UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS NEWS

HIGHLIGHTS

Vol. 2 No. 1 February 1985

UNOLS Chairman Ferris Webster gave formal testimony to the Oceanography Subcommittee of the House Merchant Marine and Fisheries Committee on September 26, 1984 on UNOLS' role in the ocean community. Later, in response to a letter from Congressman Joel Pritchard (R-WA), Ferris provided information on the level of Federal funding for oceanographic research since 1967. Ferris's testimony and response to Congressman Pritchard's letter are of interest, and are reproduced:

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM
STATEMENT TO OCEANOGRAPHY SUBCOMMITTEE,
MERCHANT MARINE AND FISHERIES COMMITTEE
26 September 1984

I am Ferris Webster, Professor of Oceanography at the University of Delaware, and this year's elected Chairman of the University-National Oceanographic Laboratory System (better known as UNOLS).

The University-National Oceanographic Laboratory System

UNOLS is a private organization of academic oceanographic institutions which operates oceanographic facilities. To paraphrase the objectives as set forth in the UNOLS charter: UNOLS is a national system that works with the funding agencies to assist in the effective coordinated use, assessment, and planning of oceanographic facilities for graduate-level research and educational programs. By optimizing Federal and other support for academic oceanography, UNOLS will thereby continue and enhance the excellence of this nation's oceanographic program.

Support for the operation of UNOLS is provided by the Federal agencies that support or use the academic oceanographic fleet. These are the National Science Foundation (NSF), the Office of Naval Research (ONR), the National Oceanic and Atmospheric Administration (NOAA), the United States Geological Survey (USGS), the Marine Mineral Service (MMS), and the Department of Energy (DOE). The funding for UNOLS operations that is provided by this group of agencies is coordinated through the NSF.

Eighteen universities and research institutions are Members of UNOLS, and another thirty-one are Associate Members. Meetings are held twice a year. Between meetings, business is carried out through an Executive Committee, an Advisory Council, and a number of specialized committees. A full-time Executive Secretary is located with the School of Oceanography of the University of Washington in Seattle.

Fleet Coordination

The ships and other facilities operated by UNOLS institutions have mainly been acquired through NSF and ONR. Of 26 research vessels in the UNOLS fleet, NSF holds title to 12, ONR to seven, and seven have been acquired by other means, generally through state or institutional sources.

UNOLS Members have been working with the funding agencies to improve and maintain effective use of the academic research fleet. NSF is the largest user of the Academic fleet, with the support by agency breaking down as:

NSF	60-70%
ONR	10-15%
NOAA, USGS, MMS, DOE	10-20%
Other	10%

The challenge in managing the fleet is to match the facilities and support available to the needs of the science program. The actual scheduling of the fleet is carried out by the individual operating institutions. This procedure maintains close ties between the ship operators and the scientific investigators. In general, the science is accommodated, with some competition by funded research programs to get the available ship time. If there is a problem, it's that the field may be underfunded, so that too high a percentage of good science proposals are rejected.

I am pleased to report that the cooperative scheduling of the UNOLS fleet has been working well. I want particularly to acknowledge the constructive help of the National Science Foundation in achieving this.

The Current State of the UNOLS Fleet

At the current time, the UNOLS Fleet is in relatively good shape. There is a good balance between science program needs and fleet capacity. The fleet is almost fully utilized.

Fleet usage has been increasing modestly over the last five years, though it is significantly below the levels of the previous five years. Fleet usage was 4,494 days in 1983 and is estimated to be 5,210 days in 1984. The projection for 1985 is 5,999 days. Note however, that the average ship usage over the five-year period from 1975-1979 was 6,056 days.

To put the present fleet funding situation in perspective, it may be worth recalling the history of the academic fleet. Over the last fifteen years, the national capability to work at sea from academic research vessels has dramatically decreased.

An analysis prepared by the UNOLS Advisory Council two years ago indicated that the academic research fleet shrank from 35 vessels in 1971 to 25 in 1982. The size of the research fleet was, however, merely a symptom of the general decline of the overall support of oceanographic research by all the Federal agencies. There has been a particularly strong decrease in funding of oceanographic research by ONR, which has failed to keep up with inflation to the extent that today's program is significantly smaller than it was in the late sixties.

Some increases in Federal funding for the fleet have occurred in the past two years, and there may this year be adequate resources to support the existing fleet.

Fleet Replacement

Within the next decade, UNOLS Members and the Federal agencies will face a major challenge in coping with the aging of the academic fleet. The FOFCC Oceanographic Fleet Study Report notes that, using a 30-year lifespan for a research vessel, half of the UNOLS fleet should be retired by the end of the century. The problem is most severe with the larger vessels in the UNOLS fleet.

