2011 Committee of Visitors Report for the Facilities

Programs of the Division of Ocean Sciences

Update of Actions as of September 25, 2012

## Findings and Recommendations

**Ship Operations**

**Recommendation (1):** Institute and conduct a periodic, holistic review (either internal to NSF, external, or a combination of both) of vessel operations, operator performance, material condition and capabilities to support current and emerging science. Reviews should include all available, pertinent information including ship operations e-jackets, ship inspection reports, and post-cruise assessments. The expected outcome is to ensure the capability of operators, crews and vessels to support safe and effective science operations, to maximize the efficiency of operations, maintenance, training and ship upgrades, and provide the background and justification for any necessary follow-on actions.

**Action:** As stated by the COV, there are numerous on-going mechanisms such as ship inspections, post-cruise assessments and proposal review analyses being used to gather inputs on vessel operations, operator performance, material condition and capabilities to support current and emerging science. In an effort to take a more holistic approach, the Integrative Programs Section will conduct an internal review of all aspects of the ship operations related activities. The approach will be to focus on each ship Class in the different geographic regions and review all the available data for each ship operator. This will include responses to ship inspection report discrepancies, feedback from the science community users, SSSE and OI proposal submission focus and quality, shipyard maintenance reports and plans, etc. The IPS Program Officers for Ship Operations, Shipboard Scientific Support Equipment, Oceanographic Instrumentation, Technical Services, and Submersible Support will evaluate past performance and the effectiveness of on-going practices and discuss plans for the future in each program area. OCE Ocean Science and Marine Geosciences Program Officers will be invited to participate in a follow-on session to discuss the results of the review with a goal of increased coordination between the facilities and science programs. The overall expected outcome is increased safety and efficiency of all Academic Research Fleet activities in support of ocean science research operations.

**Update**: The Program Managers for the Facilities Programs in IPS have engaged in an internal process to review all aspects of each Program. Regular and impromptu meetings between Ship Operations, Submersible Support, Oceanographic Instrumentation, Shipboard Science Support Equipments and Ship Acquisition and Upgrade occur weekly. Each Program Officer reviews every Ship Inspection report, commenting on those aspects of highest priority within their area of expertise. Additionally, each post-cruise assessment report is read by the Program Officers for Ship Scheduling and Submersible Support, and if specific issues that impact other Programs are raised, then they are shared as appropriate (including the Science Programs). This team-based approach to assessing the entire IPS Facilities group has led to a greater understanding of how each program operates, and how management and funding allocation decisions affect their overall ability to support science. There is also a clear benefit to having all Program Officers aware of issues outside their individual program(s), especially when answering questions from the community; more timely answers can now be provided with greater confidence than in the past.

As the federal agencies work toward modernizing and “right sizing” of the Academic Fleet, re-competition of the NSF-owned vessels is being discussed to better align with National Science Board requirements. It is envisioned that *Sikuliaq* and the RCRVs (and possibly *Langseth* in the future) will have an external review of operational quality and effectiveness after 5 years of operation and full re-competition after 10 years of operation. These reviews will revolve around daily rates, ship condition, and service to science with information from proposals, ship inspections and UNOLS post cruise assessments as inputs. IPS believes this is in line with the COVs recommendations for a more holistic review.

In order to more effectively interface with the Science Programs, one-half of a recent Division-wide retreat was dedicated to considering challenges with balancing funding between Facilities and Science and how best to integrate decisions, both funding and scheduling, to maximize the efficiency of Academic Fleet utilization. An overall assessment of the current state of funding and planning was followed by breakout teams targeted at the specific issues of Ship Operations, Ocean Drilling, and the Ocean Observing Initiative.

Ship Operations has continued funding for Early Career Investigator UNOLS Chief Scientist Training Cruise program. This program was developed in response to a recent decline in requests for UNOLS facilities. Two separate chief scientist training cruises are funded on intermediate general purpose research vessels, to serve as a forum for teaching early career marine scientists how to effectively plan for, acquire and utilize time at sea for multi-disciplinary research and educational activities.

This action item is considered **Ongoing.**

**Recommendation (2):** While it is the understanding of the COV that a replacement for the Ship Operations Program Director has been sought and chosen, IPS should ensure the continuity of the successful ship operations and maintenance program at the high level maintained by the incumbent until the next Program Director is in place, and an effective turnover can be achieved.

