UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS FLEET IMPROVEMENT COMMITTEE

MEETING REPORT

April 1-2, 1992
National Association of State Universities
and Land-Grant Colleges
One Dupont Circle, NW, Suite 710
Washington, D.C.

MEETING REPORT
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The UNOLS Fleet Improvement Committee (FIC) met in Washington, D.C. on April 1 and 2, 1992. The meeting was called to order by Marcus Langseth, FIC Chair, at 9:30 a.m. New member Eric Firing from the University of Hawaii was welcomed to the FIC. Bob Dinsmore's contributions to the FIC over the years were noted and a show of FIC's appreciation will be extended. Items on the Agenda (Appendix I) were called in the order reported herein.

ATTENDANTS

FIC Members:
Marcus Langseth, FIC Chair
Peter Betzer
Teresa Chereskin
Eric Firing
Charlie Miller
Tom Royer
Don Wright

Participants:
Jack Bash, UNOLS
Annette DeSilva, UNOLS
Cheryl Lyn Dybas, NSF
Donald Heinrichs, NSF
Keith Kaulum, ONR
Alberto Malinverno, L-DGO
Richard West, NSF
David Yeager, NOAA

APPENDICES

I. FIC Meeting Agenda
II. Summary of Ship Use/Capacity
III. NSF FY 1993 Budget Request
IV. Academic Fleet Operations Support (1990-1992)
V. Academic Research Vessels 1985-1990 (OSB, 1982)
VI. NOAA Slide Package
VII. Estimated Value of UNOLS Fleet Report
VIII. Facilities for Coastal Oceanography on the Pacific Coast
IX. Marcus Langseth's Memo re: Coastal Oceanography
X. Fleet Improvement Plan Slides

APPROVAL OF MINUTES:

The minutes for the 7-8 October 1991 meeting held at the Alton Jones Campus of URI in Rhode Island were approved without revision.

UNOLS REPORT :

UNOLS Council February Meeting. Jack Bash gave a summary report of the activities of the February UNOLS Council meeting at Texas A&M:

UNOLS Review - A UNOLS review was conducted by a panel chaired by Tom Johnson, UNOLS Council Vice Chair. Questionnaires prepared by the panel were randomly circulated to the community by Jack Bash. Approximately 60 responses were received representing a return rate of about 23 percent. The general consensus of the returns were positive. The surveys indicated that UNOLS is doing well, particularly in the ship scheduling process. Users are generally pleased with the quality of ship services. Concerns were expressed, however, in the areas of UNOLS lack of involvement in controlling the size of the UNOLS fleet and in representing the interests of coastal oceanography. The panel is in the process of writing a final report of their findings.

Future Fleet/Coordination - The Council discussed the future of the UNOLS fleet and the coordination of this fleet. FIC was tasked to update the Fleet Improvement Plan which defines the UNOLS position in regard to fleet size and composition that will support present and future science programs. This issue has been placed on the FIC agenda and will be addressed at length in this meeting.

NSF Inspection Review - Jim Williams, chair of a panel to review the effectiveness of the NSF Inspection process, reported on the findings and recommendations of their review. The review was requested by Dick West of NSF. The UNOLS Council had expressed concern at the July 1991 meeting as to their level of participation in safety issues. The report found the NSF inspection process effective, however not all UNOLS vessels are subject to this inspection. The Council requested that they be routed any special case inspections, such as for vessels requesting entry into the UNOLS fleet.

Don Heinrichs indicated that NSF is drafting a letter setting policy for addressing safety deficiencies identified in the review. NSF will not fund science on vessels with major safety deficiencies. Additionally, they will only fund science requests for vessels (foreign, charter, or other research fleets) which meet comparable UNOLS safety standards.

ALVIN/AII - ALVIN issues were given a great deal of attention at the Council meeting. The ALVIN Review Committee (ARC) responsibilities will be increased to include new tasking to address recommendations of the submersible science study. The ARC charter will be updated to include their new tasking and membership will be increased as needed. The ALVIN tri-partite Memorandum of Agreement (MOA) is due for renewal at the end of 1992. The MOA will be updated to include a plan for transition from manned to unmanned submersibles. ONR has indicated that they will be unwilling to sign the MOA unless such a provision is included. 1992 looks to be a disappointing year for ALVIN in light of its very light schedule. To drum up additional interest in ALVIN, a notice for interest in a global expedition has been circulated.

Technical Forum - The formation of a technical support group/forum in which technical support personnel can network and exchange ideas was discussed. Suggestions are being solicited from the community as to the best approach for this initiative. The UNOLS office will collect the suggestions and formulate a proposal to the Council at their July meeting.

Modes of Fleet Acquisition and Operation - George Shor has agreed to chair a panel to study the modes of fleet acquisition and operation. In response to a Council request, the FIC representative to this panel will be Charlie Miller.

Cruise Assessments - The UNOLS Office presented the Council with a preliminary cruise assessment summary for 1991. The final report will be distributed at the July meeting. The new assessment forms, Captain's Post Cruise Reports, are flowing in. They will be processed next year. Any suggestions for improvement of the presentation/summary of the cruise assessment form along with the Captain's form can be submitted to UNOLS Office.

Ship Availability/Utilization. An eight year summary of UNOLS ship use was compiled by the UNOLS Office, Appendix II. For the last five years, over 1000 unused ship days per year are accounted. This is based on an availability of 300 operating days/year for Class I & II, 270 operating days/year for Class III, 180 operating days/year for Class IV, and 110 operating days/year for Class V. The summary indicates that ship time is available for use and perhaps NOAA can take advantage of this time.

AGENCY REPORTS:

NATIONAL SCIENCE FOUNDATION: Don Heinrichs provided the committee with an update of the NSF Federal Budget Request for 1993. A summary of this budget is included as Appendix III. The budget request includes a 17.6% increase overall with Ocean Sciences requesting a 15.4% increase or $206.4 million. Don suggested that these numbers are likely to change as Congress works through the budget process and an increase such as this in an election year is optimistic but possible. Don also provided a summary of Academic Fleet Operations Support for the years of 1990 to 1992 along with projected costs through 1998. This summary, included in Appendix IV, reflects the support received from various agencies and how these funds were distributed by ship class. Cost projections through 1998 reflect the anticipated cost of the fleet over this time period. Don's final handout, Appendix V, titled "Academic Research Vessels 1985-1990" reflected comments made to the Ocean Science Board in 1982. These comments remain germane today.

Don reported that JGOFS will not be going to sea in 1993 which may leave a shortage of class I/II ship cruises. WOCE has indicated they would like to take 1994 off from field work. He further suggested that the replacement of ATLANTIS II by KNORR may well come sooner than the planned 1997 time frame. This conversion will be funded from the proceeds of the sale of ATLANTIS II. Don also noted that present plans call for the retirement of MOANA WAVE when AGOR 25 enters the fleet leaving Hawaii without a UNOLS ship.

OFFICE OF NAVAL RESEARCH: Keith Kaulum provided an update of the KNORR/MELVILLE conversions. KNORR completed a successful 32 day cruise with Delaney/Spiess and is presently in a Jacksonville shipyard undergoing a post overhaul guarantee period. The ship plans to depart for Pacific WOCE work upon completion of this shipyard period, about 12 April. A very positive cruise assessment came from the first cruise. At the time of this meeting MELVILLE was enroute to Scripps and scheduled to arrive in San Diego on 3 April. The ship will be drydocked for equipment installation and to finish its overhaul/conversion. MELVILLE is scheduled to enter the fleet in June when WASHINGTON will be retired. Congress has appropriated $15 million for financing the completion of the KNORR/MELVILLE conversion. Keith further reported that Congress has passed legislation transferring GYRE to TAMU. The process is expected to be completed in the next few months.

The proposals for construction of AGOR 24 have received technical review. The choice of shipyard should be announced in the near future. Funding for AGOR 25 remains on track and NOAA is still considering an option for AGOR 26. The Taiwanese have indicated an interest in yet another AGOR vessel of this class. The potential shipyards have been made aware that a redesign from AGOR 23 is necessary to meet established noise standards.

Keith reiterated the ONR view that the ALVIN operation should take advantage of the technology developed in the unmanned submersible area and that an integration of these two fields is necessary. ONR would like to see some of this planning in the Memorandum of Agreement for ALVIN operation which is scheduled for revision by the end of this year.

NATIONAL OCEANOGRAPHIC AND ATMOSPHERIC ADMINISTRATION: Captain David Yeager announced that the NOAA Fleet Modernization Study is now the Fleet Modernization Plan and should be available for public distribution soon. David gave a summary of the NOAA fleet and its activities. He indicated that NOAA ships currently average 201 days at sea per year being limited by funding. Their goal is to increase this to 240-250 sea days in order to reach 5000 total days needed to accomplish the fleet's mission. Congress has provided, in the 1992 budget, $33.2 million for fleet modernization. This will be distributed over 1992 and 1993. The fleet modernization budget should increase significantly for FY 1994. NOAA will be planning $4 million for charter support in 1993. This will include a continued use of VICKERS. Their operating plan calls for large blocks of time from charters. They are planning 250-325 sea days per year for the next five years utilizing UNOLS ships. They plan to be an active participant in the UNOLS scheduling process. In addition to VICKERS, NOAA has chartered PELICAN and LONGHORN for coastal ocean work in 1992 and probably again in 1993. Transparencies presented by Dave are included as Appendix VI.

NOAA has been talking with the Navy for possibly taking one of their T-AGOS ships. It would be equipped with a multi-beam system and used for EEZ mapping. The T-AGOS would require an unacceptably expensive conversion to serve as a general purpose research ship.

REVIEW OF STALLED ITEMS:

Submersible Support Ship Study and Report - Marcus Langseth reported that Roger Cook generated a draft report based on his subcommittee's first submersible support ship study in 1990. The FIC reviewed this study and provided their suggestions. However, a revised study has not been forthcoming. In light of recent developments for the plan to replace ATLANTIS II with KNORR, and to outfit KNORR to handle deep submersibles, it was decided not to pursue any further with the present study.

Fleet Evaluation. Worth Nowlin forwarded a report to Marcus prepared by Mr. Larry Glosten of The Glosten Associates, Inc. on the estimated current value of the UNOLS fleet, Appendix VII. Every ship with the exception of MAURICE EWING was evaluated. The report shows that in many cases the depreciated value in 1991 was not significantly different from the ship's original cost when built. Thanks goes out to Mr. Glosten for his pro bone preparation of this useful report.

Stability Study of Intermediate Sized Ships. Marcus will contact Glosten Associates to determine what their intentions are concerning this stability study.

Charlie Miller brought up an interesting concern regarding the need for mechanized shipboard equipment. At high sea states it is increasingly difficult to conduct science in a safe, efficient, reliable manner. There is a need to study (1) the behavior of ships in high sea states and (2) how to operate equipment in such an environment. Charlie was asked to prepare a tasking statement describing this problem and how it should be studied.

ICE CAPABLE ARCTIC RESEARCH VESSEL:

Arctic Research Vessel Design Study - Tom Royer reported on the progress of the Arctic research vessel development. A proposal has been submitted to NSF for a preliminary design study. The proposed cost of the study is $ 800 K and will be performed by Glosten Associates.

Evaluation Tour - The Arctic research vessel evaluation tour leaves April 4 for the Kara Sea. Heavy ice conditions can be expected. Representatives from the United States Coast Guard, Glosten Associates, Thyssen/Waas, along with Dolly Dieter, Bob Dinsmore, and Robert Elsner will be on the tour. They will have the opportunity to examine the platform characteristics of two hull forms, SOROKIN, the Thyssen/Waas hull form and NICKOLOV, the Odin hull form. They will also be given a tour of the Thyssen/Waas shipyard facility.

