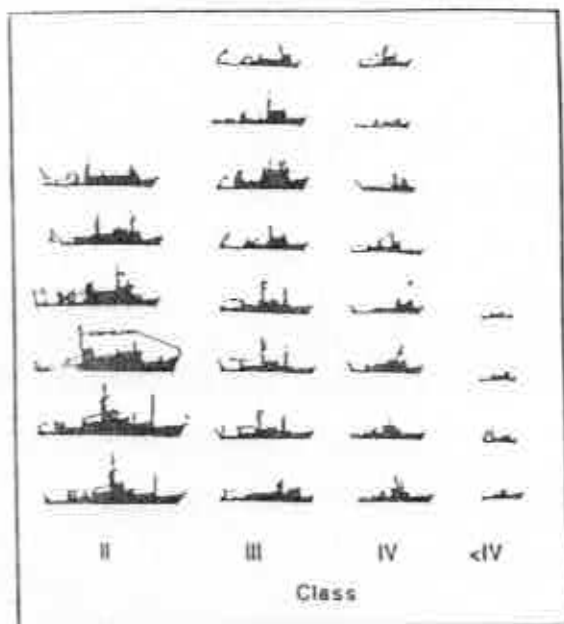


# UNOLS NEWS

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SPECIAL EDITION: Annual Meeting



## AN ANCIENT UNOLS TALE

In the beginning there was block funding and the community looked upon block funding and saw that it was good -- but flawed. Scientists at non-operating institutions had a hard time getting ship time and sometimes ships were not optimally employed. In an effort to correct these flaws the system was changed. The agencies went up on the mountain and returned with a new covenant which required day rate funding -- and the community donned sack cloth and ashes and mourned the old ways -- but they adjusted. Nevertheless, the new covenant was seen to be flawed also. Operating institutions had much less control over ship use; expedition planning became much more cumbersome; and students got a lot less sea time. Funding was no longer guaranteed and newcomers began to ask the powers for funds and yea to receive them! But a prophet (minor) arose among the community and said, "let us change this covenant into one that works better." And the prophet concluded that the biggest flaw in the day rate system was that fixed costs and variable costs were not separated in the accounting with the result that day rates grew hyperbolically as usage decreased.

And there arose a great silence from the community and the prophet was abashed ... but not for long. Then the prophet rose up and saw that it was time to write something for the UNOLS Newsletter and said, "Yea verily will I propose a solution." And here it is.

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About half of the costs of operating a UNOLS vessel with a full schedule are fixed costs such as annual crew salaries and other fixed personnel costs, the operation of a marine operations office with rent, utilities, bookkeeping and

*(continued on next page)*

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purchasing staff etc., the maintenance of a marine base at the ship's home port and other costs which are more or less independent of the amount of operating time; and half are variable costs such as food, fuel, sea pay and travel for crew, some maintenance, port fees and other costs which increase as the ship is used.

\* \* \*

A way (not the only way) to deal with this problem is agency sponsorship of UNOLS vessels. Under such a scheme, all UNOLS vessels would be required to find a sponsor. Some would find sponsors from among the Federal Agencies, some in the States and some in their own institutions. These sponsors would assume responsibility for the annual fixed costs of UNOLS operations. Agencies requiring ship time would be charged at the incremental rate, i.e., variable costs only. What effect would this have on UNOLS operations?

First, it would end the "death spiral" in which low utilization drives up the day rate because the fixed costs do not decrease with decreased use. This causes users to drop out, which decreases utilization, which increases the day rate still more, etc. The day rate would be the same for a ship with a 50 day schedule as for a ship with a 250 day schedule. This, of course, removes the severe economic punishment of ships with weak schedules; a punishment we have come to rely on to regulate the size and composition of the fleet. It would also have the effect of removing the incentive to operate at levels beyond optimum and minimize maintenance time in order to decrease the day rate.

