UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS NEWS

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UNOLS CHAIRMAN'S CORNER

As UNOLS Chairman, I want to welcome readers to the UNOLS NEWS. I extend a special welcome to those oceanographers who have not had the occasion to participate in UNOLS activities. I hope this newsletter will be useful in explaining what UNOLS and its committees are doing.

UNOLS should promote the effective use of the U.S. Academic Research Fleet and access to research ships and the sea for all oceanographers. This is a special challenge today. Research funding has not been keeping up with demand. Oceanographers today have fewer vessels available for research than a decade ago. To make best use of what we do have, we must coordinate and schedule the fleet, establish performance standards for the instrumentation and equipment, and ensure that all UNOLS ships are safe.

I expect this newsletter to play an important role by informing you of UNOLS activities and opportunities. I invite your comments and advice on how UNOLS can be made more effective and better serve your needs.

I would like to acknowledge the initiative of Donn Gorsline of USC in editing and producing UNOLS NEWS. (Ed. note: any contribution that lauds the Editor will ALWAYS get top billing in UNOLS NEWS).

Ferris Webster, UNOLS Chairman

RESEARCH VESSEL OPERATORS' COUNCIL (RVOC)

The annual Research Vessel Operators' Council meeting was held in Honolulu, Hawaii October 4-6, 1983. The meeting was well attended by UNOLS Members and Associate Members. Following Federal Agency reports, special topics were addressed by guest speakers. Topics covered were Fleet Inspection, Recommended Diving Standards, Navigation Electronics-State of the Art, Marine Insurance, Medical Advisory Systems, and SEA MARC II Systems.

The two days following were spent in workshops including Policies for Chartering UNOLS and non-UNOLS Vessels, Ship Operations, Marine Technician Cost Comparison, and Updating of UNOLS Safety Standards. A tour of the University of Hawaii ship facilities concluded the meeting.

The next annual RVOC meeting will be held in the fall of 1984, date and location will be determined later. Agenda items for the meeting are Weather Reporting, specifically Navy Operations, National Oceanic Industry, Manned and Unmanned Submersibles, Jones Act, Stability, Computer Programs and Admeasurement Update. Workshops will include Marine Insurance, Fleet Update, User's Manuals and Shared Use Equipment. Any suggestions for additional topics will be welcome.

E. R. Dieter, RVOC Chairperson

time is illustrated in the following tables on Projected 1984 operations and Funding and on profiles of Funding cycles. Note especially the dramatic increase in operating days projected for 1984 over the average for 1981-1983; the 1984-1985 increase in funding anticipated in each of the funding source categories; and the $3.2M shortfall anticipated on the basis of projected ship use.

TABLE 1: Projected 1984 Ops and Funding

		$M				
	OP DAYS	NSF	ONR	OTHER	TOTAL	
East Coast	3299	14.71	2.67	5.13	22.51	
West Coast	2593	12.65	2.42	3.13	18.20	
Total	5892	27.36	5.09	8.26	40.71	
Anticipated Funding		25.0	4.5	8.0	37.5	Shortfall: $3.2M

TABLE 2: Profile of Funding Cycles

	OP DAYS	NSF	ONR	$M OTHER	TOTAL	SHORT FALL
1981	4501					
1982	4379	21.2	3.4	4.8	29.4	-----
				1983 Operations		
MAY 1982 (proj. costs)		24.9	3.9	4.9	33.6	
(anticipated)		(21.8)	(3.1)	(4.9)	(29.8)	3.8
OCT 1982 (proj. costs)		23.8	4.1	6.4	34.3	
(anticipated)		(21.8)	(3.1)	(6.4)	(31.3)	3.0
FINAL	4747	23.4	3.9	5.3	32.6	-----
				1984 Operations		
MAY 1983 (proj. costs)		28.7	4.4	6.4	39.5	
(anticipated)		(25.4)	(4.1)	(6.4)	(35.9)	3.6
OCT 1983 (proj. costs)		27.4	5.0	8.3	40.7	
(anticipated)		(25.0)	(4.5)	(8.0)	(37.5)	(3.2)
FINAL	?	?	?	?	?	?

The West Coast Group elected Brian Lewis, University of Washington as its 1984 Chairman. After conference with the group, Dr. Lewis set the next meeting of the West Coast Group for Seattle, during the last week in February, 1984.

The East Coast Group will hold their next meeting in Washington, D.C. early in March. The meeting was ajourned at 2:30 PM.