NATHANIAL B. PALMER - PALMER has set sail and ice tests are scheduled to begin in August of this year. The high quality of steel work and its ship layout were noted as outstanding features. EG&G has been contracted to provide technical support for the ship for the first six months of operation. Formation of a "scientific users group" has been

recommended for Arctic vessel oversight. Marcus will draft a letter recommending this users group and circulate it on telemail for review.

FACILITIES FOR COASTAL OCEANOGRAPHY:

Don Wright presented to the committee the progress of the subcommittee on coastal oceanography. Don reported that a series of meetings including two "town meetings" were held by the subcommittee. A questionnaire was sent out and numerous replies received. Several Mission Requirement papers were provided including one by Charlie Miller, Appendix VIII. The results of this effort suggested that the problem is more complex than originally thought and that a new direction needs to be mounted. This is best summarized in Marcus Langseth's memo to the subcommittee which is included as Appendix IX. The course of action recommended is outlined on page two of the memo. Briefly it includes:

a. Develop a report that reviews the current status of coastal oceanography; its research and facilities, and
b. An investigation of the future needs of this community.

It is believed that this information can best be collected through a workshop which represents the entire community. In order to fund such a workshop it will be necessary to submit a proposal which cogently outlines the problem and supports the need for wide participation. Don and Marcus will draft this proposal and circulate it to the Coastal Subcommittee and FIC by May.

UPDATE OF MAY 1990 FLEET IMPROVEMENT PLAN:

The UNOLS Council charged the FIC to update the May 1990 Fleet Improvement Plan. Marcus Langseth led this discussion with a series of transparencies which are included as Appendix X. Mark proposed that the update be more of a study than a report. His first transparency depicted the evolution of the Class I/II ships for 1988 through the present and projected to 1996. It shows an increase of one ship (the Arctic research vessel) with five of the seven ships built by the Navy. Seven ships are in keeping with the 1990 plan. The cost for operating this portion of the fleet was projected at $40 million in 1996. For the intermediate ships the projections show an increase of one, from six to seven. These numbers include the two Harbor Branch vessels but do not include VICKERS.

Marcus presented a set of questions as an outline for the study. They are as follows:

1. What are the issues and questions which need to be addressed?
    A. What is the cost of the future fleet?
        (1) How can we obtain objective answers?
        (2) Should FIC have a contingency plan to reduce cost as needed (escape plan)?

2. How can the FIC determine the new shiptime demands coming out of global warming efforts, coastal initiatives?

3. What impact has new technology had on the demand for ship time (has new data collecting methods reduced the number of ship days needed)?

4. Are there trends in reduced funding of sea-going science?

5. Is the geographic distribution of the fleet appropriate?
   A. What is the distribution of users?
   B. Where is research done?

6. What can be done with the problem of underutilization of the intermediate ships?

7. Will future coastal needs be met by the present UNOLS Fleet?

8. How does the UNOLS fleet interact with other fleets?

Assignments for investigating these questions were distributed as follows:

- Marcus will write a preamble and collect ship geographical distribution statistics.
- Peter Betzer and David Yeager will research the "Federal Fleet".
- David Yeager, Don Wright and Charlie Miller will research funding issues.
- Eric Firing, Terry Chereskin and Peter Betzer will research the impact of technology on ships.

Initial drafts of each of these areas are to be ready 6-8 weeks prior to the next FIC meeting. The scope of the work will be analyzed then and further assignments established. The completed study should be ready no later than 18 months.

REVIEW OF LABS AND ACCOMMODATIONS:

Terry Chereskin reported that she and Marcus have begun their study to review shipboard labs and accommodations. They will perform a comparative study by compiling a check list of questions to circulate to scientists who have been on at least two different ships in the same class on cruises of at least three weeks duration. The emphasis will be on trying to identify those features of the ship that make a difference with respect to the quality of the living and working environment.

The study will perform onboard inspections of six vessels; three large class vessels which will include a UNOLS vessel, a Foreign Vessel and a NOAA vessel; and three from the intermediate class operated by UNOLS, non US institution and NOAA. Bob Dinsmore, who is participating in the study, will carry out these inspections. Labs and accommodations of foreign fleets and other research fleets will also be examined.

PROPOSAL FOR A COMPARATIVE STUDY OF COMMERCIAL MULTIBEAM SYSTEMS:

Alberto Malinverno of Lamont-Doherty Geological Observatory presented a proposal he and John Goff have put together for the "Characterization of Bathymetric Noise in Multibeam Sonar Data." He provided a brief explanation of how the present multi-beam systems operate and the major sources of error and data loss. He presented methods that can be used to determine the level of noise and bad data methods for obviating them.

The proposed study will compare bathymetric data obtained by different sonar systems, aboard different platforms and on different bottom types. It will estimate statistics of large amplitude bottom detection errors, small amplitude noise and missing data points. Actual running characteristics will be examined rather than relying on technical specifications. FIC requested that the model address the variability of conditions; such as, ship speed, sea states and noise characteristics of different ships.

The goal of the proposal is to provide potential purchasers and users with consistent measurements of actual performance (ie. noise and resolution) of different multibeam systems. The characterization of noise will also be useful for processing variations; such as in noise smoothing. The outcome of the study will be a report and a paper. John Goff has submitted a planning letter to ONR.

The methodology being developed can be applied to future acquisitions of systems. This is important when you consider each system costs between $1 million and $3 million. With the future acquisitions of AGOR 24/25, an Arctic research vessel, and NOAA large ships the proposed study has the potential to be an extremely valuable tool. FIC encourages Alberto and John to submit their proposal as soon as possible.

OTHER BUSINESS AND FUTURE FIC MEETING SCHEDULE:

T-AGOS. Papers from the Naval Oceanography Command and NAVSEA regarding alternate uses for T-AGOS class ships were forwarded to the FIC. The general conclusion of both papers indicate that the monohull T-AGOS ships are not capable of performing the multi-purpose oceanographic missions required of present and future oceanographic research ships. No reasonable upgrades could be made to the ship to make it a feasible option. David Yeager indicated that NOAA has looked at this issue and agrees that the T-AGOS would require too much conversion to serve as general purpose ships in their fleet. However, the T-AGOS could have use as special purpose platforms. Based on the existing Navy reports, FIC agrees with their conclusions.

VICKERS Status. NOAA has been onboard VICKERS and reports that many improvements have been implemented. All criteria has been met to satisfy the stability issue. The fire doors are now up to code and the new rescue boats should arrive any day. USCG is in the process of issuing a new letter of certification. NSF will go on board for an inspection after the USCG certification is complete.

Future FIC Meeting. The next FIC meeting is tentatively scheduled to be held at Scripps during either the week of October 5th (primary date) or October 12th (secondary date). The committee was asked to consider holding the meeting over a weekend to take advantage of the reduced air fare rates. The schedule will be finalized when responses are received from the committee.

The meeting was adjourned at 2:30 p.m. on 2 April 1992.

FLEET IMPROVEMENT COMMITTEE
AGENDA FOR APRIL 1 AND 2, 1992 MEETING
WASHINGTON, D.C.
APRIL 1, 0930 AM

A. Greetings, formalities and arrangements (Langseth/Bash)

B. UNOLS Report (Brass/Bash)

1. UNOLS council February meeting
2. Summary of ship availability and utilization 1990/91 (Bash)
3. Summary of ship assessment forms and the questionnaires (Bash)

C. Agency reports

1. National Science Foundation (R. West)
2. Office of Naval Research (K. Kaulum)
3. National Oceans and Atmospheric Administration (D. Yeager)
   a. Update on Fleet Modernization Plan
   b. Future use of UNOLS vessels by NOAA

D. Review of some stalled items:

1. Submersible support ship study and report
2. Fleet Evaluation
3. Stability study of intermediate sized ships

Lunch 1230

E. Update of May 1990 Fleet Improvement Plan (Langseth)

1. FIC received a new charge from the UNOLS Council to update the Fleet Improvement Plan so that it reflects changes since 1989.
2. Recent letters and tentative outline are being mailed to FIC members.

APRIL 2, 0900 AM

F. Facilities for coastal oceanography (D. Wright)

1. Do we need to refocus our objectives for this study and report. (*see short essay by Langseth*)

G. Ice Capable Arctic Research Vessel (Royer)

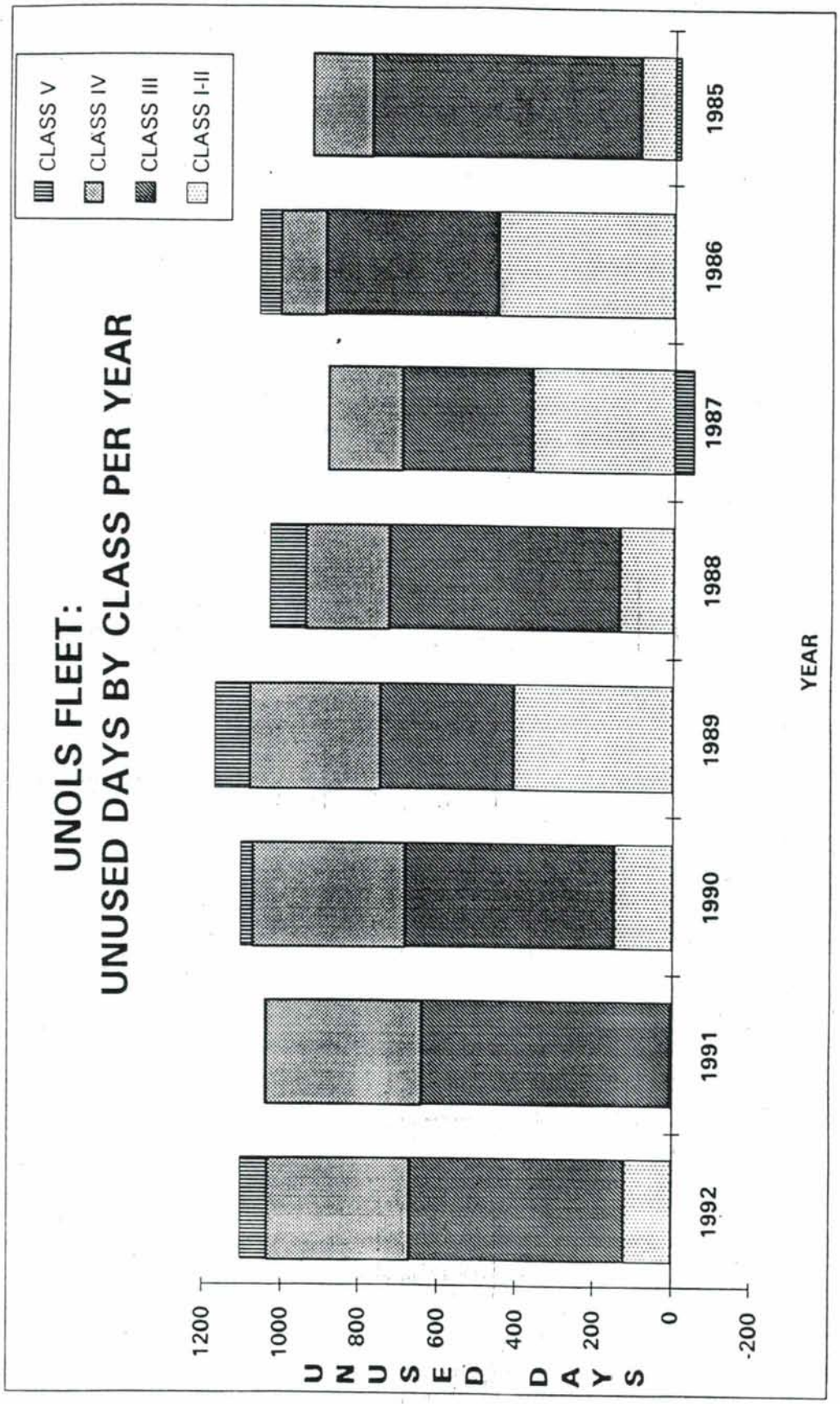
1. Plans for the Sorokin evaluation cruise
2. The proposal for a design study

