ADVISORY COUNCIL MEETING
August 27, 28, 1986
Moss Landing Marine Laboratories
Moss Landing, California

Advisory Council members together with representatives from the Minerals Management Service, National Science Foundation, Office of Naval Research, U.S. Geological Survey, and UNOLS Office Staff met at Moss Landing Marine Laboratories, Moss Landing, California. The meeting was called to order at 8:30 a.m., August 27, 1986. William Barbee, Executive Secretary chaired the meeting until the new Council chose its permanent chairman and vice chairman.

Attendees

Advisory Council

Robertson P. Dinsmore
Kenneth C. MacDonald
John Martin
Arthur Maxwell
Christopher N.K. Mooers
George H. Keller, *ex-officio*

Observers

Michael Field, USGS
Keith Kaulum, ONR
John McMillan, NSF
Hawley Thomas, MMS

UNOLS Office
William D. Barbee

Unable to attend
Robert A. Knox
Carl Lorenzen
Thomas C. Malone
Robert W. Corell, *ex-officio*

During introductions among Council members and sponsoring agency representatives Keith Kaulum advised that Dr. Eric O. Hartwig, Acting Associate Director for the Environmental Sciences Directorate, ONR has indicated that he intends to participate actively in representing ONR in UNOLS matters.

The Advisory Council selected John Martin chairman and Thomas Malone vice chairman for the 1986-1987 year. Dr. Martin chaired the meeting after his selection.

The council accepted minutes from their June 2, 1986 meeting.

The most compelling item on the meeting agenda (Appendix I) was to develop a **Purpose and Organization of the UNOLS Advisory Council for 1986-1987.** In developing a statement of purpose and organization, the Council considered:

- Statement of Purpose developed by last year's Council for 1985-1986 (published earlier in UNOLS News),

- UNOLS Chairman's letter to Members, Associate Members (Appendix II) with responses to 8/25/86,

- NSF suggestions concerning an Advisory Council Agenda (Appendix III),

- The Advisory Council's June 2, 1986 resolution to study *UNOLS Fleet Policies and Strategies for the 1990's.*

- Requests or suggestions from sponsoring agencies, including *NSF Suggestions on 1987 Agenda* (Appendix III).

The Council, together with agency representatives, discussed issues noted in these various sources. In their discussion, several points were made:

George Keller stated that, based on his letter to UNOLS and responses to date, UNOLS should function as an advisory body to sponsoring agencies on matters such as ship scheduling, ship operations, lay-ups, fleet improvement plans, etc. UNOLS should reach definitive positions on relevant issues and make firm recommendations to agencies. In general, recommendations should be delivered as UNOLS recommendations, not those of the Advisory Council or other sub bodies.

John McMillan, NSF representative noted that for several years NSF had been working with the Advisory Council on specific issues. NSF had charged the Council directly with some action items and had accepted recommendations from the Council. Similar arrangements had been in place with other UNOLS sub bodies (e.g., Fleet Replacement Committee, ALVIN Review Committee). NSF has been satisfied with responses from this mode of interaction, especially in that responses

had been timely and useful recommendations had been reached. NSF hopes to be able to continue direct interaction with the Advisory Council and other UNOLS sub bodies as appropriate.

The sense of the Council was that some sorting out would be necessary, but that those two modes of interaction could be compatible.

Sponsoring Agency Information

NSF/OCE sees a problem of communication and coordination among bodies advisory to the Division. OCE gets a measure of advise from UNOLS, the OCE Advisory Committee, the NAS/NRC Ocean Studies Board, the JOIDES Board of Directors and JOI, NASULGC's Marine Division and perhaps others. Problems might arise when two or more of these entities address the same or related problems without adequate coordination. Other critical issues might be neglected. At the very least the various advisory groups should be listed, along with their central roles. Regular, systematic communication should be established among the groups.

The Advisory Council recognized the issues of communication and coordination. They recommended that communications with other advisory groups be implemented through Chairmen's letters, UNOLS News, exchange of meeting reports, etc. Further means of coordination and UNOLS roles should be developed.

OCE sees ship scheduling and the match between funded ship requirements and ship availability as their most compelling problems. OCFS hopes to change the submission date for Ship Operations proposals from the current July 1 to October 1 thus achieving a more sensible sequence among science funding decisions, preparation of schedules and proposals.

Keith Kaulum, ONR stated that his agency generally agrees with NSF on issues that are important to the UNOLS community. ONR also wants a UNOLS structure that the agency can work with and that can provide timely, effective advise (e.g., a Fleet Replacement Committee, Advisory Council, ALVIN Review Committee). *ONR looks to UNOLS for the traditional roles of advice, recommendations and operation of facilities; they look to the Ocean Studies Board for advice on science.*

ONR sees as a critical problem the apparent excess of ship time availability (over funded requirements) during a time of active new-ship acquisition. They welcome UNOLS' advice in developing a perspective that will accommodate those two factors.

The Request for Proposals for AGOR-23 had not yet been issued. Thus, there is some slippage in the acquisition schedule:

Complete development of requirements	June, 1986
Issue RFP	July, 1986
Contract design proposals due	Feb, 1987
Contract award	June, 1987
Delivery, not later than	Dec, 1989.

The selection process for the operating institution will be a separate one but will, hopefully, be completed by about February, 1987 so that the selected institution can participate in subsequent phases of ship acquisition.

ONR does not have a good budget projection for 1987. Until there is definite budget action, ONR programs will be allowed to spend up to 50% of their 1986 levels. ONR is planning for about $4 million for UNOLS ship time in 1987.

A letter from Chief Naval Research had raised the possibility of the Navy's providing some funds to operate MELVILLE and KNORR from 6.5 money. ONR did initiate such a plea for funds beginning in FY-1988. There has been no response yet.

Hawley Thomas reported that MMS budget forecasts for 1987 had not changed (See Appendix IV). Almost all oceanographic investigations sponsored by MMS are through contracts with private research firms. MMS has asked why UNOLS ships are not used more for this work. In the contract mode for these studies the successful bidder (i.e., usually a private contractor) provides ships, either directly or through subcontract. In today's market the daily rate for private vessels is less than that for UNOLS vessels. Furthermore, firms with MMS contracts often make ship use arrangements too late to coordinate with UNOLS ship schedules.

Advisory Council discussion reached no firm conclusions. It was suggested that UNOLS might undertake a market survey (among other steps) to help academic fleet ships compete for contract work such as that funded by MMS. It was also noted that at present (perhaps as a consequence of low oil industry activity) costs for commercial research vessels are low and this shifts some ship use away from the UNOLS fleet. UNOLS should be aware of this situation and should respond by developing ship users other than NSF and ONR.

Michael Fields, USGS (Menlo Park) reiterated that USGS forecasts no significant UNOLS ship use in 1987. Marine program ship use funds are being used to deploy the S.P. LEE (as support vessel for the SEA CLIFF and additional geology/geophysics investigations) and for GLORIA surveys. The S.P. LEE may work in support of Atlantic programs in 1987.

John McMillan provided 1987 forecasts for NSF/OCE, OCFS and an oceanographic facilities breakdown:

NSF BUDGET ESTIMATES
UNOLS ADVISORY COUNCIL
AUGUST 1986

OCEAN SCIENCES DIVISION	1985 Actual	1986 Actual	* 1987 Estimate	** 1987 Request
Ocean Science Research	58.2	56.5	57.7	66.4
Oceanographic Facilities	34.9	33.5	34.1	37.2
Ocean Drilling Program	27.6	28.9	30.1	30.1
	$120.7 M	118.9	121.9	133.7

Oceanographic Facilities Detail

Operations				
Ship Operations	23.8	23.8		
ALVIN, Aircraft, Misc.	2.9	1.6		
Marine Technicians	2.4	2.5		
	29.1	27.9	28.3	30.5
Acquisitions and Developments				
Science Instruments	1.8	1.6		
Shipboard Equipment	1.7	1.4		
Technology Development	1.6	1.7		
UNOLS, Ship Const., Misc.	0.7	0.9		
	5.8	5.6	5.8	7.2
TOTAL	$34.9 M	33.5	34.1	37.2

* Estimate using House Appropriations markup.
** February 5, 1986 Budget Request to Congress.

In 1986, $25.2 million was available for Ship operations. (The increase over $23.8 was from DPP, ODP and EPSCOR.)

Although both estimates and requests for 1987 include modest increases for operations, a continuing resolution (and so, no increase) is becoming more likely.

Advisory Council Standing Roles. The Council reviewed the status of the standing roles that had been the structure for Advisory Council activities over the past several years. Consideration was given to whether or not the standing role structure should be maintained, if so, which of the roles should be continued, and how these activities should be reflected in a statement of the Advisory Council agenda. *The Advisory Council determined that standing roles were a useful way of organizing Council activities and provided an effective means for addressing issues.* Individual roles were reviewed.

Ship Scheduling. Examination of the UNOLS ship scheduling process was deferred until later in the meeting. The Council agreed that they should continue to monitor ship scheduling and scheduling group meetings. *Tom Malone, will observe East Coast Scheduling Group meetings, Ken MacDonald will monitor West Coast meetings.*

It was recognized that there had recently been dissatisfaction with the pace of the UNOLS ship scheduling process and with procedures used to reach and to forward recommendations on ship lay ups, etc. Furthermore, the process currently in effect, adopted in December, 1980, is not in accord with the UNOLS Charter (Annex I). *The Council recommends that UNOLS ship scheduling procedures be examined and revised as necessary to provide an improved process. Chairmen of the East Coast and West Coast scheduling groups, Robertson Dinsmore and George Shor, Jr. are requested to lead this effort.*

UNEPC. During June, 1986 meetings, UNEPC, the Advisory Council and UNOLS agreed that under present circumstances the UNOLS Expeditionary Planning Committee was not serving a useful purpose and the Committee was de-activated. The Council dropped the UNEPC standing role.

ALVIN Review Committee. Robert Corell will continue as Council Liaison with the ARC. There had been no ARC activity since June, 1986 reports.

Cruise Assessments. The Council's concern continued that an effective means be found for assessing the effectiveness of individual ships and the UNOLS fleet. The role will be continued but a member was not selected.

Vessel Inspection. Bob Dinsmore reported, and will continue in this role.

The third cycle of the NSF vessel inspection program (through MARAD/ABSTEC) is just beginning. NSF had provided a report on the inspection program (Appendix V) together

with *Guidelines for NSF/MARAD Material Condition Review of Research Vessels* (Appendix VI). (The Guidelines in preliminary draft had been appended to Advisory Council minutes for February, 1986. The final version appears here).

Since 1980 the inspection program has been expanded to include an at-sea phase, to exercise scientific equipment and to include ships owned by individual institutions. Inspectors have seen a significant improvement in the material condition of ships under the program.

As the program continues, added emphasis is being given crew training and safety. Crew training will include such things as use of breathing apparatus, response to medical emergencies, industrial safety. (As an emphasis on crew safety, the Advisory Council was informed of a recent fatal accident on R/V ENDEAVOR.)

Through UNOLS, inspection of scientific equipment has been added to the Navy's INSURV program for research vessels. An augmented inspection had just been completed on the MOANA WAVE and was judged effective.

Triennial Review. The Council agreed that during 1986-87 consideration of UNOLS fleet composition, distribution and management should be subsumed by their special study *of UNOLS Fleet Policies and Strategies for the 1990's* (as resolved by the Council at June, 1986 meetings). The Council appointed a working group of Art Maxwell, chair with Robert Knox and Ken MacDonald. That group will begin work to address the second and third points of the study:

> current and alternative mechanisms for managing and operating the vessels of the UNOLS academic research fleet and for funding and supporting that fleet; and management strategies and mechanisms to match the UNOLS fleet to the needs of ocean science research.

Fleet Replacement. Bob Dinsmore noted that the final report on Fleet Replacement was at the printers. The Council was provided copies of the executive summary (Appendix VII).

The Council discussed with the UNOLS Chairman candidates to chair and be members of the reconstituted *Fleet Improvement Committee.* (Bob Dinsmore had asked not to be considered for chairman.) In addition, *the Advisory Council recommended that the Fleet Improvement Committee review and make recommendations on the general composition of the UNOLS fleet for the 1990's and beyond. (An assessment not by specific ships or platforms, but of sizes, classes, general characteristics and capabilities of the fleet essential to the support of the ocean sciences forecast for the 1990's and beyond.)*

This charge is the first point of the Advisory Council's *Fleet Policies and Strategies Study.* In their review and

recommendations, the Fleet Improvement Committee would affirm or revise the table: Fleet Improvement Plan by 5-year Increments in the Fleet Replacement Plan (p. 10, Appendix VII). They would make explicit analysis of ship needs as outlined in NSF/OCE long range plans.