**Action:** In order to ensure continuity, Brian Midson has accepted a 120-day Detail assignment into the position of Interim Program Director for Ship Operations. A 3-week overlap period prior to the departure of the outgoing Director allowed for seamless transfer of ongoing activities. These included final funding actions in support of calendar year 2011 operations, ship scheduling for 2012, and ongoing Fleet planning activities. A replacement Ship Operations Program Director is expected to arrive in late September, which will provide at least four weeks of overlap prior to the end of the Detail period.

**Update:** Rose Dufour reported aboard at the end of September, 2011, as the new Ship Operations Program Director.

This action item is considered **Closed**.

**Recommendation (3):** IPS should consider the establishment of an external review panel to analyze, assess and document the causes of issues surrounding the acquisition, refurbishment, assignment and management of the *R/V Marcus Langseth*.

**Action:** IPS and the Large Facilities Office will hold an internal panel review at the end of September 2011 to assess the progress made by LDEO in addressing the findings of the Business Systems Review conducted in 2010. The outcome of the internal panel review will inform decisions on how best to continue oversight of the *R/V Marcus Langseth* operations under the existing cooperative agreement and the need for an external review panel.

**Update:** A one-year post-BSR review was held in September, 2011 between representatives from CU/LDEO and NSF. The NSF Large Facilities Office and the Division of Ocean Sciences concurred that the issues identified had been sufficiently adjudicated.

This action item is considered **Closed**.

**Submersible Support**

**Recommendation (4):** The relationship with NAVSEA for certification of ALVIN RHOV is an important one. We note that the funding actions in support of WHOI for this element in FY2011 fall outside the formal scope of this review. Regardless of budget mechanism or timing issues, this should have attention paid to it as part of the integrated program.

**Action:** The funding actions supporting the ALVIN RHOV project were made after the Final Design Review. The comprehensive recommendations from the panel included establishing, and fully funding, NAVSEA certification of the upgraded ALVIN. The Program has advised WHOI to pursue dual certification (NAVSEA and ABS) for Stage I (4500m operations).

**Update:** The Program suspended the requirement to pursue dual ABS Classification and NAVSEA Certification for the initial step in return to full operations due to competing requirements that could not be resolved within the budget and schedule constraints. An MOU between NSF, ONR and NAVSEA was created and signed to describe support for the reinstatement of NAVSEA certification for Alvin, as well as for sustaining certification for the foreseeable future.

This action item is considered **Closed**.

**Recommendation (5):** Transparency of the ALVIN RHOV program structure and budget could be improved.

**Action:** The Program will prepare a briefing document that will describe all aspects of the ALVIN RHOV project, including the activities of Programs other than submersible support, which may be impacted by the ALVIN Upgrade.

**Update:** Funds for the *Alvin* Upgrade Project (Cooperative Agreement 0433409) are administered through a specific account identified by a “Program Element” (7595). In FY 2012 the remaining funds to complete the project, as approved by the Final Design Review have been allocated to this account ($40,987,085), and additional funds will not be provided.

There are two activities outside this account, but related in part or in whole to the project: modifications to the R/V *Atlantis*; and the interagency agreement with NAVSEA as mentioned above. The upgrades to the R/V *Atlantis* were funded through the Shipboard Scientific Support Program and include upgrades to the A-frame. The A-frame had been scheduled for overhaul irrespective of the *Alvin* Upgrade, but was modified to account for increased weight anticipated in the upgraded Alvin. The Program estimates the cost of the R/V *Atlantis* work was increased by $800,000 in order to meet the needs of the upgraded Alvin. The cost of the NAVSEA reinstatement of certification, and sustainment of certification, are: FY2011, $1,640,000; FY2012, $845,000; FY2013 and beyond, $415,000/year.

This action item is considered **Closed**.

**Recommendation (6):** Outreach efforts at AGU should be continued and expanded to both increase program visibility, and generate interest beyond the traditional geosciences user base. Specific efforts should be developed to encourage participation from underrepresented groups.

