UNOLS Council Meeting Report

Monday, 2 February 1998
Tremont House, Conference Room
Tuesday, 3 February 1998
Texas A&M, Library
Galveston, TX

Appendices

Minutes
February 2, 1998

WELCOME & INTRODUCTION - The UNOLS Council met in the Conference Room of the Tremont House on 2 February 1998. The meeting was called to order at 8:30 a.m. by Ken Johnson, UNOLS Chair. The items of the agenda, ***Appendix I***, were addressed in the order as reported below. The participants of the meeting are listed in ***Appendix II***.

Ed Shaar, Texas A&M, welcomed the Council to Texas and provided information on the University. He announced that TAMU's Dean of Geosciences, Dr. David Pryor along with David Brooks will attend the meeting. The marine superintendent for ship operations at TAMU, Desmond Rolph, will provide a tour of GYRE on Tuesday afternoon. Sandy Green, also in the TAMU ship operations group, was largely

responsible for putting together the meeting arrangements. TAMU has arranged an evening reception at the Tremont on the first day of the meeting. On the second day of the meeting, TAMU will host a barbecue at noon.

Ken Johnson continued by introducing all meeting participants and welcoming new Council members Barbara Prezelin of U. California at Santa Barbara and Tom Shipley of U. Texas.

Ken added two items to the agenda: (1) A discussion on his upcoming meeting at the Heinz Foundation and (2) Review of a SWATH design study performed by The Glosten Associates, Inc. for U. Washington.

ACCEPT MINUTES - The meeting minutes of the UNOLS September Council Meeting were accepted as written.

COMMITTEE REPORTS - The Committee Chairs submitted their written reports in advance of the meeting and are included as ***Appendix III***. Each report was summarized by Ken Johnson. The chairs provided any updates and additional information not included in the written reports.

Research Vessel Technical Enhancement Committee (RVTEC) - Ken reported on RVTEC's participation in developing science system testing for HEALY. This project is off to a very good start with approximately nine institutions involved. AICC had requested that RVTEC coordinate this process. A team has been identified to address each system to be tested. Each test will also be accompanied by a scientist in addition to the technicians. The U.S. Coast Guard will support the science system testing development and sea trials. The funds will be distributed to the technical support groups through the UNOLS Office.

A discussion evolved on the issue of funding for science operations on HEALY. The ship is scheduled to begin science operations in the year 2000. Dick Pittenger commented that the addition of funds to support science operations on HEALY once the ship is on-line needs to be addressed. This matter should be added to the UNOLS agenda for future meetings.

Ken Johnson will write a letter to the Director of the Office of Polar Programs, George Hunt, and FOFCC Chair, Dr. Fred Saalfeld, encouraging adequate funds to support Arctic Science. He will distribute the draft to the Council for comment. The letter will be copied to Bob Corell and the USCG.

Ken concluded the RVTEC by discussing the status of SeaNet. The SeaNet group, headed by Ellen Kappel of JOI, will be selecting vessels to receive the first five SeaNet units. The group will survey the ship operators to determine what type of communication systems are presently installed on board. They will attempt to install the units on platforms which will provide the best value in terms of both economics and broad operations.

Fleet Improvement Committee (FIC) - Following Ken's summary of FIC activities, there was a

discussion on NOAA fishery needs. The Council indicated that a better definition of the actual NOAA fishery research needs is necessary. It was suggested that perhaps the NOAA/UNOLS coordination team be reconvened to address this issue. The FIC plans to begin developing science mission requirement for an ALPHA HELIX replacement. They will try to incorporate an ice capability into the vessel as well as a fisheries capability. The FIC believes that the academic community could benefit by having a vessel with a fisheries capability. The Council agreed that the FIC should move ahead on the SMRs in the interest of the community.

The next FIC meeting is scheduled for 21-22 May at Woods Hole Oceanographic Institution. FIC will invite fisheries scientists to participate.

Research Vessel Operators' Committee (RVOC) - Ken Johnson reviewed the RVOC reports. The UNOLS ship inspection program has been resumed with Jamestown Marine Services conducting the reviews. The purpose of the inspection program is to identify safety issues. The program has also been useful in lowering insurance rates for the fleet. The Council discussed distribution of the final inspection reports. It was suggested that RVOC could provide the reports at their annual meeting. It was suggested that the ship inspection program be mentioned at the UNOLS Town Hall Meeting at the February AGU/ASLO Ocean Science meeting. It also could be included as an article in an upcoming UNOLS Newsletter issue. The Council also suggested that Dennis Nixon be contacted for the statistics on UNOLS insurance rates as they compare with the rest of the sea-going industry. This information can be included in the Town Hall Meeting information.

The current medical health services contract for the UNOLS Fleet is coming to an end. A request for bids is now on the street. It is expected that three companies will bid on the contract.

Paul Ljunggren concluded the RVOC report by reporting that over the next few years the UNOLS operators will need to deal with the ISM Code. By the year 2002, ships involved in foreign voyages must be in compliance. Each operator will need to designate a shoreside manager. The responsibilities of this manager will need to be identified. There may be pressure to come in to compliance earlier than 2002. The operators are working together to develop a method that they can all follow to come in compliance.

Arctic Icebreaker Coordinating Committee (AICC) - Jim Swift provided a lengthy written report of AICC's activities. The issue of technical support on HEALY during science operations was addressed by the Council. The AICC and USCG are discussing potential options for technical service support. One concept might be for the USCG to buy a person-year of technical liaison support from the U. of Washington (UW). UW was suggested since HEALY will be homeported in Seattle. The Council suggested that the liaison support be open to competitive bid from all UNOLS institutions.

DEep Submergence Science Committee (DESSC) - Ken Johnson reviewed the DESSC report. Dick Pittenger elaborated on the ATLANTIS bow thruster problems. Fixes have been identified and will be carried out during the ship's present Post Shakedown Availability (PSA) period. The cost of the fix is

approximately $300K. The bow thruster fixes are also applicable to REVELLE but no funding has been identified to correct the problem. HVAC problems on ATLANTIS are also going to be corrected during the PSA period.

Don Heinrichs elaborated on the ship scheduling problems which were identified in Mike Perfit's report. NSF has taken a number of actions to hopefully prevent future scheduling conflicts. For the next two years, there will be an NSF committee to look at long-term scheduling within the agency. Before planning an NSF time series, the program will need to be reviewed by the committee. The same procedure will be implemented for expeditionary type programs. NSF's new procedures that will go into effect for the February 15th proposal submittals. The next edition of the NSF Ocean Sciences Newsletter will feature ships and address the committee's plans.

Ship Scheduling Committee (SSC) - Ken Johnson began the ship scheduling report by providing a viewgraph with the statistics of ship usage from 1995 through 1998. In 1998, there are 4,984 days scheduled, see ***Appendix IV***. The ship day totals, excluding Class <IV, are down almost 500 days from last year. The table depicts the increase of ship time for the smaller ships with a decrease of large ship time. Don Moller noted that there may be additional ship time in 1998 that has not yet been scheduled. WECOMA may be used for studies in response to recent volcanic activities at Juan de Fuca Ridge. There also may be additional time for studies of El Nino. NOAA is also exploring various vessel options for 120 days of ship time to perform tuna surveys. They are looking at the availability of WORTHY as well as UNOLS vessels.

Sujata Millick discussed the Navy's interest in using UNOLS vessels for test and development (6.4/6.5) programs. These programs would represent "new" ship time funds for UNOLS. This part of the Navy has not had exposure to UNOLS, and as a result they are unaware of our scheduling procedures. It was recommended that Jack Bash and Ken Johnson meet with ONR and their 6.4/6.5 program officers to provide a presentation on UNOLS facilities and scheduling procedures.

Don Moller commented on 1999 ship time requests. At this time, there are approximately ten to 15 ship requests on file that are viable. There may be another ten requests from the February panel reviews. It is difficult to tell how this compares to the number of requests this time last year, but it appears to be less. Last year was a light year for large ships, indicating that this year will also be light. Don noted that he has seen 13 ROV requests, of these four have been funded. Requests for the small vessels appears to be about normal.

Ken concluded by presenting a viewgraph showing UNOLS fleet charge days by agency. Over the years, there has been a decline in total days for NSF and ONR. NSF is still by far, the largest supporter of the UNOLS fleet. Use by NOAA, NAVO and "Others" is up since 1995. It was commented that it does not appear that ONR's funding policy of 80% support from the facility program and 20% support from the science programs has resulted in an overall increase in ONR ship time.

AGENCY and OTHER REPORTS

Department of State - Tom Cocke provided the report for State. He explained that Patsy Brown, his part-time assistant, has left CORE and consequently has departed from the State Department. Patsy's position was supported solely by NSF. This leaves no backup persons in Tom's office if he were to leave. The work load calls for a full time assistant. The Council recommended that the Chair write a letter to FOFCC and CORE requesting their assistance on this matter. It was also suggested that this could be discussed at the UNOLS Town Hall Meeting.

Tom reported that meetings are being held with Mexico to try to resolve problems with clearances. A NOAA ship was boarded during its last port call to Mexico. Because of sovereign immunity, boarding is not acceptable. NOAA has a scheduled three ship operation this year studying tuna and dolphin that will require Mexican clearance. In a related note Tom reminded the Council that because the United States is not a signature to the Law of the Sea we can not execute the "applied consent" provision in the Law. Applied consent would give consent for clearance if no response was heard from the host country after four months.

National Oceanic and Atmospheric Administration (NOAA) - A NOAA representative was unable to attend the Council meeting; however, a written report was provided by CDR. Elizabeth White, NOAA, and is included as ***Appendix V***.

National Science Foundation (NSF) - The NSF report was given by Don Heinrichs, see ***Appendix VI***. He began by announcing various staff changes. Bob Corell's position has been extended until December 31, 1999. Rita Colwell, a micro-biologist from the University of Maryland, has been named Deputy Director NSF. The position of Program Director for Instrumentation and Technical Support has been advertised.

Don reviewed various program issues at NSF. A modification and expansion of technical support for shared use instrumentation and data acquisition systems is under consideration. They are trying to have support for shared use equipment come through the Technician Program office and rather than the science programs. The goal is to have the changes in place by 1999. The Guidelines for OCFS Proposals is to be updated and modified. Dick West has the lead on this effort. The guidelines were last written in 1994 and requires updating. As an example, the present version includes no reference to the World Wide Web. The hope to update the guidelines to the current state and electronic world. NSF would like to have the update in time for 1999 ship operation proposals. The Oversight committee (Committee of Visitors) recommends increased focus on "end-to-end" services and "quality of support" for ship operations in service of science projects. The National Science Board mandated review of the current fleet operations with emphasis on exploring cost effectiveness for managing research ship operations. The review is to be complete by February 1999.

Don discussed the NSF budget request for 1999, see ***Appendix VI***. Geosciences are slated for an 11.5% increase from $455.11M in 1998 to $507.31M in 1999. The Ocean Sciences budget increases by 11.8%. Within Ocean Sciences, Research support would see a 13.7% increase. Enhanced support for

individual investigators is planned. The Oceanographic Centers and Facilities increase is 9% from $52.26 to $56.96. This would (1) provide fleet support to ensure required ship time and capabilities for research requirements, (2) enhance technical and shared-use instrumentation support for research projects to reduce the burdens on sea-going scientists, and (3) continue maintenance and ship improvement programs.