Bob Dinsmore provided a brief on the AGOR-14 repowering study, i.e., KNORR, MELVILLE (Appendix VIII). Briefly, scientific and operational requirements are to provide a faster, more dependable and acoustically quiet ship, maintain the ship's maneuvering, dynamic positioning and precision trackline capabilities and provide for greater auxiliary electric power. Three alternatives are under consideration: conventional drive with thrusters, Z-drive with thrusters, existing configuration with modern cycloids.

Navy funding for the conversions would be in FY-1988. Estimates are from $15 million to $17 million per ship.

Shipboard scientific instrumentation, technician programs and user manuals. John Martin continues to gather information on how various ships are equipped and on various institutional policies for shared use equipment, technical manning and costs. RVOC is doing a somewhat similar study. John Martin has furnished a copy of his files to Chair, RVOC.

UNOLS and individual investigators need more information and detail on the costs to do investigations on various ships.

For example, if ship time cost, cost of special equipment, cost for ship and system technicians and data processing costs are included, how do total costs for a Sea Beam survey vary among CONRAD, WASHINGTON and ATLANTIS II? For a CTD investigation on the OCEANUS, WECOMA and NEW HORIZON?

UNOLS News will continue with Tom Malone as editor. (Bill Barbee will do the Fall 1986 number in Tom's absence.)

International Restrictions to Ocean Science Committee. Harris Stewart will deliver his report on problems in obtaining foreign clearances before October meetings. The Council will defer consideration until receipt of the report.

The Council discussed IROSC, and were concerned that it was not appropriate to maintain that committee or any other as a standing sub body to the Council. Their sense was that if there was need for an IROSC it should be a UNOLS committee. The Council deferred specific recommendation.

Acquisition and Management of Advanced Technical Facilities. The Council had earlier recommended (and UNOLS had concurred) the establishment of an Oceanographic Supercomputing Committee. (See Advisory Council minutes, February 6, 7, 1986). An OSCC had not yet been formed. Further, recent events call the need into question (e.g., the establishment of the Institute for Naval Oceanography, which will emphasize numerical modeling and will be a factor in supercomputers for oceanography). *The sense of the Advisory Council was that it was either premature or unnecessary for UNOLS to establish an OSCC (or a position at NCAR to represent the ocean community's interest in the NCAR supercomputer).*

Scientific and governmental trends; agency/community contact. The UNOLS Executive Committee will put special emphasis on communications within UNOLS and, especially, among advisory bodies (e.g., OSB, JOIDES, NASULGC, FOFCC, UNOLS). It was suggested that a better model for communications needs among these advisory groups and a good system for meeting those needs is required.

Other business. The UNOLS Chairman and Executive Secretary had been contacted by the NSF/Division of Polar Programs concerning POLAR DUKE/UNOLS fleet interaction. A meeting among the UNOLS Executive Committee, DPPAC, DPP representatives and OCFS representatives will be held during October UNOLS meetings.

The Advisory Council had received copies of a proposal for a **Requirements Analysis for the Polar Research Submarine.** The company making the proposal had asked for a UNOLS endorsement of the proposals. It was the sense of the Advisory Council that it was not appropriate to endorse such proposals submitted to and perhaps under consideration by sponsoring agencies. George Keller agreed to acknowledge receipt of the proposal while declining to endorse it.

Advisory Council members. Carl Lorenzen, University of Washington and Member institution representative had withdrawn from the Advisory Council. During the meeting Christopher N.K. Mooers, Navy Postgraduate School and Associate representative resigned from the Council. (Chris had accepted a position to head the newly established Institute for Naval Oceanography. Duties there will not allow his effective participation in UNOLS activities.) *The UNOLS Chairman will reactivate the 1986 Nominating Committee (Charles Miller, Chair, Fred Speiss, Don Boesch). Elections to the unfilled terms will be at the October Semiannual meeting.*

The Advisory Council tentatively set their winter meeting for January 22, 23, 1987 at Scripps and Council, Ship Scheduling and UNOLS Semiannual meetings for May 27-29, 1987.

Advisory Council Agenda for 1986-1987

The most important issues facing UNOLS and the Advisory Council are those embodied in their study of *UNOLS Fleet Policies and Strategies for the 1990's.* These issues are: the general composition of the UNOLS fleet for the 1990's; current and alternative mechanisms for managing and operating the UNOLS fleet and for funding and supporting it; and management strategies and mechanisms to match the UNOLS fleet to the needs of ocean science research. The 1990's are only three years away, and intensive planning efforts are underway that will lead to at least two large scale ocean science programs: WOCE (World Ocean Circulation Experiment) and GOFS (Global Ocean Flux Studies). These world and global studies are being initiated in recognition of the fact that studies on the workings of one ocean basin or another are not adequate for an understanding of our total ecosystem.

We are all painfully aware that present science programs are underfunded and it is impractical to think that WOCE and GOFS programs could be supported from existing sources. For this reason the NSF is attempting to obtain the additional funds that will make these programs a realty in the 1990's. We in the UNOLS community are used to thinking of ships as the primary support facilities. Undoubtedly, ships will play a major role in future studies, and UNOLS and Fleet Replacement Committee efforts in support of an improved UNOLS fleet will continue. However, we must also recognize that needs for remote sensing and supercomputer support are rapidly growing. Should UNOLS remain primarily involved with ships or should it expand into these other important areas? This question will be addressed in the coming year.

In addition to the future needs, the Advisory Council will continue in addressing immediate problems such as better ways to schedule ships, the issue of excess ship time, etc. In short, the Advisory Council will continue to play an important role in advising federal agencies on the spending of about $40 million each year. In view of our current standing, representation on the Council and at national meetings is especially important and full participation of the UNOLS membership is urged.

The meeting was adjourned at 12 noon on August 29, 1986.

Appendix I

AGENDA
Advisory Council Meeting
Moss Landing Marine Laboratories
8:30 a.m.
August 27, 28, 1986

Accept Minutes of June 2, 1986 meeting (attached 1).

Choose Chair, Vice-Chair, Advisory Council. Charles Miller, Chair for 1985-1986 is no longer on the Council. Tom Malone, Vice-Chair for 1985-86 remains on the Council. The A/C selects their own Chair, Vice-Chair.

Advisory Council Agenda for 1986-87. At the first meeting of the new Advisory Council, consideration should be made of the Council's agenda for the coming year. Last year's statement, **Purpose and Organization of the UNOLS Advisory Council** is attached (2). Other issues are review/assignment of standing roles, the A/C Study of Fleet Policies and Strategies (see June 2, 86 minutes) and the UNOLS' Chairman's correspondence on UNOLS tasks, etc (3).

Advisory Council Standing Roles. (Status reports, review of the Standing Roles mode of business, selection of members/roles.)

Ship Scheduling Process. Harris Stewart has been the A/C rep to East Coast Group, John Martin to West Coast.

Several Issues have been raised concerning UNOLS Ship Scheduling.

1. Developing an effective fleet schedule for 1987. Although progress was made at June, 1986 scheduling meetings, UNOLS recommendations need to be made more explicit (based on recent funding decisions) and funding shortfalls need to be addressed. 2. The process for developing UNOLS recommendations on ship scheduling/lay-ups/operation needs review, and process definition. The current UNOLS process for ship scheduling/recommendations was adopted in December, 1980 (4a, 4b). This process is not, however, in complete accord with UNOLS Charter, Annex I. Furthermore, some UNOLS Members have suggested changes to ship scheduling procedures. (George Shor will submit one such, to be distributed at the meeting.) See also correspondence Keller - Griffin (4c.).

UNEPC. Bob Corell has been A/C rep. Recommendations are that UNEPC be discontinued. (Some of the function could be assumed into ship scheduling groups.)

ALVIN Review Committee. Bob Corell. Program Status.

Cruise Assessments. Bill Barbee for Carl Lorenzen.

Vessel Inspection. Bob Dinsmore. Program Status.

Triennial Review. Charles Miller has had prime responsibility for triennial review of UNOLS Fleet Composition, Distribution and Management. Another review could be due in May, 1988.

The A/C could cast their new **Study of UNOLS Fleet Policies and Strategies for the 1990's** as a part of their review series. In any event, address the policies and strategies study here. (See p. 12, June 2, A/C minutes).

Fleet Replacement. Bob Dinsmore has provided an annotated procurement schedule for the Navy AGOR-23 (5.). UNOLS and Advisory Council issues are : Roles of UNOLS, A/C and Fleet Improvement Committee in evaluation and selection of ship design contract. Define roles and plan implementation. Roles of UNOLS, A/C in defining process for and selections of ship to be replaced by AGOR-23 and operating institution implementation.

Information is also provided on modernization of KNORR, MELVILLE. (See 5 and 6, F. Webster letter.)

A second issue is implementation of recommendations on continuation of Fleet Replacement Committee (or Fleet Improvement?). Formation of new committee.

Shipboard scientific instrumentation, technician programs and user manuals. John Martin. Status Reports.

UNOLS News. Next issue (v.3, n.3) will be distributed in late September. Bill Barbee will collect information in Tom Malone's absence. Potential news items: Statements on their philosophy and agenda from Chairman UNOLS, A/C or both. Best funding information provided by agencies, extractions from testimony to HMMFC hearings of June 24. Developments at August 27, 28 meeting.

Advisory Council Communications. Charles Miller has been reviewing between-meetings communications for the Council. The only thing on hand is a response from Alan Berman (7).

UNOLS and Federal Agency Statistical Base. Ferris Webster had been examining UNOLS ship use and other agency statistics. Two compilations are included in his answers to HMMFC questions (8).

International Restrictions to Ocean Science Committee. Harris Stewart has been IROSC Chairman and Bob Corell has also addressed issues such as clearance requests, problems, etc. Stewart presented his preliminary report, **Problems Encountered by the UNOLS Ship Operating Institutions in Obtaining Clearances to work in Waters Under Foreign Jurisdiction**, at the June A/C meeting (see Appendix II). Agency representatives have suggested that the report does not expose all problems, and at least one IROSC member has reservations about the report (9). Issues: Follow-on to report and continuations of IROSC.

Acquisition and management of advanced technical facilities. Charles Miller and Chris Mooers have addressed issues. Outstanding item is to implement Council recommendations on formation of Oceanographic Supercomputing Committee (OSCC). See June, 1986 Council minutes.)

Forecast of scientific and government trends, agency/community contact. Mooers, Maxwell, Webster. Status reports. Also invitation to participate with Principal Academic Oceanographers (10).

Sponsoring Agency Information to Advisory Council from: (Includes updated budget projections if available.)

John McMillan (and others), NSF
Keith Kaulum, ONR*
USGS rep, Menlo Park, USGS
John Albright?, NOAA
Hawley Thomas, MMS

*Including comment on letter Admiral Mooney to Walter Munk suggest additional ONR ship use funding (11).

Other business.

UNOLS - DPP fleet interaction. This is/has been an issue and a meeting has been suggested (12).

A Submerged Research Ship. (Most of the time.) See package and proposal (13).

Advisory Council Members. At least one member will withdraw/resign from the Advisory Council. Initiate procedures to replace.

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

An association of institutions
for the coordination and support
of university oceanographic facilities

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July 14, 1986

The following letter was sent to:

Members and Associate Members of UNOLS

Since its inception in 1971, the University-National Oceanographic Laboratory System (UNOLS) has attempted to improve communications and coordination among members of the academic oceanographic community in respect to the utilization of facilities common to this community. UNOLS has clearly brought about improved communications and planning for these facilities over the years.