Secondly, this scheme places a new level of control over the UNOLS fleet in the hands of the sponsors. Ships will survive or fail depending on the willingness of Agencies, States and Institutions to support their fixed costs by becoming their sponsors. This would, however, give Agencies a means for the control of the UNOLS fleet. New vessels would not be able to enter the fleet without the commitment of a sponsor. Vessels would leave the fleet when their sponsors were no longer willing or able to pay the fixed costs of their operation. Sponsors who contemplated bringing a new ship into the fleet would have to be prepared to be sponsors themselves or find a home for the vessel with some other sponsor. Some of us might see this as a good thing and long overdue. Sponsors might complain that they were being asked to support fixed costs for other non-Agency users at the total cost rate and rebate the recovered fixed costs to the sponsor.

Thirdly, UNOLS vessels would be in a position to compete for outside business (from other Agencies) without the problems we currently have with those agencies. In particular, the peculiar problems we have faced in dealing with NOAA would be vastly reduced. NOAA would only have to pay the increase in variable costs of using a UNOLS vessel, the same basis they use for calculating the costs of their own ships. When NOAA use rose to some critical level, the sponsors would, no doubt, ask NOAA to contribute to the sponsoring costs of some vessels, but that would not effect the day rate.

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\* \* \*

The prophet made this proposition and all was silence but the prophet suspected that this was only the calm before the storm and, after meditating on the usual fate of prophets, took shelter in a cave (but a cave equipped with a computer). "Yea" said the prophet, "lets let 'em think about this for a while and see what happens."

\* \* \*

To throw your own stone at the prophet (whether or not you're a sinner) address them to me at G.BRASS on OMNET or GBRASS@RSMAS.MIAMI.EDU on INTERNET and I will pass them on to the prophet. A summary (heap) of these brickbats will be included in a subsequent newsletter.

## SHIPS IN THE NEWS

### AGOR 24 and AGOR 25 Construction Underway

AGOR-24 is under construction at Halter Marine Shipyard, the same yard that built R/V THOMPSON (AGOR 23). A number of engineering changes are being incorporated to improve the capabilities of the vessel including additional berthing for eight. AGOR 24 has been named ROGER REVELLE. It is owned by the Navy and will be operated by Scripps Institution of Oceanography. Launch is scheduled for February with delivery of the vessel planned for 1996.

On February 15, 1994 the construction contract for the AGOR-25 was signed at the Naval Sea Systems Command. Woods Hole Oceanographic Institution will be the operator of the AGOR-25 which will come on line in Spring 1997. The vessel is under construction at Halter Marine in Pascagoula MS where the AGOR-24 is currently under construction. The Keel Laying ceremony for AGOR 25 was held on August 16th.

### The OCEANUS Class Receives Mid-life Refits

ENDEAVOR and WECOMA completed their refits and outfitting, and have resumed science operations. OCEANUS has also completed its shipyard refit and is scheduled to resume operations in 1995. All three ships are significantly enhanced for science. Improvements on ENDEAVOR and OCEANUS included a new deckhouse, stacks and mast. ENDEAVOR and WECOMA received a deck extension. Air conditioning and refrigeration upgrades were performed on all ships.

## **KNORR Conversion Plans Underway**

Plans for conversion of R/V KNORR to a support platform for DSRV ALVIN and the Argo/Medea/Jason remotely operated vehicle and their associated science missions are underway. A UNOLS subcommittee has been formed to assist in the review of conversion plans. The subcommittee has representation from both the DESSC and Fleet Improvement Committee as well as the user community. Members include Ken Johnson, Chair; Peter Betzer; Jeff Fox; Richard Lutz; Fred Spiess; and Karen VonDamm. The subcommittee has met with WHOI and Glosten Associates aboard KNORR .

The time frame for the conversion will be dependent upon KNORR's operating schedule. KNORR is scheduled to return from the Indian Ocean in the early part of 1996 when it would begin the conversion. ATLANTIS II will also be returning to WHOI in this same time frame to permit cross-decking of the A-frame. ALVIN will enter a six month overhaul when it returns to WHOI. It is expected that the KNORR conversion will take about three months to perform. The extent of the conversion is yet to be determined, but will be driven by the funds available. The sale of ATLANTIS II will be the primary source of funds.