UNOLS has placed a high priority on dealing with the issue of aging of its research vessels, and has established a Fleet Replacement Committee to develop a plan for orderly replacement of the UNOLS fleet. We expect that the results will lead to recommendations to the funding agencies. The committee's work is coordinated with the Federal Oceanographic Fleet Coordinating Council (FOFCC) oceanographic fleet study, with UNOLS participation and staffing. In addition, the Fleet Replacement Committee is representing the UNOLS community in the Navy's program to develop characteristics for a new ship for the academic fleet.

A related issue is the composition, distribution, and management of the UNOLS fleet. A report to UNOLS on this subject was prepared by the UNOLS Advisory Council in 1982. In the two years since then, the situation regarding fleet usage and needs has changed. Some of the conclusions of the 1982 report relating to fleet composition are no longer applicable. The Advisory Council is preparing an update, which it plans to complete by May, 1985.

Future Issues

UNOLS is addressing issues of future importance to the academic research fleet.

The UNOLS Advisory Council is looking at new platform designs as part of its interest in orderly fleet replacement. Might new types of platforms (multi-hulls, semi-submersibles) be more effective than simple replacement of one conventional ship with another?

Oceanographic satellites, despite their promise, have not yet appeared on the scene. When they do, possibly toward the end of this decade, they may stimulate new means for worldwide oceanographic research. New programs being developed to understand global climate variability are examples of how these

new tools might be exploited. There will surely be an impact on ship usage, though I am uncertain that the new global research perspective will mean that we will need fewer ships.

UNOLS is developing new procedures to improve the national planning for distant, expeditional research activities. The idea is to improve the use of ships in distant waters through early discussion of plans by scientists from all interested institutions. The first results are promising, and preliminary plans for coordinated distant-water research operations in 1986 and 1987 are taking shape.

To conclude, I am proud of UNOLS's solid accomplishments in what may be less glamorous areas than those discussed so far: establishing and maintaining standards for safety on all UNOLS ships; promoting the more effective use of shipboard scientific gear; ensuring that funded oceanographers from all U.S. institutions have access to the fleet; promoting communications between the ship-operating institutions and oceanographic research scientists; arranging for at-sea world-wide medical assistance to all UNOLS vessels. These effective steps in improving the use of the academic research fleet have justified the effort put in by many individuals to create UNOLS and to make it work.

Excerpted Part of Congressman Pritchard's Question

Question: I understand that you have taken a look in trends in the level of Federal research support for oceanographic research over the years. Would you supply these figures for the record, being sure to include description of how you arrive at these figures? Would you comment on the significance of these trends, and hazard a prediction as to the health of the U.S. oceanographic research capability in the next ten to fifteen years? What do you think should be done?

Response: I have attached the figures in funding for "oceanographic research" that I have taken from the Federal Ocean Program Reports now published by the Committee on Atmospheres and Oceans of the Federal Coordinating Council for Science, Engineering and Technology. I have not done anything with the figures -- they are exactly as reported in Federal documents. However, they should be used with care, since there may be year-to-year changes in how each agency defines "oceanographic research". An example of this can be seen between 1981 and 1982, where the Department of Defense (DOD) changed its categorization.

On the right-hand side of the table, I have deflated the data with the Consumer Price Index (C.P.I.) to give the budgets in constant 1967 dollars. These C.P.I. values, and estimates for 1984 and 1985, were provided by Professor Eleanor Craig of the Economics Department at the University of Delaware.

It is evident that Federal support of oceanographic research, as defined here, has not kept pace with inflation over the past decade. There have been particularly strong decreases in the Department of Commerce (i.e., NOAA). In addition to individual agency declines, our overall national oceanographic

research capability has been slowly decreasing. If this is deliberate, I would like to see the reasoning made public. If it is not deliberate, but arises from ineffective and uncoordinated National policies, more attention should be directed to the problem.

There is no reason that the decline in the national oceanographic research effort should continue over the next ten to fifteen years. It could be quickly reversed. First, we should have more effort to define the situation and thereby to analyze its causes. This would likely be a prerequisite to taking action to develop a conscious policy. A basis for such a policy might be a restatement of oceanographic research priorities as proposed at your hearings. I believe that the oceanographic research community and Congress have major roles to play.