Lunch

H. Proposal for a comparative study of commercial multibeam systems (Malinverno)

I. Review of labs and accommodations (Chereskin and Langseth)

J. Other business and future meetings of the FIC


UNOLS FLEET:
UNUSED DAYS BY CLASS PER YEAR
CLASS V
CLASS IV
CLASS III
CLASS I-II
UNUSED DAYS
1200
1000
800
600
400
200
0
-200
1992
1991
1990
1989
1988
1987
1986
1985
YEAR

8-YEAR SUMMARY OF SHIP USE/CAPACITY

YEAR	UNUSED DAYS				AVAILABLE DAYS	USED DAYS	UNUSED DAYS	NOAA DAYS
	CLASS I-II	CLASS III	CLASS IV	CLASS V				
1992	119	548	367	70	6240	5136	1104	420
1991	3	635	400	5	5775	4732	1043	321
1990	148	532	393	31	5170	4066	1104	209
1989	407	339	334	90	4930	3760	1170	74
1988	136	588	215	92	5480	4449	1031	19
1987	362	328	192	-51	5480	4649	831	0
1986	449	438	117	57	5320	4259	1061	36
1985	85	685	154	-16	5770	4862	908	45

Available days are based on the following:

Class I + II 300 OP DAYS/YEAR
" III 270 " "
IV 180 " "
V 110 " "

NSF FY 1993 BUDGET REQUEST

NSF

- Total Request is $3.027 Billion
- Increase of $453.5 Million or 17.6%

	Totals	Increases
Research and Related Activities	$2211.5 M	$336.5 M or 17.9%
U.S. Antarctic Program	163.0 M	75.0 M or 85.2%
Education and Human Resources	479.5 M	14.5 M or 3.1%
Academic Research Facilities & Inst.	33.0 M	no change
Critical Technologies Institute	1.0 M	new program
Salaries, Expenses, IG Office	139.0 M	26.5 M or 23.6%

- Major Research Initiatives

	Totals
Advanced Materials and Processing Program	$318.5 M
High Performance Computing and Communications	262.0 M
Biotechnology	205.6 M
U.S. Global Change Research Program	162.5 M
Multidisplinary Research on the Environment	118.0 M
Advanced Manufacturing	104.5 M

- Education and Human Resources

Precollege Programs	$286.0 M
Undergraduate Programs	146.0 M
Women, Minority, Other Programs	118.0 M
Expt. Program for Competitive Research	20.0 M

NSF FY 1993 BUDGET REQUEST

Geosciences (w/o Antarctic Program)

- **Total Request is $472.4 million**
- **Increase of $68.0 million or 16.8%**

	Total	Increases
Atmospheric Sciences	$151.9 M	$24.8 M or 19.5%
Earth Sciences	88.1 M	11.9 M or 15.6%
Ocean Sciences	206.4 M	27.6 M or 15.4%
Arctic Research Program	26.0 M	4.7 M or 22.0%

- **Major Increase Categories**

	Increases
Disciplinary Research	$40.2 M
Facilities	25.5 M
Education & Human Resources	2.3 M

- **Major Program Increases**

Global Change Programs	44.0 M
Biotechnology	1.9 M
High Performance Computing	1.7 M
Environmental Studies	5.3 M
Hydrological Science (EAR)	2.5 M

- **Major Facility Increases**

Research aircraft	2.8 M
Arctic research ship	2.8 M
Global seismic network	2.0 M

NSF FY 1993 BUDGET REQUEST

Ocean Sciences

- **Total Request is $206.4 million**
- **Increase of $27.6 million or 15.4%**

	Total	Increases
Ocean Science Research Support (OSRS)	$109.3 M	$18.5 M or 20.3%
Oceanographic Centers & Facilities (OCFS)	59.3 M	7.7 M or 14.9%
Ocean Drilling Program (ODP)	37.8 M	1.4 M or 3.9%

- **Budget Increase Highlights**

Global Change increase of $21.2 M to $64.1 M 49.4% increase with focus on research and facilities for WOCE, JGOFS, GLOBEC and TOGA-COARE.

Enhanced support for biotechnology research involving the establishment of two small marine biotechnology centers with other NSF divisions. ($1.6 M)

Enhanced support for interdisciplinary projects on ecosystems subject to environmental change. ($0.75 M)

Support for engineering design and initial construction contract for an ice-capable Arctic research vessel ($2.75 M)

All other activities ($1.3 M).

OCEAN SCIENCES DIVISION

	Actual FY 1990	Actual FY 1991	Estimated FY 1992	Requested FY 1993
Ocean Sciences Division	$147.4 M	$164.8 M	$178.8 M	$206.4 M
Ocean Sciences Research	72.9 M	82.1 M	90.8 M	109.3 M
Ocean Drilling Program	32.0 M	35.0 M	36.4 M	37.8 M
Oceanographic Facilities	42.5 M	47.7 M	51.6 M	59.3 M

OCEANOGRAPHIC FACILITIES DETAIL

Operations				
Ship Operations	$ 22.4 M*	$ 26.7 M*	$ 30.2 M*	$ 34.0 M*
ALVIN, Aircraft, etc.	1.4 M	1.8 M	1.3 M	1.5 M
Marine Techs	3.7 M	4.0 M	4.3 M	4.6 M
	27.5 M	32.5 M	35.8 M	40.1 M
Infrastructure				
Science Instruments	$ 1.8 M	$ 1.9 M	$ 4.0 M	$ 4.5 M
Shipboard Equipment	2.1 M	2.2 M		
Ships, Upgrades	3.4 M	3.7 M	3.3 M	6.1 M
UNOLS, Misc.	0.6 M	0.6 M	0.7 M	0.7 M
	7.9 M	8.4 M	8.0 M	11.3 M
Technology, Centers, Reserves				
Technology Development	$ 3.5 M	$ 4.2 M	$ 4.5 M	$ 5.0 M
AMS Center	1.8 M	1.7 M	1.5 M	1.1 M
Cross Directorate/Reserves	1.8 M	0.9 M	1.8 M	1.8 M
	7.1 M	6.8 M	7.8 M	7.9 M

* *Plus $1.0 M from ODP (1990), $1.6 M (1991 and 1992) , $1.5 M (1993)*

NSF92-1

ACADEMIC FLEET OPERATIONS SUPPORT*
(1990–1992)

UNOLS TOTAL	Actual 1990	Estimate 1991	Estimate 1992
NSF	21,188	27,151	35,835
NOAA	2,535	2,109	4,339
ONR	5,545	5,268	4,225
OTHER	2,514	2,990	3,015
INST	2,504	2,061	2,475
	$34,286	$39,579	$49,889
JOI INST			
NSF	16,484	21,111	30,095
NOAA	1,275	702	772
ONR	5,297	5,016	4,136
OTHER	1,405	1,431	941
INST	1,016	1,008	1,419
	$25,477	$29,268	$37,363
OTHERS			
NSF	4,704	6,040	5,740
NOAA	1,260	1,407	3,567
ONR	248	252	89
OTHER	1,109	1,559	2,074
INST	1,488	1,053	1,056
	$8,809	$10,311	$12,526

* Source: NSF Ship Operations Proposal (1992)/March 1992 versions

ANNUAL OPERATION COSTS BY SHIP CATEGORY (1992)
(HEINRICHS CLASSIFICATION)

LARGE SHIPS

MEVILLE/WASHINGTON KNORR, THOMPSON EWING, ATLANTIS II	\$4.1 M 265 days

INTERMEDIATE SHIPS*

MOANA WAVE,VICKERS OCEANUS, WECOMA ENDEAVOR, ISELIN NEW HORIZON, GYRE	\$2.5 M 254 days

REGIONAL/OPEN OCEAN

POINT SUR,ALPHA HELIX CAPE HATTERAS	\$1.3 M 178 days

REGIONAL

SPROUL, HENLOPEN WEATHERBIRD	\$0.9 M 201 days

LOCAL

PELICAN, LONGHORN LAURENTIAN, BLUE FIN BARNES, CALANUS	\$0.3 M 107 days

JSL/ROV

SEWARD JOHNSON EDWIN LINK	\$1.4 M 182 days

* GYRE excluded from intermediate ship average owing to short schedule

1992 ACADEMIC FLEET OPERATIONS SUPPORT *
(HEINRICHS CLASSIFICATION)

SPONSOR	LARGE SHIPS	INTERMEDIATE SHIPS	REGIONAL/OPEN OCEAN
NSF	17,930	11,943	4,811
NOAA	742	1,863	39
ONR	1,139	2,876	90
OTHER	167	730	1,621
INST	588	633	165
	$20,566	$18,045	$6,726

SPONSOR	LOCAL SHIPS	JSL/ROV SHIPS	ALVIN SUPPORT**
NSF	714	437	889
NOAA	275	1,420	491
ONR	120	–	66
OTHER	132	366	–
INST	482	608	–
	$1,723	$2,831	$1,446

* Source: NSF Ship Operations Proposals (1992); March 1992 versions

** under negotiations

ACADEMIC FLEET COST PROJECTIONS
(1993–1998)

Adjustments for optional operations: 1992 base

• Large ships	270 days	$4.2 M
• Intermediate ships	260 days	$2.6 M
• Regional/open ocean	230 days	$1.7 M
• Regional ships	200 days	$0.9 M
• Local ships	140 days	$0.4 M
• JSL/ROV ships	180 days	$1.4 M

Assumptions: Conventional fleet model (NSF/ONR)

- 4% annual inflation adjustment 1993 to 1998
- Three new large ships

– AGOR – 24	1995 operations
– Arctic research vessel	1996 operations
– AGOR – 25	1997 operations

- Three ships retired

– ALPHA HELIX	no 1996 operations
– MOANA WAVE	no 1998 operations
– ATLANTIS II	no 1997 operations

ACADEMIC FLEET COST PROJECTION
(1993–1998)

Conventional fleet model (NSF/ONR): with 4% inflation (in millions of dollars)

SHIPS	1993	1994	1995	1996	1997	1998
Large	22.0	22.9	28.6	35.0	36.4	37.9
Intermediate	21.6	22.5	23.4	24.3	25.3	23.0
Regional/open ocean	5.4	5.6	5.8	4.0	4.2	4.4
Regional	2.7	2.8	2.9	3.0	3.1	3.2
Local	2.4	2.5	2.6	2.7	2.8	2.9
JSL/ROV	3.0	3.1	3.2	3.3	3.4	3.5
	$57.1	$59.4	$66.5	$72.3	$75.2	$74.9
Constant 1993 dollars	$57.1	$57.1	$61.5	$64.1	$64.1	$61.4

Research project increases required for operations

SHIPS	1993	1994	1995	1996	1997	1998
Large	25	–	270	270	–	–
Intermediate	161	–	–	–	–	(260)
Regional/open ocean	156	–	–	(230)	–	–
Regional	(3)	–	–	–	–	–
Local	198	–	–	–	–	–
JSL/ROV	(4)	–	–	–	–	–
	533 days	–	270 days	40 days	–	(260) days
Cumulative from 1992	533 days	533 days	803 days	843 days	843 days	583 days
Percent change from 1992 (5381 days)	9.9%	9.9%	14.9%	15.7%	15.7%	10.8%

ACADEMIC FLEET COST PROJECTIONS
(1993–1998)

Short term issues/items

- Operations funds in 1992 estimated at $49.9 million.
  Unlikely $57.1 M will be available in 1993.
  (NSF operations increase request is $3.8 M.
- NSF requirements for large ship time for global change programs decreases in 1993 and 1994, i.e., JGOFS Equatorial Pacific experiment uses one ship year in 1992. Next major experiment planned for 1994/95 in Indian Ocean; WOCE planning one year gap between Pacific hydrographic program and Indian Ocean.
- NOAA projects increased use of academic ships in 1993 and 1994.
- ALVIN/ATLANTIS II operations evolving. Replace ATLANTIS II with KNORR in 1993/94??