R. Dinsmore, Chairman

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UNOLS CHARTER MODIFICATIONS DISCUSSED AND VOTED AT OCTOBER SEMI-ANNUAL MEETING

Four modifications recommended for adoption were discussed and voted upon at the October Semiannual Meeting in Washington, D.C. Three passed and one has been rewritten to meet objections and discussion and will be circulated for review and approval or disapproval. The three modifications adopted are as follows:

1. Addition to paragraph (d) of Section 2 on organization (Copies of the Charter can be obtained from the UNOLS Office).

   (Amend paragraph (d) of Section 2 on organization)

   The Advisory Council periodically will review the lists of Member and Associate Member Institutions. It will recommend to UNOLS additions, status changes, and terminations on the basis of Member Institution and Associate Member Institution definitions. Changes will be considered at a regular UNOLS meeting and require a two-thirds vote of the Members Institutions present or by proxy if absent. (APPROVED)

DESIGN IDEAS FOR OCEANOGRAPHIC RESEARCH PLATFORMS; A Task Report

Our fleet of research vessels is mostly middle-aged now and will be retired together during a relatively brief period between 1990 and 2005. Substantial progress has been made in the last decade in advanced computer modeled platform designs for the Navy, and the offshore industries, which offer significant improvements in station keeping, comfort, economy and safety. In the search for platforms to take the place of VELERO IV and FRED H. MOORE we have unique opportunities to explore the alternatives. We should avoid the short term temptation to convert surplus ships from distressed industries, but rather seek to advance the state of the art in research platforms performance. If we fail to seize this opportunity now, we will have insufficient experience with the next generations of platforms such as semi-submersibles and sailing catamaran ships. We then might be tempted to merely replace the present vessels with more of the same rather than exciting new vessels which can work efficiently world-wide in higher sea states with much greater payloads, comfort and safety.

A position paper presented to the Council outlines two possibilities for advanced platforms. We must not permit the recent hard economic times for scientific ship operations to lock us into accepting more mediocre platforms with which we will have to live for decades. With over one hundred research vessels nation-wide, ocean scientists and engineers have ample justification for the construction of a fleet of ships tailored to their needs and special conditions.

John Van Leer, UNOLS Council Member

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UNOLS EXPEDITIONARY PLANNING COMMITTEE (UNEPC) HOLDS ORGANIZING MEETING

The UNOLS Expeditionary Planning Committee (UNEPC) held their first meeting during the October Semiannual Meeting in Washington, D.C. on October 25, 1983. George Shor, first chairman of the committee, led discussion of the organization of the committee work and outlined the charges to UNEPC. Briefly, the committee will coordinate the scheduling of major expeditions that require long lead times whether because of remote area of operation, logistically complex work, multi-ship coordination or special facility use. These will typically be multi-institutional projects and may be international. Principal Investigators who are commencing plans for such expeditions should send letters of intent to George Shor, or to the UNOLS Office as soon as possible. Earliest time frame for the work of UNEPC is late 1985-early 1986 and beyond. The committee will help in the publicizing of the projects, assist with funding agency coordination and communicate with the East and West Coast Ship Scheduling Committees during the pre-cruise planning period. A letter has been circulated to the UNOLS community and an announcement will appear in forthcoming issues of UNOLS NEWS, and in EOS.

UNEPC membership includes a chairman elected from the marine sciences community for a three-year renewable term, and one member appointed from each of the UNOLS Member Institutions operating Class A, B or C vessels. These presently include University of Washington, Oregon State University, University of Hawaii, Scripps Institution of Oceanography, Texas A & M University, University of Miami, Lamont-Doherty Geological Observatory, the University of Rhode Island and Woods Hole Oceanographic Institution. The Chairman of the ALVIN Review Committee, the UNOLS Executive Secretary (Staff) and a member of the UNOLS Advisory Council are also appointed to the UNEPC by the Chairman of the Advisory Council of UNOLS. Watch for more news and information on these activities.

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NECOR EXECUTIVE COMMITTEE APPROVES MINIMUM LIST OF SHARED-USE EQUIPMENT FOR NECOR SHIPS

The following list of basic equipment recently approved (July 8, 1983) by the NECOR executive committee will be of interest to UNOLS institutions and marine scientists and may provide some guidance for future UNOLS lists. Comments are invited and should be sent to Bob Dinsmore at WHOI.