UNOLS also serves in a liaison and sounding board mode between the oceanographic community and various federal agencies, but especially to the National Science Foundation, the Office of Naval Research and the National Oceanic and Atmospheric Administration. It is called upon to advise on such issues as research fleet composition, capability and size, lay-ups, sea going technician responsibilities, vessel safety and operation, and scheduling. UNOLS has, and does, in my opinion, serve a useful purpose, but perhaps not as effectively as it might in all its areas of concern. Tight budgets are not necessarily new, but certainly the future, on a near term basis, will require increased innovation by the ocean community in regard to the effective use of its facilities. The community will have to deal with this issue or pay the piper when the federal agencies make the decision for us. In my opinion, UNOLS has a major role to play here, but can only do so if its credibility level is high with agencies such as NSF and ONR. Although UNOLS has bitten the bullet more in recent years, it has a way to go if it is to increase its effectiveness. I am hopeful that UNOLS will develop a means of better quantifying its evaluations so it can be more objective and far less subjective when dealing with such issues as lay-ups, scheduling, and fleet characteristics. These are turf issues, and in many cases, as we all know, are tough to reconcile. They must, however, be addressed and resolved.

The purpose of this letter is not to review UNOLS mission, but rather to solicit your comments and concerns regarding UNOLS. For example, do you see tasks for UNOLS that it is not presently carrying out? Do you have concerns with what UNOLS is or is not doing? I do not know if the deans and directors of academic oceanographic programs have ever been solicited for their comments about UNOLS' role, if they have, it was certainly a good many years ago.

I would appreciate it if you would take a few minutes to consider UNOLS' role in our community and share with me your thoughts. The floor is yours. I assure you that your comments will not fall on deaf ears.

Sincerely yours,

George H. Keller
Chairman

GHK:ms

cc: W. Barbee
UNOLS Advisory Council

NSF Suggestions on 1987 "Agenda"
UNOLS Advisory Council
August 1986

Developmental Roles — NSF liaison

1) Ship scheduling process (McMillan)
   - Early assessment of needs regional requirements, etc.
   - Improved science/ship assessments, flexibility, ship capabilities, and non-schedule factors.
   - Timely advice to NSF re. schedules, candidate layups, etc.
   - Examine/improve UNOLS procedures, timing, etc. to do above

2) Fleet Improvement Committee (West)
   - Procede with new charge
   - Under "amplify and update" charge include analysis of OCE Long range plan and Navy plans with operating days/costs.
   - "Scientific mission requirements" examine existing and new ship laboratory design/ upgrade.

3) Fleet Policies and Strategies for 1990's (Heinrichs)
   - Procede with study
   - "1990's fleet composition" include OCE long range plan and Navy plans for construction and conversion.
   - "Managing/operating strategies" include long range plans requirements regarding shipboard laboratories, accommodations, major systems, etc.

Standing Roles

1) Fleet effectiveness review
   - User assessment (McMillan)
   - Vessel inspection (West)
   - Safety, crew training (new task, add) (West)
   - Instrumentation, technician support, manuals (Clark)

2) ALVIN Advisory Committee (McMillan)
   . Implement reorganization
   . Include Navy assets review

3) Statistical/data files (McMillan/West)
   . Continue/improve
   . Master report - summary for last "decade" through 1985/86.
   . Reference document re. ships operating, use, funds source, science disciplines, etc. NSF staff reports can be included.

4) International Liaison and Requirements (Heinrichs/McMillan)
   . Clearances
   . LOS
   . Reporting, data submissions, etc.
   . Revamped IROS.

Action Items

. UNOLS Office rotation (1988)
. Charter status/update
. Ocean Studies Board liaison
. Update mailing lists

United States Department of the Interior

MINERALS MANAGEMENT SERVICE
WASHINGTON, DC 20240

MAY 20 1986

MINERAL MANAGEMENT SERVICE (MMS) ENVRONMENTAL STUDIES ARE AWARDED IN THE FORM OF CONTRACTS, USUALLY BY COMPETITIVE PROCUREMENT, TO PRIVATE COMPANIES OR, IN A FEW CASES, AS INTERAGENCY AGREEMENTS TO OTHER FEDERAL AGENCIES. THE COORDINATION AND DIRECTION OF RESEARCH VESSELS FOR STUDIES IS NOT A FUNCTION OF MMS HEADQUARTERS. VESSELS ARE SELECTED BY EACH POTENTIAL VENDOR AT THE REGIONAL LEVEL AND APPROVED BY THE MMS HEADQUARTERS LEVEL. COORDINATED USE OF THE GIVEN VESSEL BY MULTIPLE VENDOR IS INITIATED AT THE REGIONAL LEVEL. COST SHARING FOR SHIPTIME WITH OTHER FEDERAL AGENCIES IS ONGOING.

IMPACT OF GRANN-RUDMANN-HOLLONGS LAW, AND OTHER CHANGES, REDUCED THE FISCAL YEAR(FY)86 FUNDING FOR THE ENVIRONMENTAL STUDIES PROGRAM TO $25,192,000. THIS REPRESENTS A 7.0% DECREASE FROM THE ENACTED BUDGET FOR FY86. THE PROPOSED ENVIRONMENTAL STUDIES FUNDINS FOR FY87 IS $22,965,000. PROPOSED REGIONAL FUNDING DISTRIBUTIONS ARE: ALASKA, $9.0 MILLION., ATLANTIC, $2.3 MILLION., GULF OF MEXICO, $3.4 MILLION., PACIFIC, $5.8 MILLION., AND WASHINGTON (HDQ), $2.4 MILLION.

REGIONAL STUDIES REQUIRING RESEARCH VESSELS INCLUDE PHYSICAL OCEANOGRAPHY AND BIOLOGICAL PROJECTS. BIOLOGICAL PROJECTS THROUGHOUT THE REGIONS REPRESENT OVER 50% OF THIS TOTAL STUDY EFFORT. INFORMATION ON INDIVIDUAL STUDIES PROPOSED IS PROVIDED IN REGIONAL STUDIES PLANS PREPARED ANNUALLY BY EACH REGIONAL OFFICE.

QUESTIONS ON THE ENVIRONMENTAL STUDIES PROGRAM SHOULD BE DIRECTED TO DR. DON AURAND, CHIEF, BRANCH OF ENVIRONMENTAL STUDIES AT(202) 343-7744.

NSF Report
UNOLS Advisory Council
August 1986

NSF SHIP INSPECTION PROGRAM

In 1980, the NSF established the NSF Ship Inspection Program to improve the reliability of NSF-owned research vessels. The first set of inspections was conducted for NSF-owned ships in 1980 and 1981.

Many changes have taken place since that first series of inspections:

1. The survey team has been increased from two to three surveyors to include the inspection of shipboard scientific equipment.

2. Institutionally-owned vessels have been added to the Program.

3. An at-sea component to demonstrate ship maneuverability, and to exercise scientific equipment is now standard.

4. A new set of UNOLS safety standards have been adopted, *

5. Pre inspection guidelines have been published.

By the end of 1986, 50 inspections of 23 ships will have been conducted.

The 1986 series includes 3 NSF and 10 institutional vessels (see attached schedule). A history of inspections dating back to 1970 and including SOCC and INSVRV inspections is attached. This shows that the number and frequency of inspections of NSF and institutional ships has increased significantly since 1980.

There has been a definite improvement in the condition of inspected R/V's. Typically, the first inspection identifies a host of discrepancies in comparison to UNOLS safety standards, other regulations (USCG, ABS, Code of Federal Regulations) or good scientific equipment and practices. NSF forwards inspection reports to the ship operator with a request for a response

* Draft version appears in minutes of February 1986 Advisory Council meeting. Final version published late January 1986.

containing plans for correcting discrepancies. The response is reviewed by NSF and the surveyors, and any comments are sent back to the operator. When needed, NSF schedules a follow-up inspection. This has been necessary in only one instance.

In subsequent inspections, the number and seriousness of discrepancies has decreased to the extent that some recent, third-round, inspections have found very little to report. However, there are some areas in need of further improvement.

1. Crew training in fire fighting and first aid is spotty. Some crews have excellent training with all having attended fire fighting school and all certified in CPR; other crews have little or no training in these areas.

2. Recent changes in USCG regulations on pollution control have complicated the handling of waste on some vessels.

3. A few ships need more capable stern A-Frames to accommodate the safe handling of large, heavy instruments.

4. Some science labs are due for modernization.

For the future, NSF plans to continue the program and retain the 2-year inspection cycle. The 4th round, for NSF-owned R/V's, is being scheduled for 1987. Consideration is being given to increasing survey expertise in engineering (engines and machinery), updating the pre inspection materials (Material Condition Review Part I and the UNOLS Ship Characteristic Form), and increasing the attention given to crew training.

Richard W. West

R. West
18 August 86

Attachments

. 1986 Ship Inspection Schedule
. Ship Inspection History 1970-86
. List of Surveyors

SCHEDULE

14-Aug-86

SCHEDULE
for the
1986 NSF/MarAd
SHIP INSPECTION PROGRAM

SHIP	LOCATION	DATES
ISELIN	Miami, FL	17-18 February
FRED MOORE	Galveston, TX	20-21 February
BLUE FIN	Savannah, GA	3- 4 April
SPROUL	San Diego, CA	14-15 April
ALPHA HELIX	Seward, AK	17-18 April
WEATHERBIRD	Bermuda	21-22 July
LAURENTIAN	Grand Haven, MI	28-29 July
CAPE HENLOPEN	Lewes, DE	15-16 October
SUNCOASTER	Tampa, FL	6- 7 November
ATLANTIS II	Tampa, FL	10-11 November
LONGHORN	Port Aransas, TX	13-14 November
BARNES	Seattle, WA	8- 9 December
NEW HORIZON	San Diego, CA	11-12 December

13 Ships , 8 Trips , 11 Locations , 26 Days on Site

SHIP INSPECTION HISTORY

12-Aug-86 R.West

	SHIP	OPERATOR	O/B	BUILT	FEET	CLASS	TONS	CRW	SCI	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
										SOCC													MarAd			
1	ALPHA HELIX	ALASKA	NSF	1966	133	IV	554	9	15					FEB						DEC			AUG			APR
2	ATLANTIS II	WHOI	NSF	1963	210	II	2300	36	15						JUN						FEB			JAN		nov
3	BARNES	WASH	NSF	1966	65	V	86	2	6														Acq'd	NOV		dec
4	CALANUS	MIAMI	NSF	1970	63	IV	111	2	6	Built							JUN				FEB		MAY		DEC	
5	CAPE FLORIDA	MIAMI	NSF	1981	135	IV	539	9	12												Built		MAY		DEC	x
6	CAPE HATTERAS	DUKE U	NSF	1981	135	IV	539	10	12												Built		MAR		NOV	
7	CAYUSE	M L M L	NSF	1968	80	V	173	7	8						APR				JAN		JAN		JUN		AUG	
8	ENDEAVOR	RHODE ISL	NSF	1976	177	III	972	12	16							Built		DEC			JUL		APR		JUN	
9	ISELIN	MIAMI	NSF	1972	170	III	830	12	24		Built	JUN					JUN				FEB		MAY			FEB
10	OCEANUS	WHOI	NSF	1975	177	III	960	12	12						Built			SEP			JAN		JUN		JUN	
11	POINT SUR	M L M L	NSF	1981	135	IV	539	9	12												Built					Acq'd
12	WARFIELD	J H U	NSF	1967	106	IV	162	7	10				JUN		MAR				MAY		JAN		JUL		OCT	
13	WECOMA	O S U	NSF	1975	177	III	1015	12	16						Built				JAN	DEC			JUN		AUG	
1	BLUE FIN	SKIDAWAY	INST	1972	72	V	86	4	8			Built			Acq'd		JUN							JUN		APR
2	CAPE HENLOPEN	DELAWARE	INST	1975	120	IV	178	6	12						Built									MAY		oct
3	EASTWARD	DUKE U	INST	1964	118	IV	610	15	15		JUN				APR			MAY		x						
4	FRED MOORE	TEXAS	INST	1967	167	III	1202	10	23																	FEB
5	KANA KEOKI	HAWAII	INST	1967	156	III	900	12	16			JUN			JUN				DEC							x
6	LAURENTIAN	MICHIGAN	INST	1974	80	V	180	7	7					Built										SEP		JUL
7	LONGHORN	TEXAS	INST	1971	105	IV	200	4	11	Built						SEP								APR		nov
8	N HORIZON	SCRIPPS	INST	1978	170	III	1080	12	13									Built						MAR		dec
9	SCRIPPS	SCRIPPS	INST	1965	95	V	287	5	8						AUG									MAR		x
10	SPROUL	SCRIPPS	INST	1981	125	IV	500	5	12												Built			Acq'd		APR
11	SUNCOASTER	F I O	INST	1962	110	IV	250	5	12													Acq'd				nov
12	VELERO IV	SO CALIF	INST	1948	110	IV	650	11	12						SEP			JUL						MAR		x
13	WEATHERBIRD	B B S	INST	1970	65	V	100	2	4	Built												Acq'd		JUL		JUL
																				INSURV						
1	CONRAD	L-D G O	NAVY	1962	209	II	1425	22	21						OCT			NOV	NOV*					OCT		
2	GYRE	T A M U	NAVY	1973	182	III	980	10	20				Built			SEP								APR		
3	HOH	WASH	NAVY	1968	65	V	91	2	6		MAY					FEB								x		
4	KNORR	WHOI	NAVY	1969	245	II	1915	25	24					MAY						FEB					SEP	
5	MELVILLE	SCRIPPS	NAVY	1969	245	II	2075	23	29	Built							AUG						AUG			
6	MOANA WAVE	HAWAII	NAVY	1973	213	II	1435	13	19				Built			NOV										APR
7	ONAR	WASH	NAVY	1954	65	V	95	2	6		MAY						FEB							x		
8	THOMPSON	WASH	NAVY	1965	209	II	1302	22	22					MAY			MAY							MAR		
9	WASHINGTON	SCRIPPS	NAVY	1965	209	II	1362	23	22					APR			AUG							FEB		