Oceanography Funding in Federal Ocean Program

	---IN CURRENT DOLLARS---				---IN 1967 DOLLARS				
YR	TOTAL	NSF	DOD	DOC	C.P.I.	TOTAL	NSF	DOD	DOC
67	61.5	24.8	28.6		100.0	61.50	24.80	28.60	
68	78.1	38.3	30.5		104.2	74.95	36.76	29.27	
69	78.4	34.9	34.3		109.8	71.40	31.79	31.24	
70	78.4	30.3	33.2		116.3	67.41	26.05	28.55	
71	101.5	49.4	32.1	19.7	121.3	83.68	40.73	26.46	16.24
72	119.4	65.7	30.0	20.5	125.3	95.29	52.43	23.94	16.36
73	109.9	57.3	27.3	21.5	133.1	82.57	43.05	20.51	16.15
74	116.1	61.1	28.4	19.7	147.7	78.61	41.37	19.23	13.34
75	124.1	65.7	27.7	19.5	161.2	76.99	40.76	17.18	12.10
76	128.9	65.0	31.8	19.8	170.5	75.60	38.12	18.65	11.61
77	144.6	73.8	31.8	23.5	181.5	79.67	40.66	17.52	12.95
78	157.6	78.9	37.0	26.9	195.4	80.66	40.38	18.94	13.77
79	172.9	88.8	40.4	28.8	217.4	79.53	40.85	18.58	13.25
80	207.3	97.5	45.5	40.2	246.8	84.00	39.51	18.44	16.29
81	218.9	95.0	53.8	42.9	272.4	80.36	34.88	19.75	15.75
82	172.2	104.9	18.1	20.7	289.1	59.56	36.29	6.26	7.16
83	179.2	107.8	20.1	20.5	298.5	60.03	36.11	6.73	6.87
84	191.4	127.8	13.5	21.1	313.4	61.07	40.78	4.31	6.73
85	222.5	138.5	20.9	29.3	325.9	68.27	42.50	6.41	8.99

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RVOC MEETING REPORT - The annual Research Vessel Operator's Council meeting was held at Bermuda Biological Station (BBS) 15-17 October, 1984. The excellent surroundings and attendance were very rewarding. Perhaps one followed the other.

The opening address was given by Dr. Wolfgang Sterrer, Director, BBS. Federal agency reports followed. John McMillan, NSF, gave a brief presentation on the 1985 budget. UNOLS happenings and concerns were presented by Bill Barbee. Bill Erb, U.S. State Department, presented the U.S. policy on hydrographic surveys in foreign waters with special interest on conflicting policies between U.S. and other countries. Commander Ralph Miller from the office of Commander Naval Oceanography Command (CNOC) discussed the Navy's need for collection of hydrographic data by ships of opportunity and the Navy's weather forecasting system which is available to the UNOLS fleet.

Richard Martino of NAVOCEANO discussed the necessity of UNOLS operators to inform the Navy of explosives and deployment of moorings in less than 300 m of water depth.

Special reports were given by RVOC members on construction of R/V SEWARD JOHNSON, outfitting R/V POLAR DUKE, replacement of R/V FRED MOORE, lengthening of R/V MOANA WAVE and doppler sonar current indicator on R/V CONRAD.

State of the art equipment presentations were given on Global Positioning System by Magnavox Corporation and Acoustic Doppler Current Profilers by RD Instruments/Mike Chapman Company.

Highly informative presentations on special medical training programs for shipboard personnel by Medical Advisory Systems, telecommunications by National Ocean Industries Association, shipboard computerized systems for stability and maintenance by Rodney Lay and Associates, history and technology of manned and unmanned submersibles by Eugene Allmendinger and marine fire fighting training programs by Jack Donovan of Texas A & M were given on the second day. The third and final day of the meeting was devoted to workshops and a business meeting.

The membership participated in the workshops with great enthusiasm. The workshops were:

1) Foreign Clearance Procedures and Post Cruise Obligations - The general feelings were that the existing forms and obligations must be further simplified. U.S. Dept. of State will try to work toward this goal.

2) User's Manuals - These appear to be in good order. The recommendation was made for all members to provide a copy of their institute's manual to all UNOLS institutions. The Manual should be dated.

3) Shared Use Equipment - A lengthy discussion followed as to the definition of shared use equipment, charges, availability, etc. No definite conclusions were made to these questions. RVOC recommends a detailed workshop on shared use equipment which would involve relevent participants from UNOLS and RVOC.

During the business meeting a standing safety committee was formed to provide continuous upgrade of the safety standards. It was recommended that UNOLS and RVOC hold a workshop to formulate diving standards. The 1963 RVOC bylaws were rewritten and adopted. A committee was formed to put together and hold a stability workshop just prior to the next annual RVOC meeting. The council expressed concern on not having received an update on the latest winch and wire study. Final business items were the railroading (oops, I meant re-election) of Jack Bash as Secretary and Dolly Dieter as Chairman.

The next RVOC meeting will be held in the fall of 1985 at Moss Landing Marine Laboratory in Monterey, California.

E. R. Dieter, Chair

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TAKE HEED - The UNOLS NEWS reminds the scientific community that a good cruise never happens without good crew and ships officers supporting the scientific personnel. Cruise assessments constantly give these hard-working folks praise and we wanted to make this known to the community. We are fortunate in having

good crews manning the fleet. Say thanks again next time you go to sea with these willing hands.