Long term issues/items

- Science capabilities, fleet profile, number of ships, geographic balance, etc., needed to meet funded research requirements.
- Capital funding for continued upgrade, modernization and replacement of research fleet in smaller size classes.

ACADEMIC FLEET COST PROJECTIONS
(1993–1998)

Alternate fleet model: submersible science

Premise

- Excess large ship capacity in 1993 – 1995 time frame.
- Science/operating budgets unable to fully use existing ships.
- Woods Hole proposal for AGOR – 24/AGOR – 25 accurate.

  - ATLANTIS II is mission obsolete and is approaching platform obsolescence. maintenance costs are becoming excessive. ATLANTIS II is 28 years old.
  - Retire ATLANTIX II and transfer its submersible support equipment to KNORR. Costs paid for by sale of ATLANTIS II.
  - Promptly achieves the numbers and mix of ships set forth in UNOLS and Federal Agencies Long Range Plans.
  - Contributes materially to an affordable fleet. Annual operating cost of ATLANTIS II estimated at $4.2. million.

Action

- Replace ATLANTIS II with KNORR in 1993–1994
- Revitalize NECOR. Institutional coordination (WHOI, LDGO, URI) of four ships--EWING, KNORR, ENDEAVOR and OCEANUS
- Phase–in AGOR – 25 in 1997 time frame.

ACADEMIC FLEET COST PROJECTIONS
(1993–1998)

Alternate fleet model: submersible science (cont.)

Issues

- WHOI proposes ATLANTIS II/KNORR transition coincident with AGOR – 25 acquisition. Impact of early change.
- EWING only large general purpose ship with home port in Atlantic from 1994 to 1997. Atlantic focus??
- ONR/NSF cooperation required.

Cost projections: transition last quarter 1993/first quarter 1994. Constant 1993 dollars.

	1993	1994	1995	1996	1997	1998
• Large ships	$20.9 M	$17.6 M	$22.0 M	$26.4 M	$30.8 M	$30.8 M
• Fleet total	$56.0 M	$52.7 M	$57.1 M	$59.7 M	$64.1 M	$61.4 M

- Cumulative saving 1993–1998--$14.3 Million

Comments

- Other models possible. NOAA role?
- Neither model addresses
  - no research vessel in Hawaii post–1997.
  - static view toward smaller (coastal) ships.
- Both models assume continued growth in support for field programs by UNOLS fleet. 14.5 percent by 1997.

ACADEMIC RESEARCH VESSELS 1985–1990
(OSB, 1982)

Findings

- Overview. Cardinal belief is that the U.S. style of doing deep water oceanography primarily through the academically operated research fleet is unquestionably the best in the world. Results largely because management of the fleet is in the hands of major academic and research institutions. Of prime importance to continue operations that do not separate the sea–going oceanographers from the responsibility for management of research vessels.

- Scientific needs. Research projections call for an academic fleet larger than present one. Funding projections indicate this larger fleet would be underfunded by almost 50 percent in late 1980s.

- Cost projections. If additional funds not forthcoming, UNOLS fleet of general purpose vessels must be reduced through layups, retirements, or diverting vessels to special purposes that may attract additional funds. Economic savings of consolidation of the academic fleet into fewer operating centers appear to be modest. Consolidation would have deleterious effect of further decoupling the scientific user from the vessel operations.

ACADEMIC RESEARCH VESSELS 1985–1990

Findings (cont.)

- Agency support. Use of ships can be reduced by insufficient funding for research as surely as by insufficient funding for ship operations per se. Balance must be readjusted as the state of science and national needs evolve. Ratio of ship operations to research is much higher in NSF/OCE than in ONR, both in recent past and as projected for future. NSF funds have consistently supported the operations of the UNOLS fleet to an extent that other agencies have been able to use these vessels selectively.

- General purpose ships. Present academic fleet is believed adequate for research requiring general purpose vessels during later part of decade. Smallest ships cannot conduct open ocean research but large ships can conduct most coastal research and are required in the case of large–scale cooperative programs.

- Special purpose ships. One or more vessels dedicated primarily to underway seismic profiling and to studies of the benthic boundary layer requiring deep towing and deployment/recovery of large bottom instruments are needed. 1000 to 2000 scientist days per year on ice–strengthened ships in each polar ocean could be used. Need for capability for large nets and trawls appears insufficient to warrant dedicated ship.

ACADEMIC RESEARCH VESSELS 1985–1990

Findings (cont.)

- Use of non–academic ships. Academic use of non–academic ships is increasing. This issue requires further study. Federal operation of the academic fleet is undesirable because federal research ships have higher operating costs than comparable UNOLS vessels and would further separate users of academic vessels from the management of them.

- Information base. Improved management requires the systematic collection and analysis of data necessary for making critical decisions. UNOLS group scheduling seems to be an effective way of enhancing the efficiency of ship use.

Selected Recommendations

- Maintain an academic research fleet.

- Predictive models of layup savings be used as guidelines for allocating funds and ship time during periods of funding shortfall.

- U.S. should begin at once the construction of a new polar research vessel.

- An improved communication system and information pool should be operated by UNOLS and financially supported by NSF and ONR.

- Requirements for and costs of requested ship time should be explicit in research proposals.

ACADEMIC RESEARCH VESSELS 1985-1990

Quotes without comment

"The most difficult task for the steering committee was to obtain complete and realistic projections for the future, both for the state of marine science and its financial support."

"ONR funded approximately 20 percent of the UNOLS ship time during 1970-1980. This contribution steadily decreased during this period from 34 percent in 1970 to 12 percent in 1980."

"...unlike NSF, one of whose goals has been to maintain a capability for U.S. sea-going research, ONR's goal usually has been to support only the specific amount of time needed for completion of specific research. The approach taken by ONR might not have been feasible without the commitment to 'basic' support of the fleet by NSF."

"Small savings could be realized by consolidating the fleet so that fewer institutions operate the vessels; the savings per ship increase in absolute amount with increasing size of ship, but the savings relative to the operating cost of a given size of vessel are independent of the vessels size. The savings are real, but may be economically trivial."

ACADEMIC RESEARCH VESSELS 1985-1990

Quotes (cont.)

"The total budget available for operation of the UNOLS fleet is currently about 90 percent of that required for full operation."

"At present, the average oceanographer requires, or at least is able to obtain, less ship time than did the statistical equivalent in earlier years."

"There are several arguments for maintaining some number of large vessels readily available to academic oceanographers. ...The U.S. Navy still has a worldwide, open-ocean mission which requires research... Increasing scientific and national interest in interactions between the ocean and atmosphere continues to require observations made under conditions where those interactions are hazardous for small vessels. ...academic scientists now frequently work together in large interdisciplinary projects which require enough space that researchers from several disciplines be able to work on the same ship at the same time."

"Another way of assessing future needs for research vessels is to examine recently planned or evolving scientific programs which are national (or international) in character... Often absent in such reports, however, is a philosophy of limited financial resources... Also absent, in most cases, are analyses of the ship time required to complete the programs."

"Academic scientists like to believe that great ideas and opportunities for research are just around the corner, and they are occasionally correct in this belief."

RESOURCES TO MEET REQUIREMENTS

- 3565 Days available on NOAA ships (base funded)
  ~~Approx. 240 days obtainable @ variable cost~~
  ~~* T-AGOS acquisition and/or conversion could impact FY 93/94 days at sea~~
- 2.1 ~~$1.5~~ Million earmarked for charter in FY 93
  * VICKERS support for 100-110 days requires approx. $1.2 Million

~~[redacted]~~

FY 1992
A YEAR OF CHANGE

- FLEET MODERNIZATION FUNDING
- INCREASE IN FUNDING FOR AIRCRAFT INSTRUMENTATION
- ALBATROSS IV REACTIVATION
- MT MITCHELL PERSIAN GULF DEPLOYMENT
- OPERATION OF THE R/V VICKERS
- CHARTER VESSEL UTILIZATION TO SUPPORT NOAA PROGRAMS
- SUCCESSFUL USE OF DIFFERENTIAL GPS TO CONTROL EEZ AND HYDROGRAPHIC SURVEYS

PLANNING FOR THE FUTURE

- NOAA PRIORITIES ARE SHIFTING
  - FY 94 BUDGET GUIDANCE AS PRIORITIES: SEA GRANT, CZM GRANTS, COASTAL OCEAN, CLIMATE AND GLOBAL CHANGE; AND DATA MANAGEMENT
- BASE PROGRAMS WILL BE SUBJECT TO REVIEW
  - COMMERCIAL/SCIENTIFIC BENEFIT
  - IMPACT
  - RELEVANCE TO EXECUTIVE/LEGISLATIVE AGENDAS
  - POLITICAL FEASIBILITY
  - SCOPE
- BASE FUNDED SHIP AND AIRCRAFT TIME CONSTANT FOR FY 93 AND PROBABLY 94
  - SCIENCE INITIATIVES MAY PROVIDE ADDITIONAL FUNDS

PLANNING FOR THE FUTURE (CONT'D)

- MULTI-PURPOSE USE OF EXISTING PLATFORMS
  - CONSIDER MINOR CHANGES IN EQUIPMENT TO IMPROVE CAPABILITIES
  - CONSIDER PROGRAM FUNDING FOR IMPROVEMENTS
  - REMAIN CONSISTENT WITH MODERNIZATION
- NEW TECHNOLOGY AVAILABLE NOW - IMPACTS WILL BE FELT IN THE NEAR TERM
  - DIFFERENTIAL GPS
  - IMPROVED MULTI-BEAM CAPABILITIES
  - IMPROVED COMMUNICATIONS CAPABILITY
- WITHIN NEXT 3 YEARS EXPECT LONGER UNDERWAY PERIODS AND SMALLER VESSEL COMPLEMENTS
  - MUST BEGIN ACTIONS TO ACCOMMODATE THIS
  - BLUE/GOLD OR 3/2 CREWING
  - REVIEW PROGRAM SUPPORT REQUIREMENTS/ PROGRAM IMPACTS
  - INCREASED TRAINING REQUIREMENTS

PLANNING FOR THE FUTURE (CONT'D)

- EFFECTS OF MODERNIZATION ON SHIP AVAILABILITY WILL NOT BE FELT UNTIL LATE 94/EARLY 95
  - CURRENT MIX TO BE BASICALLY UNCHANGED
  - REPLACEMENT OF VESSEL(S) WITH T-AGOS WILL IMPROVE RELIABILITY/CAPABILITY
- CHARTER VESSEL SUPPORT WILL BECOME INCREASINGLY IMPORTANT SUPPLEMENT TO EXISTING FLEET
  - NC WILL BE AN ACTIVE "BROKER"
  - VICKERS EXPERIMENT
  - USE OF EXCESS UNOLS CAPABILITY
- INCREASED STRESS ON EXISTING PLATFORMS FOR NEXT 2 - 4 YEARS
  - CRITICAL MAINTENANCE FUNDING WILL HELP
  - AUGMENTATION A REALITY
  - POSSIBLE COMPLEMENT REDUCTIONS

DAYS AT SEA REQUESTED

	FY 93	FY 94
OAR	630	695
NOS	1968	1968
NMFS	2681	3470
TOTAL	5279	6133

NOAA CHARTERING

- FY 1992

Commercial (National Marine Fisheries Service National Ocean Service)	$2.75 Million
R/V VICKERS (Supports Office of Oceanic and Atmospheric Research, Office of Global Programs)	$1.2 Million
UNOLS (Includes Support from National Undersea Research Program)	$4.5 Million
TOTAL	$8.45 Million

→ FY 1993

Expectations are the Same as FY 1992

→ - FY 1994

The FY 94 Budget is in development but increases in charter funding are being requested

DEPARTMENT OF OCEANOGRAPHY
TEXAS A&M UNIVERSITY
COLLEGE STATION, TEXAS 77843

WORTH D. NOWLIN, JR

(409) 845-1443

24 February 1992

MEMORANDUM

TO: Marcus Langseth, Chairman UNOLS Fleet Improvement Committee

FROM: Worth D. Nowlin, Jr. Worth

SUBJECT: Estimated Value of UNOLS Fleet

Mr. Larry Glosten, of The Glosten Associates, Inc., has completed his report on the estimated current value of the UNOLS fleet. It is attached.