Acq'd: Acquired

* Special review in cooperation w/MarAd

National Science Foundation

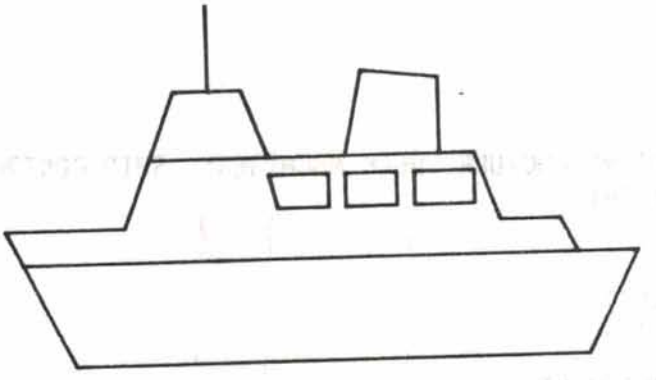
Ship Inspection Program

SURVEYORS

Mr. John F. Ennis American Bureau of Shipping surveyor (retired)	1980-83
Captain Samuel H. Applegarth, Jr. Commander US Navy (retired)	1980-
Captain Robertson P. Dinsmore Woods Hole Oceanographic Institution	1983-
Mr. John S. Humble American Bureau of Shipping surveyor (retired)	1984-

R.West
14-Aug-86

Guidelines for NSF / MARAD Material Condition Review of Research Vessels



These Guidelines have been prepared by the NSF / MARAD Review Team to inform ship operators of what to expect during the review and how to prepare the ship and marine staff for the Material Condition Review

January 1986

NSF/MARAD MATERIAL CONDITION REVIEW GUIDELINES

CONTENTS

1.	OVERVIEW	1
	Purpose	1
	Scope	1
	Typical Schedule	1
	Follow Up	1
2.	SHIP PREPARATION	2
	General	2
	Documents	2
	Science Equipment	3
	Space and Materials	3
3.	HULL AND MACHINERY	4
	General	4
	Hull	4
	Machinery	5
4.	SAFETY, SUPERSTRUCTURE, DECK MACHINERY, SHIP CONTROL AND HABITABILITY	6
	General	6
	Dockside Review	6
	At Sea Review	7
5.	SCIENCE EQUIPMENT	8
	General	8
	Dockside Review	8
	At Sea Review	9

NSF/MARAD MATERIAL CONDITION REVIEW GUIDELINES

1. OVERVIEW

Purpose

One purpose of the NSF/MARAD Material Condition Review is to assure that the seaworthiness and safety of research vessels supported by NSF meet or exceed the standards set forth by the UNOLS Safety Standards, and applicable requirements of the American Bureau of Shipping, the code of Federal Regulations, and the U.S. Coast Guard. Another purpose is to ensure that NSF-owned ships as capital assets, are being adequately maintained. In addition the Review examines the scientific capabilities of research vessels in accordance with accepted community standards and expectations.

Scope

Material Condition Reviews are presently conducted on a two year cycle. The Review examines the ship's hull, tanks, decks, propulsion machinery, auxiliary electrical systems, auxiliary machinery, navigation and communication equipment, habitability, pollution control, damage control and safety. The Review includes a dockside and an at-sea component to exercise all ship systems and scientific capabilities. At present drills such as fire drills and man overboard drills are not included in the Review. However, crew training procedures are reviewed.

Typical Schedule

Review Team: Normally consists of three (3) reviewers (two for ships under 90 feet) plus one (1) representative from MARAD and one (1) from NSF.

Day zero: Review Team arrives motel. Pre-review materials at motel registration desk at check in time.

Day one: 0830 hrs. Review Team arrives ship. Prebrief orientation meeting with marine staff and crew. Dockside review with each reviewer accompanied by knowledgeable crew member or marine staff person.

Day two:
- 0830 hrs. Ship departs for sea trials of ship's maneuvering and science equipment.
- 1400 hrs. Debriefing session held on board for marine staff and crew.
- 1500 hrs. Review Team departs.

Follow Up

Following the Review, a written report will be forwarded through appropriate channels to the institution. The report will be accompanied by a request for a response outlining corrective measures to be carried out by the institution.

NSF/MARAD MATERIAL CONDITION REVIEW GUIDELINES

2. SHIP PREPARATION

General

All ship machinery and systems should be up and operational. All tanks scheduled for inspection should be open and ventilated. It is important that as complete an outfit of scientific instrumentation and shipboard equipment, normally available to scientists, be on board and operational.

The NSF coordinator should be advised beforehand if any equipment will not be functioning. Any non-functioning ship's equipment or scientific equipment should be noted on Part 1 Material Condition Review and any changes should be reported to the Review Team upon arrival at the vessel.

Documents

The following information or documents should be distributed to each member of the Review Team (normally five persons) upon their arrival at their motel the day before the Review:

1. Part 1 Material Condition Review
2. UNOLS Ship Characteristics Form
3. Copy of Cruise Manual or Chief Scientist Handbook
4. Reports of corrective actions resulting from the previous Material Condition Review and other improvements or changes in ship's condition
5. List of names and titles of institutional personnel participating in the Review

The following documents should be available at the initial meeting (prebrief) with the Review Team.

1. Stability booklet or information
2. Letter from Coast Guard designating the ship an "Oceanographic Research Ship"
3. Owners certificate
4. Booklet of General Plans
5. Load Line Conditions of Assignment
6. Load Line Certificate
7. Life raft inspection documents
8. Fire Extinguisher Inspection Report
9. Electrical circuits Meg Report
10. Lube Oil and Fuel Oil Analysis Reports

Main and auxiliary machinery manuals should be readily available for use by the machinery spaces reviewer.

The following documents should be available on board for use by the science equipment reviewer.

1. Manual of specifications, prints, and operational instructions for winches and cranes and other science equipment as available
2. Wire history records and shipboard wire logs (see Handbook of Oceanographic Winch, Wire, and Cable Technology)
3. Copy of most recent NSF Ship Operations proposal, Technician proposal, Shipboard Scientific Support Equipment and Oceanographic Instrumentation proposals. Planning list of proposed equipment for next ensuing proposals
4. Lists of cooperative or shared use equipment and procedures for requesting their use
5. Diving manual

Science Equipment

In order to simulate operating research conditions, as complete an outfit of scientific instrumentation and equipment generally available to scientists should be on board and operational.

For underway tests, the following equipment, if available, are suggested for use with the:

1. Trawling winch; bottom trawl or dredge.

2. Hydrographic winch; bottom grab or sampler.

3. CTD winch; CTD or STD with Rosette Sampler or other hard wire instrument to test continuity of slip rings and cable and to demonstrate data collection and on board analyses capabilities

Space and Materials

Space should be available for the Review Team to stow gear, change clothes and wash up.

Flashlights, wiping rags, a tape measure, soap and toweling materials should be available.

NSF/MARAD MATERIAL CONDITION REVIEW GUIDELINES

3. HULL AND MACHINERY

General

This phase of the Review will begin with an inspection of tanks followed by machinery and other spaces. The reviewer is accompanied by a knowledgeable crew member (normally the Chief Engineer).

Hull

In general, the following will be examined as applicable.

1. Sluice valves, doors in watertight bulkheads, closing appliances in enclosed superstructure bulkheads and for air and sounding pipes.

2. All accessible parts of the steering arrangements, including the steering machinery, quadrants, tillers, blocks, rods, cables, telemotor or other control transmission gear and brakes.

3. Coamings and closing arrangements of ventilators to spaces below the freeboard deck and into enclosed superstructures, hatchway coamings, hatch covers, and all their supports.

4. All accessible parts subject to rapid deterioration.

5. Exposed machinery casings, guard rails and all means of protection provided for openings and for access to crew's quarters.

6. Freeing ports in bulwarks.

7. Decks and deck compositions.

8. Engine room bilges.

9. On vessels about twelve (12) years or older, the plating and framing below a representative number of portlights will be examined. This may require suitable inspection openings to be cut in sheathing.

10. Any alterations in structural arrangements, fittings and appliances upon which load lines are conditional.

11. Fore peak tanks, ballast tanks, voids and cofferdams will be examined internally every four (4) years from date of build. About half of these spaces will be examined during each Review. Any tank not examined within the past two years should be open and throughly ventilated in advance of the Review. To avoid duplication of inspection on classed vessels the internal inspections may be modified.

Machinery

1. Operation of main and auxiliary machinery during sea trial will be observed. Operation of overspeed trips, audible and visual alarms for failure of lube oil on main and auxiliary diesel engines will be demonstrated either before or after sea trial.

2. Piping systems together with valves and manifolds will be generally examined for leakage, labeling of valves, supports, etc. Operation of fuel oil valves arranged for operation outside of the compartment in which the valve is located will be demonstrated.

3. Wireways will be sighted where visible, and switchboard given a general examination. Generators will be observed in operation under load either separately or in parallel.

4. Remote shutdown of fuel oil service and transfer pumps will be demonstrated.

NSF/MARAD MATERIAL CONDITION REVIEW GUIDELINES

4. SAFETY, SUPERSTRUCTURE, DECK MACHINERY, SHIP CONTROL AND HABITABILITY

General

The purpose of this phase is to review compliance with UNOLS Safety Standards and applicable requirements of the American Bureau of Shipping and the U.S. Coast Guard, and to determine the material condition of the superstructure, deck machinery, ship control equipment and status of habitability. This phase generally takes two days. The first day comprises an alongside inspection and the second day is an underway sea trial designed to test all ship control equipment.

The tests attempt to determine if the equipment can operate at its design limits. While the Review Team does not intend to cause material casualities, such casualitites are possible. If ship's personnel do not wish to operate certain equipment to the design limits, they should, without hesitation, so state and the reasons therefore. Of course, safety is always of paramount importance and an overriding factor.

Dockside Review

1. The reviewer conducting this facet of the review is accompanied by a knowledgeable crew member (normally the Master or First Mate). The crew member should have on his person keys to all locked spaces so that entry can be made on a timely basis.

2. The review normally starts at the bridge level and proceeds downward and fore and aft covering all decks, spaces and storerooms. All equipment that can be properly tested in port will be activated (including safety equipment and alarms). In preparation for this, power should be available at the equipment (however, ship's generators do not have to be on the line). Equipment that can not be properly tested in port will be tested during the Sea Trial. Logs, navigation instruments and publications, medical supplies and documentation should be readily available.

3. Dry store rooms, freezers/refrigerators used for food storage, galley and the mess area will be inspected in company with the cook. This will be scheduled so as not to interfere with food preparation/serving/clean up.

4. Near the end of this phase emergency pumps and fire hoses will be tested (this is sometimes deferred to the second day).

5. Depending on the size of the ship and other factors, this phase of the inspection will consume most of the first working day.

At Sea Review

1. Arrangements should be made for radio communications checks with a shoreside or other station. Transmissions will be made while at sea.

2. All electronic equipment should be powered up or on standby. Electronic navigation equipment should be set up pierside and track throughout the sea trial.