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ALVIN HISTORY VOLUMES - Those of you that use ALVIN may be interested in a three volume series that reviews ALVIN operations and the history of the facility. Write to UNOLS Headquarters for further information.

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SPEAKING OF SUBMERSIBLES...One of the new Navy initiatives plans much augmented community use of the SEACLIFF and other Navy research subs. Estimates of as much as 60 dives per year have been suggested. This is welcome news considering ALVIN's full schedule. Watch for more on this.

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PROCEDURES FOR REPORTING SURFACE AND SUBSURFACE OBSTACLES - The Defense Mapping Agency Hydrographic/Topographic Center (DMAHTC) is the point of contact for ship operations that use sonic emitters, towed devices or explosive charges. Such operations present special hazards to submarine operations and navigation. DMAHTC has agreed to disseminate information concerning underwater hazards as part of the Notice to Mariners system. The intent of the new reporting procedures is to eliminate mutual interference problems and equipment damage between ongoing and planned operations by advising units at sea of surface and subsurface obstacles. To be effective, the revised Notice to Mariners system relies on the cooperation of the maritime community (military, government and commercial). Timely notification is needed by DMAHTC for all operations that install moored underwater instrumentation, tow or drag devices of any kind, use sonic emitters or explosives. DMAHTC will disseminate information as follows:

(a) For moored instrumentation in depths of 300 meters or less (the maximum depth where damage could result from normal fishing operations), information will be broadcast as a radio navigational warning and reprinted in Section II of the Notice to Mariners.

(b) For depths greater than 300 meters, the information will not be broadcast. Documentation will be forwarded to appropriate Naval Commands for their use.

Commercial companies are not required to provide operational information to DMAHTC but are encouraged to do so. The DMAHTC point of contact for information and notification is Mr. Mitchell Kalloch, Chief, Navigation Department, Defense Mapping Agency Hydrographic/Topographic Center, 6500 Brooks Lane, Washington, D.C., 20315, telephone (202) 227-3130.

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BOB DINSMORE REPORTS ON 1984-85 SCHEDULE OF FLEET REPLACEMENT COMMITTEE -

SCHEDULE OF EVENTS FOR UNOLS FLEET REPLACEMENT PROCESS

1984

SEPTEMBER	-	Conceptual Designs for Five G&G Ships Completed for University of Texas (includes one SWATH)
OCTOBER	-	Outline Draft of Long-Range Replacement Plan
NOVEMBER	-	Conceptual Designs Underway for:
		Large General Purpose R/V
		Large SWATH R/V
		Medium Large General Purpose R/V

(Five UTIG Concept Designs Converted to General Purpose)

DECEMBER
- Inspection and Cruise of 3,000 ton Japanese SWATH
- Comparative Model Texts on Two SWATH Hulls

1985

JANUARY
- First Draft of Requirements and plan for Ship Replacement
- Commence Conceptual Design Study for Coastal SWATH Research Vessel

FEBRUARY
- First Round of Conceptual Design Studies (large ships) Completed and Circulated for Review

MARCH
- Second Draft of Requirements and Plan for Ship Replacement
- Community-Wide Workshop for Review of Ship Requirements, Planning, and Conceptual Designs. Recommendations for Proceeding on Next Phases of Plan.

APRIL
- Final Draft of Requirements and Plan for Ship Replacement
- Commence Preliminary Design Studies for One or More New Ship Plans

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BACKGROUND OF TENTATIVE UNOLS FLEET REPLACEMENT PLAN

The recent Navy initiatives in oceanography include support for replacement of university research vessels. In order to implement this initiative and to include it within the earliest Navy budget planning cycle (called POM-87), an overall UNOLS replacement plan was requested as a matter of urgency (due 30 September 1984). In order to meet the Navy need, a "tentative plan" was formulated based on existing UNOLS documents and several hastily called conferences.

The Navy principally is concerned with the five-year cycle starting at FY-1987. The plan largely revolves around construction of three new large general purpose ships: one a SWATH (tied in with another Navy initiative) which is termed "high performance AGOR"; the second which is a large "high endurance AGOR" around which UNOLS requirements have been developed; and the third is a "medium endurance AGOR" about the size of existing large UNOLS ships. The Navy further suggested modernizing the two newest large ships (MELVILLE and KNORR) to extend their service life to 30-40 years.

The tentative plan otherwise submits a scheme to replace the existing fleet on about a 30-year age basis. It does, however, address four new specialized ships chiefly so that these requirements carried from earlier plans should not be overlooked. Their continuation in the plan should be examined closely.