This report represents considerably more thought and effort than might be apparent on first reading. I believe that it is a document which prudent facilities' managers (private and government) should wish to maintain in current status.

I have thanked Mr. Glosten for his pro bono preparation of this useful document. And, you will note by the distribution list that I have begun its circulation.

WDN/sm

xc: Distribution

Distribution:

Gary Brass, Chairman UNOLS
Carl Wunsch, Chairman OSB/NRC
Chairman, Marine Board/NRC
John Knauss, Administrator NOAA
Robert Corell, Assist. Director for Geosciences, NSF
Eric Hartwig, Division Director, ONR
Adm. Chesborough, Oceanographer of the Navy
Chief of Staff, House Merchant Marine and Fisheries Committee

16 January 1992

Subject: An Informal Report on the Estimated Current Value of the UNOLS Fleet of Oceanographic Research Vessels

Prepared for: Dr. Worth Knowlin, Chairman
Oceanography Department
Texas A&M University
College Station, Texas 77483

By: L.R. Glosten
The Glosten Associates, Inc.

Introduction

In the fall of 1989 Bruce Hutchison and Duane Laible of The Glosten Associates, at the request of Worth Knowlin, Chairman of the UNOLS Fleet Improvement Committee, reviewed and commented on a draft of the UNOLS Fleet Improvement Plan. In the course of that discussion, it was suggested that it might be useful to develop, and in the future maintain, an estimate of the present value of the vessels of the UNOLS fleet. Since The Glosten Associates has done this sort of appraisal in the past for both commercial and institutional vessel operators, the firm volunteered the services of Larry Glosten to undertake the project on a public service basis.

At the time it was not contemplated that two years would pass before a report would be submitted. However, it turned out that some of the basic information required was quite elusive. Moreover, arriving at a consensus on just what "present value" really means in this case involved extensive discussion. In fact, it was during this discussion that the results reported herein were evolved and consequently they are already generally known. This report simply formalizes them.

Purpose of Evaluation

The UNOLS fleet is, of course, the property of the U.S. government and it appears that in general the government does not maintain any statement of the value of its physical assets. Corporate organizations, on the other hand, do maintain statements of worth in which physical assets are included in terms of monetary value. For the most part these "book values" are arrived at by accounting formulas which result in figures that have little relation to market value, replacement cost or functional worth. However, many organizations find it useful to appraise their physical assets from the latter perspectives, and in the marine field we have undertaken several such projects.

Such an appraisal, particularly if maintained from year to year, gives a picture of the economic value of the resources available, shows whether this value is growing or shrinking, and can be useful in determining the timing and costs of appropriate replacements. We hope that this study may prove to be of value in some of these areas of interest.

Theory of Evaluation

The general concept of monetary value is the price that a willing buyer will pay to acquire ownership of a thing from a willing seller, neither being under pressure to consummate a transaction. Aberrations occur, of course, when there are surpluses or scarcities in supply or demand. The best and most often used method of determining value is by observing the market to determine the value at which comparable goods are changing hands. By accumulating data, a sense of the effect of variations in such things as age, size, quality, condition and style can be judged. This method works well for buildings, automobiles and the like, for which an active market exists. Even in the case of commercial vessels such as cargo ships, tankers, tugs or fishing vessels it can be applied, though the marine market seems to be acutely affected by supply and demand. This fact causes a problem when, as in the current instance, there is a desire to appraise an entire fleet in the absence of any desire to effect an actual transaction. And clearly there is no established market for an entire fleet of oceanographic research vessels or for that matter even an individual vessel of specialized design. We have faced this type of problem before in connection with commercial vessels. In response we have developed a theory, as discussed in the following paragraphs, that seems to make sense and which seems to conform reasonably well to the behavior of actual markets for ships.

The general shape of the curve of declining value as a function of age is shown in Fig. 1. This generic curve is developed for a particular vessel as follows:

(a) The original cost is assumed to be "reasonable." In other words, the purchaser believed the vessel was worth its cost or he would not have built it and the builder was willing to construct it for the price.

(b) In a commercial case the purchaser of a vessel would expect to recoup its cost by a stream of earnings over a vessel lifetime, which might reasonably be assumed to extend from twenty to thirty years. We have chosen to use, in this study, twenty-five years. The residual value of the ship at any time would be the time discounted value of the stream of earnings still remaining. In the case of a research vessel we would substitute "value of science to be performed" for "earnings." In the absence of inflation, which is separately taken into consideration, an appropriate discount rate might be 3%. Such a curve would go to zero at the end of the assumed lifetime.

(c) In the real economic world values do not terminate in this abrupt manner. Typically, at about midlife, procedures in the form of increased repairs and maintenance as well as acceptance of decreased reliability and performance are accepted. The result is an extended life in which value decreases less and less each year, never reaching zero. At some point the vessel is judged to be uneconomical and is scrapped (or passed along to a poorer, less demanding or less astute owner). This process seems to be fairly represented by a curve showing annual depreciation each year of a constant percentage of current value. We have used 8%.

(d) Our curve is a composite, the earlier years represented by the discounted value approach, changing to the 8% curve at the end of year 14 where the slopes are the same.

(e) In some cases our vessel will undergo in the midperiod of its career a major refit, conversion, rehabilitation or modernization designed to extend its useful economic life. Even in the absence of inflation such a refit may well cost a major fraction of the vessel's original cost. And a good portion of the cost of a major refit may go toward removals, rearrangements and replacements so that the resulting increase in vessel value is far less than the cost of the entire refit. In this study we have assumed a "cost effectiveness" of 65%. Clearly this is a broad generalization.

(f) The probable trend of the depreciation curve after such a major refit has been the subject of some discussion. In the end we have adopted the convention of treating the value at the conclusion of a major refit as a "new ship" value to be depreciated as heretofore described on the basis of a new lifetime starting at the conclusion of the refit.

As previously stated, Fig. 1 illustrates the concepts described.

The Effect of Inflation

The preceding discussion has considered the nature of the change, over time, in the monetary value of a vessel in the absence of monetary inflation. This is a hypothetical situation that has not existed over the past several decades during which annual inflation percentage rates have at times reached double digit levels. Within our office we have maintained a shipbuilding cost index that gives a reasonable indication of the trend in the cost of commercial shipbuilding over the past 30 years (Fig. 2). Figure 3 shows the valuation, according to the principles discussed above, for a hypothetical vessel built in 1962 at a cost of $5,000,000 in 1962 dollars and with the depreciated valuation each year, expressed in the "shipbuilding dollar" of that year. This curve illustrates the effect of serious inflation in dulling our appreciation of changes in values over extended periods of time when these values are expressed in elastic dollars.

Cost Data

In attempting to carry out the current evaluation of the UNOL's fleet, we have had to rely largely on cost data furnished by the ship operating institutions, both for original construction and for subsequent major refits. This information has come in various formats and there is some reason to believe that these numbers are not all rigorously comparable. However, in the long run, given the manner in which they have been used, there are probably no serious aberrations in the end results. Nonetheless, the following thoughts are offered here for consideration in future record keeping.

Definition of "Vessel" - The physical assets that constitute a research vessel are not always clearly defined with regard to the equipment that may or may not be included. The value of items such as specialized winches, portable laboratory units and other equipment may or may not be included in "cost of construction" figures. Studies such as this would be sounder if there could be assurance that the costs on which they are based conformed to an understood policy in this regard.

Construction Cost - In commercial practice it is not unusual to capitalize into the construction cost of a vessel a number of items, in addition to the shipyard contract price, that relate to its acquisition. Such costs might include:

- All or some fraction of design costs
- Contract administration costs
- Cost of change orders approved during construction
- Fitting out and mobilization costs after delivery

The total of such costs can amount to an appreciable, additive fraction of the shipyard contract price. It would be desirable to establish a consistent practice in this regard if comparative statistics are to be maintained.

Mechanics of Evaluation

The actual evaluation process is simple and will be clear from Fig. 4. The best information available as to the original cost of acquisition of the vessel appears in Column 1. The vessel is assumed for the purpose of this study to have been new when acquired. In Column 2 the original cost is converted to 1991 dollars by multiplying the actual cost by the ratio of the shipbuilding index in 1991 to that of the year of acquisition. These values come from Fig. 2. For vessels that have not undergone a major refit the next applicable column is 9, which simply states the age in 1991 which is used to enter Fig. 1 to determine the depreciation factor used to calculate the value in 1991, Column 10, and in 1992, Column 11. Column 12, the current annual depreciation, is the difference between Columns 10 and 11.

For those vessels that have undergone a major refit, the process is somewhat more complicated. The depreciated value in 1991 dollars for the year of major refit is calculated in Columns 3, 4 and 5 and combined with an appropriate fraction of the cost of the refit in 1991 dollars, Columns 6, 7 and 8, to determine a new value to be used as a point of departure. The vessel is depreciated in later years as though it were new in the year of completion of the refit.