This equipment will be available upon request (lead times required vary with the type of equipment and with institution) to any scientist using a NECOR vessel.

Precision Depth Recorders
Transducers (3.5 kHz and 12 kHz)
XBT Systems (deck unit, two launchers, calibration probes)
Navigation Equipment (Satellite navigation with automatic speed and heading inputs, Loran C)
Satellite Communications (ATS) (basic equipment for voice, PCM modem, RS-232 terminal)
Slip Ring Assembly for Conducting Winch
Ship Parameter Network (SAIL) (ship speed, gyrocompass, navigation..Loran C and SatNav.. sea water temperature, time)
Water Sampling Equipment (Niskin bottles, messengers, reversing thermometers and frames)
Refrigerators and Freezers
Salinometer
Spectrophotometer
Oxygen Titration Equipment

Community discussion of comparable basic lists is invited. How about some entries from the Biologists and Geologists?

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EAST COAST AND WEST COAST SHIP SCHEDULING MEETING, OCTOBER 25, 1983

The following excerpts and data are drawn from the report of the East and West Coast Ship Scheduling Groups, submitted to UNOLS for the meeting of October 25, 1983 held in conjunction with the UNOLS Semiannual Meeting in Washington, D.C. These groups include the representatives of members and associate members on each major coast (Gulf meets with East Coast), and meet to exchange data on ship utilization for the succeeding period and to arrange for ship use by principal investigators outside their own organizations or for investigators from non-UNOLS institutions, or with special ship needs. The chairmen for 1983 were John Martin (West Coast) and Bob Dinsmore (East Coast). The two groups then meet jointly and later report their activities to the UNOLS membership.

Meetings were held at the National Science Foundation, 1730 K Street NW and 1800 G Street NW.

Individual meetings were convened by their chairmen at 9 AM. The joint meeting was held from 1-3 PM.

1. Ship schedules, operations, costs and agency support were quickly reviewed. The reviews revealed only modest changes in estimates for the total cost of 1983 operations from estimates provided in February and May, 1983.
2. Ship schedules, operations, costs and agency support for 1984 were next projected by individual institutions, and discussed and summarized.

Projected ship use days for 1984 remain almost 25% greater than for 1983. Projected funding includes $24-27M (67%) from NSF, $5M (12%) from ONR, and $8M (20%) from other federal and state agencies. (The Other category includes approximately $1M NSF funds anticipated through Joint Oceanographic Institutions Inc.).

Although in many respects, the assembled UNOLS Fleet Schedule is well defined, a number of problems exist: a large part of the ALPHA HELIX (University of Alaska) schedule is still tentative pending decisions to be made within NSF's Division of Polar Programs. Pending decisions concerning rehabilitation and modification of the MOANA WAVE and the rescheduling for replacing KANA KEOKI make the University of Hawaii's projected schedule tentative. Adjustments to the scheduling of South Atlantic investigations have resulted in a GYRE schedule that leaves the ship in the South Atlantic, facing unproductive transit time. Schedules from other institutions include uncertainties of from 2-15% related to pending funding decisions by sponsoring agencies.

These problems and uncertainties notwithstanding, there is the real possibility that in 1984, the ship time requirements of funded research might exceed the available (or funded) shiptime; i.e., a small number of funded researchers could be left on the dock. The critical match in 1984 between the projections of ship requirements and funded ship

2. Revision of paragraph (1) of part (e) of Section 2 on Associate Membership as follows: (e) UNOLS institutions are divided into two groups to reflect a distinction between operators and non-operators of significant, shared, oceanographic facilities. (1) Member Institutions conduct graduate academic programs in the marine sciences and operate UNOLS vessels (defined below) or National Oceanographic Facilities (Annex II) for academic purposes, and for which a significant proportion of the funding is provided by the federal government. Member Institutions agree to operate their UNOLS vessels in accord with UNOLS safety standards, to participate fully in the UNOLS scheduling process, and to meet cost accounting and performance standards according to UNOLS uniform procedures. Facilities are regularly available to users outside of the operating institution when funding is provided by the sponsor of the intended research or by the user. Institutions will normally be expected to show evidence of three or more years of continuous operation of shared research facilities in order to qualify for membership. Election as a UNOLS Member Institution will be considered by the Advisory Council upon receipt for evaluation of a written application indicating the facilities qualifying as a UNOLS vessels or National Oceanographic Facilities, the graduate level research and academic program of the institution, its history as an operator of shared significant facilities, and a projection of the use of facilities for the next year, including user charges. Elections to membership will be held at a regular UNOLS meeting and require a majority vote of the Member Institutions present or by proxy if absent. (APPROVED)