3. The gyrocompass should be operating, repeaters aligned and radar gyro inputs set up prior to leaving the pier. An attempt will be made to determine the gyro error, if any.

4. Once underway and sea room is gained, a full power run will be commenced. This will last about 30-40 minutes.

5. Upon completion of the full power run, the ship will be crash stopped, sternway obtained and rudder tested and timed going astern.

6. All modes of steering, engine control, remote stations, auto pilot, etc., will be tested. The rudder will be timed going ahead. Emergency steering, if any, will be tested.

7. The bow thruster will be tested at full power.

8. Anchors will be dropped on the brake and the windlass tested. (It is not desired to be in shallow water for this test.)

9. Other deck machinery, life/work boats may be tested at this time.

NSF/MARAD MATERIAL CONDITION REVIEW GUIDELINES

5. SCIENCE EQUIPMENT

General

The purpose of the science equipment phase is to review the material condition and the operating procedures for the installed scientific equipment and instruments, and for the shared use equipment available to support shipboard investigators. The review usually comprises two days: the first day is dockside for the inspection of all shipboard instrumentation and associated records including shore facility, technical services, and storage. The second day is an underway test cruise for operation of all shipboard systems.

Dockside Review

1. The senior Marine Technician or other person in charge of shipboard science equipment should be prepared to assist the science reviewer during dockside inspection.

2. Areas of shipboard examination will include: winches, cranes, hydro frames, trawl frames, laboratories, science storerooms, transducer wells, echo sounders, meteorological equipment, navigation equipment, freezers, boats, and other installed scientific equipment. The inspection also will include scientists' staterooms and living quarters, and safety procedures for science personnel.

3. Shared scientific equipment, especially the inventory listed in the Cruise Manual or other prospective shipboard investigators listings will be examined for condition and status of availability.

4. Spare wires and cables and associated records should be available for inspection.

5. Technical services available at the laboratory for shipboard support will be reviewed along with procedures, costs, and overall capability.

6. Shore facilities, shops, storage, and other support services will be toured.

7. The institution diving program and especially its interaction with shipboard procedures will be reviewed.

At Sea Review

1. All installed scientific equipment and instruments will be exercised under simulated operating conditions.

2. Several lowerings of each winch (equipped as described under Science Equipment on page 3 above) will be accomplished in as deep water as practicable. Winch brakes, both auto and manual, will be tested under load with simulated hydraulic and electrical failure. Level wind and wire monitors including remote readouts will be examined.

3. Crane is to be exercised to maximum extension and slewed through all operating points.

4. Science echo sounders, 12 khz, 3.5 khz, and others are to be operated throughout test. A sample trace is to be annotated and delivered to science reviewer.

5. SAIL system (if installed) is to be operated throughout test. SAIL printout is to be delivered to science reviewer.

6. Uncomtaminated seawater system and surface thermosalinograph should be operating.

7. Ship should be prepared to launch and record one XBT probe.

8. Stationkeeping tests will be made for the purpose of checking maneuverability and the effectiveness of the bow thruster (if installed).

9. Ordinarily, towed seismics arrays, cameras, piston coring, mocness nets, deep tow, and other heavy equipment will not be tested at sea but will be inspected ashore if such equipment is included as a part of ships shared use equipment.

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

A PLAN FOR IMPROVED CAPABILITY OF THE UNIVERSITY OCEANOGRAPHIC RESEARCH FLEET, JUNE 1986

SUMMARY

The purpose of the University-National Oceanographic Laboratory System is to provide for community-wide coordination and review of the utilization of available facilities and for access to those facilities. UNOLS assesses the current match of facilities to the needs of academic oceanographic programs and makes appropriate recommendations of priorities for replacing, modifying, or improving the numbers and mix of facilities for the community of users.

Ships of the University-National Oceanographic Laboratory System (UNOLS) comprise a twenty ship fleet operated by fifteen academic institutions. The "Fleet" considered here comprises seagoing ships over 100 feet in length. The operating institutions are autonomous, but scheduling and performance standards are coordinated by the group acting jointly.

Most of the basic research projects of the Federal oceanographic program are carried out by ships of this fleet. The ships are, therefore, primarily general purpose types with special capabilities in the basic sciences disciplines. Chief sponsors for UNOLS ships utilization are the National Science Foundation and the Office of Naval Research. However, to some extent oceanographic projects of most Federal agencies are included in UNOLS ship operations.

The need to plan for new, more capable research ships to conduct scientific programs at sea has become virtually self evident. Numerous studies have amply demonstrated that our ships, mostly constructed in the 1960's are becoming obsolete in their capability to support oceanography for the 1980's and 1990's. The 1984 Federal Oceanographic Fleet Study (FOFCC) reported that two of its major findings give cause for concern. These are:

- Within the next fifteen years over 70% of the Federal fleet will have become overage and obsolete.
- No Agency has an approved plan for the replacement of ships as they become obsolete.

It concluded that the issue of fleet replacement is a matter of urgency and is to be considered one of the priority matters resulting from the Federal Fleet Study.

Nowhere is this more apparent than in the UNOLS fleet where a total of seven large seagoing ships are present to serve the university community. Of these, most were constructed in the 1960's. The requirements now being posed by scientific investigations render these ships marginally capable.

A 1982 National Academy of Sciences study on the needs for academic research vessels examined the growing demands being placed upon these ships. It noted the following: Much scientific equipment, especially that going onto or into the bottom, has increased in weight, bulk and complexity, therefore requiring deployment from large, stable ships. Increasing complexity of electronic sensors and shipboard computers often result in an increase in the number of technicians who must go to sea, rather than a reduction in their number. The nature of new interdisciplinary ocean science research projects requires that several scientists from different disciplines be able to work on the same ship at the same time. This increases the demand for laboratory, storage and other work-ing spaces aboard ship. Large high performance overside handling arrangements and modern state-of-the-art shipboard laboratories will be needed to support major on-going ocean programs. In addition, a high quality working and living environment is essential in order to attract competent seagoing personnel.

In 1984, based on recommendations of its Advisory Council, UNOLS established a Committee charged with planning for the orderly replacement of the UNOLS Fleet.

That Committee is completing its work and the preparation of its report. Its goals are to: (1) Recommend the numbers and types of new ships and replacement dates; (2) Prepare a set of science mission requirements for the various classes of ships; and (3) Undertake representative conceptual designs.

The principal findings of this report are:

1. Many, if not most, of the existing large ships are not capable of meeting the requirements of on-going science at sea. In this regard they are mission obsolete. Their average age is 19 years, and by the mid-1990's, four of the seven ships over 200-ft. will have exceeded their generally recognized 30-year service life. Up to one-third of all existing ships are approaching obsolescence, both platform and mission.

2. New ships should have improved seakeeping and station keeping characteristics; and should have upgraded laboratory, overside handling, and scientific outfitting. Consequently, new ships inevitably will be larger than existing ships.

3. The numbers of future ships should not be significantly different from the existing fleet.

4. The mix of ships should be about evenly divided between the size classes, i.e., large ships, intermediate and small ships.

5. New and improved ships should be more economical to operate. Through the use of fuel efficient engines, unattended engine rooms with integrated machinery systems, newly developed anti-corrosive and fouling coatings, and other modern ship technologies, the costs of research ship operations will be reduced.

6. Several of the new ships should have, in addition to regular multi-disciplinary (general purpose) research capability, an enhanced capability - or option - for a particular discipline or field of work. These include multichannel seismic (MCS) geophysics; submersible and polar (or high latitude) research.

7. Necessary improvements in the UNOLS Fleet as defined above should start in the near term - 1986-1990. The existing fleet should be totally replaced by the year 2015.

The proposed new fleet is recommended to be eight large ships (200-300 ft LOA); six intermediate ships (150-200 ft); and six small ships (100-150 ft). Because they are older and are demonstrably incapable of meeting modern science requirements, priority attention has been focused on the larger ships.

Profile of Planned UNOLS Fleet

	Existing Fleet	Upgraded Fleet
Large Ships: Classes I & II (over 200 ft)		
General Purpose	5	4
MCS Capable	1	2
Ice Capable	0	1
Submersible Handling Capable	1	1
Intermediate Ships: Class III (150-199 ft)		
General Purpose	6	6
MG&G Ship	1	0
Small Ships: Class IV (100-149 ft)		
General Purpose	6	5
Ice Capable	0	1
TOTAL	20	20

In looking to new ships the first step has been to describe the science mission requirements to which the new ships will be expected to respond. In accomplishing this the UNOLS Committee took on a massive campaign of meetings, interviews and questionnaires in order to gain the views of the scientific community. The most overriding requirement upon which all oceanographers agreed was seakeeping, that is for a ship which will allow both overside and laboratory work to proceed in higher sea states than is now available. Other requirements include overside and deck handling arrangements to allow work in greater capacity and sizes than is now possible; larger and improved scientific laboratories; increased scientific complement (up to 35 scientific and technical personnel); reduced noise and vibration; greater speeds (up to 15 knots) and cruising range. Endurance should provide for cruising to any part of the world ocean and working there for 3-4 weeks before returning.

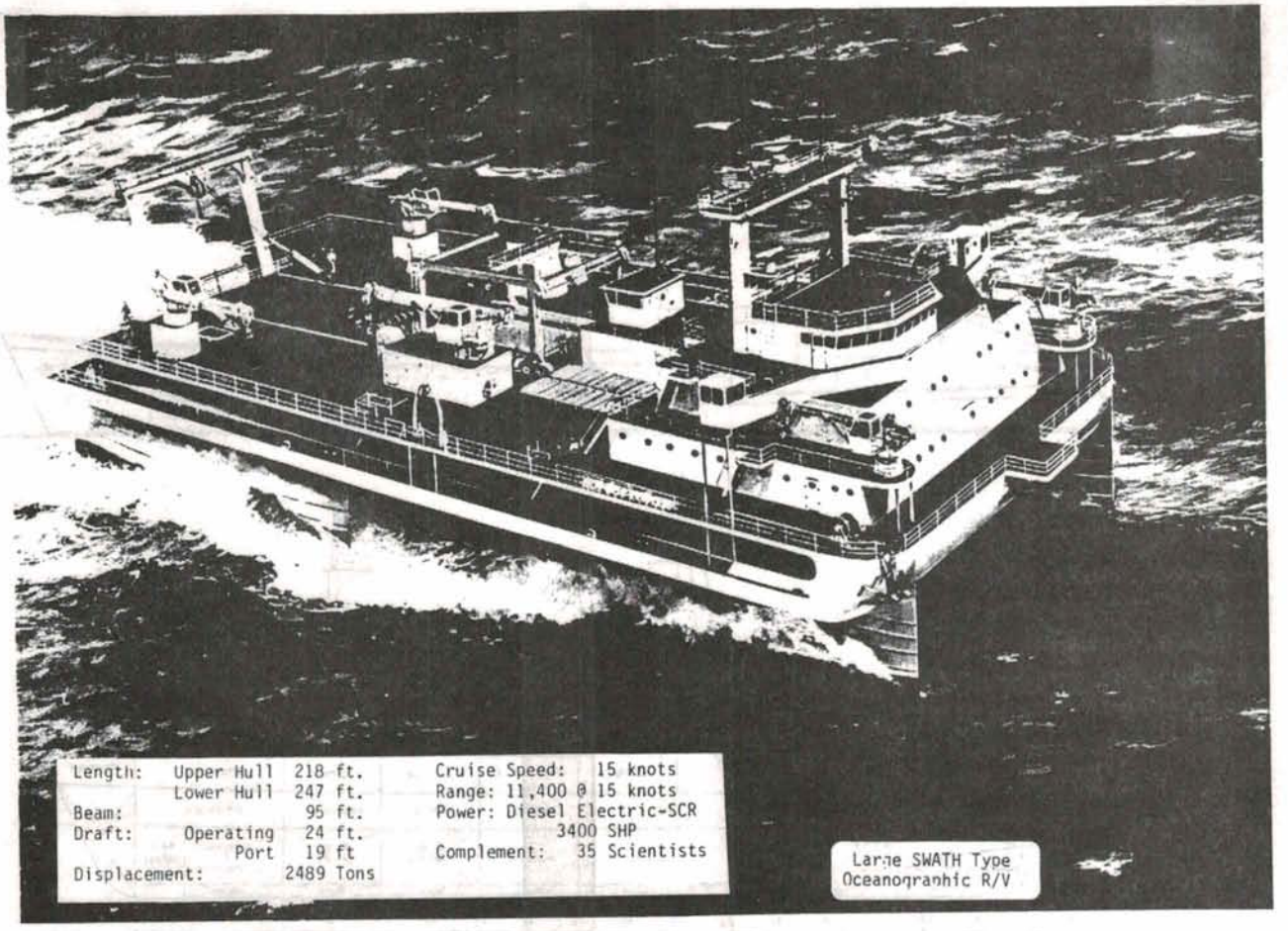
In describing new ships for the future, the UNOLS Committee sought innovative new designs with an emphasis on seakeeping. With support from the National Science Foundation and the Office of Naval Research, eight conceptual ship designs were undertaken for the purpose of fitting the science requirements into a real hull. The conceptual designs included two each of the following types of ships.