Naval Oceanographic Office (NAVO) - CDR. Jim Trees provided the report for NAVO. A copy of his viewgraphs are included in ***Appendix VII***. NAVO utilized 392 UNOLS ship days in 1997. Twelve ships were used from eight institutions. A total of $7.5M was expended with $6.2M going for ship time. An additional $7.5M of support is planned for 1998 UNOLS operations. Eight ships from seven institutions are scheduled for 431 ship days. Ships planned for 1998 operations include: CAPE HENLOPEN, CAPE HATTERAS, WECOMA, PELICAN, REVELLE, THOMPSON, KNORR and NEW HORIZON. By using UNOLS vessels, significant accomplishments and goals are being addressed in four operational areas of the Navy's ASW Improvement Program. These areas include: Pacific Fleet shallow water range, Score Range, AUTEC Range and Onslow Bay. Jim concluded by noting that the planning aspects for 1999 are in process.

Bob Knox reported briefly on the NAVO data processing being performed at Scripps. In 1997, some problems were experienced with the formats of the data received by Scripps from other institutions. This made processing the data more complex and as a result delivery of the data to NAVO was slightly delayed. For 1998, Scripps plans to contact all of the other institutions involved in NAVO cruises to ensure that properly formatted data is provided for Scripps processing.

United Stated Coast Guard (USCG) - A representative from the USCG could not attend the Council meeting, however, a written report was proved and is included as ***Appendix VIII***.

Office of Naval Research (ONR) - ONR's activities were reported during the UNOLS Issues discussions.

UNOLS ISSUES:

National Science Board Action - Don Heinrichs provided a summary of the progress with the National Science Board mandated research fleet operations and management review. His viewgraphs are included as ***Appendix IX***. The NSB reviewed the request for continuation of Oceanographic Research Vessel and Submersible Operations awards for five years. The operation awards were approved for a shorter duration of two years, 1998 and 1999. NSF staff are to review and report back on the cost-effectiveness of the present and possible alternative methods of managing ship operations. A review panel will be established with six to eight members representing academia, industry and government. The panel is to provide a comprehensive and balanced evaluation of science support services and capabilities, ship operations, and size and organizational structure for the support of the academic research fleet. It is to recommend actions by NSF to ensure the most cost-effective means of organizing and managing the research fleet for support of research requirements. The review plan is to

be submitted to the NSB in February 1998 for their concurrence. In March 1998, the committee appointments will be made. The committee should have its report to NSF management by December 1998. In February 1999, NSF management will provide their response to NSB. The renewal of operations award authority for 1999 and beyond could be issued by May 1999.

UNOLS Town Hall Meeting - Ken Johnson discussed plans for a UNOLS Town Hall Meeting to be held on 12 February at the AGU/ASLO Ocean Sciences Meeting. The meeting was prompted in response to the low attendance at the UNOLS Annual Meeting in September. Following the Annual Meeting, Ken contacted various UNOLS representatives to determine why they have not attended UNOLS activities. The responses varied. It was decided to try to reach out to the community in a different forum, such as, a major science conference.

Ken presented the Council with a series of draft Town Hall viewgraphs. The Council provided their comments along with topics that should be brought to the attention of the community. Some of their general comments and suggestions included:

- Discuss the purpose of the UNOLS ship inspection program noting that it identifies ship safety deficiencies, it helps to identify ship equipment needing repair, upgrade or replacement, and it helps to reduce fleet insurance rates.
- Discuss recent clearance issues.
- Encourage audience's participation through open and frank discussions. Reduce the number of viewgraphs and allow plenty of time for community discussion.
- Provide briefing materials as hand outs prior to the presentation. Make UNOLS Directory sheets available. Provide bulletized lists of UNOLS information. UNOLS "success stories" should be cited.
- A thoughtful follow-up process should be carried out from the meeting feedback
- Survey the audience prior to the presentation: How many sea-going scientists? How many agency representatives?
- UNOLS issues and facts that could be addressed include ship scheduling procedures, alcohol consumption on UNOLS vessels, and ship lay-up costs. There should be discussion on how science and ship operation funding is managed; what happens to residual ship funds when schedules are light?

The Council also made specific comments to Ken’s viewgraphs. Some of these are listed below:

- Meeting rationale - It was suggested that reference should be made to NSB/NSF’s review of facilities in regard to modes of operation and management.
- Build partnerships - A bullet should be added explaining that partnerships encourage scientific intellectual exchanges. The partnership with U.K. added 77 days for the DERBYSHIRE survey in Western Pacific. This cruise reduced the dayrate for THOMPSON and helped to make an NSF cruise in the Western Pacific economically feasible.
- UNOLS Structure - A viewgraph listing the UNOLS Council is needed along with an explanation

of the Council nominating process.

- UNOLS Committees - Provide specific examples of committee activities, tasking, and achievements. Provide names and contacts of UNOLS Committee Chairs. Explain how people can volunteer for UNOLS activities and committees.
- Ship Scheduling - Give examples of scheduling efficiencies. Provide statistics on cruises, on science days, and on trends.
- Recent trends in Ship Support at the NSF - Various observations and question arise in regard to this viewgraph. Is the community becoming non-seagoing scientists? Ships will go away if community does not propose to use them - is this what the community wants and realizes? Is proposal pressure low because scientists feel that the chances of getting funded are too low? A primary point should be made that the NSF budget responds to proposal pressure and sea-going science needs. By maintaining a larger fleet, flexibility is maintained.
- UNOLS Partnerships - UNOLS/NAVO relationship fosters intellectual interchanges. UNOLS signing MOU with NOAA adds a meteorological platform capability for the community.
- Post Cruise Assessment - Explain that assessments will be discreetly handled.

UNOLS Fleet Statistics - Sujata Millick, ONR, provided a series of viewgraphs on various UNOLS fleet statistics over the past twenty years, see ***Appendix X***. The first graphs showed the ratios of NSF and ONR ocean sciences funding as compared to their respective ship funding. NSF's funding shows that for every $5 they put towards ocean sciences, approximately $1 goes towards the ships. The ratio of ONR Ocean Sciences funding to ship funding has been in the range of 15 to 20 percent. For both agencies, the ocean sciences funding has risen at a quicker rate than the ship funding. The next graph shows the NSF and ONR operating days as well as the available science berths by year. NSF operating days have fluctuated over the years, but there has been a general decline since 1978 when they funded over 4000 days. ONR's days have been relatively constant over the past 20 years at around 500 to 600 days. The graph showed that the number of available science berths has gone up approximately by 150 per day at sea since 1978. The last chart that Sujata provided showed the UNOLS ship capacity versus utilization. The chart shows that if all planned ship retirements occur without replacement, utilization would perhaps converge with the optimal capacity of the fleet. However, it was noted that BLUE FIN replacement plans are already in place and CALANUS replacement plans are moving along. Additionally, it was noted that utilization of the fleet is not spread evenly among the classes. This year, there has been a significant increase in small ship utilization while the large ships are underutilized. The Council pointed out that these issues need to be factored into the equation when making long term projections.

Glosten SWATH Report - Ken Johnson reported on the U. of Washington's recent study into a SWATH vessel. The Glosten Associates, Inc. performed a conceptual design study to determine the feasibility of designing and building a SWATH to requirements provided by UW. Russ McDuff forwarded a letter summarizing the findings of Glosten's Study along with a document discussing the sea-keeping and operability of such a vessel. This material is included as ***Appendix XI***.

Tuesday, February 3, 1998 - Texas A&M Library

Charter Review - Clare Reimers chaired a subcommittee including Bob Knox and Rick Jahnke to review the UNOLS charter and recommend changes. Sections of the charter have become outdated. Additionally, readoption of the charter is required every three years and was last adopted in 1995. The subcommittee provided the Council with a draft update of the charter prior to the meeting. Clare provided an explanation of the rationale behind the changes. The major changes in the Charter concerned composition of the Council and the definition of membership. An extensive discussion followed as the Council reviewed each of the recommended changes. The issue of meeting participation and quorum requirements were discussed. Most changes were accepted as written with advice provided on others. The subcommittee will incorporate the Council's comments and present a revised draft of the Charter at the summer meeting.

A nominating committee of Dennis Hansell, Chair, Clare Reimers and a third person yet to be named was established to develop a slate for replacing Council members with terms expiring. The terms of Ken Johnson, Chair; Tom Royer, Vice Chair; Dick Pittenger, At-large representative and Bob Wall Non-operator member are expiring.

Clearance Issues - Prior to the meeting Bob Knox provided the Council with a history of problems experienced by Scripps on obtaining clearance from Mexico, see ***Appendix XII***. Bob briefly addressed this issue and suggested that more negotiations with Mexico is necessary.

AGOR 26 Construction Update - Sujata Millick reported that the U. of Hawaii has been selected as the operator for AGOR 26. Robert Hinton has been hired by UH to be the representative during the design stage and follow the ship through construction to delivery. Selection of the design/construction team for the vessel is expected by late March/early April. Robert Hinton and representatives from ONR, the Oceanographer's office and NAVSEA will be selecting the design/builder. Phase one of the project is for design and model testing and is budgeted at $1M. Phase two is the construction phase and budgeted at $36M.

Results of The Glosten Associates' Study on Regulatory Changes - Glosten is completing a study on the effects of recent regulatory changes on new construction and more specifically whether or not an intermediate class research vessel can be economically built and operated under these rules. A draft of the study suggests that intermediate ships will need to be inspected vessels and comply with the new International Safety and Management (ISM) rules of the IMO. Glosten estimates that this will increase construction cost by approximately $800K. They also estimate that the total cost for an intermediate vessel to be approximately $18M. The Coast Guard's manning rules should permit reduced manning. The net could mean lower life-cycle costs. The draft report was briefed at the fall RVOC meeting and again at the November FIC meeting. The final report is expected soon.

The Council briefly discussed the implications of the new ISM regulations. Documentation requirements to be in compliance with the new regulations are very detailed. A large cost may be

involved in generating the documents. Under the new regulations, each ship operation group will need to identify a responsible shore-side individual. The Council recommended that Dennis Nixon be contacted to address the question of liability to the marine superintendent under the new regulations.

NOAA Fishery Needs - A brief discussion was held concerning the possibility that NOAA/NMFS may be interested in using UNOLS vessels for some of their fisheries needs if these ships are appropriately configured. The FIC is working on a set of science mission requirements (SMR) for the replacement of ALPHA HELIX. Consideration will be given in these SMRs for a fish research capability. The Council will await the results of the work by the FIC.

Long Term Utilization of the UNOLS Fleet - The discussion of long-term utilization of the UNOLS Fleet was discussed in the Town Hall Meeting agenda item above.

SEA CLIFF and ATV Retirement Plans - Sujata Millick reported that ONR has sent a letter to Admiral Krul indicating the academic community's interest in obtaining SEA CLIFF for science use. Once a decision is made by the Navy regarding SEA CLIFF's future, the agencies will consider funding an engineering study for the vehicle.

Retirement plans for the ATV have been off and on again over the past year. The Navy's plans are unknown at this time. Sujata indicated that the agencies will convene to discuss the vehicle's retirement plans in 1999 and potential future uses. Multiple parties have expressed an interest in operating the vehicle. She indicated that a visit to the facility would be worthwhile.

Application for UNOLS Membership - The Council accepted the University of California, Santa Cruz's application for UNOLS membership and forward their nomination for voting at the Annual Meeting, see ***Appendix XIII***.

Discussion on the membership applications for the New Jersey Marine Science Consortia and the Southern California Marine Institute will be deferred until the issue of how to address the membership by consortia is resolved.