3. Revision of paragraph (2) of part (e) of Section 2 on Associate Membership as follows: (2) Associate Institutions conduct academic programs in the marine sciences and use on a recurrent basis, but do not necessarily operate, seagoing oceanographic facilities for academic purposes. Election as UNOLS Associate will normally be done after submission of a written application to the Advisory Council for evaluation of the institution's academic programs and its probable involvement in UNOLS activities. Election will be made at a regular UNOLS meeting by a vote of UNOLS institutions. A simple majority vote of UNOLS Member and Associate Member Institutions present or by proxy if absent will be sufficient for election. (APPROVED)

The fourth modification to the body of the Charter was not approved and will be reported on in a later issue if favorably acted upon on second submittal.

One modification of the Annex to the Charter was also discussed and approved.

1. Revision of paragraph 1. of ANNEX II, National Oceanographic Facilities as follows:

In addition to regular institutional UNOLS facilities there may be identified National Oceanographic Facilities, defined as those facilities, specialized and otherwise, that are made available for the use of qualified scientists from any institution and the use of which shall be recommended by a UNOLS Review Committee. (APPROVED)

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IMPACT OF CRUISE REPORTS----YES, THEY ARE IMPORTANT!!!!! AND THEY GET RESULTS.

The UNOLS NEWS reported on the need for all PI's to complete the cruise reports in its last issue. An excerpt from the recent review of the Oceanographic Facilities Support Section documents the importance of these reports:

"The other important recommendation of the 1980 report is that immediate action be taken to halt the deterioration of the fleet, to reduce the time lost by scientific programs. The 1980 report stated 'that significant losses of science occur on almost 40% of cruises...' The subcommittee commends OFS for taking immediate and effective action to improve this deplorable situation.

OFS requested the UNOLS Advisory Council to establish a method of cruise assessment and evaluation. In 1981 the Advisory Council asked the Chief Scientists of all cruise legs to fill out a simple questionnaire at the conclusion of work at sea. Copies of these forms are submitted to the operator and to the UNOLS Office. A member of the Advisory Council was assigned a standing role of reviewing these forms to look for trouble spots in

the fleet and to prepare a summary with assistance of the UNOLS Office. These summaries, but not the original forms, are periodically distributed to UNOLS Members and to OES and ONR.

These forms have provided a positive feedback to both the operators and to the funding agencies, and the information has been beneficial to both. The operators have responded positively by emphasizing funding for maintenance and upgrading. The result has been a dramatic improvement in efficiency and cost-effectiveness of operation. A quick perusal of Cruise Assessment forms for the past year suggests that less than 5% of cruise legs suffered any loss of science time due to operator, ship, crew, scientific support equipment or operator-supplied instrumentation."

Ron La Count and his staff in OFS, together with Keith Kaulum at ONR have done a fine job in meeting this problem and Chief Scientists are urged to keep the forms coming in.

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UNOLS COMMITTEE ON FLEET REPLACEMENT NOW IN ACTION

Bob Dinsmore, Chairman of the Committee on Fleet Replacement reports that all hands are signed on.

The Membership is:

Robertson Dinsmore, WHOI, Chairman
George Keller, OSU — Worth Nowlin, TAMU
John Martin, MLML — Fred Spiess, Scripps
David Menzel, Skidaway — Derek Spencer, WHOI

The Committee is organizing and setting its directions. A two-stage approach is contemplated. In the first stage the committee would identify and verify fleet requirements (emphasizing the replacement crisis emerging during the 1990's), determine needs, examine and evaluate various hull-platform capabilities and configurations and sponsor a number of conceptual designs. A community-wide workshop would be held to gain broad-based information and to establish the basis of support for preliminary concepts. In the second stage the committee would develop coordinated plans from preliminary results for vessel replacement and construction, and sponsor preliminary design or designs for identified priority needs. It will be important to work closely with Federal funding agencies who have undertaken a parallel effort, particularly through the Federal Oceanographic Fleet Coordinating Council (FOFCC). The Committee's proposal and flow diagram follow.