TENTATIVE UNOLS FLEET REPLACEMENT PLAN

Introduction

The need to plan for new, more capable research ships to conduct scientific programs at sea has become a matter of urgency. Numerous studies have amply demonstrated that by the 1990's most ships will be obsolete in terms of capability to keep up with the growing requirements of modern seagoing oceanographic programs. Large high performance overside handling arrangements and modern state-of-the-art shipboard laboratories will be needed

to meet major ongoing ocean programs. In addition, a high quality working environment is essential in order to attract competent seagoing personnel.

Replacement Criteria

Fleet replacement plan is based upon needs envisioned by CY 2000. Overall numbers and mix of ships is not significantly different from current inventory. Major additions are in areas of specialized type capabilities and include geophysics, submersible handling and polar research. Basic criteria of plan are:

- It should be responsive to the anticipated future trends of oceanographic research and engineering.
- It should be realistic in terms of the national economy.
- It should bear the general approval of the academic community.
- It should be sufficiently creditable to compete in the Federal funding infrastructure.
- It should provide a logical implemenation scheme bridging the current and projected time frame.
- It should provide for periodic updating.

Time frame and ship types are based upon:

- Age and material condition of existing ships
- Deficiencies in capability of existing vessels

Outline of Plan

Fleet replacement by five-year increments is given by the following table:

Time Frame	Class I & II	Class III	Class IV	Specialized
1985-1989	2 new (modernize 2)		1 new	1 G&G
1990-1994	1 new		1 new	1 Polar R/V
1995-1999	1 new	2 new	1 new	1 Sub Handling
				1 G&G
2000-2004		2 new	2 new	
2005-2009		3 new		
2010-2014	2 new		2 new	
Total	6	7	7	4

Notes:
1. Two Class II ships modernized in 1985-89 are same as replacements in 2010-2014.
2. Requirements for G&G ships may be met by new Class II ships.
3. Polar R/V requirement may be met by new procurement in other elements of Federal Oceanographic Fleet.

Proposed Navy Support (POM-87)

It is proposed that Navy fund new construction of three Class II ships in POM-87 as follows:

	Fund	IOC	Est. Cost
High Performance AGOR	FY-87	FY-91	$35M
High Endurance AGOR	FY-88	FY-92	$30M
Medium Endurance AGOR	FY-89	FY-93	$25M
Modernize two AGOR's	FY-87		

UNOLS NEWS will update this important committee's work in following issues. Comments of ship users are always welcome and useful in the Fleet Replacement Committee's work and suggestions and comments should be directed to Bob Dinsmore at Woods Hole Oceanographic Institution.

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PROPOSED SCIENTIFIC MISSION REQUIREMENTS FOR PLANNED NEW FLEET ADDITIONS OVER THE NEXT DECADE - UNOLS NEWS readers will be concerned with the specifications for the planned fleet replacement vessel types presently being considered by the Fleet Replacement Committee. Copies of the scientific mission requirements for the large high endurance general purpose oceanographic research ship are listed in this issue. Mission requirements for these last two types can be obtained from UNOLS headquarters. We will keep you informed of updates and additions. Also note that specs are being finalized for the new Navy "AGOR's" and we will publish these in Vol. 2 No. 2.

SCIENTIFIC MISSION REQUIREMENTS FOR
LARGE HIGH ENDURANCE GENERAL PURPOSE OCEANOGRAPHIC
RESEARCH SHIP

General:

The ship is to serve as a large general purpose oceanographic research ship. The primary requirement is for a high endurance vessel capable of worldwide cruising (except in close pack ice) and able to provide both overside and laboratory work to proceed in greater capacity and in higher sea states than is now available. Other general requirements are larger scientific parties, reliability, flexibity, cleanliness, vibration and noise free, and an overall upgrading of quality for doing science and engineering at sea.

Size:

The size ultimately is determined by the requirements. It seems likely that these will result in a vessel larger than present academic ships. However, the LOA should not exceed 300 feet.

Endurance:

Sixty days; providing the ability to transit to the most remote area and work 3 - 4 weeks on station.

Accommodations:

Twenty-five to thirty scientific personnel in two-person staterooms. Expandable to 40 through the use of vans. Science library-lounge with conference capability. Science office.

Speed:

Fifteen knots cruising; sustainable through Sea State 5. Speed control plus/minus 0.1 knot in 0-6 knot range; and plus/minus 0.2 knot in range 6-15 knots.

Station Keeping:

Maintain station and work in Sea States through 5; limited work in SS 7.

Dynamic positioning both relative and absolute in 35 knot wind, Sea State 5, and 3-knot current in depths to 6,000 m using GPS and bottom transponders. Plus/minus 5 degrees heading; plus/minus 150 ft. max. excursion.

Ice Strengthening:

Ability to transit loose pack (5/10 cover). Not intended for icebreaking or close pack work. Protection against encounters with growlers and other glacial ice difficult to detect.