Ship Scheduling Improvements - Jack Bash briefly presented viewgraphs (see ***Appendix XIV***) depicting the new Ship Time Request Form which will replace the original one on the web. This form is in two parts with the first part being prepared for the initial request and the second part completed when funding is confirmed or when a program manager requests its submission. Jack also presented the new world chart display that will track the requests as they are posted. A world chart will be available for each year's requests.

AGOR Z-drive Thruster Status - Dick Pittenger gave a brief history on the Z-drive failures to date, see ***Appendix XV***. He reported that WHOI will upgrade KNORR's lower gears and lower thrust bearing during the next shipyard period in March-April 1998. The upper gears will be inspected at this time. The Glosten Associates has been studying the Z-drive problems and it appears that the problems are

traceable to manufacturing defects and metallurgy. It was noted that none of the gears manufactured by Klinenburg have failed. All future orders of the gears will be to Klinenburg. Insufficient gear tooth contact may be responsible for some of the failures. A chart showing torque versus effective tooth contact was provided.

Dick pointed out that manufacturing for replacement gears takes thirteen months. This is unacceptable. KNORR and MELVILLE needs a ready set of spare gears. Funds have not been identified for the spares. The most recent failure of THOMPSON's upper gears is still a mystery. Inspection of the AGOR gears will be performed at every dry-docking opportunity.

Interim Fleet Improvement Plan - Ken Johnson reported that he will readdress the interim Fleet Improvement Plan for the next Council meeting.

Long Range Issues - Ken Johnson reported that he has been invited to attend a meeting at the Heinz Foundation, Ocean Science and Technology: The Next 25 Years. This will be held on February 6-7 in the NAS Beckman Center, San Diego. An array of leading oceanographers will present their view of the future. Ken will express the need for new technology and facilities to meet future research needs.

The Council discussed other long range UNOLS issues. It was recommended that UNOLS needs greater public relations. Articles in various magazines were suggested, including airline in-flight magazines. It was also recommended that UNOLS should submit papers to MTS for presentation at their conferences. A joint effort with Glosten was recommended. A summary of long range items included:

- Promote the UNOLS Fleet.
- Promote Town Hall Meetings.
- Bring ships to big cities for public tours.
- Conduct public outreach programs on inactive ships during lay-up period.
- Send ship articles/press releases to state newspaper agencies.
- Generate ship/ocean related videos for TV viewing.

It was recommended that a follow-up to the upcoming Town Hall Meeting might be a summary in EOS.

It had been suggested that formal presentations on technical issues with guest speakers might be useful for Council meetings. However, this has not been met with overwhelming support.

UNOLS Membership Activity - This issue was covered in the discussion on the UNOLS Town Hall Meeting.

UNOLS Brochure - Vicky Cullen, WHOI, has submitted a proposal to NSF for updating the UNOLS Brochure. Don Heinrichs reported that the proposal is working its way through the NSF review process.

ISM Regulations - Ken charged the RVOC to address the ISM issues. UNOLS will assist in any way.

New Ship Construction - Skidaway's plans for replacement of BLUE FIN are moving along. They are working on the contract wording to address ABS requirements. They have indicated that they are having some difficulties in finding a local shipyard for construction. They may end up having the ship built in Nova Scotia.

There has been no recent news from Miami on CALANUS replacement plans. It appears that they are working to match the design to the funding available.

Dick Pittenger reported that plans for construction of their small SWATH is moving along. A meeting is planned for the regional organization of the Gulf of Maine on 7 April to discuss potential modes of operation for the vessel.

UNOLS Calendar - It was recommended that the summer Council meeting be held at the W. Alton Jones Campus in Rhode Island. Availability of the facility will be investigated.

The meeting was adjourned at 2:30 p.m.

1/30/98

UNOLS COUNCIL MEETING

Monday, 2 February 1998
Tremont Hotel, Conference Room
Tuesday, 3 February 1998
Texas A&M Library
Galveston, TX 77550

Meeting Agenda

Call the Meeting: Ken Johnson, UNOLS Chair, will call the meeting to order at 8:30 a.m., 2 February 1998.

Accept Minutes of the September, 1997 Council Meeting.

COMMITTEE REPORTS: Ken Johnson will provide a brief summary of the UNOLS Committee written reports and open the floor to a question/answer period. (Prior to the meeting, Committee Chairs submitted written reports for distribution to meeting participants.) Chairs will identify any important issues that need to be addressed further by the Council.

AGENCY and OTHER REPORTS: Reports from agency representatives on funding outlooks, facility updates, and special projects:

Department of State - Tom Cocke
National Oceanographic and Atmospheric Administration - written report
National Science Foundation - Don Heinrichs
Naval Oceanographic Center - CMD Jim Trees
Oceanographer of the Navy - Pat Dennis
Office of Naval Research - Sujata Millick
Consortium for Oceanographic Research and Education - Capt. Daniel Schwartz

UNOLS ISSUES:

NSB Actions: ODP and Ship Operations - Don Heinrichs will report on NSF plans for review of academic ship operations. ***Enclosure 1*** is an e-mail message from Don Heinrichs dated 12/2/97 regarding this topic.

UNOLS Town Meeting - Ken Johnson will review plans and discussion for the UNOLS Town Meeting to be held at the 1998 Ocean Sciences Meeting on 12 February in San Diego.

Charter Review - Clare Reimers will introduce the recommended changes to the UNOLS Charter and structure as prepared by the ad hoc committee (***Enclosure 2***).

- Council Nominating Process Discussion - The terms of Ken Johnson, Chair; Tom Royer, Vice Chair; Dick Pittenger; and Robert Wall are expiring.

Clearance Issues - Discussion on Mexican Clearance Issues as reported in Bob Knox's e-mail message of 27 January.

AGOR 26 Construction Update - Sujata Millick will provide an update on the Navy's construction of AGOR 26, SWATH research vessel.

Results of The Glosten Associates' Study on Regulatory Changes - Jack Bash will review the results of the Glosten Associates' study regarding the impact of new USCG regulatory changes on new ship construction.

NOAA Fishery Needs - Ken Johnson and Larry Atkinson will provide an update on UNOLS activities related to fisheries oceanography platform needs.

Long Term Utilization of the UNOLS Fleet - Discussion on ship use projections for the future and expectations for NAVO funding in the outyears.

SEA CLIFF and ATV Retirement Plans - Sujata Millick will review plans for the future of DSV SEA CLIFF and ATV following their retirement from the Navy.

Ship Scheduling Improvements - Jack Bash will report on the progress of the improvements to the UNOLS ship scheduling process.

AGOR Z-drive Thruster Status - Bob Knox and Dick Pittenger will review the latest status of any AGOR Z-drive issues.

Interim Fleet Improvement Plan (IFIP) - Ken Johnson will present revisions to the Interim Fleet Improvement Plan.

Long Range Issues - Identification of long range issues for UNOLS Council attention.

UNOLS Membership Activity - Ken Johnson has been polling UNOLS Member representatives to determine why attendance was low at the Annual Meeting. Discussion on how to increase UNOLS participation.

Applications for UNOLS Membership -

- The University of California at Santa Cruz has applied for UNOLS Membership. A copy of their application is included as ***Enclosure 3***.
- The New Jersey Marine Sciences Consortium applied for UNOLS Membership in September. Discussion on the status of their application.

UNOLS Brochure - Update on plans for updating the UNOLS brochure.

New Ship Construction - Update on Skidaway's construction of R/V SAVANNAH. Update on plans for replacement of CALANUS.

Calendar for UNOLS Meetings:

MEETING	**LOCATION**	**DATES**
AICC	New Orleans, LA	21-22 Jan 1998
UNOLS Council	Galveston, TX	2-3 Feb 1998
UNOLS Town Meeting	San Diego, CA	12 Feb 1998
FIC	Woods Hole, MA	May 1998
Ship Scheduling Review	Arlington, VA	Spring 1998
DESSC	Woods Hole, MA	Spring 1998

- Ken Johnson will be attending the Heinz Foundation Meeting, Ocean Science and Technology: The Next 25 Years, Feb. 6-7, NAS Beckman Center.

Adjournment

Appendix II

Meeting Participants

NAME	AFFIL.	PHONE/FAX /INTERNET ADDRESS
Larry Atkinson	ODU	(757) 683-4926/(757) 683-5550/atkinson@ccpo.odu.edu
John Bash	UNOLS	(401) 874-6825/(401) 874-6167/unols@ gso.uri.edu
David Brooks	TAMU	(409) 845-3651/dbrooks@ocean.tamu.edu
Tom Cocke	Dept.of State	(202) 647-0240/(202) 647-1106/tcocke@state.gov
Annette DeSilva	UNOLS	(401) 874-6825/(401) 874-6167/unols@gso.uri.edu
Dennis Hansell	BBSR	(441) 297-1880x210/(441) 297-8143/dennis@bbsr.edu
Don Heinrichs	NSF	(703) 306-1576/(703) 306-0390/heinric@nsf.gov
Ken Johnson	MLML	(408) 755-8657/(408)753-2826/johnson@mlml.clastate.edu
Bob Knox	SIO/UCSD	(619) 534-4729/(619) 535-1817/rknox@ucsd.edu
Paul Ljunggren	LDEO	(914) 365-8845/(914) 359-6817/pwl@ldeo.columbia.edu
Sujata Millick	ONR	(703) 696-4530/(703) 696-2007/millics@onr.navy.mil
Don Moller	WHOI	(508) 289-2277x236/(508) 457-2185/dmoller@whoi.edu
Dick Pittenger	WHOI	(508) 289-2597/(508) 457-2185/rpittenger@whoi.edu
Barbara Prezelin	UCA, SB	(805) 893-2879/(805) 893-4124/barbara@icess.ucsb.edu
David Prior	TAMU	(409) 865-3651/dprior@ocean.tamu.edu
Claire Reimers	Rutgers Univ.	(732) 932-6555x236/(732) 932-8578/reimer@ahab.rutgers.edu
Tom Royer	ODU	(757) 683-5547/(757) 683-5550/royer@ccpo.odu.edu
Ed Shaar	TAMU	(409) 862-3290/(409) 845-6331/eshaar@ocean.tamu.edu
Tom Shipley	UTX, Austin	(512) 471-0430/tone@utig.utexas.edu
CDR. Jim Trees	Naval Ocg. Office	(228) 688-4370/(228) 688-5514/treesj@navo.navy.mil
Robert Wall	U. of Maine	(207) 799-7734 (home)

Appendix 3

UNOLS Committee Reports

RVTEC Report to UNOLS Council

The 5th annual RVTEC meeting was held October 27th through 29th at the University of Washington South campus facility in Seattle. Approximately 50 technician representatives from UNOLS operator institutions were present. Also present were representatives from Antarctic Support Associates and a delegation of five from the Coast Guard. Following introductions, minutes and reports of ongoing UNOLS committees and business the first discussion of the HEALY science testing program opened. Although we did not begin to formulate an actual testing plan at the meeting, several interested individuals were identified to undertake planning of various portions of the test plan.

