for technical downtime.

What is the chain of command for providing science party requirements, navigation, etc? - Most of this will be through the science officer.

Steve asked Peter Littlewood if there was anything he wanted to address since he was leaving today. Peter was concerned that there will a lot of new people on board and it will absolutely necessary to take the time to clearly define what everyone's role is, make sure the procedures are airtight and everyone is trained.

Jeff is negotiating with Western GeCo for access to their work manual as an upper level set of instructions to be turned into an instructions manual. They will have to have written procedures for everything on the science side, which is different than how it was on EWING.

Tom Shipley asked if LDEO was still trying to get people to industry training. Jeff said that it has been hard to nail this down because everyone in industry is so busy.

Paravane options ([Appendix V](#))

LDEO currently has two types of doors. 3 #15 doors and 2 #46 doors plus some spare parts. The first digit is the version number and the second is the size. So, 15s are older and smaller than the 46s. The 46's are incomplete and need some additional money and work. They have the possibility of getting 16 doors, which are almost the size of the 46s. They have modeled the spread between guns and streamers for different configurations, looking at the wire out needed and what the wire tension would be. The 15 and 16 doors work for a 100m spread and possibly 150m. For a 200m spread, the 16 and 46 both work. The proposal is to trade the 46s and 15s for three #16 doors. One concern is that this would lower the number of spare doors available. The vanes have floatation; so losing one is not very likely.

Steve would like to see the numbers to better understand what each set gives you in order to make a better assessment and to make a recommendation.

Archive Media ([Appendix VI](#))

Showed several iterations of data flow and archiving. One issue is whether or not to keep a real time brute stack capability. Part of cruise planning will be to determine what type of tape data output the PI needs. They will support user workstations, but the user will be responsible for archive of data from their own machines. Need to have multiple workstations. The Archive copy will now be SDLT (Super Digital Linear Tape).

Issues remaining for tomorrow

- Marine Mammal issues and what the future might hold
- Shake down and calibration cruises
- Training
- The ombudsman role of MLSOC - how to obtain community input, talk to future PIs
- Onboard processing and data flow.
- Long range planning.

- Open Starboard side.

Meeting resumed on Tuesday at 8:20 am

Steve Holbrook wanted to make sure that action items were developed for himself and the committee.

Ideas for assisting scientists using the seismic facility

- Committee recommendations for training and assistance to be provided, especially for 3D, but also for all cruises.
 - o Pre-Cruise training and online resources.
 - o Shore side assistance checking navigation data and helping with processes using remote login.
 - o Provide assistance with survey design using assistance from operator or some online tool. There may be some issues surround providing this service that should be examined carefully.
 - o On board support - make sure that QC is done on navigation and data, which would need the creation of brute stacks.
 - o Tom Shipley recommends the ability to create 2D lines on board the ship. This would be done by the science party using onboard software and assistance from onboard and ashore.
 - o Hardware and software on board to create brute stacks and perhaps 2D lines along with on board support for this software.
- Ideas from Sandy Shor
 - o Define the role of the LDEO support person, consider the idea of a Chief Scientist
 - o Get community feedback
 - o Get input from the drilling community.

Langseth Shakedown Cruises

John Diebold showed the boxes (work areas) for the shakedown cruises, which are about 12 - 14 hours from Galveston. He then reviewed the schedule of shakedown cruise activities. The schedule is shortened to 49 days at sea and they have removed some days for deploying the large Paravanes. The 3D seismic test is at the end of the schedule and they may need to cancel it if things are not working. The big question is where to do the 3D seismic test. They can't shoot in a lease block that is the property of some company and will need to check with the Minerals Management Service (MMS) to see where a 3D survey could be taken and the data publicized. There was a discussion about the design of the survey, what is the minimum size that can be done and make sure the goal of the shake down is accomplished. They need to determine if the previous shallow water calibration site is allowable from a permitting point of view this time around. From a scientific point of view this is an important location, because it allows extrapolating EWING data to LANGSETH data. The shallow and deep calibration sites are of critical importance. The slope site is the lowest priority. For the deep calibration site, they will need the BBN engineers. One idea is to do just the deepwater site during the middle leg and shorten it up, which would allow for a shorter time with the BBN engineers on board.

Also discussed was the OBSIP deployment. A suggestion was made that the OBSIP test deployments be done in conjunction with a calibration shoot, probably the deep-water site.

It was pointed out that a high priority for the shakedown is to allow for the crew to learn how to deploy the gear and then for the bridge crew to get practice maneuvering the ship with Paravanes out and then with streamers and guns. Need to make sure that the first crew is onboard for the testing cruise.

During the discussion it was clear that the schedule needed to be modified to ensure that the 3D test not

be last and cancelled due to lack of time. The 3D test is critical to the success of the testing and calibration program. The location of the shallow water site adds a lot of transit time to the schedule and it is probably a non-starter from an environmental permitting point of view. It was suggested that the shallow water calibration and slope calibration be scheduled last and that the slope calibration be a contingency item that would be cancelled if there was not enough time.