Results of Evaluation

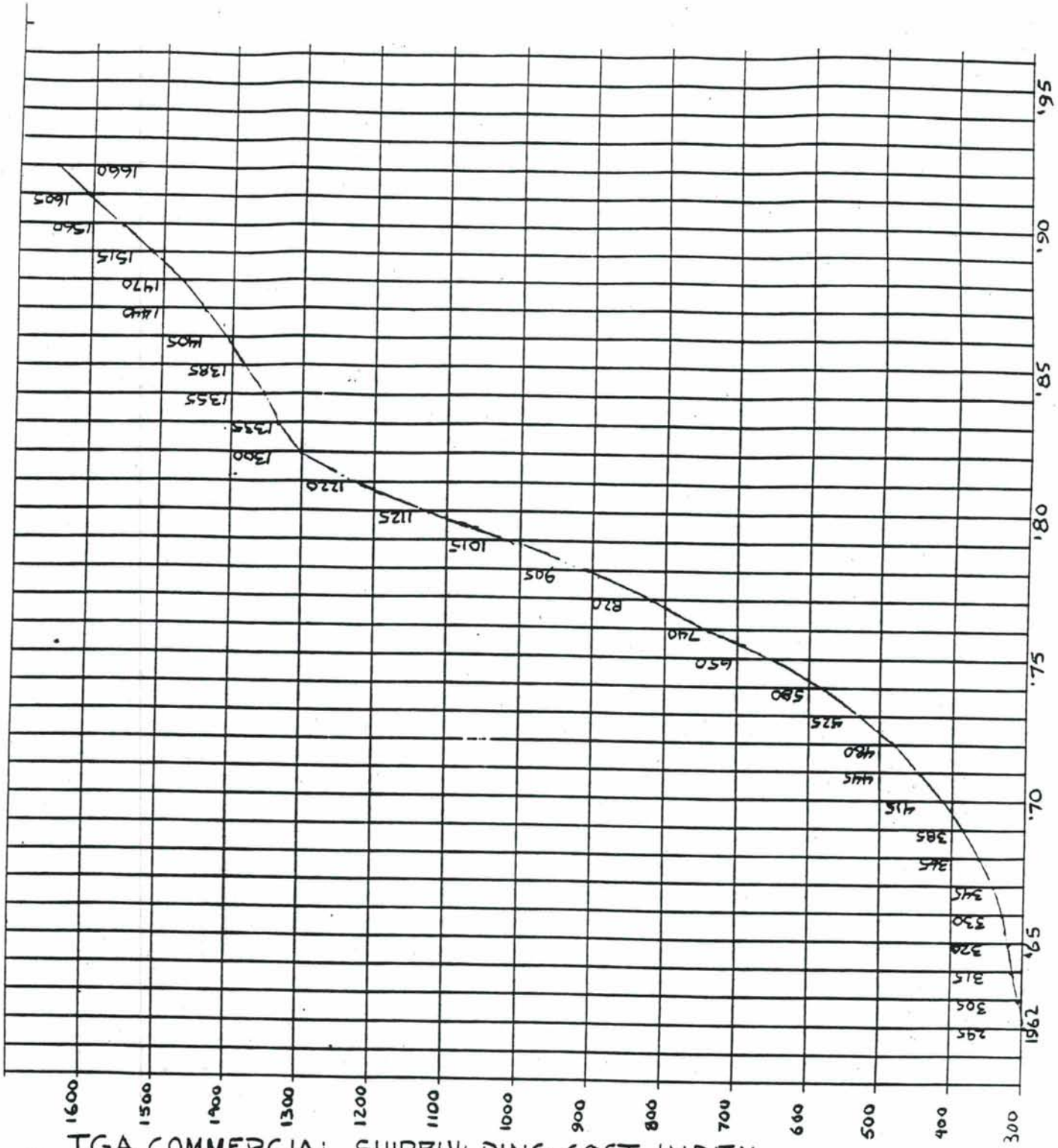
It is not the purpose of this report to suggest the uses these numbers may serve. However, to the author the bottom line summations of Fig. 4 suggest some observations. The depreciated value of the fleet as a whole in 1991 was 129 million dollars. Dividing this by the total acquisition costs in 1991 dollars (Col. 2) gives a ratio of 0.6, which by reference to Fig. 1 would suggest a "weighted average age" of 12 years. This is consonant with the fact that the current depreciation rate is about 4.5 percent of current value. These numbers would be typical of a fleet that is neither growing or contracting substantially. It is perhaps noteworthy that three vessels, KNORR, MELVILLE and AGOR 23 now constitute about 57 percent of the value of the fleet.

Conclusion

As noted in the body of this report, there may be anomalies in the original cost data. Moreover, other minds may have differing opinions with regard to appropriate ship life and depreciation rates. Also, the discounting of the value of major refits may be the subject of discussion. If so, the details of the calculations could be modified. It is believed that the basic method is sound and it is hoped that this study, particularly if maintained over time, will be one useful tool in the planning of future fleet needs.

BASIC DEPRECIATION CURVE
FIG 1
MID-LIFE REFIT
35%
65%
8%/YEAR
3% DISCOUNT
PERCENT OF COST
YEARS FROM DELIVERY
100
90
80
70
60
50
40
30
20
10
1
5
10
15
20
25
30
35
40
.973
.944
.915
.885
.854
.823
.790
.756
.721
.686
.649
.610
.572
.531
.489
.450
.414
.381
.350
.322
.296
.273
.251
.231
.212
.195
.179
.165
.152
.139

FIG 1



TGA COMMERCIAL SHIPBUILDING COST INDEX

1939 = 100

FIG 2

VALUATION CURVE IN CURRENT YEAR DOLLARS OF HYPOTHETICAL VESSEL DELIVED IN 1962.

FOLLOWS FROM FIGURES 1 & 2

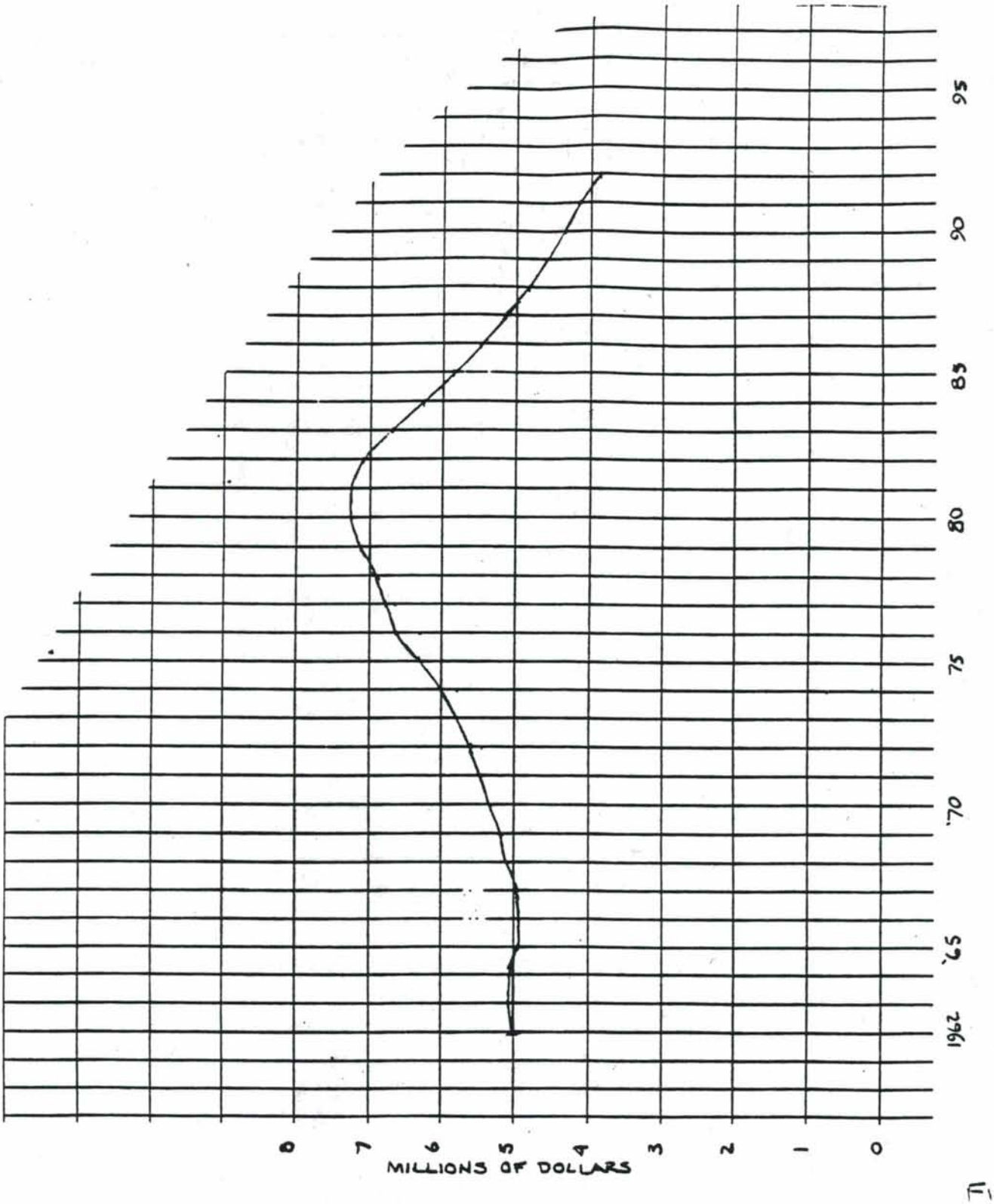


FIG 3

Figure 4
EVALUATION OF UNOLS VESSELS

SHIP (Note: all dollar values are in 1000's)	Year Acquired	Original Cost	Original Cost in 1991 Dollars[1]	Year Major Refit	Vessel Age at Refit	Depreciated Value 1991 Dollars[2]	Refit Actual Cost	Refit Cost 1991 Dollars	Value End of Refit (5)+65%of(7)	Vessel Age[3] in 1991	Depreciated Value 1991	Depreciated Value 1992 1991 Dollars	Depreciation 1991-1992
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ATLANTIS II	1963	4,800	25,250	1981	18	9,620	6,500	8,580	15,200	10[3]	10,430	9,860	570
ALPHA HELIX	1965	1,500	7,530	--	--	--	--	--	--	26	1,470	1,350	120
THOMAS WASHINGTON	1965	5,800	29,120	1981	16	13,104	2,000	2,640	14,820	10[3]	10,200	9,620	580
WARFIELD	1967	1,600	7,440	--	--	--	--	--	--	24	1,720	1,580	140
KNORR	1969	7,000	29,190	1990	20	9,399	20,000[4]	20,000	22,400	-0-[3]	22,400	21,800	600
MELVILLE	1969	7,000	29,190	1990	20	9,399	20,000[4]	20,000	22,400	-0-[3]	22,400	21,800	600
ISELIN	1971	--	no cost data available			--	--	--	--	20	--	--	--
LONGHORN	1971	200	720	1985	14	382	300	348	530	6[3]	440	420	20
MOANA WAVE	1973	2,800	8,570	1984	11	5,562	1,800	2,124	6,940	7[3]	5,480	5,250	230
GYRE	1973	2,800	8,570	--	--	--	--	--	--	18	3,260	3,000	260
OCEANUS	1975	2,600	6,420	--	--	--	--	--	--	16	2,890	2,660	230
WECOMA	1975	3,200	7,900	--	--	--	--	--	--	16	3,560	3,270	290
CAPE HENLOPEN	1975	1,200	2,960	--	--	--	--	--	--	16	1,330	1,220	110
ENDEAVOR	1976	3,000	6,510	--	--	--	--	--	--	15	3,180	2,930	250
NEW HORIZON	1978	4,200	7,430	--	--	--	--	--	--	13	4,250	3,940	310
CAPE HATTERAS	1981	3,000	3,960	--	--	--	--	--	--	10	2,720	2,570	150
POINT SUR	1981	3,000	3,960	--	--	--	--	--	--	10	2,720	2,570	150
LINK	1982	--	no cost data available			--	--	--	--	9	--	--	--
SPROUL	1984	1,500	1,770	--	--	--	--	--	--	7	1,400	1,340	60
JOHNSON	1985	--	no cost data available			--	--	--	--	6	--	--	--
PELICAN	1986	1,700	1,940	--	--	--	--	--	--	6	1,600	1,530	70
AGOR 23	1991	27,700	27,700	--	--	--	--	--	--	-0-	27,700	26,950	750
TOTALS			216,130								129,150	123,660	5,490

[1] Derived from Fig. 2
[2] Depreciation calculated from Fig. 1
[3] Or "age" from refit
[4] Estimated value

FIG 4.