Woody Sutherland (SIO) gave a report on the UNOLS/NAVO work. NAVO has been very satisfied with the quality of data and the cooperation received under this program. There will be a continuation of the NAVO work in 1998 with some $7.5 million of ship time involving several UNOLS Institutions. Dale Chayes (LDEO) and Rex Buddenburg of the Naval Post Graduate School, Monterey reported on the status of SeaNet. New players have come into the loop, there have been technology advances, and various institutions have gone their own way in efforts to achieve connectivity at sea. At this time most of the UNOLS ships are equipped to accomplish some degree of e-mail interchange while at sea. Ellen Kappel of JOI received a $1.5 mil grant from ONR in September to assemble the infrastructure and place prototype systems on ships. Following a two day work session at the Brookings Institution in September there has been progress toward the implementation of the system.

On day one, the meeting adjourned to the UW dock for a tour of the R/V THOMPSON and a reception hosted by the School of Fisheries and Oceanography.

Tuesday's session began with the meeting's major program, a tutorial on the various aspects of Marine Corrosion given by Mr. Bill Riffe of Marine Environmental Research, Inc. Bill has had many years experience in the field. He covered practical and chemical aspects of the corrosion process and gave anecdotal evidence of how it applies to our work.

Tom Wilson of SUNY presented a report from the On-line Resources subcommittee. The status of the RVTEC "Home Port" Web site was reported and a strawman proposal for the format of an on-line equipment database was discussed and suggestions solicited. A proposed RVTEC logo was also presented. A motion was made by Sandy Shor and seconded by Rich Findley to accept Tom's second design as the official RVTEC logo. The motion passed without dissent.

Rich Findley of University of Miami presented a report from the Long Range Instrumentation Planning Subcommittee. He described present models of data collection and distribution using sensors that are collected by a single computer and then distributed to clients computers on the network.

The afternoon ended with a discussion of the proposed RVTEC salary survey. The primary intent of this survey was to provide managers with an idea of industry averages throughout the UNOLS community and for use as a tool to justify salaries for shipboard technicians. There was some dissent regarding collection of the data and the need for such a survey although the majority clearly favored a survey. In the end it was decided that publication of the data was not a totally accepted idea and that the results would be kept at the UNOLS office and disseminated by request.

The meeting adjourned to Sea Bird for a plant tour and general question/answer session.

The final session on the last day opened with a discussion of the INMARTECH 98 international meeting.

Tom Wilson presented results of a comparison of broadband and narrowband Acoustic Doppler Current Profilers conducted aboard the R/V SEWARD JOHNSON.

John Freitag presented a verbal summary of a report he prepared for NSF on the current state of the market for Vessel mounted Doppler Current Profilers. Copies of the report will be included as an addendum to the RVTEC meeting minutes.

Tom Wilson presented preliminary information regarding beta tests of the SeaTrak GPS attitude/heading sensor. SeaTrak is being developed by Seagull Technology of Los Gatos CA with a planned release date of early 1998.

The final order of business was elections:

- Tony Amos was elected as Vice Chair, term to begin at the adjournment of this meeting and end at adjournment of the 1999 annual meeting.
- Tom Wilson was re-appointed as the chairperson of the On-line Resources subcommittee.
- Steve Poulos was re-appointed as the chairperson of the Data Standards subcommittee.
- Rich Findley was re-appointed as the chairperson of the Long Range Instrumentation planning subcommittee
- Don Moller was re-appointed as the chairperson of the Wire and Cable Specifications

subcommittee.

Following a short discussion on topics for next year, thanks were given to Neil Bogue (UW) and Mike Webb (NOAA-PMC) for co-hosting the meeting and the meeting adjourned at noon.

Other RVTEC activities of the past year have included preparations for INMARTECH 98 and coordination of HEALY science system testing:

INMARTECH 98 has been progressing to the point where hotel selection and meeting venues are presently under consideration. The meeting will be in La Jolla, CA. and hosted by Scripps. Present plans call for a four day meeting with one day reserved for UNOLS/RVTEC business and three days devoted to workshops and tours for the international group as well. We plan to follow an agenda similar to our normal RVTEC but offer some options in the workshops through the use of breakout sessions. We anticipate having a keynote speaker at the beginning of the meeting and a reception at the Scripps Aquarium. The meeting is planned for 19-22 October.

RVTEC is becoming involved in the science testing on the new Coast Guard Icebreaker, HEALY. Because HEALY is the first Coast Guard vessel with science written into its mission statement, the Coast Guard asked UNOLS and the AICC to be involved in both the science systems testing and scheduling of the vessel. Several testing proposals are in hand and we are in the process of requesting proposers to refine their documents in preparation for the next phase of the cruise planning. The next meeting is the planning meeting at CRREL in Hanover, NH on the 3-4 of February.

Respectfully submitted,
John Freitag,
Chair RVTEC

Report from the Fleet Improvement Committee - by Larry Atkinson

The FIC under the new Chair, Larry Atkinson, met in Seattle on 7-8 November. The report from that meeting was posted in the Fall 1997 UNOLS newsletter so I will just give highlights and some additional information.

Under the topic of Planning, Analysis and Communication, FIC will work in collaboration with the UNOLS Council to analyze trends in ship needs so we can better plan for the future. The analysis as they are done will be published so that the ship using community can better understand the evolving situation.

The Fleet Improvement Plan will be prepared in draft form by November 1998 and in final form by November 1999. Most importantly FIC members agreed that the report must face the political realities

of the time as we can best interpret them.

Science mission requirements are a vital part of the ship planning process. In times such as these when ships are suddenly and unexpectedly funded by Congress, we must have our requirements in hand. To this end we are involved in three SMR efforts.

1. ALPHA HELIX Replacement - ALPHA HELIX must be replaced in a few years and it seems clear that Alaska must have a research vessel. The SMR committee for the HELIX replacement is chaired by Dr. Tom Weingartner (U.Alaska, Fairbanks). Tom is putting together a committee of volunteers to address not only the oceanographic requirements but they must also address the issues of ice strengthening and fisheries research. We expect the draft report will be ready by the summer of 1998 and a final report will be ready by winter 1999. The committee will have contact with people familiar with ship design so the SMR process will not stray into impossible requirement scenarios.
2. East Coast Vessel - A replacement will be needed for an east coast vessel. The SMR process will utilize the findings of the 'Williamsburg Meeting" and other efforts that have occurred recently to address the coastal vessel issue. Dr. Larry Atkinson is chair of that committee.
3. Fisheries Research - Recently there have been discussions of the practicality of combining fisheries and oceanographic research on the same vessel. FIC will address that problem however, since the ALPHA HELIX replacement committee will be examining the problem in detail, this committee will not be formed until information starts to develop from the ALPHA HELIX SMR process.
4. Intermediate Vessel SMR - The SMR process for new intermediate vessels will also be on hold until the ALPHA HELIX replacement SMR is near completion.

FIC is making a determined attempt to include more ship users in the SMR process. To that end we asked for volunteers in the UNOLS newsletter and, surprisingly, got 11 volunteers.

Report from the RVOC Committee Chair - Paul Ljunggren

The 1997 RVOC Meeting was hosted by Woods Hole Oceanographic Institute from 21-23 October. Over 60 people representing 48 organizations were onhand for the meeting.
On the agenda were presentations/discussions on:

- The structural problems being experienced by MBARI with their SWATH vessel, WESTERN FLYER, were described and potential corrective measures were discussed.
- Marine Communications. - An over view was provided on the status of current and planned systems for extending the Internet to sea and what these systems will be able to offer. This was followed by a presentation on the recently funded SeaNet Project describing their program, projects, and services they plan to provide for extending the Internet to ships underway.

- Glosten Associates gave a presentation relating to a study they were conducting for UNOLS describing the impact of recent regulatory changes on future new construction of research vessels.

The 1998 RVOC Meeting will be held at the University of Hawaii. The dates for this meeting will be 4, 5, 6 November.

The Ship Inspection Program was resumed in 1997 after the contract for the program was awarded to Jamestown Marine Services. Inspections of seven ships were completed last year. I requested comments from the operators on the new inspection program and responses have been quite favorable. Operators were pleased with the quality of the inspection, the knowledge and experience of the inspectors, and the positive approach of the inspection process.

The following projects are currently ongoing within RVOC:

Safety Committee:

- Safety Video: A draft of the safety video script has been prepared and reviewed by the Safety Committee. Recommended changes have been forwarded to Jamestown Marine Services, the script is being revised, and will be reviewed by the committee one more time. Once finalized, shooting will starting shortly thereafter. Much of the filming of the video is expected to take place on R/V ENDEAVOR because of the proximity and current out-of-service status. Target date for release of this video is 1 July 1998. The project remains on schedule.
- RVOC Safety Standards: Work on the revision/update is underway. Committee members have been assigned responsibility for various sections of the Safety Standards. At this time review of all but one section has been completed. Once compiled the revisions will be submitted to RVOC for review. They intend to have the changes to the Safety Standards approved, printed and distributed by 1 January 1999.

Primer for Small Research Vessels:

David Powell of RSMAS has been corrdinating the project. The objective of this publication is to discuss the capabilities and mission requirments for small R/V's. Items to addressed include regulatory issues, design & construction, stability, safety, outfitting, insurance, and various hull forms.

At the RVOC meeting, David reported that he had received 50% of the material from the contributing authors. Since that time he reports continued progress although input is still required from authors of several sections.

Medical Standards Group:

A Medical Standards work group was established to formulate physical capabilities as they relate to job

performance, medical standards, and medical history questionaires for crewmembers. Fred Jones of Oregon State University recently assumed the duties of chair for this group.

Report from the Chair of the UNOLS Arctic Icebreaker Coordinating Committee to the UNOLS Council - 29 January 1998 by Jim Swift

The UNOLS Arctic Icebreaker Coordinating Committee (AICC) continues to provide scientific oversight of Arctic polar science support on US vessels, with primary focus on USCGC POLAR STAR, USCGC POLAR SEA, and the new USCGC HEALY.

The AICC accomplishes much of its business through a lively e-mail correspondence. Internal discussions are restricted to a private e-mail list, but all appropriate materials are also copied to an extended e-mail list that includes agency, Coast Guard, and community representatives. Meetings have been about every nine to ten months. The AICC held its most recent meeting 21-22 January 1998 in New Orleans, Louisiana.

The first day the meeting was held at the Avondale shipyard, where USCGC HEALY is under construction, and focused entirely on HEALY.

With respect to HEALY construction, progress has been good. Four AICC representatives and Don Heinrich attended the launch and christening on 15 November. This turned out to be a baptism as well: a major splash-back of water, mud, grease, and debris hit the part of the crowd where most of the UNOLS/NSF party was standing. Most unfortunately a number of people were injured, including 12 hospitalized. For the UNOLS/NSF group, none of whom were hurt, it was a never-to-be-forgotten event.

At the January 1998 meeting, the AICC tour of HEALY found a wild scene of construction and clamor in almost every compartment. The construction schedule may be lagging somewhat, but apparently not to any worrisome degree. HEALY's laboratories and staging areas are impressive. The AICC provided a number of comments to the Coast Guard, including observations that visibility of science operations areas from the bridge appears to be nearly nil, and that grappling with that may become a major ship operation issue for the Coast Guard. There were extensive discussions about provisions for coring, and the AICC recommended that the Coast Guard prepare the facilities so that HEALY can take cores shorter than ca. 20 meters from over the fantail, rather than from the starboard A-frame, so that the starboard area remains free for other activities on typical multi-purpose cruises. Cores longer than ca. 20 meters must be carried out over the starboard side due to ship layout considerations.

Delivery remains late 1998 with 1999 for shakedown and testing. Seattle has been designated as the HEALY home port, much to the relief of the AICC and most of the scientific community.