The overarching goal of the conversion of KNORR will be to provide a submersible support ship with capabilities that exceed those of ATLANTIS II, while still maintaining as much of the general purpose oceanographic capabilities of KNORR as possible.

## **R/V SEWARD JOHNSON Receives a Midbody Extension**

R/V SEWARD JOHNSON has just completed a shipyard period to undergo a number of major improvements including a midbody extension of 28 feet. The extension provides greater deck space and additional berthing. Sea trials have been performed and went well. The ship is scheduled to resume operations in late September.

## **KNORR RECEIVES SeaBeam**

ONR funded the procurement of a multibeam system for KNORR. Installation of the system began in August during a recent drydocking of KNORR.

## **Three Institutions Permitted Access to the DOD Global Positioning System**

A Memorandum of Understanding (MOU) between DOD and NSF has been signed permitting three institutions (WHOI, Scripps and UW) to have access to the P-code that removes the dither from the GPS signal. The MOU will provide access to and use of the Precise Positioning Service of the Navstar Global Positioning System (GPS). These institutions must have a security officer with clearance to install the classified code into the receiver. You will also have to purchase a receiver set. Once installed

the receiver can go aboard ship as an unclassified piece of equipment. After a year, the MOU is to be reviewed. It is hoped that the program can then be expanded to include all interested UNOLS institutions.

The DOD Global Positioning System (GPS) is dramatically changing the way we navigate at sea. The ability it offers to know position with unprecedented

accuracy enables new ocean science opportunities and new operations procedures.

WHOI was given the loan of a Navy P-Code receiver in 1993 to support a succession of ONR cruises on KNORR in the mid-Atlantic. WHOI's experience has been very positive. P-Code GPS accuracies significantly shorten survey evolutions. KNORR was able to

dynamically position in deep water while deploying ROBS's and other instrumentation. The GPS-Dynamic Position System was used very effectively to grapple deep moorings and then to hold position for alongside recovery. Increased experience with P-code receivers is sure to applications. <sup>o</sup>  
(Information provided by Joe Coburn, WHOI.)

## ARCTIC RESEARCH VESSEL NEWS

### The Preliminary Design Study of the Arctic Research Vessel is Complete

The UNOLS Office recently distributed the preliminary design study for the NSF Arctic Research Vessel or "ARV." The study funded by the National Science Foundation was headed by the University of Alaska with a steering committee made up from members of the University-National Oceanographic Laboratory System (UNOLS). The naval architecture firm of the Glostien Associates of Seattle was to perform the study.

The preliminary design shows a ship that meets or exceeds the mission

requirements in all respects. The length is 306 feet on the waterline, 340 feet overall. The beam is 89 feet, with a 30 foot draft. Four diesel engines driving twin screws provide 16,000 horsepower.

Mission requirements defined ice worthiness as sustained headway in level ice 3 1/2 feet thick, and able to transit - by ramming - pressure ridges up to seven feet in height. A ridge seven feet in height can have a much greater depth resulting in an overall thickness of 20 to 30 feet. The hull would meet

American Bureau of Shipping A3 Ice Class which allows independent operations in the central Arctic Basin during summer months, and year round when escorted. Full compliance with U. S. and international safety and environmental rules is required including the proposed revisions to the Canadian Arctic Pollution Prevention Regulations. The mission requirements also call for an endurance of 90 days, accommodations for 35 scientists, high sea state seakeeping, and scientific outfitting to support modern oceanographic research in all disciplines.

The ARV hull form builds upon the newest innovative concept of icebreaker design. The bow is broad and rounded with a shallow-sloped, ice breaking bow. Reamers at the widest point of the ship improve turning in ice and reduce ice friction along the side of the vessel. A sharp wedge on the keel of the ship, and a pair of nozzled propellers and rudders set well below the water line minimize encounters with broken ice. The outboard profile shows a steeply sloped deck house to minimize adherence of spray ice. Bridge elevations and bridge wings extending to the side of the vessel provide excellent visibility needed for ice navigation. Forward and amidships enclosed work rooms provide convenient over-side access for science instrument packages.

