

University-National Oceanographic Laboratory System

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The University-National Oceanographic Laboratory System (UNOLS) is a unique organization nearing its 30th anniversary. It continues to walk a tight rope between the federal agencies and academia, between competition and collegiality. Evolving from a Stratton Commission recommendation, UNOLS forged a solid niche in the management of a virtual research fleet. Institutional members maintain a federation type management style yet agree to coordinate their schedules, adhere to common safety standards, exchange scientific parties, and plan for future ship replacements. At the same time, members are hustling to outshine competing institutions in the quest for full schedules. Science is a winner in the process as ship managers strive for ever improving operations, high safety and maintenance standards, new scientific tools and instrumentation and an accommodating, professional crew. Where appropriate, standardization has been accomplished yet each ship maintains a personality or character that is tailored to its individual mission expertise.

In many ways UNOLS has changed little in its 30-year history. The size of the fleet has remained amazingly consistent. In 1972 there were 35 ships in the fleet. Of these, 16 were over 40 meters in length (Treadwell et al., 1988). Today the fleet consists of 28 (soon to be 29, see figure at the end of this article) ships with 16 of these ships over 40 meters. In addition, academic scientists have access to National Oceanic and Atmospheric Administration's *Ron Brown* and the three U.S. Coast Guard icebreakers, *Healy*, *Polar Sea* and *Polar Star*. The fleet is significantly more capable today than at its inception. Most of the early ships were converted World War II vessels. Considering the state-of-the-art of science, this early fleet was able to provide scientists with adequate platforms to study the ocean using the tools available. Today the ships have more endurance, carry larger scientific parties and are chock full of the

latest scientific equipment and navigation gear. Ships are more than a platform to collect samples. They are sophisticated floating laboratories and advanced communications centers. Samples are not only collected and archived but are processed, often in real time, and results are used to plan future investigation. Preliminary results of onboard investigations are shared with colleagues worldwide allowing yet further in-depth study.

The founders of UNOLS were plowing new ground in establishing this organization (Byrne and Dinsmore, 2000). Institutions controlled their ship's schedules as well as the science party aboard and decided who would have access to their ship(s). Investigators from institutions without ships were at a severe disadvantage when desiring to go to sea. If they were fortunate enough to have a collaborating scientist at an institution

with a ship they stood a fair chance of getting on a cruise, but rarely as chief scientist. Under this system, if you wanted to do science at sea you needed to associate with an institution operating a ship. Institutional directors wielded considerable power with respect to ship use. The idea of a nationally coordinated schedule was not met with enthusiasm by these directors. The negotiations that hammered out the framework for UNOLS in 1971 were lively, heated and deftly argued (Byrne and Dinsmore, 2000).

The first charter of UNOLS was adopted at the first regular UNOLS meeting held at Texas A&M University at College Station in May, 1972 (Byrne and Dinsmore, 2000). At the outset, the main function of UNOLS was to coordinate ships' schedules and to focus on the replacement of federally funded vessels. During the first year, UNOLS efforts began to focus on the development of coastal ships, uniform standards of operation, foreign clearances, uniformity of technical services, national facilities, and of course the fleet replacement (Byrne and Dinsmore, 2000). Although the UNOLS charter has

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been amended or revised 14 times the focus has changed little as evidenced by the following excerpt from the current charter:

An objective of UNOLS is to coordinate and review the access to and utilization of facilities for academic oceanographic research, and the current match of facilities to the needs of academic oceanographic programs. UNOLS makes appropriate recommendations of priorities for replacing, modifying or improving the numbers and mix of facilities for the community of users. Another objective is to foster federal and other support for academic oceanography, thereby continuing and enhancing the excellence of this nation's oceanographic program. Emphasis is placed on ships and other seagoing facilities. (<http://www.unols.org/ucharter.html>)

The objectives and goals of UNOLS have changed little over the years, but the culture and management focus have shifted. The original composition of UNOLS consisted of only operating institutions. In the mid 1970s an associate membership was established to permit non-operating institutions an opportunity to come to the table. At first it was a trickle of associate members, but that trickle soon turned into a flood. By the late 1980s associate members outnumbered operator members by two to one. The power/decision base, however, still remained with the operators, since associate members could not vote. Rumblings around the community suggested that the working scientists were not getting their due, since the operators had all the decision power. The perception was that operating institutions were more driven by the concerns of the ships and not always those of the working scientist. This reasoning is difficult to confirm since the UNOLS representatives from the operating institutions were, for the most part, sea-going scientists. In response to this pressure the UNOLS leadership revised the charter in 1988 by eliminating the associate membership category and bringing associate members to the table with full voting rights. As part of the change the UNOLS Advisory Board became the UNOLS Council with all committees a subset of the Council. The Council met three times a year to conduct the routine business and the full membership met annually. Operators still dominated the Council, as the Chair came from an operating institution and the membership mix on the Council favored operating institutions.