A special "hats off" to John Freitag, UNOLS RVTEC, and Jack Bash for a great start on preparations from the academic community for the HEALY science systems testing program. Quite simply, academic participation on this program, essential for preparations for HEALY's future mission, would not be coming about if it were not for them. John is overseeing community attendance at a series of test cruise meetings set up by NAVSEA and the Coast Guard. Tech groups have been identified for all primary science systems, and proposals are in progress. This appears to be accomplished in consensus mode; the AICC is not aware of any community dissension. The AICC has made a first cut at designing scientist oversight for the test program, and has recommended that legs be kept short. This will help minimize technical and science group expenses, and help make the objectives of each cruise leg clear to all hands. It was noted that some tests can be carried out in temperate waters, and that other test and oversight activities, such as those relating to the SeaBeam system, should begin at a very early stage.

The AICC has been discussing with the Coast Guard various means to help ensure close ties with the UNOLS technical and scientific communities, for example with an informal (unfunded) or formal (funded) liaison with oceanography technical support at the University of Washington. Discussions continue in a positive atmosphere, though without a specific plan or proposal as yet. The AICC notes as a very positive step that Coast Guard Marine Science Technicians are now including participation on short UNOLS cruises as part of their training.

The Coast Guard has a consultant working on science user manuals for its vessels, including HEALY. These are being directly patterned after various available UNOLS manuals. Jack Bash has noted to the Coast Guard that the way the global maritime community deals with instruction and documentation is changing, and that this may impact such manuals.

In other AICC business, during mid-1997 an announcement of a Science-of-Opportunity (SOO) mission for early summer 1998 on board USCGC POLAR SEA was issued to the community by the AICC, seeking letter proposals for participation. The AICC is charged with assessing these proposals for logistic and overall compatibility with the SOO mission. No decisions are made by the AICC with regard to participation, and AICC comments are specifically not to be used to leverage agency support for any proposal. The AICC has once again "ducked the bullet" because when all is said and done, it appears that everyone will be accommodated one way or the other, and the Coast Guard has yet to face the issue of "well, who do we tell can't go along?". A nine-page SOO assessment document from the AICC was distributed to the AICC (including the UNOLS Office), the Coast Guard science liaison, and all lead investigators. The AICC concurred with the recommendation of Lisa Clough as Chief Scientist for this cruise. The AICC's role in the 1998 POLAR SEA SOO cruise is thus complete, and remaining decision and discussions will be between the Coast Guard, Chief Scientist, and investigators.

The AICC was very recently informed that USCGC POLAR STAR may be able to carry out a Science-of-Opportunity mission off the Alaskan north slope in summer 1998, and the Coast Guard is exploring the possibility of a tie-in to SHEBA, perhaps with a transect close to the ice camp. Coast Guard discussions with the SHEBA Project Office have shown that the SHEBA group may have in mind specific logistical support such as exchanging personnel or removing cargo. Other possibilities mentioned include recovery of moorings and/or drifters. These are different concepts than providing

ship support for a group of scientists from SHEBA or ancillary programs who might not otherwise be provided an opportunity to carry out their program due to prior lack of such support. There is thus some question of exactly what science opportunities might be available. For example, if the primary mission became personnel transfers, then it might well be that no science berths would be available. The Coast Guard science liaison has noted that personnel transfers do not fit the Science-of-Opportunity concept, and specifically that the top priority for SOO cruises is exposing potential future paying customers to the use of the ship for science. The AICC is now debating via e-mail whether or not to issue a short-notice SOO announcement to the community. The announcement has been drafted, and is ready to circulate.

The AICC Chair notes that the committee much enjoys its productive and collegial relationship with the Coast Guard, including both the icebreaker operations group and the HEALY construction group. The attitudes are excellent and communications, while always benefiting from attention, are good.

The AICC has membership issues to resolve in the near future, and these will be attended to via e-mail discussions.

The next scheduled meeting of the AICC will be in New Orleans, probably in late 1998, though perhaps in early 1999. The dates will be set to fit the HEALY schedule so that a grand tour of the completed vessel can be scheduled as a central activity of the meeting. This meeting should provide a good opportunity for agency and community representatives to see HEALY, and learn more about the AICC and future plans. Hence the AICC might solicit and expect larger- and broader-than-usual attendance at this meeting.

Ship Scheduling Committee Report - by Don Moller

1998:

All schedules are locked in. All funded programs are accommodated with the exception of programs requiring ATLANTIS/ALVIN which was over subscribed for 1998 with three cruises deferred. Normal or routine schedule changes are anticipated for most vessels during the year.

Of note are:

1. Actions in response to "El Nino" events. (perhaps Bob Knox can expand on this)
2. Actions in response to recent "Juan de Fuca" event (WECOMA & NEW HORIZON).
3. MELVILLE adds two weeks of NRad time
4. Possible NOAA Mammal monitoring cruise in Pacific, @100 days:
    - Acoustics are an important consideration in choice.
    - NEW HORIZON and ENDEAVOR have responded.
    - Other non-UNOLS vessels being considered (US Army, ex-NOAA).

- Decision expected relatively soon. OAR is not in decision loop.

5. USN queries regarding ship availability in NE region on short lead times. Requests through NAVO and ONR. These were fishing expeditions basically asking "can you be of help?". None have been able to be accommodated.
   QUESTIONS ON THE SUBJECT: -
   Can we expect more inquiries of this general nature from the Navy labs or Navy contractors? If so, need to establish better lines of communication for these labs. (Perhaps Jim Trees and/or Sujata Millick could comment).

1999:

Review of 1999 ship time requests.

I have reviewed the requests for ship time on UNOLS vessels for CY-1999 that are currently available to the schedulers.

Sources of information are:

1. The UNOLS web site.
2. Paper (831) ship requests from UNOLS office, and operators.
3. Abstracts from proposals w/o ship time requests.

As of 0800R 1/28/98, I am aware of a total of approximately 200 individual ship time requests for 1999 of all types and forms. I judge that 100-120 of these requests are viable.

I defined "viable" as falling in the category of:

1. known funded cruises: stand-alone, time-series, GLOBEC-lumped as one cruise;
2. recently submitted proposals/831s, i.e., still subject to review;
3. proposals submitted to November 1997 panels with unknown results.

Large ships requests (non-ALVIN or ROVs) - Total =31 requests:
Atlantic- 7, Pacific- 21, Other (Indian Ocean, Black Sea)- 3
Principle use of ship- 28, Ancillary 3
EWING specific, i.e. MCS- 5
Of these 31 requests, 10 are funded or considered probable. Anticipate that an additional 10-15 ship requests will hit the system for CLASS I/II in the next month.

Programs with ROV operations (Jason, ARGO-II, DSL-120) not associated with ALVIN, i.e., can be run from a vessel other than ATLANTIS:
Total of 13
Atlantic- 3, NoPac- 8, Black Sea plus Indian Ocean- 2

Of these 13 requests, 4 are funded and the balance are pending. One funded program in each: Juan de Fuca, Mid-Atlantic Ridge, Indian O., Black Sea.

Notes:

a. Only Van Dover in Indian Ocean is potential work for BROWN
b. Ballard in Black Sea on C. CHOUEST is time constrained, June/July.
c. Additional 3 funded joint ALVIN/ROV-ops cruises should be run in 1999. (Sinton-SoEPR, Karson-Hess Deep, Blackman-MAR)
d. Vehicle scheduling complexities will exist in 1999 as existed in 1997. Likely the vehicles will be on 3 ships in 1999. Transitioning vehicles between ships will be a major time sink. Weather/ timing contraints exist.

INTERMEDIATES (w/ MOANA WAVE and SEWARD JOHNSON):
Estimate 30-35 viable ship requests
Atlantic- 10, Pacific- 20-25

GLOBEC is considered 1 request and likely to be 300+days, 2 ships, 1st half.
ECOHAB: No east coast work in 1999. West coast program is viable but no feel yet for # days.

Estimate 10 requests are funded or have high probability of funding. Anticipate 20-25 requests for this class, both oceans, from 15 Feb NSF proposal deadline.

SMALLER VESSELS:
Number of requests seem to be at the norm.

BIG UNKNOWNS:

- NAVO - no input yet. Optimistic - same as 1998, Pessimistic - 1/3 of 1998.
- NOAA - academic ship needs to be identified by end February 1998. Likely 200 days to
- Academic RVs including ECOHAB but not GLOBEC
- NSF- 15 February deadline will produce more requests. How many?????

UNOLS DEep Submergence Science Committee Notes for UNOLS Council meeting Feb 2, 1998 - by Mike Perfit

The new ATLANTIS has been on line since last Spring and has proved to be an excellent support vessel for ALVIN and the tethered vehicles. Demand for ATLANTIS and all deep submergence vehicles has been heavy which made scheduling very difficult for 1997-98. Nonetheless we were able to accommodate many of the programs on Juan de Fuca in the fall that had originally been scheduled for

THOMPSON, very few days were lost to weather and the 98 schedule now is now quite full. Some nagging problems still exist with ATLANTIS (e.g. thruster noise), but many will be fixed or improved during the current PSA (Post Shipyard Availability) and drydock in San Diego (Dick Pittenger will give details later).

Scheduling problems that nagged us last year seem to have abated for now. Potential problems still exist in accommodating expedition-type science to distant parts of the oceans as well as many established time-series programs in the traditional "Yo-yo" areas (MAR-EPR-JdF). Working together with DESSC, NSF has initiated internal actions to review their role in the selection of scientific projects and scheduling priorities. They will also review the process and focus of multi-year planning and strategic thinking. A management team of Don Heinrichs, Dolly Dieter, Dave Epp, Phil Taylor, and Bruce Malfait has been established to address this issue. (NSF rep. may elaborate)

Last Summer and Fall, DESSC requested that the Navy provide SEACLIFF and ATV for science use when they are decommisioned. WHOI plans to submit a proposal to perform an engineering study to evaluate the feasibility of integrating SEACLIFF and/or its components into the National deep submergence facility. As of the DESSC meeting in December, the Navy had not finalized their disposition plans for SEACLIFF and ATV. (Sujata Millick can hopefully provide some updates on this).

During the past few years, DESSC has been consumed in the planning activities associated with bringing a new support platform on line, and integrating ROV operations with the ALVIN operations. For the most part, the combined operations are working very well. Now DESSC is ready to start looking ahead at long-term facility needs. DESSC together with the community has begun to examine the types of deep submergence research that will be conducted into the 21st century and the facilities required to meet these science objectives. During the December DESSC meeting at the San Francisco AGU Meeting, there was a lot of lively discussion regarding future facilities and it appears the community is supportive of developing a new, robust ROV for science.

Facilities News

ALVIN battery power improvements have been made and are working well. There is approximately an 18% increase in power which results in approximately 30 minutes of extra bottom time per dive. A new deep submergence vehicle systems upgrade proposal has been funded by NSF which WHOI is presently working on. Many items are included in the upgrade the principal ones are: datalogging and video systems, additional buoyance for science sensors, vehicle systems upgrades, scanning sonar, inductive couple linked data transmission and temperature sensors and development of a virtual ALVIN which will serve as a training tool for pilots and can also be used for planning efficient power usage during operations.

WHOI is also addressing staffing plans for ROV flyaway operations will be hiring two new people to the Deep Submergence Operator's Group. The WHOI operators also plan to enhance operator/user communication by identifying a science liaison to oversee cruise planning/facilities use.