PROPOSED DEVELOPMENT OF A PLAN FOR RESEARCH VESSEL REPLACEMENT AND CONSTRUCTION

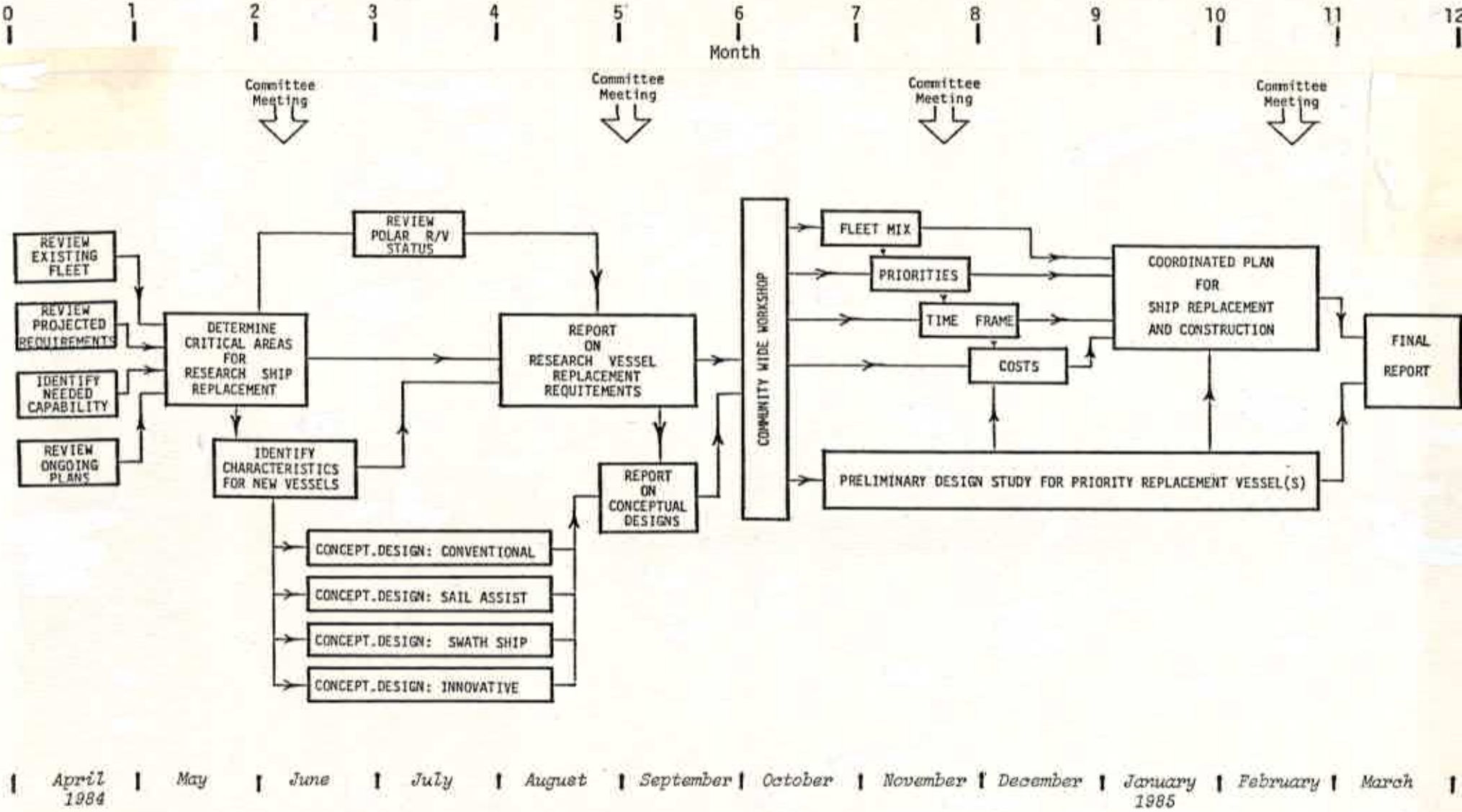
Abstract

It is proposed to conduct a study leading to a coordinated plan for the replacement of aging UNOLS Research Vessels and the construction of new ships in order to implement the plan. The proposed study is under the direction of the UNOLS Committee on Fleet Replacement and will be administered on behalf of UNOLS by the Woods Hole Oceanographic Institution.