Deck Working Area:

Spacious fantail area - 3,000 sq. ft. minimum with contiguous work area along one side 12 x 50 ft. minimum. Provide for deck loading up to 1,500 lbs./sq. ft. and an aggregate total of 100 tons.

Oversize holddowns on 2-ft. centers. Highly flexible to accommodate large and heavy equipment. Removable bulwarks. Dry working deck but not greater than 7 - 10 ft. above waterline.

Usable clear foredeck area to accommodate specialized towers and booms extending beyond bow wave.

All working decks accessible for power, water, air, and data and voice communication ports.

Cranes:

A suite of modern cranes to handle heavier and larger equipment than at present: (1) to reach all working deck areas and offload vans and heavy equipment up to 20,000 lbs.; (2) articulated to work close to deck and water surface; (3) to handle overside loads up to 5,000 lbs., 30 ft. from side and up to 10,000 lbs. closer to side; (4) overside cranes to have servo controls and motion compensation; (5) usable as overside cable fairleads at sea.

Winches:

New generation of oceanographic winch systems providing fine control (0.5 m/min); constant tensioning and constant parameter. Wire monitoring systems with inputs to laboratory panels and shipboard recording systems. Local and remote controls.

Permanently installed general purpose winches include:

- Two winches capable of handling 30,000 ft. of wire rope or electromechanical cables having diameters from 1/4" to 3/8".

- A winch complex capable of handling 40,000 ft. of 9/16" trawling or coring wire and 30,000 ft. of 0.68" electromechanical cable (up to 10 KVA power transmission and fibreoptics). This could be two separate winches or one winch with two storage drums.

Additional special purpose winches may be installed temporarily at various locations along working decks. Winch sizes may range up to 40 tons (140 sq. ft.) and have power demands to 300 h.p.

Portable shelters available to winch work areas for instrument adjustments and repairs. Winch control station(s) located for optimum operator visibility with reliable communications to laboratories and ship control stations.

Overside Handling:

Various frames and other handling gear and more versatile than present to accommodate wire, cable and free launched arrays. Matched to work with winch and crane locations but able to be relocated as necessary.

Stern A-frame to have 20-ft. minimum horizontal and 30-ft. vertical clearance; 15-ft. inboard and outboard reaches.

Articulated stern ramp, 20-ft. minimum width, providing variable configurations ranging from a flush deck to a waterline platform.

Provision to carry additional overside handling rigs along working decks from bow to stern.

Control station(s) to give operator protection and operations monitoring and be located to provide maximum visibility of overside work.

Towing:

Capable of towing large scientific packages up to 10,000 lbs. tension at 6 knots and 25,000 lbs. at 2.5 knots.

Laboratories:

Approximately 4,000 sq. ft. of laboratory space including: Main Lab area (2,000 sq. ft.) flexible for frequent subdivision providing smaller

specialized labs; Hydro lab (300 sq. ft.) and Wet lab (400 sq. ft.) both located contiguous to sampling areas; Bio-Chem Analytical lab (300 sq. ft.); Electronics/Computer lab and associated users space (600 sq. ft.); darkroom (150 sq. ft.); climate controlled chamber (100 sq. ft.), and freezer (100 sq. ft.).

Labs should be located so that none serve as general passage-ways. Access between labs should be convenient. Labs, offices, and storage to be served by a man-rated elevator having clear inside dimensions of approximately 3 ft. by 4 ft.

Labs to be fabricated using uncontaminated and "clean" materials and constructed to be maintained as such. Furnishings, HVAC, doors, hatches, cable runs, and fittings to be planned for maximum lab cleanliness.

Fume hoods to be installed permanently in Wet lab and Analytical lab. Main lab shall have provision for temporary installation of fume hoods.

Cabinetry shall be high grade laboratory quality including flexibility through the use of unistruts and deck boltdowns.

Heating, ventilation, and air conditioning (HVAC) appropriate to laboratories, vans, and other science spaces being served. Laboratories shall maintain temperature of 70-75 degrees F.; 50% relative humidity and 9-11 air changes per hour. Filtered air provided to Analytical lab. Each lab area to have a separate electrical circuit on a clean bus with continuous delivery capability of at least 40-volt amperes per square foot of lab deck area. Labs to be furnished with 110 v and 220 v AC. Total estimated laboratory power demand is 100 KVA. Uncontaminated sea water supply to most laboratories, vans, and several key deck areas. Compressed air supply to be clean and oil free.

Vans:

To carry four standardized 8 ft. by 20 ft. portable vans which may be laboratory, berthing, storage, or other specialized use. Hookup provision for power, HVAC, fresh water uncontaminated sea water, compressed air, drains, communications, data and shipboard monitoring systems. Van access direct to ship interior.

Provision to carry up to four additional portable non-standard vans (600 sq. ft. total) on superstructure and working decks. Supporting connections at several locations around ship including foredeck.