- **SWATH Ships.** The SWATH or semi-submerged ship is a relatively recent development in ship design. SWATH ships, in theory and performance, demonstrate a remarkably stable environment. Additionally, they have a platform configuration which is highly attractive for science and engineering operations at sea. It is time for the oceanographic community to take a hard look at what SWATH can offer.

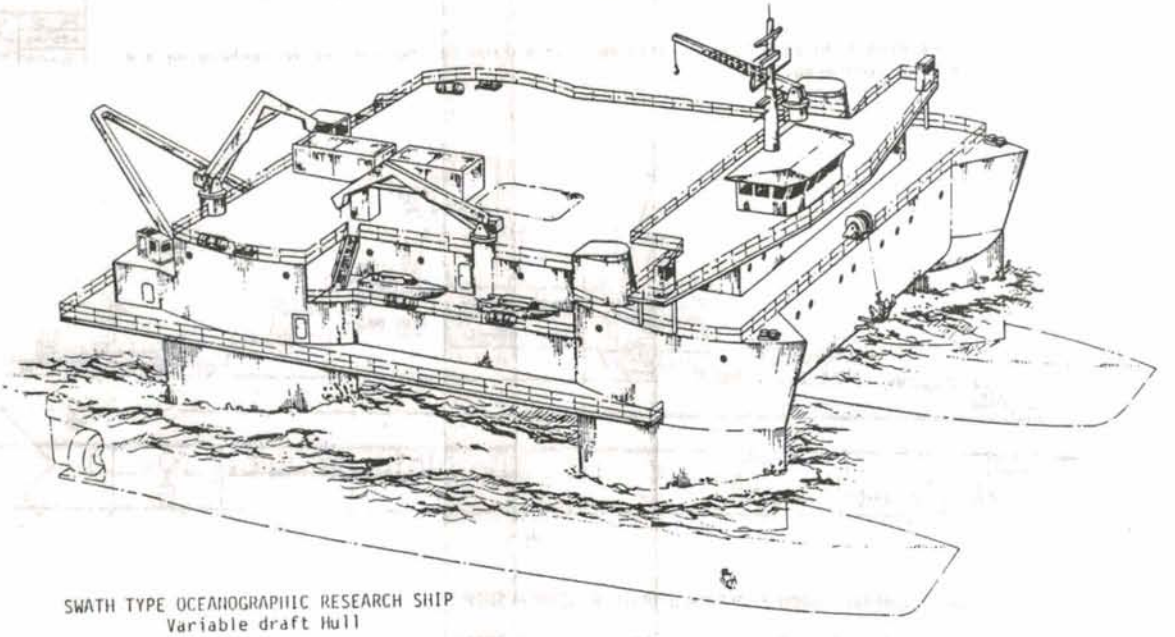
- **High Endurance Ships.** Ships 250-300 ft LOA are not now available in the UNOLS Fleet. They are intended to meet requirements for extended worldwide cruising including high latitudes with larger scientific parties and to permit both overside and laboratory work to proceed in higher sea states than is now possible.

- **Medium Endurance Ships.** Ships of a 200-250 ft size range are intended to have the highest capability commensurate with this size range. Although of similar size to existing ships, they should provide superior seakeeping, laboratory arrangements and overall ability to do science at sea than is presently available and at the same time be more economical in their operation.

- **Ships With Enhanced Geology & Geophysics Capability.** These are ships intended to have the same multi-discipline capability as the above ships, but in addition are to carry a configuration for multichannel seismic investigations. Such ships inevitably are larger than their corresponding general purpose type class.



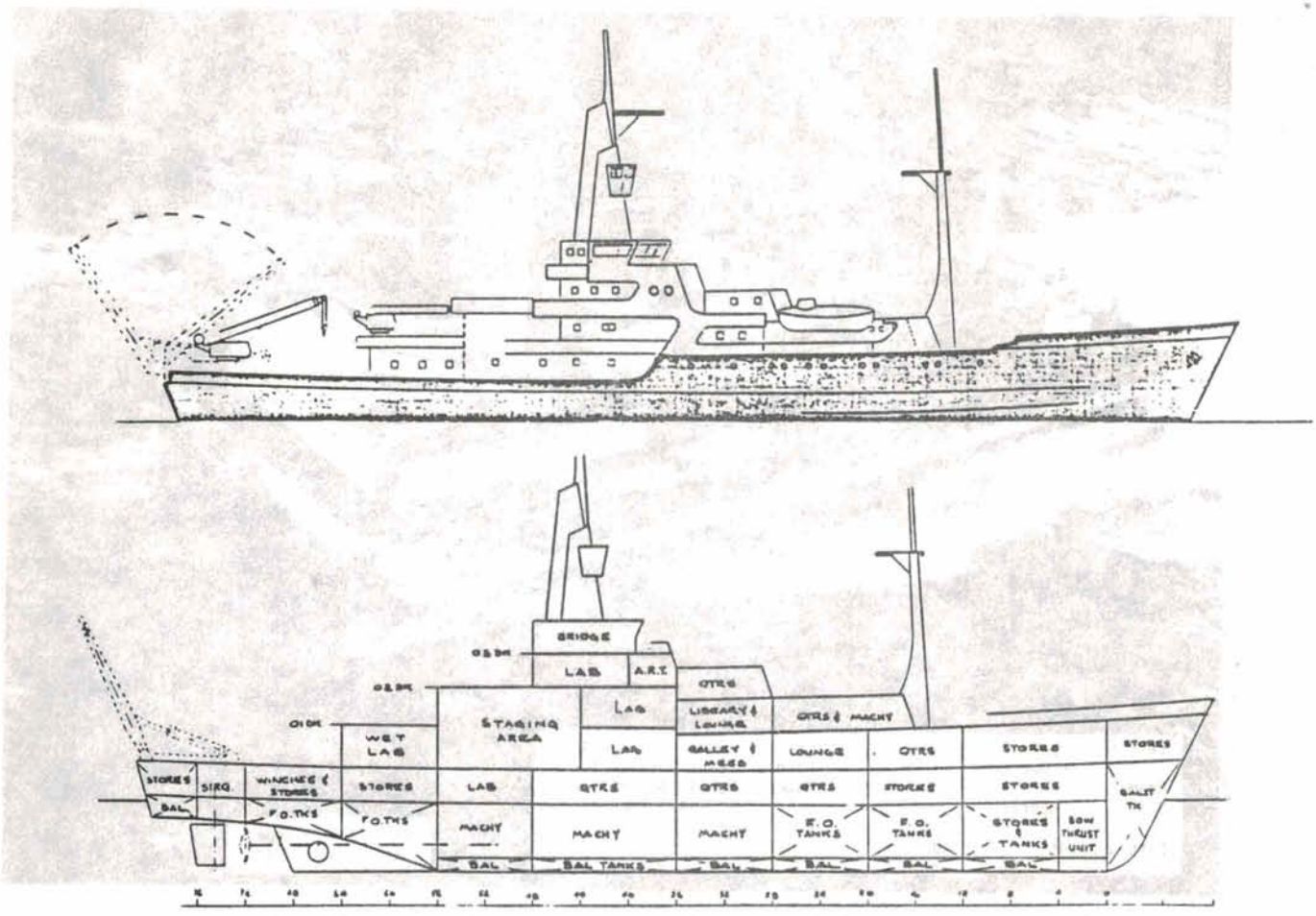
Small Waterplane Twin Hull (SWATH) Ship. Note abundance of deck space and overside handling capability including center well.



SWATH TYPE OCEANOGRAPHIC RESEARCH SHIP
Variable draft Hull

Length:	Upper Hull	147 ft	Cruise Speed: Transit - 15 knots	
	Lower Hull	202 ft	Operating - 10 knots	
Beam:		104 ft.	Power: Diesel Electric 6000 SHP	Blue Sea McClure
Draft:	Operating	26 ft.	Complement: 30 Scientists	Houston, Texas
	Transit	15 ft.		
Displacement:		3220 L.Tons		

SWATH with interior center well area. Variable draft allows ballasting working deck close to water. Transits in catamaran mode.

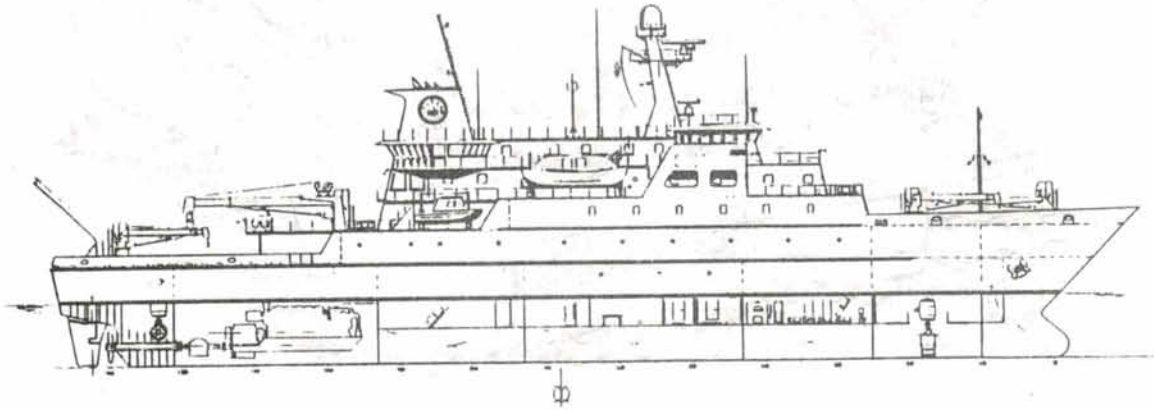


Length	275 LBP	310 LOA	Cruise Speed		16 Kts
Beam		68 Ft.	Range		12,000 mi. @ 16 Kts
Draft		21 Ft.	Power	(Diesel Elec. SCR)	6,800 SHP
Displacement		5,840 LT	Complement		35 Scientific

Large High Endurance R/V where primary attention has been given to seakeeping and deck working area.

WOODS HOLE OCEANOGRAPHIC INSTITUTION
JONATHAN LEISY
MARINE DEPARTMENT

DN TK	NECOR - LARGE RES SHIP - PRELIMINARY ARRGT	
APD CAS	10-5-84	DWG No. 8506-
1/8"=1'-0"		



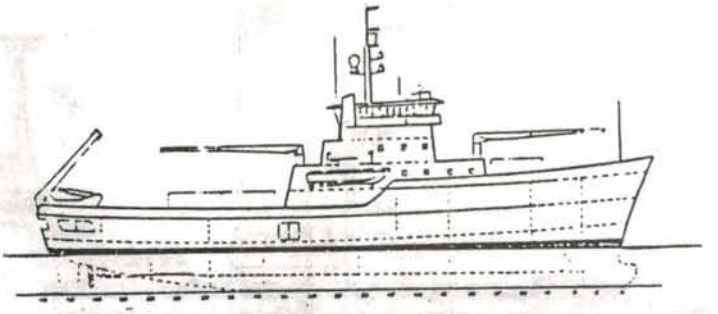
LARGE GENERAL PURPOSE OCEANOGRAPHIC RESEARCH SHIP

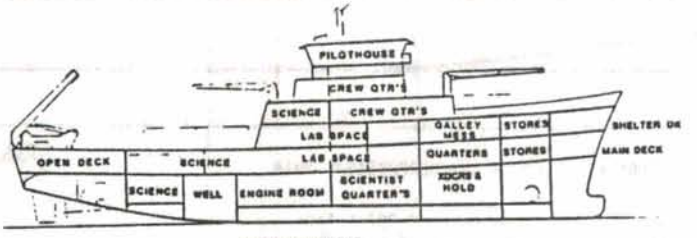
Length	273 LBP	300 LOA	Cruise Speed	14 knots
Beam		54 Ft.	Range	10,000 nm
Draft		18 Ft.	Power	4,000 SHP
Displ.		LT	Complement	33 Science

Large High Endurance R/V where emphasis is on laboratory and economy of operation.