Archiving scientific data:

An Internal WHOI committee, Scientific Data Advisory Committee (SDAC), was set up in September to review all WHOI scientific data archiving policies and issues, including the National Deep Submergence Facility Archives. The committee along with the WHOI Marine Operations group recognized that the existing policy needs revision. There was much discussion about the policy and it was recognized that the community needs to know who holds the data and how to access it. WHOI hopes to be able to complete the archiving policy revisions and submit to DESSC and federal agencies for review and approval in the late Spring.

1998 Schedule:

The year begins with ATLANTIS in San Diego for its PSA period. From there, ALVIN operations are planned for off San Diego. This will be followed by Jason operations off Guaymas. ALVIN operations are planned for the Northern EPR to be followed by ALVIN operations at Juan de Fuca. In August, ALVIN operations are planned again off San Diego. For the remainder of the year ATLANTIS and ALVIN will be at the Southern East Pacific Rise for a series of programs, one of which will also require DSL-120. "Fly-away" ROV operations include one program in March in the Southern EPR using DSL-120 from MELVILLE. Three programs are scheduled from THOMPSON in August through October using Jason, ARGO-II and DSL-120 at Juan de Fuca and then off of Hawaii. (Dick or Annette might have a map of planned 1998 work sites.)

SUPPLEMENTAL INFORMATION

Long Range Planning (Operations)

Time-series vs. Expedition: It is clear that there will be a problem accommodating both time series work in addition to expeditionary type programs. PIs need to determine if their work can be carried out using ROVs. It was questioned whether it is the feasible to make ROVs usable for all time series programs.

New Deep Submergence Vehicle Construction and Facilities Upgrades: It appears that a suite of vehicles will be needed to accommodate future needs. There are a variety of issues which need to be addressed, such as, the operational limits and required support personnel. Substantial input and justification from the community is needed on whether or not a science dedicated ROV should be pursued. The community also needs to look at other types of vehicles such as AUVs as rapid response tools. Should these vehicles be included in the suite of science vehicles?

There was a discussion on how to approach long term needs and whether a workshop would be effective. It was suggested that perhaps a group of time series scientists could meet to discuss their facility needs. This group could produce a white paper with their recommendations. For the short term, an ROV system is likely to best suited to meet the varied needs of multidisicplinary researchers for both

expeditionary and time-series science We also need to look at what can be done to increase the current capabilities of ROVs. All viable ROV options should be carefully assessed. Aditionally, the community needs to be educated on how to effectively and efficiently utilize our deep submergence assets. The community needs to make decisions about upgrades to the existing facilities. It appears that a science dedicated ROV could bridge the gap between short-term and long-term needs.

The community and operator needs to explore funding strategies to implement required long-term new facility construction and short-term upgrade to existing vehicles. Agency, WHOI and private funding sources, or a combination, should be investigated.

Appendix IV

Ship Scheduling Statistics

Charge/Operating Days
(1995-1996-1997-1998)

	1995 Total	1996 Total	1997 Total	1998 Total
A-II / Atlantis	319	93 *	185 *	273 *
Ewing	310	315	273	95 *
Knorr	350	279	284	259
Melville	297	297	308	205 *
Revelle		80 *	268	295
Thompson	333	248	214	274
Edwin Link	175 *	166	214	238
Endeavor	228	147	201	0
Gyre	122	219	184	98
Moana Wave	195	144	202	190
New Horizon	240	174 *	259	221
Oceanus	167	168	208	235
Seward Johnson	271	304	284	233
Wecoma	145	198	199	220
Alpha Helix	144	73	118	180
Cape Hatteras	175	0	221	201
Cape Henlopen	198	185	206	200
Longhorn	72	130	46	58
Pelican	182	201	206	200
Pt. Sur	164	116 *	188	193
Sea Diver	180	132	105 *	74
Sproul	145	155	182	176
Weatherbird	154	187	151	154
Days	4586	4011	4733	4272
Barnes	77	86	126	107
Bluefin	75	96	82	146
Celanus	48	50	111	140
Laurentian	91	72	44	146
Urraca	0	0	0	173
Grand Total Days	4877	4315	5096	4984

* Overhaul or partial service

Note: Based on data available on 30 Jan.'98

D.A.M. - 2/2/98

- - - - Annual Breakdown of CHARGE DAYS - - - -
(by "program type")

	1995	1996	1997	1998	Total
WOCE	350	71	190	0	611
JGOFS	333	17	80	116	546
MGG	675	801	606	631	2713
OTHER	246	421	676	654	1999
Total	1609	1310	1552	1401	5872
ALVIN	319	93	167	266	845
ROV	0	104	134	257	495

2/2/98 - DAM

UNOLS FLEET CHARGE DAYS

(by Agency & Year)

		1995	1996	1997	1998
NSF	Days	3249	2738	2909	2797
	%	66.6	63.5	57.1	56.1
ONR	Days	403	454	499	367
	%	8.3	10.5	9.8	7.4
NOAA	Days	354	145	378	362
	%	7.3	3.4	7.4	7.3
NAVO	Days	0	0	373	479
	%	0	0	7.3	9.6
OTHER	Days	872	978	937	979
	%	17.9	22.6	18.4	19.6
TOTAL	Days	4877	4315	5096	4984

2/2/98 - DAM

Appendix V

NOAA Report

A NOAA Update for the February 1998 UNOLS Council Meeting - Galveston, TX

With regret, our individual schedules prevent us from sending a NOAA representative to the UNOLS Council meeting in Galveston in February. Consequently, I will attempt to provide the Council with some cuffent items of interest about what's happening in the NOAA Fleet.

RONALD H. BROWN is presently conducting operations on the Atlantic Climate Circulation Experiment and will begin Post Shipyard Availability (PSA) upon return the end of February. Following PSA, the ship will depart for the Ocean-Atmosphere Carbon Exchange Study (OACES) in the North Atlantic. Of particular note, because of extreme difficulties in acquiring pier space in Lisbon for Year of the Ocean at the time requested, BROWN will NOT be participating in the Nautical Exhibition and will not inport in Lisbon. NOAA ship time requests for FY 1999 and FY 2000 have been received and we are presently drafting a schedule to the Indian Ocean which will include a UNOLS cruise.

The KA'IMIMOANA A-76 solicitation was released in early December. At least ten industry responses have been received so far. The solicitation period closes February 27 with final award scheduled for April. IF, there is turnover to contractor operation, it would occur in late August.

A major repair period is underway on the fisheries vessel Oregon H which services the Gulf of Mexico. A Phase I refurbishment contract (3 and half month shipyard period) on RELENTLESS will be awarded shortly. Phase H (4 month shipyard) is expected to start in October. RELENTLESS will replace CHAPMAN in the summer of 1998 to conduct fisheries research in the Gulf of Mexico. Negotiations are continuing between National Marine Fisheries Service and U.S. Geological Service on use of WORTHY for tropical Pacific tuna-dolphin surveys in 1998 and beyond. An FRV feasibility package has been completed and distributed internally for the possible construction of new fisheries vessels.

On ship disposal: NOAA is in the final process of title transfer of ex. NOAA Ship SURVEYOR to new owners. Title transfer follows the successful completion of the required PCB remediation work. The new owner will be USS, Inc., 2650 NE Hwy 20, Suite G60, Bend Oregon, 97701. The current plan by USS, Inc is to offer the ship for sale for refit..... or lacking success in that effort proceed to scrap the vessel. MALCOLM BALDRIGE is undergoing remediation and DISCOVERER is planned for disposal.

Since Tom will probably discuss, I will just say that the sovereign immunity issue with Mexico is stiff under negotiation between NOAA General Counsel, DOS and USN.

The NOAA Corps is still here and permission to recruit is expected soon.

Respectfully submitted,
Commander Elizabeth White, NOAA
January 26, 1998

Appendix VI

NSF Viewgraphs

UNOLS Council, February 1998
NSF Report

Staff

- Robert Corell, Assistant Director for Geosciences appointment extended to December 31, 1999.
- Rita Caldwell, University of Maryland, nominated for Deputy Director, NSF

Program Issues

- Modification/expansion of technical support for shared use instrumentation and data acquisition systems under consideration
- Guidelines for OCFS proposals to be updated/modified.
- Oversight committee (Committee of Visitors) recommends increased focus on "end-to-end" services and "quality of support" for ship operations in service of science projects.
- National Science Board (NSB) mandated review of current system for academic research fleet operations with emphasis on exploring more "cost-effective" methods of managing research ship operations

NSF Budget Request - FY 1999

(figures in millions)

	FY 1998	FY 1999	Increase	Percent
Research and Related Activities				
Biological Sciences*	370.82	416.52	45.70	12.3%
Computation and Information Sciences	307.17	329.64	22.47	7.3%
Engineering	357.97	400.55	42.58	11.9%
Geosciences	455.11	507.31	52.20	11.5%
Math & Physical Sciences	715.71	792.03	76.32	10.7%
Social & Behavioral Sciences	130.66	150.26	19.60	15.0%
Polar Sciences	228.53	244.96	16.43	7.2%
Critical Tech. Institute	2.73	2.73	0.00	0.0%
	$2,568.70	**$2,844.00**	**$275.30**	**10.7%**
Education & Human Resources	**$632.50**	**$683.00**	**$50.50**	**8.0%**
Major Research Equipment**	**$109.00**	**$94.00**	**($15.00)**	**-13.8%**
Administration/Operations	**$141.80**	**$152.00**	**$10.20**	**7.2%**
NSF Total	**$3,452.00**	**$3,773.00**	**$321.00**	**9.3%**

*BIO includes $40.0M for Plant Genome Research
**MRE includes $31.0M for MPS projects, $42.0M for Polar Sciences projects, and $21.0M for GEO projects

NSF Budget Request - FY 1999

(figures in millions)

	FY 1998	FY 1999	Increase	Percent
Geosciences				
Atmospheric Sciences*	153.82	170.22	16.40	10.7%
Earth Sciences	95.13	106.70	11.57	12.2%
Ocean Sciences	206.16	230.39	24.23	11.8%
	$455.11	**$507.31**	**$52.20**	**11.5%**

	FY 1998	FY 1999	Increase	Percent
Ocean Sciences				
Ocean Sciences Research Support	112.15	127.50	15.35	13.7%
Oceanographic Centers & Facilities	52.26	56.96	4.70	9.0%
Ocean Drilling Program	41.75	45.93	4.18	10.0%
	$206.16	**$230.39**	**$24.23**	**11.8%**

*MRE account includes $21.0M for Polar Cap Observatory

NSF Ocean Sciences Priorities - FY1999

Ocean Sciences Research Support - $127.50 M

- enhanced support for individual investigator research projects
- expanded support for interdisciplinary studies of Life in Extreme Environments (LExEn)
- increased support for coastal ocean process studies
- increased support for field programs in earth system history and ecosystems research
- expanded modeling and data assimilation efforts for ocean circulation and ocean flux studies
- joint effort with Earth Sciences for more focused studies of continental margins
- continue long term process studies of deep ocean systems and amplify efforts to develop new technologies and instrument systems for "seafloor observatory" capabilities
- additional funds for projects of significance to society in partnerships with national consortia such as National Oceanographic Partnership Program (NOPP) or with international funding agencies such as the European Union.

NSF Ocean Sciences Priorities - FY1999

Oceanographic Centers and Facilities - $56.96 M

- provide support for academic research fleet at level to ensure required ship time and capabilities are provided to satisfy research project requirements
- enhance technical and shared-use instrumentation support for research projects to reduce burdens on sea-going scientists
- continue maintenance and ship-improvement programs for modern and efficient academic research fleet.