The study is a twelve month effort and comprises the following task elements:

- Review and verification of requirements for research vessels.
- Status of current ships, and the identification of needed capabilities and priorities to meet them.
- Report of critical areas of ship replacement, and specifications for priority replacements.
- Conceptual design studies of several selected alternative platforms.
- Community-wide workshop for the purpose of reviewing and discussing the above efforts, and to make recommendations on the nature and scope of further effort.
- Development of a replacement plan incorporating desired fleet mix to meet requirements, priorities, time frame, and costs of new construction.
- Preliminary design of vessel type which implements early phase or phases of plan.

The flow chart for the proposed study is shown in Figure 1.



UNOLS COMMITTEE ON FLEET REPLACEMENT

PROPOSAL FOR

COORDINATED PLAN FOR SHIP REPLACEMENT AND CONSTRUCTION

JAN. 1984

FIGURE 1

The committee has also been alerted to the need to examine current plans for vessel replacement which might affect composition of the UNOLS fleet, (e.g., University of Southern California, Scripps and University of Texas plans to replace VELERO IV, E.B. SCRIPPS and FRED H. MOORE). A Fleet Replacement Committee report will be made at the UNOLS Annual Meeting.

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SOME ADDITIONAL EXCERPTS FROM THE OFS OVERVIEW REPORT

The following excerpts FROM THE Overview Report dealing with review of fleet changes seem appropriate to cite as background for John Van Leer's report and the Committee on Fleet Replacement report. *"Comments on Ship Assignment and Fleet Distribution and Composition - The capabilities, composition, distribution and management of the Academic Fleet is of fundamental importance to the health and vitality of U.S. Oceanography. Considerable attention has been given to various aspects of these issues by the National Academy of Sciences, UNOLS, the NSF and other government agencies, and by academic institutions. We commend OFS for seeking the assistance of the UNOLS Advisory Council during the spring of 1982 by asking for a thorough review of the Composition, Distribution, and Management of the Academic Fleet. ..... The use of an organized and representative body like UNOLS, combined with NSF and other governmental policies and procedures provides the basis for a widely accepted context for the difficult responsiblity of determining the composition, distribution, and management of the Academic Fleet. While the UNOLS study contributed significantly toward addressing the budgetary issues raised in 1982, the overall policies for increasing, decreasing or altering the size, composition and distribution of oceanographic vessels remains unclear. .....*

Further, the subcommittee suggests that formal review of proposed additions, replacements or other augmentations of the fleet by UNOLS would provide a consistent external review mechanism for all changes contemplated for the academic fleet. We are of the opinion that proposals by individual institutions to change, in some way, vessels assigned to them should not be considered in isolation, but must be thoroughly reviewed in the fullest context of scientific needs for vessel support by an institution, by the oceanic region to be served by the vessel, and by the ocean science community at large.

We recommend that all major actions involving the composition of the Academic Fleet be sent to the UNOLS Advisory Council for their recommendations."

These concerns voiced during the regular overview of OFS operations should be a major agenda item for all of us to consider in the next few months. It is evident from various items in this issue of UNOLS NEWS that review of the academic fleet and the review of the policies, procedures and impact of changes related to the fleet are at the foundation level of the ocean community and should be discussed as widely as possible. Comments are invited.

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NSF PROPOSAL WORKSHOPS

Ron La Count, Head, OFS, NSF, will be leading workshops on ship operations proposals for institutional representatives just following the spring UNOLS East and West Coast Ship Scheduling meetings:

East Coast Workshop, March 20, 1984 - Washington, D.C.

West Coast Workshop, February 28, 1984 - Seattle, WA

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STATEMENT OF FY 1985 NATIONAL SCIENCE FOUNDATION BUDGET

Information on the National Science Foundation's budget request for FY 1985 is extracted from a release dated February 1, 1984:

The National Science Foundation's (NSF) budget request for FY 1985 is $1,501.8 million, an increase of $179.8 million or 13.6 percent above the FY 1984 level of $1,322.0 million. The total includes $1,308.2 million for research and related activities, a 14.6 percent increase over FY 1984; $75.7 million for science and engineering education; $115.1 million for the U.S. Antarctic Program; and $2.8 million for foreign currency.

Dr. Edward A. Knapp, Director of the NSF, said, *"This budget reflects the fact that the Administration is deeply committed to excellence in our country's pursuit of scientific and technological advances and to training our next generation of world-class scientists and engineers. For the second year in a row the Administration is requesting funding increases, totaling 37 percent over the two years.*

"Coming at the end of more than a decade of no real growth, this is outstanding news for all of us who care about the continued health of our Nation's scientific and engineering enterprise."