RODNEY E. LAY & ASSOCIATES
NAVAL ARCHITECTS

OUTBOARD PROFILE
300'-0" x 54'-0" x 28'-0"
RESEARCH VESSEL





INBOARD PROFILE

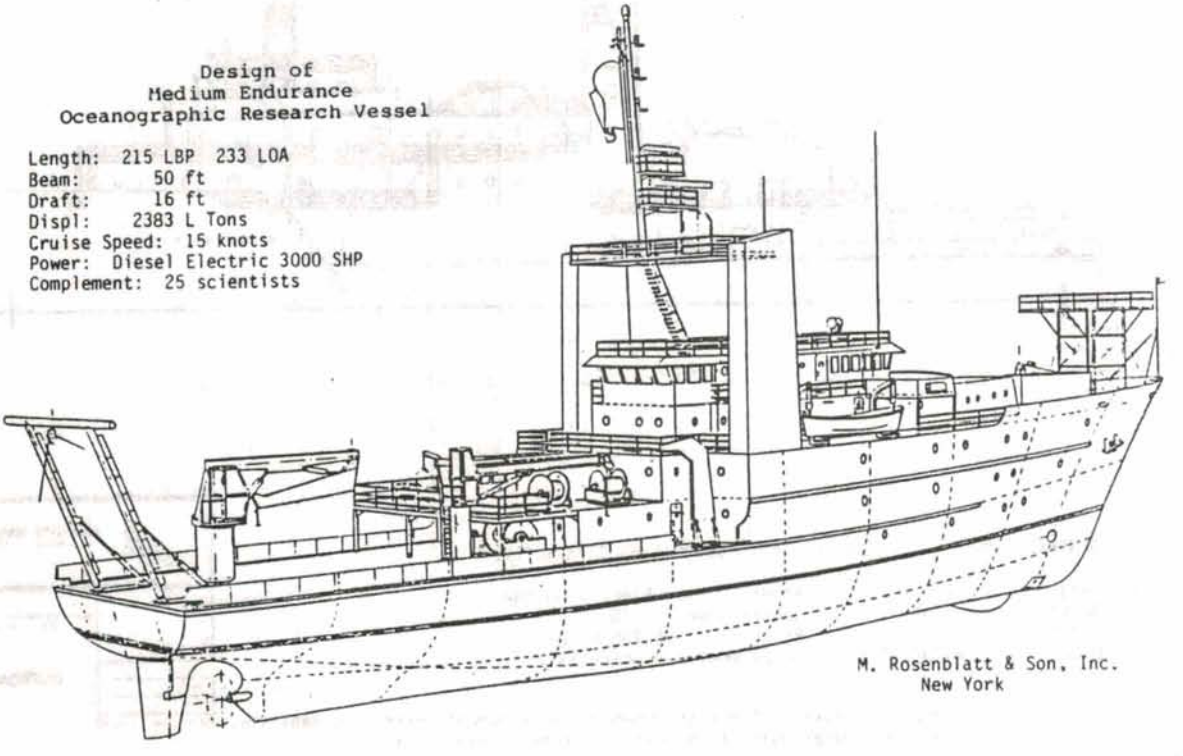
Length	212 LWL 228 LOA	Cruise Speed	14 knots
Beam	64 ft.	Range	10,500 nm
Draft	15 ft.	Power	3,000 SHP
Displ.	2,468 LT	Complement	25 Scientific

SCRIPPS INSTITUTION OF OCEANOGR
UNIVERSITY OF CALIFORNIA, SAN DIE
212' LWL RESEACH VESSEL
DESIGN CONCEPT- ARRANGEMENTS
THE GLOSTEN ASSOCIATES
CAVBLH | NO SCALE | OCT 1985 | 8534-2

Medium Endurance R/V. Shelter deck design shows two working deck and interaction with laboratories. Wide beam permits a sizeable centerwell not ordinarily found on monohull.

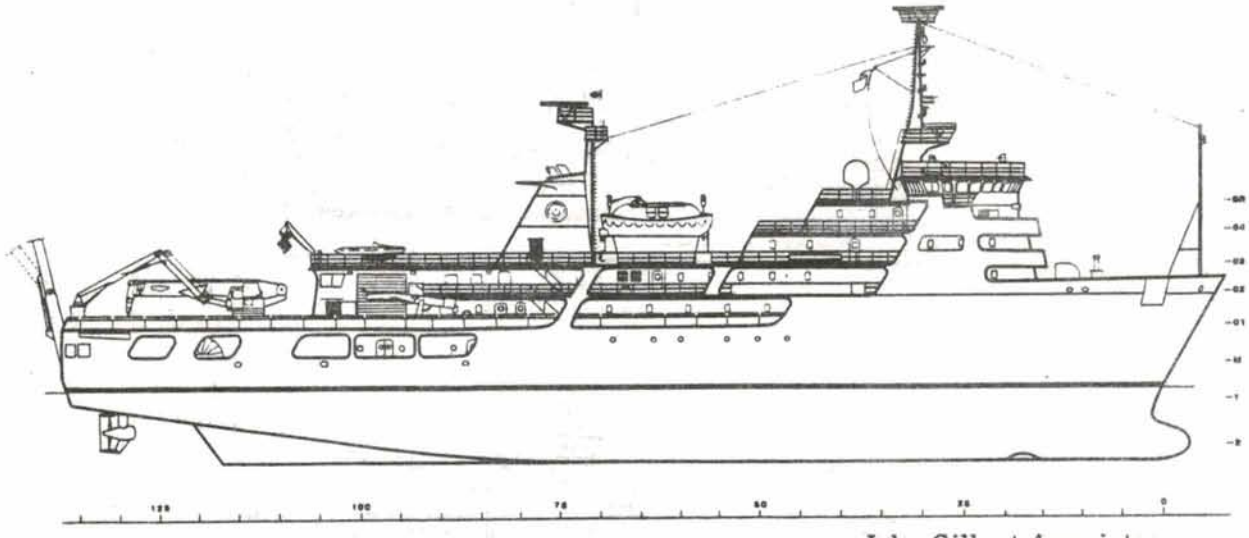
Design of
Medium Endurance
Oceanographic Research Vessel

Length: 215 LBP 233 LOA
Beam: 50 ft
Draft: 16 ft
Displ: 2383 L Tons
Cruise Speed: 15 knots
Power: Diesel Electric 3000 SHP
Complement: 25 scientists



M. Rosenblatt & Son, Inc.
New York

Medium Endurance R/V. Attention has been given to overside handling and economy of operation.

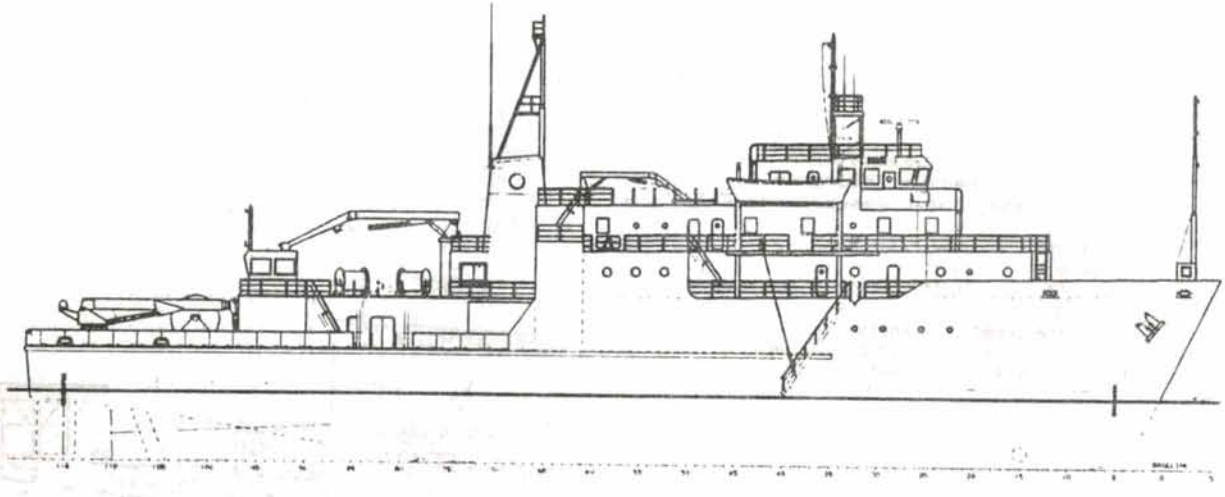


John Gilbert Associates

LARGE GENERAL PURPOSE RESEARCH AND GEOPHYSICAL SHIP

LOA:	291 Feet	Displacement:	4,997 L Tons
LBP:	275 Feet	Cruising Speed:	14.5 Knots
Beam:	58 Feet	Range:	24,000 N Miles
Draft:	19 Feet	Power:	5,000 SHP

High Endurance R/V with enhanced ecology and geophysics capability. MCS Streamer and air-guns are handled from lower deck. Upper deck is for general purpose activity.



GENERAL PURPOSE RESEARCH SHIP WITH GEOPHYSICS CAPABILITY

Length:	238 LBP 250 LOA	Power:	Diesel Elec. 3000 SHP
Beam:	52 ft	Cruise Speed:	14 knots
Draft:	15 ft	Range:	13,700 miles
Disp:	2,790 LT	Complement:	28 Scientists

MARINETTE MARINE CORPORATION

OUTBOARD PROFILE

Medium Endurance R/V with enhanced multichannel seismics capability. MCS and other outfitting share the same working area.

SUMMARY COMPARISON OF SCIENCE REQUIREMENTS FOR LARGE SHIPS

	HIGH ENDURANCE R/V (Monohull)	SWATH R/V	MEDIUM ENDURANCE R/V (Monohull)
SIZE RANGE	Class I (250-300 ft)	Class II (200-250 ft)	
ENDURANCE	Sixty Days: 30 days cruising; 30 days working. 15,000 miles total range at cruising	Fifty Days: 25 days cruising; 25 days working. 12,000 miles total range at cruising	
CRUISING SPEED	15 knots		14 knots
SEAKEEPING	15 knots through SS 4 13 knots through SS 5 8 knots through SS 6	15 knots through SS 6 10 knots through SS 7	14 knots through SS 4 12 knots through SS 5 8 knots through SS 6
STATION KEEPING	Dynamic Positioning at best heading: Wind Vel. 35 knots; Sea State 5; 3 knot current; ± 5° head; ± 150 ft maximum excursion		
PRECISION TRACKLINE	Maintain a precision trackline, including towing, at speeds as slow as 2 knots with maximum 45° heading deviation from the trackline in wind speed 35 knots; Sea State 5; 3 knot current. Speed control along track to be ± 0.1 knot; maximum lateral excursion 150 ft		
TOWING	Capable of towing large scientific packages up to 10,000 lbs tension at 6 knots, and 25,000 lbs tension at 2.5 knots into a sea state 5 and 3 knot current		
SCIENCE ACCOMMODATIONS	30-35 scientific personnel in two person staterooms. Expandable to 40 in portable berthing vans.		20-25 scientific personnel in two person staterooms. Expandable to 30 in portable berthing vans
DECK WORK AREA	3,000 sq ft with contiguous 12 x 50 ft area along side 100 tons disposable load	4,000 sq ft with 15 x 30 ft centerwell 100 tons disposable load	2,000 sq ft with contiguous 12 x 40 ft area along side 90 tons disposable load
LABORATORY AREA	4,000 sq. ft. plus 4 portable vans with inside access		3,000 sq ft plus 2 portable vans with inside access
SCIENCE STORAGE	20,000 cu. ft.		15,000 cu. ft.
ICE STRENGTHENING	ABS Class IB except ABS Class IAA when specified as ice capable	None	ABS Class IC
ACOUSTICAL SYSTEMS	All ships to carry precision echo sounding ("SEA BEAM"); 3.5 kHz and 12 kHz echo sounding; Doppler current profiling; bottom positioning to 6,000 m depth. Design underway - target is echo sounding at Sea State 4		
MULTI-CHANNEL SEISMICS	Selected vessels to carry seismic air compressors for 4,000 scfm at 2,000 psi; and a large array MCS system	Selected vessels to carry seismic air compressors for 3,000 scfm at 2,000 psi; and a large array MCS system	

Implementing the plan should take into account a meld of motivating factors:

1. A replacement schedule which is realistic in terms of the national effort an economy. The effect of this would be to smooth the peaks of existing ship construction dates into a reasonably uniform number of replacements per year.