Brief Sub-Subcommittee Report:

Facilities for Coastal Oceanography on the Pacific Coast

Charles Miller (OSU)

I. **Demand** - Projections of the demand from the academic oceanography community for coastal research vessel time off the Pacific coast are *very* uncertain. In mid-1991 it looked as if a number of government programs for coastal oceanography would develop quickly, with field programs as early as 1993. Those included the Ocean Margins Program of DOE and an Eastern Boundary Current Study as part of the NSF GLOBEC Program. Now the first version of OMP has been developed, and its field programs until the mid-90's will be on the East Coast, primarily off Cape Hatteras. Unless there is a major change in attitude at DOE, there will be no coastal vessel demand from OMP on the Pacific side. GLOBEC's eastern boundary current program is at best a fading possibility. A workshop was held in November 1991 at Bodega, but the report has not yet been issued. Potential California Current work must compete for limited, although slowly growing, GLOBEC funds with a Northwest Atlantic program in a moderately advanced stage of planning, and with both Indian Ocean and Southern Ocean programs for which plans are advancing rapidly.

Other government agencies are not moving toward significantly enhanced coastal programs that might extend funding to academic scientists. In fact, NOAA laboratories are actively seeking, and in some cases receiving, funding from NSF in direct competition with academic oceanographers.

To check these impressions, we should poll program managers in the following agencies: NSF(OCE), DOE, NOAA, and ONR. My bet is that essentially **no** increase in demand will be suggested by this poll.

II. **Charters** - Truly coastal research programs requiring boats can be safely and economically fielded by employing the widely distributed, capably outfitted Pacific fishing fleet. There are also commercial operators of other types of vessels. The NOAA-NURP program shows that interaction with such operators can be both extensive and profitable to everyone. Vessels with certified operators, fully equipped with modern navigational and communications equipment are available from Dutch Harbor to San Diego (and on to La Paz, for that matter). The fishing fleet has been regularly employed off the Oregon coast by Oregon State University, which has developed policys and guidelines for charters on vessels of several sizes.

In most cases the investigator must plan on providing some items of gear usually provided by UNOLS vessels. For example, a portable winch with conducting wire might be needed to deploy a CTD. Since coastal work is usually well served by lightweight equipment, small wire sizes, and shallow deployments, such winches can indeed be portable. Space aboard can readily be converted to laboratory use by creative crating of scientific gear. Boxes should open to serve as laboratory benches with equipment ready to run, everything accessible. The typical fishing vessel is not suitable for those oceanographers that are really landlubbers. It doesn't have palatial cabins, spacious dining areas, or spotless maintenance. It will roll, pitch, and yaw. However, using them will integrate coastal oceangraphers with the real ocean-using community along our coast. That will benefit both our science and our image among the public that counts. It's fun.

A fascinating possibility is opened by the extended use of charters. It is suggested by the "Eureka" operations carried out off Peru in the 1970's. In those studies some 50 fishing boats were "chartered" by the Peruvian fisheries agency and sent to starting points spaced along the entire Peru coast. At a given hour they started sampling seaward, completing a massive station grid to almost 200 miles offshore in a single day. Coupling that sort of synopticity in sea surface observation with satellite imagery could produce some very nice insights.

The OSU charter guidelines are attached as an exhibit and proposed UNOLS working document. These spell out a mechanism by which contracts can be developed between boat operators and PI's as agents of their universities. There is a bottleneck in application of this policy. It is the process of Coast Guard vessel designation. The operator must seek from the Coast Guard designation of his vessel as an oceanographic research vessel. He must also arrange for Coast Guard inspection. The ease with which such designations are granted depends greatly upon which functionary at the Coast Guard office receives the request. The operator either can be burdened with a mountain of paperwork or can simply receive the designation in the mail on request. In the paperwork outcome, delays of up to two months have been experienced. Not all operators will persist through these difficulties and delays. There seems to be no explanation except personality differences. The inspection is generally a simpler matter, provided that vessel and gear are in good operating trim.

Actual OSU requirements are seaworthiness, redundant radio communications, maintained radar, basic navigational equipment, EPIRB's, and survival suits. All of that is contained in the UNOLS safety standards and in the U.S.C.G. document Merchant Marine Safety and Inspection [46 C.F.R. (shipping)]. Once contracts have been established, relationships have been generally satisfactory. We have had no safety problems. Problems encountered at other times by others (the *Holo-Holo* incident, etc.) will serve to remind us of what to watch for in charter arrangements.

In recommending extension of the practice of chartering fishing and other coastal vessels, UNOLS could negotiate for an improved and standardized Coast Guard designation procedure.

III. **Bigger Ships** - In the present political climate, it is hard to imagine new funding for coastal oceanography of such a scale that new ships of the Cape class or larger would be justified along the Pacific coast. Many institutions operate boats in the 40-80 ft. class that can be used for very simple observations in the coastal ocean on a regular basis. Our only small oceanographic *ship* currently operating is the R/V POINT SUR out of Moss Landing. The description of the POINT SUR in her Cruise Planning Manual is attached for comparison to other vessels currently being proposed for expanded coastal studies. The comparison sought is explicitly to the proposal submitted to the coastal facilities subcommittee by the Gulf of Mexico group headed by Peter Betzer. The POINT SUR is smaller (135 ft. vs ca. 150 ft.), carries fewer scientists (12 vs. 22), does not carry sizeable vans, and is limited to 21 days at sea (Gulf proposal suggested 30). Nevertheless, the Pt. Sur is very capable overall, and it is about the largest ship that could be considered in any sense limited to "coastal" work. I simply offer this description as a working document.

We should carefully consider whether new ships of the scale of the Gulf Group proposes differ in any significant way from present intermediate class vessels such as the OCEANUS class. These now have daily rates of order $12,000, and so will a comparable new "coastal" vessel.

College of Oceanography
Oregon State University
Corvallis, Oregon 97365

13 March 1987

Memo to Faculty and Staff

From: Douglas R. Caldwell, Dean

Subject: Policy and Procedure for the Charter of Private Vessels (Revision 3)

It is the policy of the College of Oceanography to ensure all vessels operated under its auspices, including those on charter, are in full compliance with the regulations governing Merchant Marine Safety and Inspection [46 C.F.R. (Shipping)] and the Research Vessel Safety Standards of UNOLS. Accordingly, the following procedures apply:

1. Any vessel chartered shall be properly designated as an oceanographic research vessel and inspected by the U. S. Coast Guard. To ensure this, the language of attachment (1), together with a copy of attachment (2), will be included in invitations to bid. The person requesting the charter should determine the number of days allowed for the offeror to complete the requirements. The UNOLS Research Vessel Safety Standards now require that all chartered vessels be equipped with a Class-A Emergency Position Indicating Radio Beacon EPIRB) and that the vessel operator is familiar with its purpose and operation.

2. The Marine Superintendent will be notified of the vessel tentatively selected for charter and will be given basic information concerning the vessel in the format of attachment (2) as returned by the bidder. The Marine Superintendent will evaluate all information and documents concerning the vessel, and conduct his own inspection if necessary, to determine that all regulatory and safety requirements have been met.

3. If the vessel is satisfactory for charter, the Marine Superintendent will so advise the Dean.

4. The selected and approved vessel will be recommended for award of the contract.

During the operation of the chartered vessel, additional actions are necessary to insure the safety of the scientific party. The Principal Investigator or a designated person ashore must perform the following functions:

1. Before departure, receive a written cruise plan from the party chief on board and deposit a copy with the Ship Operations Office. Forms for this purpose are available from that office. A sample is contained in attachment (3).

2. Ensure that a Scientist Information form is on file with the Ship Operations Office for every member of the scientific party. Attachment (4) is a sample of this form which is also available from the Ship Operations Office.

3. Ensure that notice of return to port is received within two hours of the scheduled time, or radio notice of a change in plan if the vessel is to be more than two hours late. If no information is received, notify the Marine Superintendent, if he is not available notify the Dean. The Marine Superintendent will take action to reach the vessel by radio and notify the Coast Guard at the appropriate time.

4. For voyages planned for over 24 hours, receive daily radio reports of the vessel's present location and planned locations for the next 24 hours. This report should also include reports of adverse weather, equipment failures or other factors effecting the vessel and its planned operations. Arrangements may be made to have radio reports received by the Ship Support Facility Office in Newport during working hours. If this report is not received, take action as indicated in (3) above.

The Ship Operations Office will maintain files of vessel charters. A note concerning your experiences with a particular vessel would be a meaningful inclusion and an aid to other Principal Investigators planning a charter.

Questions relating to charters should be taken up with the Marine Superintendent as far in advance of a charter as possible.

attachments (5)

Attachment (1)

Vessel Documentation and Inspection

The Contractor shall obtain from a U. S. Coast Guard Marine Safety Office, for the vessel offered, a letter of designation as an oceanographic research vessel to be carried on board for the time period of the charter.

If the vessel offered is not currently U. S. Coast Guard inspected, the Contractor shall obtain an "Uninspected Vessel Examination" from the Coast Guard. The results of this inspection and a copy of the letter of designation shall be provided to:

Marine Superintendent
Oregon State University
Hatfield Marine Science Center
Newport, OR 97365

(Telephone (503) 867-3011 extension 224)

If the above requirements cannot be met at time of bid, they shall be met within _____days of bid opening date or disqualification will result.

In addition, Oregon State University reserves the right to conduct its own inspection and evaluation of the vessel being offered before award of contract.

Attachment (2)

Date_____

Principal Investigator_____

Proposal for Charter of Vessel

Vessel Name_____

Number_____ U.S.C.G. Letter of Designation as Oceanographic Research Vessel on board? _____

Radio Call Sign_____

Owner_____ Crew Size_____

Address_____

Phone_____

Operator (Captain)_____ Type License _____

Address_____

Description of Vessel

Year Built_____ Make_____ Type Rig_____

Hull material_____ External Color_____

Length overall_____ Gross Tons_____ No. of Lifejackets w/lights_____

Has bunks for_____people No. of survival suits_____

No. Fire Extinghishers_____ Type_____Size_____

Is vessel Coast Guard inspected?_____ Liferaft?_____

Date and place of last inspection_____

Has vessel been surveyed for insurance?_____ When?_____ (attach copy)

Make, Model & Age

Radios: VHF_____CB_____SSB_____

EPIRB (class)_____Radar_____

Loran C_____Sounder_____

Compass_____Last Adjusted_____

Safety Standards

Vessel Safety Manual (NPFVOA or Coast Guard 5-86) on board_____

Stability Instructions for Operator on board_____dated_____

Charts & Nautical Publications for area of operations on board_____

Attachment (3)

Date_____

Principal Investigator_____

Cruise Plan for Charter Vessel

_____
name of vessel

Radio Call Sign:_____ Working Freqs:_____

Itinerary: (indicate length of voyages, if day trips, planned time of return, etc

Area of Operation:

Communications Plan: (specify shore contact who will receive daily radio-phone report of vessel's location and time of contact and individual who will be notified of the final arrival in port)

Scientific Party: (if only on board for portion of cruise, specify inclusive dat

Attachment (4)

CONFIDENTIAL
Prior to cruise departure, mail to: Ship Operations, College of Oceanography, Oregon State University, Corvallis, Oregon 97331.

MEMBER OF SCIENTIFIC PARTY - R/V_____, departing_____
date

Last Name [No Nicknames] First Name Middle Initial Social Security No.