This charter change was feared by some operating institutions, concerned that non-operating institutions would vote with a heavy hand to the detriment of ship operations. This did not happen. In fact non-operating institutions felt they still lacked a solid voice, and the

proverbial fox was still in the chicken coop. Their concerns were largely centered around the ship scheduling process. To the outsider looking in, ship schedules were designed around operator's interests at the expense of the science interest. In reality, the schedule driver was cost. Schedulers were heavily pressured by fiscal constraints to eliminate transits, consolidate cruises and shift scientists to the most cost effective platform. They were encouraged to fill schedules to an optimum level by bringing in non-traditional science. The push and pull of the scheduling process caused cries of foul. Scientists were being manipulated for economics (as some claimed) at the expense of science programs. These concerns triggered yet another charter change in 1999 opening up the UNOLS Council chairmanship and committee chairs to include non-operators. The dance continues. Non-operator institutions continue to gain a stronger voice in the process, but economics drives many of the decisions. The struggle for science friendliness and operating efficiencies is an inherent part of the UNOLS process.

In November, 1997 the National Science Board of the National Science Foundation (NSF) ordered a study of the UNOLS Fleet. A Fleet Review Committee was established and a year-long comprehensive study of the fleet was conducted. This committee, chaired by Dr. Roland Schmitt, presented eight findings as paraphrased below (Schmitt et al., 1999):

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1. The potential for near-term decrease in ship utilization provides an opportunity to improve the capability, productivity and quality of fleet operations.
2. NSF must accelerate and expand efforts to articulate a vision for future technology requirements.
3. The UNOLS system should be retained.
4. Funding agencies and UNOLS need to support fleet improvements by enhancing quality control, expanding training of personnel in technical and safety procedures and develop higher standards for shared use facilities.
5. The practice of periodically competing the management of the UNOLS Office should continue.
6. A trial that includes some commercial operators participating as UNOLS non-member operators to provide unique capabilities not otherwise available should be considered.
7. There is a need for a strong effort for new technology introduction, improved existing facilities and technologies and a systematic, standard approach to maintenance, renovation, upgrading and replacement.
8. Federal agencies should prepare and maintain a long range plan for modernization and composition of the fleet well into the 21st century.

This was a strong endorsement for the UNOLS system and welcome news to deflect criticism. It is not that things cannot be improved, but the core system works and works well. UNOLS members especially welcomed recommendation number eight that tasked the federal agencies to come up with a long-range plan for replacing the fleet. That process has begun.

In spite of the best efforts of the Fleet Replacement Committee and the follow-on Fleet Improvement Committee the ship replacement processes has been random and at times spasmodic. The exception to this was the Fleet Replacement Committee's work in the late eighties that led to the design and construction of the AGOR 23 class of ships. Most ship replacement efforts started with the operators lobbying Congress, State Houses and institutional donors to acquire new ships. Rather than seek community consensus, institutions grabbed the mantle and worked the system. At times this has led to some imbalance in the fleet. A fair, national effort for overall planning is a welcome breath of fresh air.

The Federal Oceanographic Facilities Committee (FOFC) is tasked with developing the plan for modernization and ship replacement. This plan is to be presented to the National Ocean Research Leadership Council (NORLC) for endorsement. It is important that this plan has vision and represents the collective needs of the science community.

Many exciting new programs and research tools will be available for the sea going scientists as we look into the future. These will have an impact on the way

science is conducted at sea and the way UNOLS will need to support this science. It takes a minimum of five years and normally ten years to plan for new ships. This slow process places a burden on the planners to "get it right". Bold, visionary planning can be risky but timid, short-sighted planning can prove disastrous. The federal agencies supporting UNOLS have a responsibility to the sea going scientific community to aggressively pursue a sound and dynamic ship replacement policy.

The founders of UNOLS can be duly proud that the plans forged nearly 30 years ago have stood the test of time. UNOLS is alive and well. The prospects for the future are exciting. Science has been well served by this system in the past and there is every expectation that this will continue well into the future.

REFERENCES

- Byrne, J.V. and R.P. Dinsmore, 2000: Two Years of Turbulence Leading to a Quarter Century of Cooperation: The Birth of UNOLS. In: *50 Years of Ocean Discovery: NSF 1950-2000*. National Research Council, Washington, DC.
- Treadwell, T.K., D.S. Gorsline and R. West, 1988: *History of the U.S. Academic Oceanographic Research Fleet and the Sources of Research Ships*. UNOLS Fleet Improvement Committee, Texas A&M University, College Station, TX.
- Schmitt, R., E. Doyle, S. Ramberg, H. Bezdek, C.D'Elia, E. Druffel, L. Mayer and G. Weatherly, 1999: *The Academic Research Fleet*. NSF.



Artist's rendition of newest UNOLS fleet vessel (AGOR 26), the R/V Kilo Moana, owned by the U.S. Navy and operated by the University of Hawaii. Scheduled for launch in 2002. Painting reprinted with the permission of Lockheed Martin. Patrick A. Lundquist, artist.