The preliminary hull design was tested at one of the world's premier icebreaker testing facilities-

HSVA model test basin in Hamburg, Germany. These and other tests predict that the performance of the ARV will exceed that of existing icebreakers of comparable size and power. The efficiency of the hull for breaking ice and maneuverability to take advantage of open water leads will help reduce fuel costs and maximize science time.

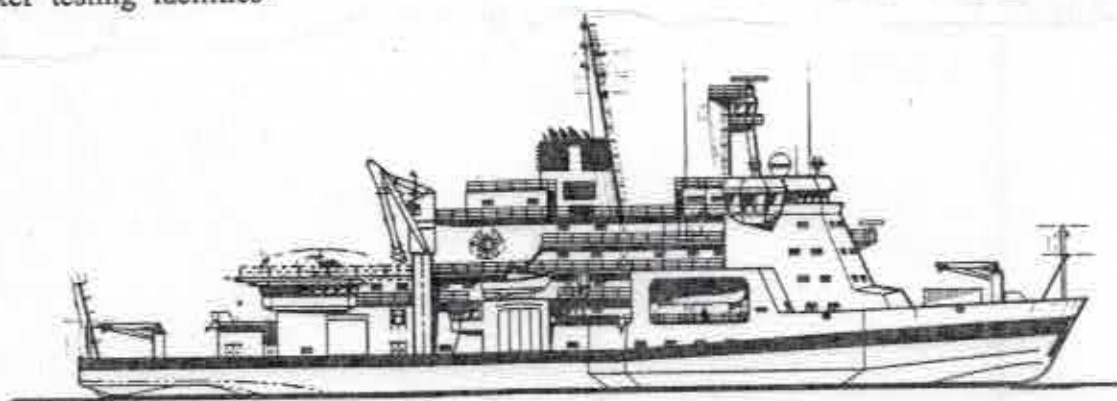
The primary mission of the ARV is to support science. With this in mind, the main deck with overside working access both forward and aft is almost totally given over to science. Eight laboratories totalling 6,100 sq. ft are interconnected by a large central passageway. This complex also includes science shops, offices, darkroom, aquaria, and enclosed over-side work areas.

Accommodation arrangements provide for 36

science personnel in two person staterooms, and 26 officers and crew. Upper decks also include conference rooms, library, recreation spaces, and helicopter facilities. Below decks are machinery spaces, science hold storage, compressors, and transducers.

A video of the ARV design has been produced for UNOLS by Woods Hole Oceanographic Institution, Bob Dinsmore, Marcus Langseth, and Annette DeSilva that describes the unique development process of the ARV design, the innovative design features and the results of the ice model tests. Information regarding the video can be obtained from the UNOLS Office.

*(Information for this article was provided from the video script written by Robert Dinsmore, WHOI and Marcus Langseth, L-DEO)*



## NOTES FROM BELOW

### Navy Approves an Increase of ALVIN's Operating Depth to 4500 Meters

The U.S. Navy has approved an increase of ALVIN's operating depth from 4000 meters to 4500 meters. The ALVIN Support Group at Woods Hole Oceanographic Institution has been doing the requisite background work to support the increased depth certification for the past three years. Their biggest hurdle was producing technical documentation that would provide detailed and objective evidence of adequate design and testing procedures to support the increased depth capability.

Some of this work entailed supplying certification documentation for various ALVIN systems and equipment back to 1971. The final step of the recertification process entailed fabrication of new titanium pressure housings for the motor controllers on ALVIN. This was accomplished during November and December of 1993, with installation of the new housings in January 1994.

Subsequent to the recertification, a successful

dive series was carried out (Eli Silver - UCSC) where dives were made to seafloor depths of approximately 4300 meters in the Costa Rica Trench.

By increasing the depth capability of ALVIN to 4500 meters, scientists will now be able to investigate 86% of the ocean basins. This depth increase means that nearly all of the mid-ocean ridge crest as well as many deeper portions of continental margin, backarc basins and oceanic studies will be in reach of ALVIN.