In FY 1985 NSF will continue expanding the efforts begun in FY 1984 to address the needs of researchers in all disciplines for access to the most advanced computer systems. Growth in this area will be from $6 million in FY 1984 to $20 million in FY 1985. Continued support is included in all research areas for researchers with proven need and ability to use such systems. Funding is provided for networking capability, local user support, and local facilities upgrading. In addition, the National Center for Atmospheric Research (NCAR) will acquire a Class VII Advanced Vector Computer (AVC) as a major step in upgrading of the NCAR computing facility. The AVC will provide researchers in atmospheric and ocean sciences a system having five times the speed and ten times the memory of NCAR's current computing facility.

The second group of 200 Presidential Young Investigators Awards will be made to help increase the attractiveness of academic careers and to help develop stronger ties between universities and industry. These awards, which will total 400 in FY 1985, require matching funds from the private sector. In 1984, two of the awards are in oceanography.

Another outstanding feature of the budget, Dr. Knapp said, is the continued growth of research instrumentation support with a 21.8 percent increase from $194.6 million to $237.0 million. Approximately $122.0 million will support instrumentation for individual research projects. The remainder will support instrumentation at multi-user centers at universities and at national centers. This continued growth will help provide scientists and engineers with the tools to keep them at the cutting edge of advanced research activity.

Engineering support will increase in FY 1985 with special support in coastal and ocean engineering, problems of repair, retrofit, and rehabilitation of parts of the public infrastructure, and upgrading and modernization of experimental facilities used in earthquake engineering.

Astronomical, Atmospheric, Earth, and Ocean Sciences (AAEO) support is $373.5 million, an increase of $43.5 million or 13.2 percent over the FY 1984 current plan. Items include:

- Beginning the first-phase acquisition of the Advanced Vector Computer (AVC) to be based at the National Center for Atmospheric Research, and allows for continued payments towards the mass storage system.
- Emphasis on studies of the ocean floor, maintenance and upgrading of shipboard scientific equipment, and commencement of the first year of an international drilling program using a large, modern drillship.

U.S. Antarctic Program (USAP) for FY 1985 is $115.1 million, an increase of $12.6 million or 12.3 percent above the FY 1984 current plan. Within this total:

- A $10.8 million increase will provide for a greater number of research awards with new initiatives in glaciology and oceanography.

SUMMARY OF OBLIGATIONS BY APPROPRIATION
FY 1984-1985
(DOLLARS IN MILLIONS)

	FY 1984	FY 1985	CHANGE FY 85/84 AMOUNT	CHANGE
RESEARCH AND RELATED ACTIVITIES APPROPRIATION	$1,141.7	$1,308.2	$166.5	14.6%
U.S. ANTARCTIC PROGRAM APPROPRIATION	102.4	115.1	12.7	12.3%
SCIENCE AND ENGINEERING EDUCATION APPROPRIATION	75.0*	75.7	0.7	0.9%
SPECIAL FOREIGN CURRENCY APPROPRIATION	2.9	2.8	-0.1	-3.9%
TOTAL, NSF	$1,322.0	$1,501.8	$179.8	13.6%

*AN ADDITIONAL $13.9 MILLION WILL BE AVAILABLE AS A RESULT OF CARRYOVER FROM FY 1983

DOLLAR AMOUNTS HAVE BEEN ROUNDED; % CHANGE HAS BEEN CALCULATED ON ACTUAL DOLLAR AMOUNTS

O.D. 84-224
1-31-84

NSF OBLIGATIONS BY BUDGET ACTIVITY
FY 1984-1985
(DOLLARS IN MILLIONS)

BUDGET ACTIVITY	FY 1984	FY 1985	CHANGE FY 85/84
MATHEMATICAL AND PHYSICAL SCIENCES	$ 358.8	$ 416.7	16.1%
ENGINEERING	120.7	147.1	21.8%
BIOLOGICAL, BEHAVIORAL, AND SOCIAL SCIENCES	224.7	253.1	12.7%
ASTRONOMICAL, ATMOSPHERIC, EARTH AND OCEAN SCIENCES	330.0	373.5	13.2%
SCIENTIFIC, TECHNOLOGICAL, AND INTERNATIONAL AFFAIRS	40.8	46.9	14.9%
PROGRAM DEVELOPMENT AND MANAGEMENT	66.6	70.9	6.5%
SUBTOTAL, RESEARCH & RELATED ACTIVITIES	$1,141.6	$1,308.2	14.6%
U.S. ANTARCTIC PROGRAM	102.5	115.1	12.3%
SCIENCE AND ENGINEERING EDUCATION	75.0*	75.7	0.9%
SPECIAL FOREIGN CURRENCY	2.9	2.8	-3.9%
TOTAL	$1,322.0	$1,501.8	13.6%

*AN ADDITIONAL $13.9 MILLION WILL BE AVAILABLE AS A RESULT OF CARRYOVER FROM FY 1983.