Ocean Drilling Program - $45.93 M

- enhance operational support to ensure research project requirements are met
- complete refit of the JOIDES Resolution
- enhance support for research project awards with focus on earth system history and continental margin studies.

Appendix VII

NAVO Report

Metrics

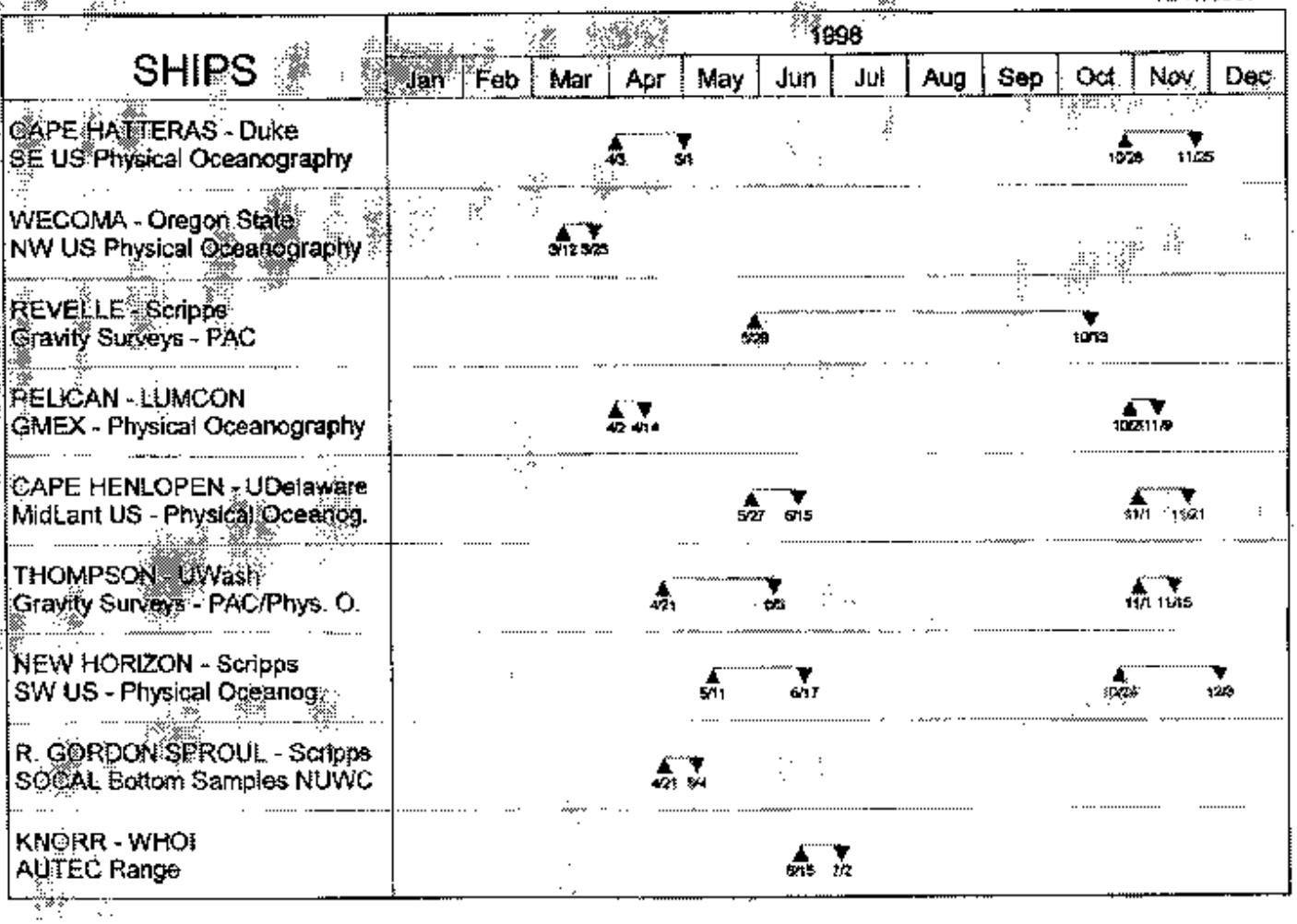
1997		1998	
➠ **Ship days**	**393**	➠ **Ship days**	**431**
➠ **Funds**	**7.5M**	➠ **Funds**	**7.5M**
↳ Ships	6.2M	↳ Ships	6.6M
↳ Other	1.3M	↳ Other	0.9M
➠ **UNOLS Institutions**	**8**	➠ **UNOLS Institutions**	**7**
➠ **Ships Used**	**12**	➠ **Ships Used**	**8**

UNOLS 98 Planned Operations

CAPE HELOPEN	**42 Days**	**Physical Oceanography**
CAPE HATTERAS	**56 Days**	
WECOMA	**15 Days**	
PELICAN	**24 Days**	
REVELLE	**135 Days**	**Gravity Survey**
THOMPSON	**60 Days**	**Gravity/Physical Oceanography**
KNORR	**19 Days**	**AUTEC Range update**
NEW HORIZON	**80 Days**	**SCORE Range update/Physical Oceanography**

1998 UNOLS SHIP SCHEDULES - NAVOCEANO

10/17/1997



ASW Improvement Program/UNOLS

- **Pacific Fleet shallow water range**
  - Mission need statement - CNO N8 Apr 94
  - Top 4 priority on LANT/PAC consolidated top 10 list
- **Score Range**
  - Expanded requirement to include Amphibious Opposed Landing site
  - Expanded instrumented shallow water weapons test range and diesel submarine simulation training area
  - Increased emphasis on "choke point" scenarios including exercise assessment of tactics
- **AUTEC Range**
  - Hydrophone update, first ever replacement and upgrade (FY 98)
- **Onslow Bay**
  - Update entire range, priorities and requirements (FY 99)

Appendix VIII

USCG Report

UNOLS COUNCIL MEETING
U.S. COAST GUARD AGENCY REPORT
03 FEB 98

USCGC POLAR SEA will be making a shake down/science of opportunity cruise from 27 APR to 09 JUL 98. This cruise will also involve participation in a Russian-led oil spill exercise off of Sakhalin Island at the beginning of the trip. The science party is made up of approximately 20 PIs and students. Lisa Clough has been assigned as Senior Scientist.

USCGC POLAR STAR has recently been scheduled for a two month Arctic trip, departing Seattle on 09 JUL. She will be operating off of Pt Barrow and will be involved with some SHEBA support. There is space for science of opportunity. Interested parties can contact Dr. Phil McGillivery, Pacific Area Coast Guard Science Liaison Officer, at (510) 437-5355.

USCGC HEALY construction continues at Avondale Shipyard. Although the Coast Guard has not been formally notified, it appears that a two-three month delay in delivery is likely, possibly as late as 31 May 99. This development retnoves any slack time from the 1999 schedule for crew training and ice trials. An ice trials planning conference is scheduled for 03-04 FEB at the Cold Regions Resemh and Engineering Laboratory to address a wide variety of testing demands. The Coast Guard is proceeding with plans to meet the summer 1999 ice trials schedule so that an unrestricted Arctic science cruise can be accomplished in 2000.

CRUISE PLANNING GLTIDES and SHIP REQUEST FORMS for the Polar Class ships and HEALY are being completed by a contractor and will emulate those of other ships already posted on the Web.

MST TPAINING: Coast Guard Marine Science Technicians (MSTS) have made a number of cruises on UNOLS vessels in the last five months. This idea was broach at the SEP97 UNOLS Council meeting and has been enthusiastically embraced by both the Coast Guard and the UNOLS members. The Coast Guard is most appreciative of this exchange and plans to continue the practice as a standard training requirement for our technicians.

CIVILIAN TECBNICIANS: The Coast Guard recognizes the need to continuously irnprove the level of support available to the science community aboard the Polar Class ships and on HEALY when delivered. The preferred alternative is to properly train our crews to deliver on par with LTNOLS fleet technicians. At present, there are no plans to have regular civilian employees or contractors working on Coast Guard ships. Contract personnel are expected to be involved in HEALY science testing cruises.

Final decisions regarding HEALY staffmg will evolve from the these events.

COAST GUARD HEADQUARTERS STAFF OCEANOGRAPHER: The Office of Personnel Management has a current announcement seeking applicants for the Coast Guard's "Marine Science Specialist GS-12/13" (Announcement no. AR0301). The closing date is 16FEB98. Interested parties can review the announcement on the OPM Web Page. HTTP://www.usajobs.opmgov and contact CDR DuPree for @er information. Wide dissemination of this opening would be highly appreciated.

CDR George DuPree
Chief, Icebreaking Division

Commandant (G-OPN- 1)
U.S. Coast Guard Headquarters
2 1 00 Second St. SW
W@gton, DC 20593-0001
(2D2) 267-1456
gdupree@comdt.useg.mil

Appendix IX

Academic Research Fleet Operations and Resolutions

NSB-97-224
November 13, 1997
RESOLUTION APPROVED BY THE NATIONAL SCIENCE BOARD AT ITS 346TH MEETING, NOVEM:BER 13, 1997 CONCERNING COMPETITION, RECOMPETITION AND RENEWAL OF NSF AWARDS

Whereas the Committee on Programs and Plans has outlined, at its meeting on November 13, 1997, the major principles and key issues in a report "CompetitiorL, Recompetition and Renewal-of NSF Awards: (NSB 97-216) in the context of the various types of NSF Awards; and

Whereas the Committee on Education and Human Resources concurs in the principles articulated in the report;

Now, therefore, be it RESOLVED, that the National Science Board:

Affirms its strong support for the principle that expiring awards are to be recompeted unless it is judged to be in the best interest of U.S. science and engineering not to do so. This position is based on the conviction that peer-reviewed competition and recompetition is the process most likely to assure the best use of NSF funds for supporting research and education. And Requests that the Director, NSF, take such steps necessary to ensure that NSF practices embody this principle.

NSB Statement
on
Competition, Recompetition and Renewal of NSF Awards

The commitment to merit-reviewed competition within the context of NSF's merit review criteria is a hallmark of the NSF grant/award making process. The principle of expiring awards to be recompeted follows from the conviction that peer-reviewed competition and recompetition is the process most likely to assure the best use of NSF funds for supporting research and education.

NSF awards range in size and complexity from individual investigator and small group awards, to large groups, centers, and to construction, operation and research use of national and international facilities. This paper outlines the major issues associated with competition, recompetition and renewal in the context of the special characteristics of the several categories of NSF awards:

1. individual investigators and small groups;
2. large groups;
3. centers;
4. construction, operation and research use of facilities for national and international user communities;

1. Individual Investigator and Small Group awards:

These represent, by nunber, the great majority of NSF awards. They are made typically for three years, in response to peer review assesmnents of proposals. Renewels require peer review of proposals and survival in the competition with every other proposal submitted for in the same research area. No special additional measures are required to assure competition. The key critieria are always those specified by NSF and approved by the NSB (reference the recent Grant Proposal Guide); management issues, per se, do not play a significant role.

2. Large Group Awards

Some large university groups receive continued funding over extended periods. It is important to periodically reassess these Large Group Awards (LGAs) to determine in which areas continuation may be needed and appropriate. One special issue in evaluating LGA renewal proposals is the need to determine whether individual. members continue to ment support. Another is that several subgroups may be funded under the large group umbrella, making it necessary to determine whether the subgroups individually merit funding. There is a concern that the group can buffer individual members and subgroups from competition unless NSF staff make special review arrangements. This raises concerns about management within the LGA..