2. A priority of new construction based upon the material condition and scientific capability of existing ships.

3. A priority of new construction based upon the needs of ongoing science.

Fleet Improvement Plan Shown by 5-year Increments

Time Frame	LARGE (Over 200 ft.) Classes I & II	INTERMEDIATE (150-199 ft.) Class III	SMALL (100-149 ft.) Class IV
1986-1989	1 new 1 new (MCS capable) modernize two	---	---
1990-1994	1 new (ice capable) 1 new (MCS capable)	--- ---	1 new (ice capable)
1995-1999	---	2 new	1 new
2000-2004	1 new (sub-handling capable)	1 new	2 new
2005-2009	1 new	3 new	---
2010-2014	2 new	---	2 new
TOTAL	8	6	6

This plan will need continuing review and updating in order to keep up with changing times and requirements. In addition, selected designs might be further developed; and new concept designs started on smaller ships and innovative platforms. This calls upon UNOLS to provide for continuing efforts in the fleet replacement process.

UNOLS FLEET REPLACEMENT COMMITTEE

MEMBERS

Robertson P. Dinsmore, Woods Hole Oceanographic Institution - Chairman
George H. Keller, Oregon State University
Marcus G. Langseth, Lamont-Doherty Geological Observatory
David W. Menzel, Skidaway Institute
Worth D. Nowlin, Jr., Texas A & M
Joseph D. Phillips, University of Texas
Derek W. Spencer, Woods Hole Oceanographic Institution
Frederick W. Spiess, Scripps Institution of Oceanography
Richard W. West, National Science Foundation, Observer
Keith W. Kaulum, Office of Naval Research, Observer

AGOR 14 REPOWERING STUDY

Orig. July 1985
Revised June 1986

SCIENTIFIC AND OPERATIONAL REQUIREMENTS -

The oceanographic mission requirements from 1965 have been updated and revised for the purpose of best meeting projected oceanographic requirements at sea. The following tentative requirements shall apply for the purpose of this Study.

1. Speed: 14 knots maximum speed, but this alone should not dictate the choice of a propulsion system.

2. Endurance: Minimum 10,000 miles at 12 knots cruising speed.

3. Tow Pull: 10,000 lbs at 6 knots
   25,000 lbs at 2.5 knots

4. Speed Control: Continuous speed control or increments not greater than 0.1 knot (0-6 knots) and 0.2 knot (6-14 knots).

5. Ice Strengthening: ABS Class C, but this should not dictate the choice of a propulsion system.

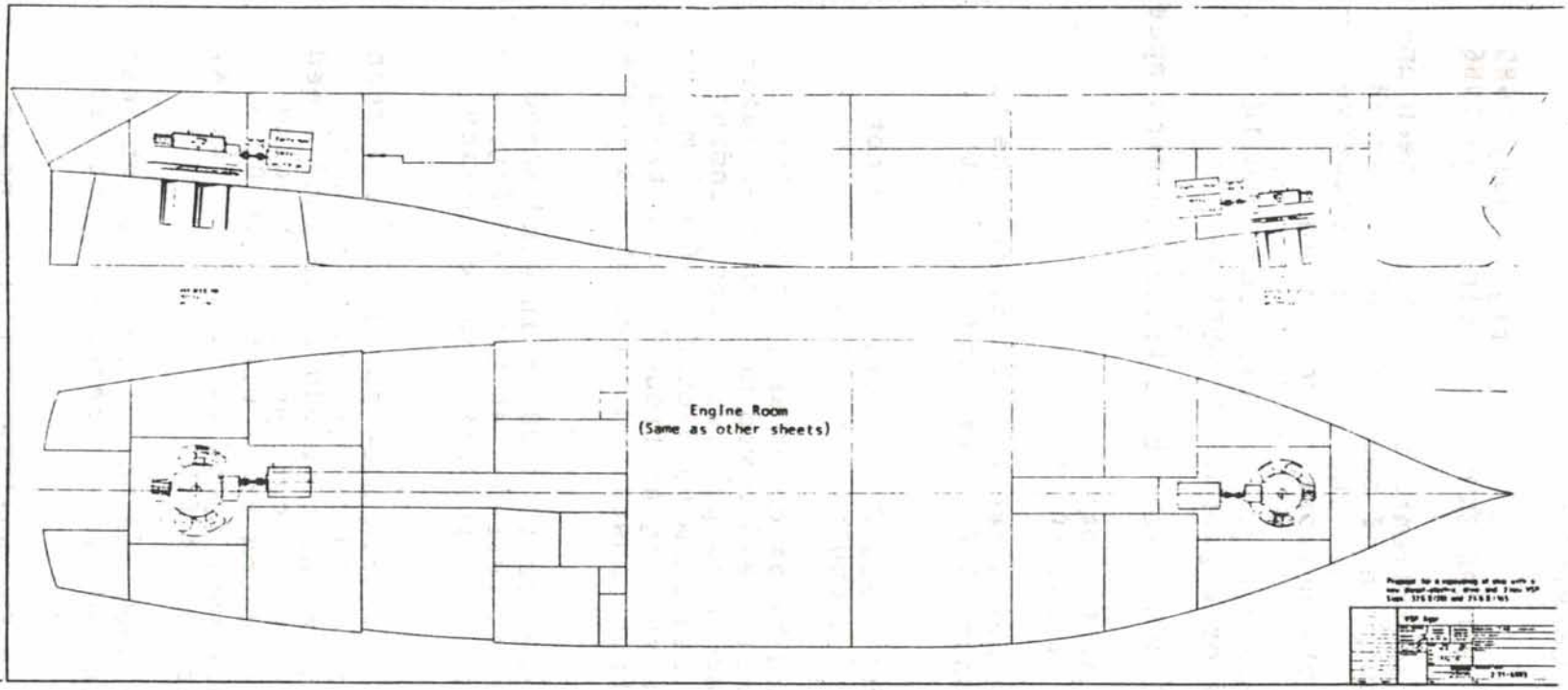
6. Acoustics: Ship should be as quiet as possible for hull mounted echo sounding and towed multichannel seismic arrays. Design target is precision echo sounding at 3.5 and 12 kHz and Sea Beam to depths of 6,000 m and acoustic doppler profiling at frequencies between 50-300 kHz; up to 10 knots sustained speed at Sea State 4 (8-ft wave height).

7. Dynamic Positioning: Depths to 6,000 m in wind speed 35 knots, SS 5 and 3-knot current, at best heading, using GPS and/or bottom transponders. Max excursion of 150 ft.

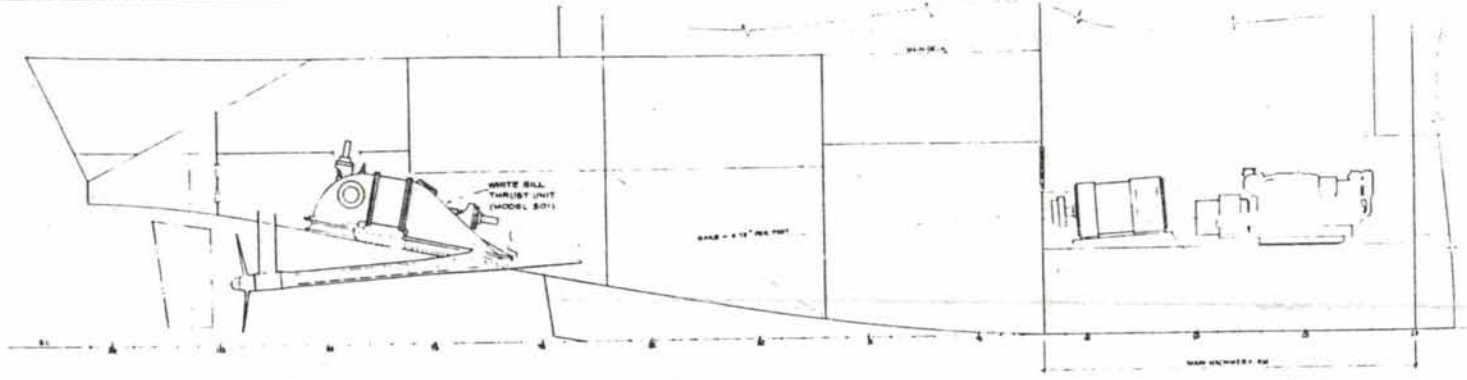
8. Precision Trackline: Maintain slow speed (2 knots mean speed) track under controlled conditions (GPS and/or bottom transponders in depths to 6,000 m) in wind speed 35 knots, SS 5 and 3-knot current, and ships heading within 45 degrees of intended track with a 10,000 lb. horizontal pull. ± 0.1 knot speed control along track. Maximum lateral excursion 150 ft.

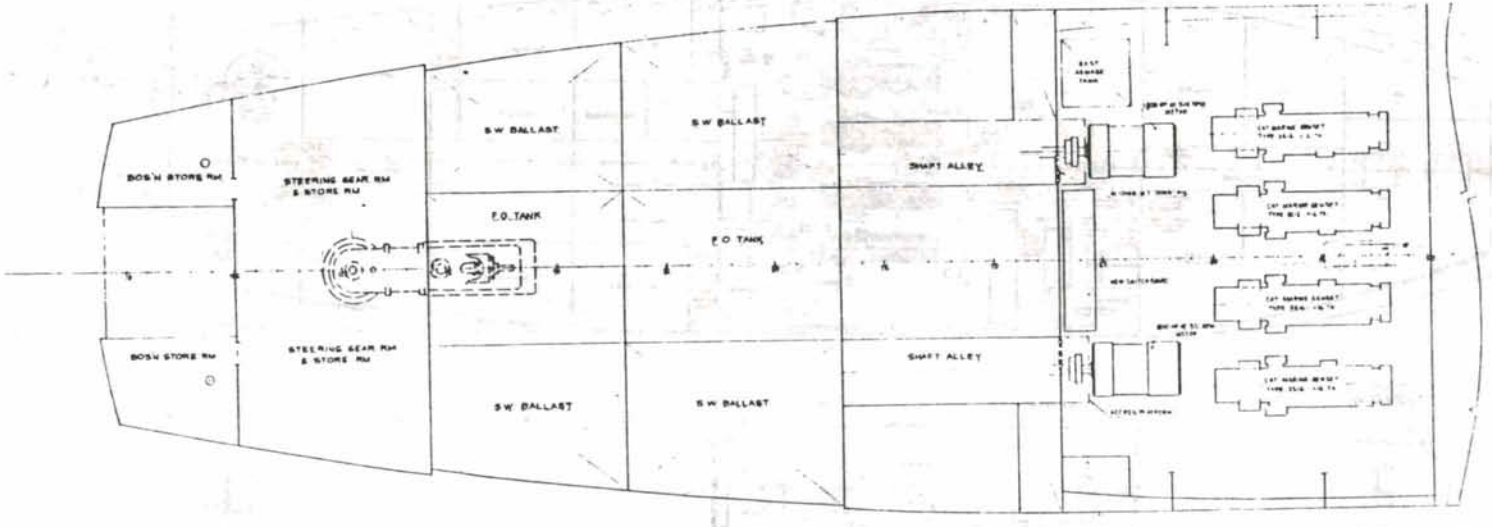
9. Payload: Provide for deck and hold loading of not less than 100 tons total in addition to regular scientific outfit.

10. Electric Load: Provide for auxiliary electric power about 50% more than now available.



Schematic for repowering AGOR-14 Class using
existing cycloid configuration but with electric drive





J.J. HENRY co inc

NAVAL ARCHITECTS, MARINE ENGINEERS

AGOR 14 & 15

CONCEPTUAL ARRANGEMENT

PROPOSED INTEGRATED DIESEL ELECTRIC PROPULSION SYSTEM

SCALE 1/4" = 1 FOOT	DATE APRIL 1986
DRAWN BY E FREITAS	DWG NO 7300 SHT 2
CHECKED BY	ALT NO 0
DATE