### ~ WORKSHOP ANNOUNCEMENT ~ NUCLEAR SUBMARINE FOR RESEARCH

UNOLS is hosting a workshop to establish the full spectrum of scientific interest in the use of a nuclear submarine to conduct oceanographic science. The workshop is to be held at the new AGU building at 2000 Florida Ave. NW in Washington, DC on September 21-22, 1994. Oceanographers from all disciplines have been invited to identify scientific programs that can best or only be done from a nuclear submarine. The results of the workshop will be an update to the Scientific Opportunities Offered by a Nuclear Submarine (SOONS) report.

## ALVIN Turns 30

This year ALVIN turned 30 and has marked the event with a series of successful operations. In 1994, only one day has been lost due to mechanical failure. Three new pilots have been certified for a total of six operational pilots. ALVIN passed its INSURV inspection by the Navy. Also, the Navy approved an increase of ALVIN's operating depth from 4,000 meters to 4,500 meters. A full year of operations are currently underway, with a healthy schedule also planned for 1995.

## Future Research Opportunities Planned on a Nuclear Submarine

In response to the success of the science cruise held last summer on the U.S. Navy Nuclear Submarine, USS PARGO, a Memorandum of Understanding (MOU) between the Navy, NSF, USCG and NOAA has been drafted by ONR for future operations using nuclear submarines. The MOU outlines the opportunities to use a nuclear submarine for Arctic Ocean science for 60-70 days per year for the next five years starting in 1995. A Broad Area Announcement for the 1995 science cruise has been issued.

## PEOPLE IN THE NEWS

**NSF** - Grant Gross will be retiring from NSF on 1 October 1994. He will become the new Head of the Chesapeake Research Consortium. Mike Reeve and Don Heinrichs will be rotating as acting Division Director while a national search is performed. It is expected that the position will be filled in the fall.

**ONR** - June Keller left ONR in June of this year. Keith Kaulum retired on August 26th. Annette DeSilva will be filling in at ONR for six months while a permanent employee to the

Research Facility office is sought. Pat Dennis will also provide support to the Research Facility Office.

**NOAA** - Charles Kears, the Director of the Fleet Replacement & Modernization Project Office (FRAM), retired this spring. Admiral William Stubblefield and Captain Don Spillman will be jointly filling the role of the FRAM Project Office Director. Admiral Peterson, Director of the NOAA Corps, will be retiring in the October/November time frame.

**USCG** - Admiral Robert Kramek has replaced Admiral Kime as Commandant of the Coast Guard. Admiral Pennington has replaced Admiral Bill Eckerd as Chief of the Office of Navigation. Captain Al Walker retired in June and will be replaced by Captain Alan Summy. LCDR Bill Davis has been replaced by LCDR Steve Wheeler.



## **New Manager of Shipboard Technician Support at Scripps**

Scripps announces with pleasure the appointment of Mr. Woody Southerland as the next manager of Shipboard Technician Support at SIO, starting this fall. He is well known to many in the UNOLS community. Mr Southerland is presently the Oceanographic Technical Coordinator and Scientific Diving Officer at the Duke/UNC Marine Consortium. He is also the current President of the American Academy of Underwater Sciences. In his post at Duke/UNC he manages a broad array of seagoing technical services and associated interactions with an interdisciplinary set of scientific ship users and with federal agencies.

### **UNOLS Calendar**

<b>Meeting</b>	<b>Dates</b>	<b>Location</b>
Ship Scheduling Committee Meeting	Sept 15	Arlington, VA
Scheduling Review Meeting	Sept 16	Arlington, VA
Council Meeting	Sept 19	Arlington, VA
UNOLS Annual Meeting	Sept 20	Arlington, VA
White Submarine Workshop	Sept 21-22	Washington, DC
Fleet Improvement Committee	Oct 3-4	Palisades, NY
RVTEC Annual Meeting	Oct 19-21	Miami, FL
RVOC Annual Meeting	Oct, 25-27	Savannah, GA
DESSC Planning Meeting	Dec 4	San Francisco, CA