**Action:** In an effort to expand the deep submergence user base, UNOLS, with support from the Submersible Support Program, will promote the exposure of the National Deep Submergence Facility (NDSF) through the Deep Submergence Science Committee (DeSSC). The Program provided a small amount of funding to support approximately 25 people to attend the Fall 2011 DeSSC meeting in San Francisco, which is held the Sunday before the beginning of the Fall AGU meeting. This will provide an opportunity for graduate students and recent graduates with an interest in deep submergence science to attend who could otherwise not afford to participate. An announcement will be made through existing UNOLS/DeSSC distribution lists, as well as some direct contacts.  For example, during the Fall 2010 AGU meeting, NDSF hosted a booth, at which a raffle was held where entrants expressed their interest in participating in deep submergence science, as well as their current career stage. Approximately 50 graduate students and recent graduates were identified in those entry forms, and these individuals will be included in the DeSSC announcement distribution.

**Update:** The UNOLS office sponsored an “Early Career Scientist” event in conjunction with the Fall 2011 AGU meeting in San Francisco. 34 participants with experience ranging from undergraduate students to junior faculty members attended the meeting, gave brief oral presentations, displayed a poster, and were hosted for dinner with deep submergence scientists, operators, and NSF Program Officers. UNOLS followed-up with a participant questionnaire, and the responses were overwhelmingly supportive. Additionally, the Program received feedback from the participants’ mentors and others praising the effort. It is hoped this event will continue, and other disciplines will emulate this approach to outreach.

This action item is considered **Closed**.

**Recommendation (7):** The current MOU between NSF, the U.S. Navy, and NOAA should be rewritten to better reflect projected future collaborations and scientific objectives among agencies.

**Action:** The development of an updated MOU is an ongoing effort that precedes this COV review. The relationship between NSF, ONR and NOAA, and their scientific investment in deep submergence, has evolved substantially since the referenced MOU was established. The agencies are considering several modifications including the establishment of a “pay-as-you-go” model, which would require all operational costs be included in day rates. Currently, the ALVIN Major Overhaul, which occurs every five years, is funded by a 60:20:20 split between NSF:ONR:NOAA. The new approach, which replicates the mechanism used by the UNOLS ships, would invoke a Major Overhaul Stabilization Account (MOSA) to cover the anticipated overhaul costs.

**Update:** The Program Officers for NSF, ONR and NOAA have met and discussed a new MOU for National Deep Submergence support. All parties recognized the changes in each organization’s mission that necessitate a new MOU, and also the continued national need for access to the deep ocean. It is agreed that a new MOU will define a MOSA account for *Alvin* operations, funded on a “pay as you go” model, wherein cost of the periodic overhaul of the submersible is paid as part of its day rate. It is expected the MOU will be executed prior to the return of *Alvin* to full operations in mid 2013.

This action item is **Ongoing.**.

**Recommendation (8):** Assess barriers to new users and look for ways to mitigate issues.

**Action:** This activity will be a continuing effort, please see Response (6) above.

This action item is considered **Closed**.

**Recommendation (9):** Consider doing a MOSA (Major Overhaul Stabilization Account) for ALVIN as one possible model to amortize overhaul charges into the day rate.

**Action:** This is an ongoing effort, please see Response (7) above.

**Update:** Discussions on this issue will continue as the new MOU is developed.

This action item is **Ongoing.**

**Recommendation (10):** There are comparable facilities to NDSF, and situating NDSF to be competitive with these is important. Possible means of building success in this regard include building accountability measures into the NDSF funding process on value delivered; better defining NDSF goals and the feedback used to define and refine these; and assessing responsiveness to community needs and requirements.

**Action:** The Program will explore with DeSSC additional ways to assess the value added by supporting deep submergence science operations through NDSF. The funding agencies, NSF, ONR and NOAA will use this assessment during the annual meeting to review funding for operations and maintenance of the vehicles and NDSF facility.

**Update:** As part of the feedback from the Fall 2011 DeSSC meeting it was noted the current method of reporting deficiencies in NDSF activities is an inefficient process. Currently each vehicle has a DeSSC member as “advocate” who queries each platform user on their experience and reports to the committee on their behalf. UNOLS and the sponsor agencies are considering a method, perhaps similar to the Ship Operations post-cruise assessment reports, to improve this process.

This action item is **Ongoing.**

**Recommendation (11):** The wider oceanographic community may not be sufficiently well informed about opportunities available through NDSF. We encourage NDSF to find productive ways to address perceptions about developing a more “open” culture.