Employer/Sponsor Address Office phone

Name of person to be notified in case of emergency- Address Relationship (area code) telephone

I understand that 1) the use or possession of alcohol or marijuana or similar drugs or stimulants is not permitted on board the vessel and; 2) that there is no expert medical service available on board. For my own protection, I report the following past or present health problems which could require emergency medical treatment: (Include use of medication)_____

Signed date

IF NOT EMPLOYED BY OSU, COMPLETE THE FOLLOWING:

I, the undersigned, agree to accompany the cruise expedition_____on R/V_____beginning on or about the_____day of_____, 19____. I understand that such expedition may expose me to certain risks of injury or death or damage to my property and I freely and voluntarily assume any and all risks of injury, including death, and damage to my property which might result from my participation in such expedition. I hereby release the State of Oregon, its officers, agents and employees from any and all claims or liabilities which I might have or claim to have against the State of Oregon, its officers, agents and employees under the Tort Claims Act (ORS 30.260-30.300), for injuries to my person, including death, or property, in any way arising out of my participation in such expedition. I agree that I will not be compensated by the State of Oregon for my participation in such expedition and that I am not an employee of the State of Oregon:

Signature of Cruise Participant date Signature of Witness date

If the participant is under 18 years of age, the undersigned parent or legal guardian hereby executes the hereinabove RELEASE AND CONSENT on behalf of his or her minor child for the above cruise expedition.

Name of Minor Signature of Parent or Legal Guardian date

Signature of Witness date

IF FOREIGN OPERATIONS, PLEASE COMPLETE THE FOLLOWING:

Place of Birth Date of Birth Citizenship

Passport No. Date of Issue Exp. date

Status - if non U.S. Citizen (Alien Registration No.)

Any information supplied herein is and will remain CONFIDENTIAL.
Form 1/81

Attachment (5)

Step-by-Step Guide to Procedures
for Offeror of Charter Vessel to
Oregon State University

Step 1. If not already available, obtain a copy of either "Vessel Safety Manual" published by the North Pacific Fishing Vessel Owners' Association (NPFVOA), NPFVOA Safety Program Office, Suite 207, Building C3, Fishermen's Terminal, Seattle, WA 98119 (206-283--0861) or "Voluntary Standards for U. S. Uninspected Commercial Fishing Vessels", U. S. Coast Guard Navigation and Vessel Inspection Circular No. 5-86 (dated 15 August 1986). It is expected your vessel will be equipped, maintained and operated according to these standards while under charter to OSU.

Step 2. Locate your last marine surveyor's report which was prepared for insurance purposes. Make a complete copy of this report and mail to:

Marine Superintendent
Hatfield Marine Science Center
Oregon State University
Newport, OR 97365

Telephone (503) 867-3011, extension 224

Step 3. Contact the nearest U. S. Coast Guard Marine Safety Office or Marine Inspection Office and request an "Uninspected Vessel Examination" and a "Letter of Designation as an Oceanographic Research Vessel" (for the time period of the charter). The former can usually be arranged by telephone and can be omitted if the vessel is otherwise Coast Guard inspected. The latter should be by written request and must include a copy of the proposed charter agreement or contract; the name, official number and description of your vessel; the area of operations; and the numbers of crew and scientists who will be on board. The person at OSU requesting the charter will assist you in obtaining this information. Ask the Coast Guard to send a copy of the Letter of Designation and Inspection Report to the Marine Superintendent. Coast Guard Offices are located at:

Juneau

Officer-in-Charge
U. S. Coast Guard
Marine Inspection
612 Willoughby Avenue
Juneau, AK 99801

Telephone:

Seattle

Officer-in-Charge
U. S. Coast Guard
Marine Inspection
1519 Alaska Way South
Bldg. One, Pier 36
Seattle, WA 98134

Telephone: 206-442-4914

Portland

Commanding Officer
U. S. Coast Guard
Marine Safety Office
6767 N. Basin Avenue
Portland, OR 97217

Telephone: 503-240-9345

San Francisco

Commanding Officer
U. S. Coast Guard
Marine Safety Office (San Francisco Bay)
Bldg. 14, Government Island, Room 208
Alameda, CA 94501

Telephone: 415-437-3101

Posted: Mon, Mar 16, 1992 7:06 AM PST Msg: LGJC-5160-4496
From: M.LANGSETH
To: UNOLS.FIC
CC: G.Brass
Subj: The coastal study

Memo:
To: FIC members
From: M. Langseth

The following is my reaction to progress with the coastal ocean study to date. I would like to discuss the direction this study is taking in depth at the April meeting. In the meantime you may want to use telemail to make some comments of your own. Mark

Some thoughts about our Facilities for Coast Oceanography charge:

I am not a coastal oceanographer, which I suspect is the reason that I am baffled by the reaction of the coastal community to our initiative to start them thinking about their future facility needs.

Unfortunately I was unable to attend the "Town Meeting" held at the AGU Ocean Science meeting in New Orleans, but I attended the one in San Francisco where I heard a lot of suspicion, cynicism and paranoia with regard to what FIC is up to. [At least they weren't passive!] Some of the criticisms I remember were- Is this an effort by the big ship operators to gain control of the small research fleet? Is this a power grab by UNOLS? Why are we talking about another new big ship when the fleet is bloated already?

Our plan to try to get inputs from different coastal regions was criticized. Some one asked whether every region that we had defined would receive a new ship? Our division of the coastal areas was attacked as though we were setting up new voting districts. I felt stung by these reactions, and wanted to shout NO, NO, NO to each of them. On further thought, I think there may be an important message in these criticisms.

First we (I include myself) may have conveyed a message that is not true. I.e. the federal agencies want to buy some new ships for coastal oceanography. So the only thing that the coastal ocean community has to decide is what kind of ship they want. In fact NSF has made it abundantly clear that they have no plans to build new coastal research vessels.
Perhaps this statement is meant to shame NOAA or EPA into providing facilities, nonetheless it is clear that no new ships or even modification of existing ships have been promised.

I can also appreciate that many coastal researcher may be nervous about federal agencies providing ships for academic research. For one thing it would mean that the new ships would most probably become part of the UNOLS fleet. UNOLS may not represent Nirvana to these researchers because of the loss of control over small vessels that are suitable for their work. They may also foresee increased bureaucracy and cost because a larger ship be thrust upon them. There are probably other reasonable concerns that make a
government owned, UNOLS coastal vessel less than desirable that I am too far removed from the community to appreciate.

If my assessment has any merit it means that UNOLS/FIC should back off a little and reassess what we are doing and why we are doing it. I think that we should emphasize our role as communicator between the community and the agencies and vice versa. Thus our product should be a report that strives to cover the following:

1. (Current status)- Describe the current research activities of the US coastal science community, and describe the facilities that are currently available and being used. Don's questionnaire has gone a long way toward getting the basic data for this task.

2. (Future research)- Attempt to project the spectrum and level of coastal science in the next 10 years. This can be based on the large programs that are being developed within various funding agencies and projection of current trends in "core" programs. These data can probably be extracted relatively easily from existing documents.

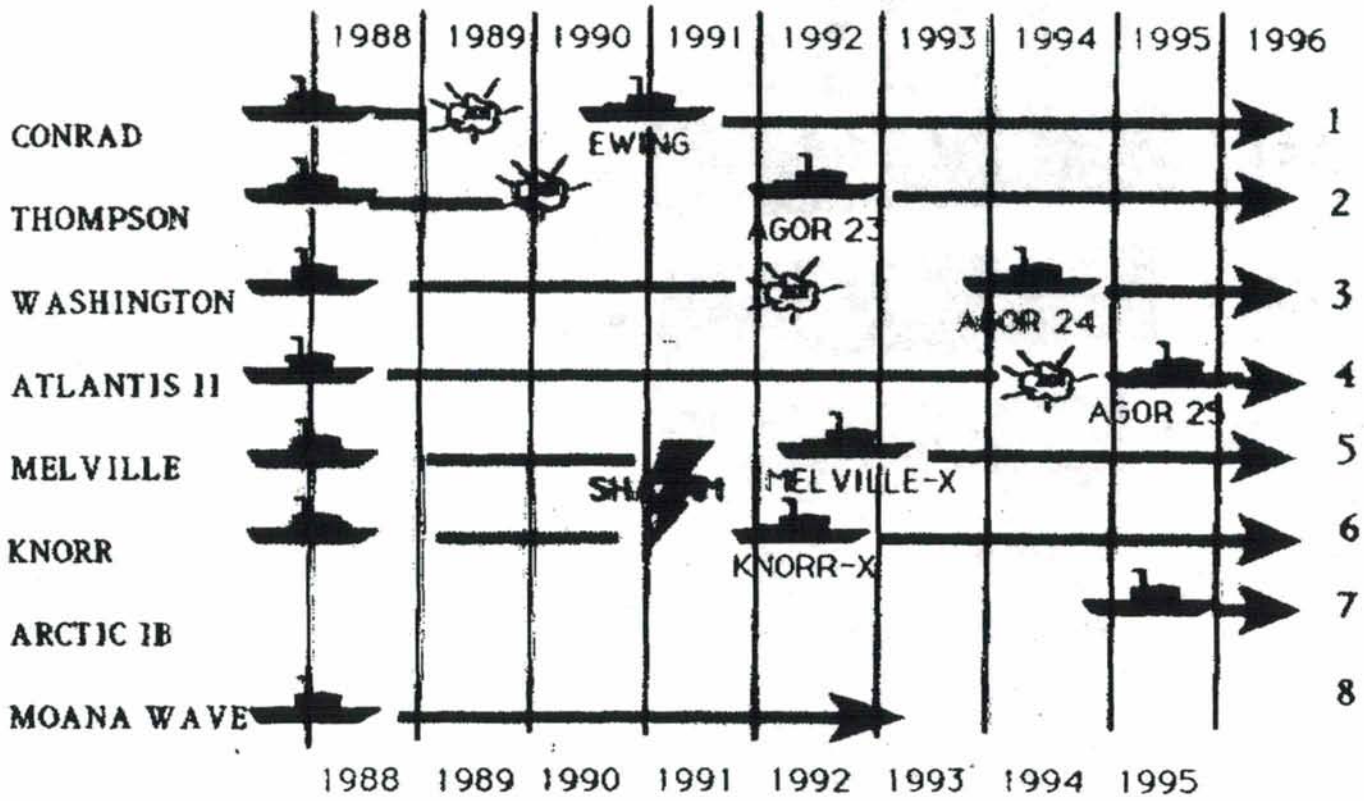
3. (Future facility needs)-With the aid of current ship users in the coastal ocean community evaluate existing facilities available to the community for field studies and experiments. Attempt to anticipate the need for improved and new facilities for the 1990's.

4. Recommendations we should probably talk about hardware needs and the process for fulfilling these needs.

I believe that it would be best if we confine ourselves to the needs of the Academic Community.

Items 3 and 4 may or may not suggest new and/or larger ships. Contrary to my earlier opinion, I think the report must discuss the increasing use of other facilities such as: satellite imaging, data acquisition and data transfer; aircraft observations; and moored instrument packages for time series observations. The community (not FIC) will have to place some priorities with respect to the type of facilities best suited to their science.

We should also keep in mind alternative modes of acquiring the facilities. The process does not necessarily have to be one where the community defines their needs and the feds build it for them. Conceivably, the community could define the types of facilities essential to do research in a certain discipline or region, and the agency provides the funds to obtain the facilities, (lease, buy or borrow) as the researchers see fit. This is just an example of one way to get away from the "UNOLS one-fold path".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CONRAD
THOMPSON
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ATLANTIS II
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KNORR
ARCTIC IB
MOANA WAVE
EWING
AGOR 23
AGOR 24
AGOR 25
MELVILLE-X
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PROJECTED COST OF LARGE SHIPS