Ship should be capable of loading and offloading vans using own cranes.

Workboats:

At least one and preferably two 16-ft. inflatable (or semirigid) boats located for ease of launching and recovery.

A scientific work boat 25-30 ft. LOA specially fitted out for supplemental operations at sea including collecting, instrumentation, and wide angle signal measurements. Twelve-hour endurance including both manned

accommodations and automated operation. "Clean" construction. To be carried as a one of four-van options above.

Science Storage:

Total of 20,000 cubic ft. of scientific storage accessible to labs by elevator and weatherdeck hatch(es). Half to include suitable shelving, racks, and tie downs; remainder open hold.

Acoustical Systems:

Ship to be as acoustically quiet as practicable in the choice of all shipboard systems and their location and installation. Design target is underway echo sounding at 15 knots at Sea State 5.

Ship to have 12 kHz, 3.5 kHz echo sounding systems and provision for additional systems.

Phased array, multibeam precision echo sounding system (Sea Beam).

Transducers appropriate to dynamic positioning system.

Transducer wells (20") one located forward and two athwartships. Large pressurized sea chest (4 ft. x 8 ft.) to be located at optimum acoustic location for at-sea installation and servicing of transducers and transponders.

Multi-Channel Seismics:

Temporarily install and carry large array MCS system comprising two large capacity air compressors; streamer reel (10-ft. high, 15-ft. wide, 20-ton weight); rigging and booms to tow array with 100-meter separation; and up to four vans (600 sq. ft.) well aft in close proximity to towed arrays.

Navigation/Positioning:

Global Positioning System (GPS) with appropriate interfaces to data systems and ship control processors.

Short baseline acoustic navigation system.

Dynamic Positioning System with both absolute and relative positioning parameters.

Internal Communications:

Internal communication system providing high quality voice communications throughout all science spaces and working areas.

Data transmission, monitoring, and recording system available throughout science spaces including vans and key working areas.

Closed circuit television monitoring and recording of all working areas including subsurface performance of equipment and its handling.

Monitors for all ship control, environmental parameters, science and overside equipment performance to be available in all, or most, science spaces.

Exterior Communications:

Reliable voice channels for continuous communications to shore stations (including home laboratories), other ships, boats, and aircraft. This includes satellites, VHF and UHF.

Fascimile communications to transmit high speed graphics and hard copy text on regular schedules.

High speed data communications (9600 Baud) links to shore labs and other ships on a continuous basis.

Satellite Monitoring:

Carry transponding and receiving equipment including antenna to interrogate and receive satellite readouts of environmental remote sensing.

Ship Control:

Chief requirement is maximum visibility of deck work areas during science operations and especially during deployment and retrieval of equipment. This would envision a bridge-pilot house very nearly amidships and with unobstructed stern visibility.

The functions, communications, and layout of the ship control station should be carefully designed to enhance the interaction of ship and science operations. For example, ship course, speed, attitude, and positioning will often be integrated with scientific operations requiring control to be exercised from a laboratory area.

Sea State	*Description*	*Height Feet*	*Meters*
0	Calm-glassy	0	0
1	Calm-rippled	0 - 1/2	0 to 0.1
2	Smooth wavelets	1/2 - 1 1/2	0.1 to 0.5
3	Slight	1 1/2 - 4	0.5 to 1.25
4	Moderate	4 to 8	1.25 to 2.5
5	Rough	8 to 13	2.5 to 4
6	Very rough	13 to 20	4 to 6
7	High	20 to 30	6 to 9
8	Very high	30 to 45	9 to 14
9	Phenomenal	over 45	over 14

SCIENTIFIC MISSION REQUIREMENTS FOR LARGE HIGH PERFORMANCE GENERAL PURPOSE OCEANOGRAPHIC RESEARCH SHIP

General:

The ship is to serve as a large general purpose research ship. The most overriding required characteristic is that the ship provide the most stable environment possible in order to allow both overside and laboratory work to proceed in greater capacity and in higher sea states than is now possible. Other general requirements are larger scientific parties, reliability, flexibility, cleanliness, vibration and noise free, and an overall upgrading of quality for doing science and engineering at sea.

Size:

The size ultimately is determined by the requirements.

SCIENTIFIC MISSION REQUIREMENTS FOR MEDIUM ENDURANCE GENERAL PURPOSE OCEANOGRAPHIC RESEARCH SHIP

General:

The ship is to serve as a medium to large general purpose research ship. The primary requirement is a maximum capability commensurate with ship size to support science and engineering operations at sea in terms of overside equipment handling, laboratory qualities, and a clean vibration free and stable environment for precision measurements.

Size:

The size ultimately is determined by the requirements. However, it is intended that this is a class ship to be a direct replacement of the current large university research ships such as the AGOR-3 Class (210 ft. LOA).