**Action:** IPS will explore with the UNOLS Council and NDSF any opportunities for developing a more “open culture”.

**Update:** NDSF, in cooperation with UNOLS/DeSSC is participating in outreach activities to both expand its user base via Early Career Scientist programs as well as by advertizing its capabilities to the established ocean science community. Recent events include the Fall AGU and DeSSC meetings where operators and deep submergence scientists met with Early Career participants, described above, as well as hosting a week-long exhibitor booth. Additional activities include an NSF/ONR sponsored collaboration between WHOI and the US Naval Academy midshipmen to develop “smart elevators” for deep submergence applications and a first ever joint NOAA Ocean Exploration-NSF operation featuring the R/V *Okeanos Explorer* and the AUV *Sentry*.

This action item is considered **Closed.**

**Oceanographic Instrumentation and Shipboard Scientific Support Equipment**

**Recommendation (12):** Continue to use the NSF Ship Inspection process as a strategic planning tool for assessing the current status of each ship equipment assets and future needs to more effectively budget future capital expenditures to maintain and enhance fleet equipment and instrumentation assets.

**Action:** IPS plans to continue using the NSF Ship Inspection process as recommended by the COV.

**Update:** Constraints on the OCE Facilities budget requires a rigorous approach to assessing the needs of the fleet. All of the ship-supporting programs coordinate their projected funding requirements and use the Ship Inspection Reports, Post Cruise Assessments and ship scheduling process to ensure the most efficient operations meet the maximum possible science objectives. This team-based approach is working well.

This action item is considered **Closed**.

**Recommendation (13):** Develop clearer and more specific proposal guidelines to distinguish between equipment and instruments funded through SSSE and OI and items more appropriately funded through ship operations (i.e., MOSA) and technical service awards.

**Action:** This is an ongoing effort. The Programs are currently revising the existing proposal submission guidelines to more effectively coordinate funding activities with oceanographic facility operators.

**Update:** IPS is working toward release of a new “Facilities and Equipment Support” solicitation that will replace the old Guidelines and also help clarify which program requests should be submitted to. Internal clearance began in September 2012 with a release expected in the fall.

This action item is **Ongoing.**

**Recommendation (14):** Establish firmer guidelines for ship operators that clearly outline the maintenance, calibration and access requirements for shared-use equipment pools, to ensure full use of these assets throughout the science community. Continue to develop and institute web-based inventories that identify pooled and shared-use equipment and the equipment request procedure for science users.

**Action:** The Program will instruct the relevant pool managers to implement and maintain a web-based inventory of assets, including guidance to users on how to incorporate such assets into their research efforts and how to include the capabilities in their proposals.

**Update:** The East Coast Winch Pool site has been established. A web-based inventory has been developed for all shared use instrumentation and equipment (<http://strs.unols.org/Public/Search/diu_equipment.aspx>) and for pooled resources (<http://www.unols.org/info/EquipmentPools.html>). Hosted on the UNOLS web site it is searchable by institution, vessel/facility, Group (e.g. bottom samplers, lab instrumentation, etc), and Device Type (e.g. box corer, CTD). The inventories will be maintained by the Operators as a condition for funding by NSF.IPS has released a letter to the community that clarifies the use and access priorities for equipment and facilities funded through IPS.

<http://www.nsf.gov/geo/oce/pubs/oce_facility-use-clarification-may12-rev6.pdf>

This action item is considered **Closed.**

**Recommendation (15):** Continue to develop and expand use of major equipment pools (e.g., wire, winch) and shared-use equipment assets with adequate funding of their maintenance to ensure timely and widespread availability of these assets to meet science needs throughout the community.

**Action:** IPS plans to continue using the equipment pools process as recommended. IPS will investigate ways to develop and expand these pooled resources to best serve the community in terms of cost effectiveness and technical capabilities.

**Update:** IPS will continue looking for opportunities to increase efficiencies and expand use of the pooled resources as the ship programs are executed.

This action item is considered **Closed.**

**Recommendation (16):** Maintain strong support for training workshops to educate operators and technicians on updated UNOLS requirements (e.g., RVSS Appendix A and B) and to provide technical guidance for best use practices and maintenance of equipment assets.

**Action:** IPS will continue to provide training and support for operators and technicians. For example, there will be a workshop on Appendix B requirements at Scripps in February, 2012.

**Update:** Training and support activities have been well received and IPS will continue to look for additional opportunities to increase efficiencies and expand use of the pooled resources as the ship programs are executed.

This action item is considered **Closed.**

**Recommendation (17):** Work with UNOLS to help implement a multibeam oversight committee and also to identify additional oversight committees as needed.