DOLLAR AMOUNTS HAVE BEEN ROUNDED; % CHANGE HAS BEEN CALCULATED ON ACTUAL DOLLAR AMOUNTS.

O.D. 84-225
1-31-84

ASTRONOMICAL, ATMOSPHERIC, EARTH AND OCEAN SCIENCES
FY 1984-1985
(DOLLARS IN MILLIONS)

	FY 1984	FY 1985	% CHANGE FY 85/84
ASTRONOMICAL SCIENCES	$78.1	$93.4	19.5%
ATMOSPHERIC SCIENCES	89.3	98.6	10.3%
EARTH SCIENCES	41.5	48.6	17.1%
OCEAN SCIENCES	113.7	124.9	9.9%
ARCTIC RESEARCH PROGRAM	7.4	8.0	8.2%
TOTAL	$330.0	$373.5	13.2%

DOLLAR AMOUNTS HAVE BEEN ROUNDED; % CHANGE HAS BEEN CALCULATED ON ACTUAL DOLLAR AMOUNTS

U.S. ANTARCTIC PROGRAM
FY 1984-1985
(DOLLARS IN MILLIONS)

	FY 1984	FY 1985	% CHANGE FY 85/84
U.S. ANTARCTIC RESEARCH PROGRAM	$10.2	$11.0	7.4%
OPERATIONS SUPPORT PROGRAM	92.2	104.1	12.9%
TOTAL	$102.4	$115.1	12.3%

DOLLAR AMOUNTS HAVE BEEN ROUNDED; % CHANGE HAS BEEN CALCULATED ON ACTUAL DOLLAR AMOUNTS

R&D FACILITIES, EQUIPMENT AND INSTRUMENTATION
FY 1985
(DOLLARS IN MILLIONS)

	TOTAL FY 1985 (EST.)	CHANGE FY 1985/1984 DOLLARS	PERCENT
MATHEMATICAL AND PHYSICAL SCIENCES	$ 99.0	$16.8	20.4%
ENGINEERING	24.0	5.8	31.9%
BIOLOGICAL, BEHAVIORAL AND SOCIAL SCIENCES	28.4	3.8	15.4%
ASTRONOMICAL, ATMOSPHERIC, EARTH AND OCEAN SCIENCES	59.1	9.7	19.6%
U.S. ANTARCTIC PROGRAM	23.9	3.7	18.3%
SCIENTIFIC, TECHNOLOGICAL, AND INTERNATIONAL AFFAIRS	2.6	0.2	8.3%
TOTAL	$237.0	$40.0	20.3%

NSF FY 1985 OCEAN SCIENCES BUDGET

	FY1983	FY1984	FY1985 ESTIMATE	DIFF. FY85/4	PCT.DIFF. FY85/84
Ocean Science Research					
Phys. Ocean.	14.7	15.5	17.2	1.7	11.0
Marine Chem.	10.8	12.0	13.4	1.4	11.7
Sub. Geol. & Geop.	12.6	14.5	16.1	1.6	11.0
Biol. Ocean.	11.8	12.6	14.2	1.6	12.7
Sub Total	49.9	54.6	60.9	6.3	11.5
Ocean Facil. & Support					
Operations	26.2	25.4	28.2	2.8	11.0
Ocean. Tech.	5.4	7.4	8.2	0.8	11.4
Sub Total	31.6	32.8	36.4	3.6	11.1
Ocean. Drlg. Prog.					
Ocean Drlg.	27.8	29.5	37.6	8.1	27.5
Less Foreign	(6.3)	(1.2)	(10.0)	8.8	733.3
Less Other U.S.	(0.5)	(2.0)	(-0-)	(2.0)	(100.0)
Sub Total	21.0	26.3	27.6	1.3	4.9
TOTAL	102.5	113.7	124.9	11.2	9.9