An action item is to find an alternate location for shallow water site. According to Bill Lang at NSF, he thought that we had already agreed to move the shallow water site due to marine mammal issues. Need to pick a site that has the right bottom reflectivity. John Anderson at Rice would be a good resource for getting this information. John Diebold and LDEO will forward a revised plan for the shakedown cruises taking this input into account.

Revisited Paravanes

The following table of streamer and gun arrangements with different doors and spreads shows the differences with each type of door.

Vane	Streamer Separation	Vane Wire Out	Van Wire Tension (met ton)	Gun Cable Out	Outer Lead-in Deployed	Inner Lead-in deployed	CFG	Center of Source
46	4x200	494	9	258	448	345	327	69
16	Same	535	8.4	318	506	407	391	73
15	Same	788	5.6	583	743	678	656	73
46	4x100m	232	10	50	185	125	114	64
16	Same	249	9.4	105	206	154	145	40
15	Same	301	4.8	166	264	223	216	50

Keeping the 15s allows most work, but not a 200-meter spread without a bigger offset. The 16s would allow more flexibility and would be easier to rig and operate than the 46s. No one thinks the 46s should be used. The 15s would create less tension and would be easier to operate and they already have them.

Recommendation from MLSOC is to keep the 15s as the primary set of vanes and figure out what to do with the 46s.

Marine Mammal Observers (MMOs)

NSF has been dealing with Incidental Harassment Authorizations (IHA) for seismic work for the past several years. Langseth will continue to need IHA permits for seismic work. NSF has initiated an environmental impact statement as an umbrella for the environmental assessment portion of applications under the Marine Mammal Protection Act (MMPA). They will still have to get permits for individual cruises.

They have a pending application for the testing and calibration cruises. They have started the process for Mutter and McGuire's environmental assessment, which will be turned into applications when ready. Holbrook's environmental assessment is mostly done and will be revisited and finished when ready. There are no plans to revisit the Batholiths IHA application since Canada does not intend to continue with the project. Other projects will start their permitting process after they are done with Mutter and McGuire.

Bill Lang is primarily responsible for these activities at NSF. The biggest possible problems in the future will be with foreign clearances and the requirements put forth by foreign coastal states. The number of observers is now at five and passive acoustic monitoring is now normal.

Steve Holbrook had a conversation with Peter Tyack (MLSOC committee member specializing in marine mammal issues). Peter said that he felt Lamont was out in front in the way they were dealing with the issues of marine mammal mitigation efforts. He thinks active systems for locating whales should be looked at. He thinks that the Langseth should take the lead in setting the standard for how to deal with marine mammal issues. Lamont has put a location in the ship for an active system and it could be installed once the issues about which of two available systems would work best. There are no funds available for this at the moment, so a new proposal for around \$250,000 would be needed. He also felt that the Langseth would provide good opportunities for observations by members of his community.

On board the ship, the acoustics people provide input to the observers about where whales might be. Depending on the details of the IHA, if whales are sighted within the danger circle, then the guns have to power down and/or stop shooting. If they shut down, then you have to have a period specified without sightings and then probably ramp up to full power over some specified time period. Communications protocol will be provided in the operations manual.

Cruise Process Flow ([Appendix XI](#))

Al Walsh reviewed the steps from proposal idea to final data transmittal and post-cruise reporting that would take place for each cruise and what some of the key elements are that they as the seismic facility operator will have to keep track of.

- Proposal preparation, web presence and outreach - Ship Request
- Proposal
- Initial data on cruise requirements
- Survey plan and shooting book
- Pre-cruise meetings - Data release and transmittal agreement - Based on the LDEO data management policy and NSF policies. (Need to have MLSOC, Sandy and the broader community look at this data management and release policy/procedure).
- Cruise parameters set including port plan - logistics, science, engineering, and deck
- Welcome aboard
- Port Plan - Ship Safety Meeting, Science Objectives Meeting
- Data Handling Manual (ELOG), Seismic Operating Manual (Observations Log), General Purpose Manual
- Data Transmittals
- Post cruise reporting.

The Data Handling Manual and Seismic Operating Manuals will be ready before the test cruise, will be revised during and after the test cruise and then again after the first few cruises. The first draft of the Seismic Operating Manual is pretty close to being done.

There was a brief discussion about how data release and archive processes apply to the proposed policy by Lamont. NSF policy for OCE is in the document at: <http://www.nsf.gov/pubs/2004/nsf04004/>

Near future requests, cruises and cruise tracks ([Appendix X](#))

Mike Prince briefly showed the requests and cruises that are tentatively scheduled for the next year and later this year.

Future issues

Due to a lack of time and other pressing issues surrounding the conversion and the testing/calibration cruises some items will need to be addressed by correspondence or at future meetings. These include the role of MLSOC as an ombudsman for the community, further discussion regarding on-board processing and data flow, long-range operations planning and issues related to the open starboard side.

Meeting adjourned.