**Action:** The Technical Services Program funded a collaborative Proposal (LDEO of Columbia University and University of New Hampshire) in 2011 to form an oversight committee for Fleet-wide multibeam operations. The committee, made up of representatives from all the users in the Academic Fleet, will evaluate each platform and access an acoustic baseline, evaluate the quality of data from each system, develop a best-practices guide for users and make recommendations for the establishment of a fleet-wide maintenance agreement with the vendor (Kongsberg) as well as the viability of a spares pool for use by the operators. It is a three year continuing grant with the first meeting scheduled in December of 2011.

**Update:** To date the MAC has performed baseline noise evaluations on four vessels (*Kilo Moana, Langseth, Atlantis* and *Melville*), has participated in the sea-acceptance trials on *Kilo Moana* and *Thompson*, and has developed software tools to aid the institutions in the operation of the sonars. For example, a Sound Velocity Profile (SVP) editor was developed to allow for the continuous input of this parameter into the sonar processing scheme. Various best-practices guides for users are currently in development.

This action item is **Ongoing**.

**Recommendation (18):** Investigate optimal means to manage, maintain and provide access to the science community for non-ship platforms, such as AUVs and gliders.

**Action:** IPS will continue to work with the UNOLS Council in support of executing emerging non-ship platform utilization. A mechanism and forum for these discussions is the UNOLS Ocean Observing Science Committee which is chartered to “Provide advice on decisions and plans from the science perspective related to NSF ocean observatories (MARS, HOTS, BATS, OOI, and others) and ocean observing support systems. These may include the U.S. Academic Research Fleet, AUV/ROVs, and other unmanned systems such as gliders.”

**Update:** IPS is continuing activities related to this topic and is encouraging discussions between the OOSC and other UNOLS subcommittees, such as DeSSC.

This action item is **Ongoing.**

**Recommendation (19):** Review the SSSE budget to determine if it is sufficient to cover future projections of equipment maintenance costs for pooled and shared-use equipment.

**Action:** As part of a larger strategic planning effort, the Division of Ocean Sciences is currently evaluating the optimal balance between science funding and facility support. Trends in usage are being evaluated, and future needs being projected within the limits of realistic expectations for federal funding levels. The SSSE budget will be part of the outcome of this process.

**Update:** IPS is continuing activities related to this topic. See response to (12).

This action item is **Ongoing.**

**Oceanographic Technical Services**

**Recommendation (20):** The OTS program should continue to provide training opportunities for seagoing technicians, publicize them, and strongly encourage technician groups and managers to request funding for training.

**Action:** The Technical Services Program recognizes the need for continued training of the technical staff. A Fleet-wide training cruise was scheduled in June of this year on *Melville* but was cancelled due to the fact that most technicians were working at sea during this busiest time of the year. Plans are underway to schedule another cruise this winter when more technicians are available. This effort is being coordinated through the UNOLS office. A survey was undertaken by the UNOLS office specifically focused on the training needs of the Fleet and those results have been distributed to the operational managers at each institution. The Program will reinforce its commitment to training during the RVTEC meeting in November 2011.

**Update:** Although the ‘training cruise’ was cancelled on *Melville* due to scheduling conflicts, another opportunity presented itself at the NOAA facility in Newport OR. 18 UNOLS technicians and 13 NOAA technicians participated in a training program that benefited both organizations. IPS will continue cooperation with UNOLS and NOAA on activities related to this topic.

This action item is considered **Closed**.

**Recommendation (21):** Look to increase the diversity of the tech pool in terms of advanced skills and abilities, gender, and culture through targeted recruitment efforts to replace those who may leave and/or retire.

**Action:** The Technical Services Program has focused specifically on the ‘aging’ of the technical support staff and has instituted a long-term internship program through the MATE program to recruit new personnel into the Fleet. In 2010, two 6-month internships were funded directly by the Program (no cost to the institutions). This was an unqualified success as both interns performed well and ultimately took full-time positions at the institutions. A third technician, although not selected for the internship, was hired at the University of Hawaii. In 2011, another two internships have been funded. Although the Program recognizes that the technical staff is over 80% male and predominantly white, it is unclear how the Program should actively recruit on the basis of gender and culture. The Program will continue its on-going discussions with the technical support managers to identify potential solutions to this issue.

**Update:** IPS will continue activities related to this topic.

This action item is considered **Ongoing.**

**Ship Acquisition and Upgrade**

No recommendations.