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HIGHLIGHTS OF THE UNOLS ADVISORY COUNCIL MEETING OF OCTOBER 24, 1984 - The Council heard a review of USC's plans for the conversion and operation of the OSPREY (replacement for VELERO IV) from Don Keach of IMCS at USC. Don outlined the history of marine work at USC and the background for the search for a replacement vessel. The closest match for the specifications finally defined was a modern purse seiner. Many of these are available due to the decline in the U.S. based industry and OSPREY was obtained from Ralston Purina Corporation at a bargain price. USC is now seeking a combination of private gift funds and NSF funds to convert the vessel to general purpose research work in the Eastern Pacific. The ship is 225' long and is being prepared for conversion at the USC Marine Facility. Previous questions raised during the first Council review were addressed by Don and after discussion of this vessel and related central California ship requirements later in the Council's deliberations a series of recommendations were made which included the requirement that meeting the ship needs and replacements in the central California area be based on a Central California Consortium bringing together USC, MLML, NPG, UCSB, UCSC, USGS. The formation of the consortium is underway

and the consortium leadership is actively developing plans for the replacement of CAYUSE and preparing proposals for conversion of OSPREY.

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SIO BUYS REPLACEMENT FOR E. B. SCRIPPS - SIO has purchased the 130' MIDNIGHT ALASKA as the replacement for the ELLEN B. SCRIPPS. The new acquisition has been renamed the ROBERT G. SPROUL and has been designated as a UNOLS vessel by the Council. The E. B. SCRIPPS has been retired from UNOLS status. The Council made this recommendation to the membership as a revision of the list of UNOLS vessels prepared at the June Council meeting.

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ADDITIONAL RECOMMENDATIONS AND ACTIONS - The Advisory Council directed the Executive Secretary to write all UNOLS operating institutions reiterating the Council's concern with the effective and efficient operation of the UNOLS fleet. Special emphasis should be given to liaison and operations for cruises supporting users from other institutions.

The Council continued its monitoring of specialized instrumentation facility initiatives and planning and also of the problems of access to foreign waters for ocean research. We will keep the readers informed of new developments in future issues.

The Council noted the need to keep abreast of new technologies and recommended formulation of a special ad hoc committee for this role.

The Council maintained its review of the changes in the fleet and of the continuing plans for fleet replacement touched on above in this issue.

Reports of the federal funding agencies were heard and highlights of the various agency plans were discussed. UNOLS NEWS periodically publishes the new budget releases by the agencies and readers are referred to Ferris Webster's analysis in this issue.

Barrie Walden of WHOI reviewed the history of the ALVIN program. This information is available from UNOLS headquarters.

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MOANA WAVE STRETCH COMPLETED - MOANA WAVE has returned to the UNOLS fleet with another 30' of added length and space. She replaces KANA KEOKI which has now been retired from UNOLS status. From preliminary reports the stretch seems to have been successful. Every lady needs an occasional face lift and the "new Look" will augment fleet capabilities.

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PARTICIPATE!!!!- UNOLS NEWS repeats its standing invitation for members of the ocean science community to send in announcements, comments and news. If Charley Miller's editorial is any indication, we have lots of interested readers and so use us. Send material to:

UNOLS Office, WB-15
School of Oceanography
University of Washington
Seattle, WA 98195

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ELECTIONS LOOM - Chairman Webster has appointed the 1985 Nominations Committee under Art Maxwell's chairmanship. Remember that everyone can send nominations for officers to the Committee. We will be electing Chairman and Vice-Chairman

and two councilors. All should be active marine folks who are interested in UNOLS!!! Send your nominee to Art at Institute of Geophysics, University of Texas at Austin, Austin, Texas, 78712. Current officers are eligible for reelection. Webster and Corell are eligible and we usually work the victims for Chair and Vice-Chair for 3 one-year terms. Councilors should represent Member and Associate Member Institutions respectively.

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NAVY IS CONSTRUCTING EIGHT TOWERS OFFSHORE FROM SAVANNAH, GEORGIA - The Navy has nearly completed the design for eight offshore towers to be installed offshore from Savannah, Georgia, in the summer of 1986. The towers will house tracking equipment for the tactical aircrew combat training system (TACTS). They will be in water depths ranging from 81 ft. to 145 ft. and will be from 30 to 60 N.M. offshore in an area ranging from Savannah to Jacksonville, Florida.

Navy design representatives indicated that they may allow investigators to use the towers as staging areas for oceanographic and meteorologic experiments that would not interfere with TACTS operations or with the performance of the towers.

A possibility exists that some power and one or two data channels could be made available to experiments.

This may be a unique opportunity for our community to establish a long term access to offshore observation/experimentation platforms. Contact Al Sutherland at NSF, OCE (phone: 202/357-7837) for further information.