We suggest that a review procedure be defined for LGA renewal/ recompetition, and that this procedure be reflected in an LGA-review form. The procedure should address explicitly reviews of any sub-groups within the LGA, as well as the question of whether otherwise less-than-competitive individuals are being supported. The LGA review should also ascertain whether sub-goups, if present, interact synergistically in important ways. The results of the reviews and the judgment of staff concerning the appropriateness of LGA support will determine whether a call for competing proposals should be announced.

3. Centers:

Many, but not all, center awards are limited to a maximum duration - typically on the order of 10 years - after which continued funding requires success in open, merit-reviewed competition The initially funded proposals are selected on the basis of merit review, and progress is monitored periodically to determine subsequent funding levels. Some center programs do not have explicit recompetition requirements. Among those that do, there is wide variation as to whether, and the extent to which, past performance is taken into account in evaluating recompetition proposals. We suggest that specific guidelines be established for the review and renewal of centers, with the aim of making the procedures as uniform and explicit as practicable. These procedures should also address the issue of phase-down of support for centers which are not in fact renewed.

4. Major Facility Awards

The complexity of these awards, and the associated community requirements, necessitate special considerations in implementing the NSF goal of full competition/recompetition. In all cases, it is essential that NSF determine periodically whether a particular facility still represents the best use of NSF funds.

a) Construction Awards:

These awards result from and require demonstrated community consensus that the facility is needed for progress in an important, high priority area of research. The decision to support a specific initial construction project or upgrade is based on the results of outside assesmnents of the scientific and technical merits of a detailed proposal, and proposed awards require NSB review and approval. Only in rare cases has NSF organized competitions to determine the awardee. Rather, the organization that developed the facility concept and secured community interest in its construction submits a unique proposal, and that organization assumes responsibility for construction, often subcontracting out all or part of the work. The subcontracts are often awarded on the basis of a competitive bid process. Through cooperative agreements NSF and the awardee normally share responsibility for monitoring progress through semiannual (or more frequent) technical reviews. We believe these procedures to be sound, but the increasing complexity of many construction projects dictates increasing attention to oversight.

b) Operation Awards:

Management of facility operations typically devolves on the organization that developed the facility concept and managed the construction phase. In a few cases this function is recompeted periodically. More generally, it is not. Unlike Centers, these facilities are often 'immovable'- or located at a unique site - and dependent for successful operation on a dedicated staff who are not interchangeable with scientists and engineers at other institutions. A further complication is that the facilities are sometimes established or upgraded with substantial cost-sharing by a host institution. In all cases there are organizational and management issues involved with the operation of large facilities, and hence NSF finds it necessary to conduct management reviews (as distinct from science reviews) at regular intervals and to provide feedback to the managing organizations, which also conduct such reviews. Occasionally, these reviews lead to the decision to recompete the management of the facility; the circumstances under which this could occur, as well as its consequences, need to be well-understood by all concerned. It is important that NSF provide proper guidance on how best to conduct these management reviews, along with defined review criteria and review forms. In particular, supplemental criteria addressing management issues should be used.

Even in cases where the management has been explicitly and rigorously reviewed and found to be effective, the benefits of competition may outweigh any short-term disadvantages of recompetition. NSF must determine periodically whether there is a better approach to managing the facility. The issue of a possible recompetition should be explicitly addressed as a regular part of the decision process for every such award.

c) Support and Research Staff at Major facilities

Major facility awards often include to support research by facility staff. Organizations such as NCAR, NRAO, NOAO etc., as well as a number of university-based facilities, employ substantial numbers of scientists and engineers. To the extent that these staff are essential to the operation and effective research use of the facility, their support should be reviewed in the context of the management assessments discussed above. The distribution of staff efforts between user services and research should be examined periodically.

Allocations of resources for staff research should be governed by rigorous merit review based on the standard NSF criteria. Many NSF programs impose additional supplemental criteria and these should be applied uniformly to external and in-house users of the facility, whether the is provided by the facility or directly by NSF. In the case of in-house users NSF may wish to delegate responsibility for conducting this merit review to facility management, while retaining responsibility for oversight. The Board recognizes that the mechanisms best suited to implement these principles may vary from facility to facility.

d) Special Rules for FFRDCs

For those NSF facilities that have the status of "Federally funded Research and Development Centers (FFRDCs), including several facilities listed above, special requirements apply to recompetition and renewal. These are spelled out in the FederalAcquisition Regulations, Part 35. Specific requirements for reviews include examination of the sponsor's continuing technical needs, consideration of alternative sources to meet those needs, assessment of the efficiency and effectiveness of the FFRDC in meeting the sponsor's needs and adequacy of the FFRDC management, and determination that the criteria under which the FFRDC was established continue to be satisfied. Such reviews must take place at least once every five years.

Academic Research Fleet Operations and Management Review

Context

- National Science Board reviewed request for continuation of Oceanographic Research Vessel and Submersible Operations awards for 5 years in November, 1997.
- Operations awards were approved for a shorter duration -- 2 years, 1998 and 1999.
- NSF staff are to review and report back on the cost-effectiveness of the present and possible alternative methods of managing ship operations
- Review procedures will follow principles outlined in NSB Resolution concerning Competition, Recompetition, and Renewal of NSF Awards for facilities operations (NSB 97-224).

Academic Research Fleet Operations and Management Review

Action

- Establish Academic Research Fleet Operations Review Panel
  - Six to eight members
  - Academic, industry, and government representatives

- Provide a comprehensive and balanced evaluation of science support services and capabilities, ship operations, and size and organizational structure for the support of the academic research fleet.

- Recommend actions by NSF to ensure the most cost-effective means of organizing and managing the research fleet for support of research requirements.

Academic Research Fleet Operations and Management Review

Terms of Reference

1) Review and evaluate the current and projected research vessel fleet required for research sponsored by the National Science Foundation within a national framework that includes research requirements of other federal agencies, state and local governments, and private sources.

   This review should be done in the context of environmental and geoscience research, in general, and the specific contributions the Academic Research Fleet provides to the research enterprise as a whole.

   Specific issues include:

   - Do the capabilities and operating modes of the academic ships meet research requirements?
   - Are the number of ships overall, and distribution within size categories, consistent with the level of research support and type of seagoing research projects expected in the future?
   - Are specialized capabilities required to meet research priorities adequately included in the overall fleet profile?

Academic Research Fleet Operations and Management Review

Terms of Reference

2) Review and evaluate overall management structure of the Academic Research Fleet; review and evaluate existing capabilities and services provided by the operating organizations; and review and evaluate possible future changes in academic fleet operations to ensure optimal operations of the academic fleet to support research requirements.

The review context should include consideration of the distributed ownership of the fleet, cost sharing for both capital acquisition and operations and requirements of multiple research sponsors who participate in scientific, operational and financial support.

Specific issues include:

- Are organizational arrangements and structures appropriate?
- Can the Academic Research Fleet system be managed in a more cost-effective manner?
- Should elements of the research fleet be recompeted?

Academic Research Fleet Operations and Management Review

Terms of Reference

3) Provide recommended actions by NSF to improve the organization, management, and cost effective operation of the Academic Research Fleet in support of scientific capabilities required to maintain world leadership in ocean and environmental science research.

   The recommendations should be formulated in the context of the results of the review and evaluations of the first two terms of reference. Key elements include providing a perspective on Academic Research Fleet operations within a national context, relevance and quality of scientific, educational, and technical support; and benefits and added value of any recommended actions for peer reviewed competition or recompetition of research fleet components.

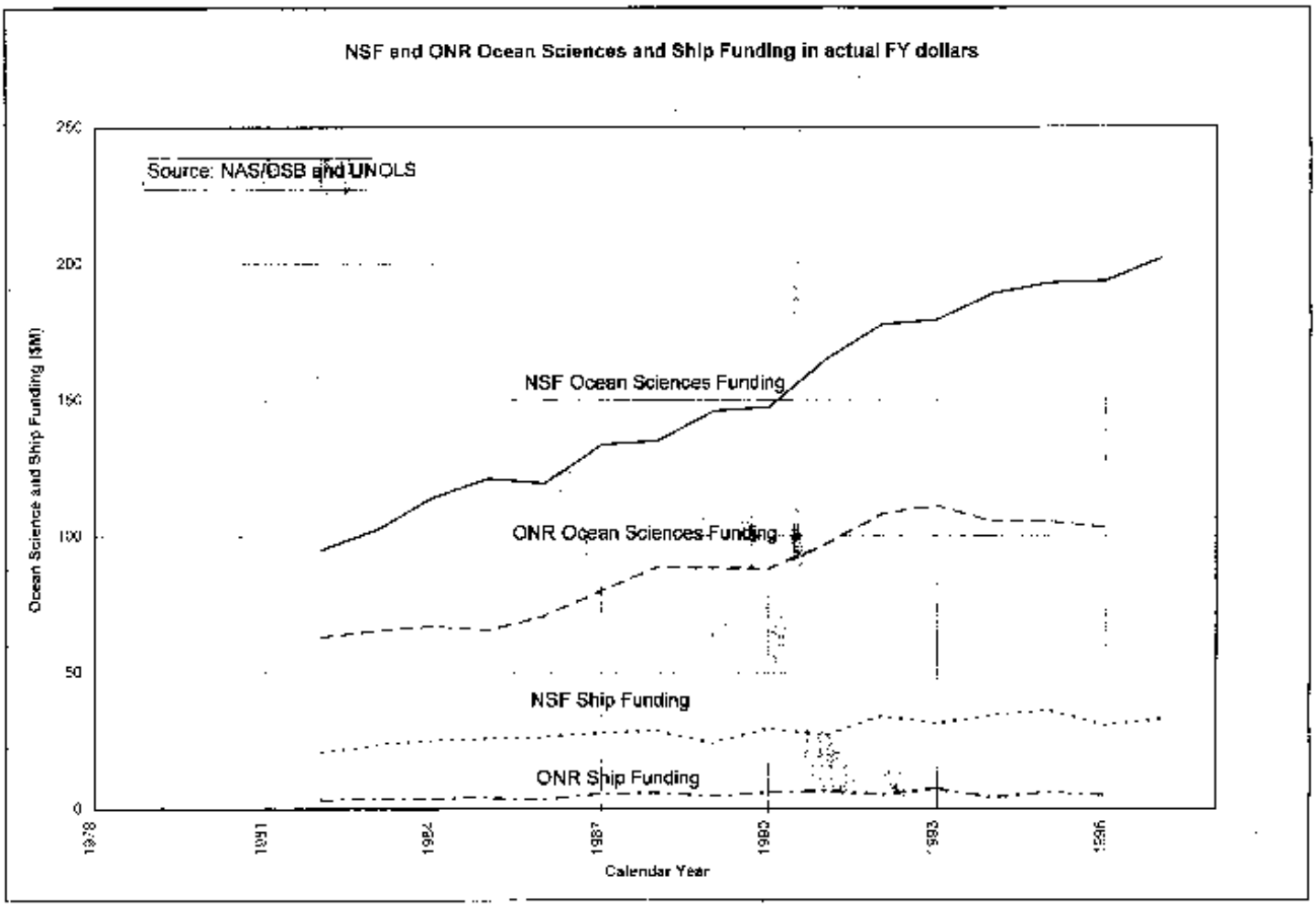
Academic Research Fleet Operations and Management Review

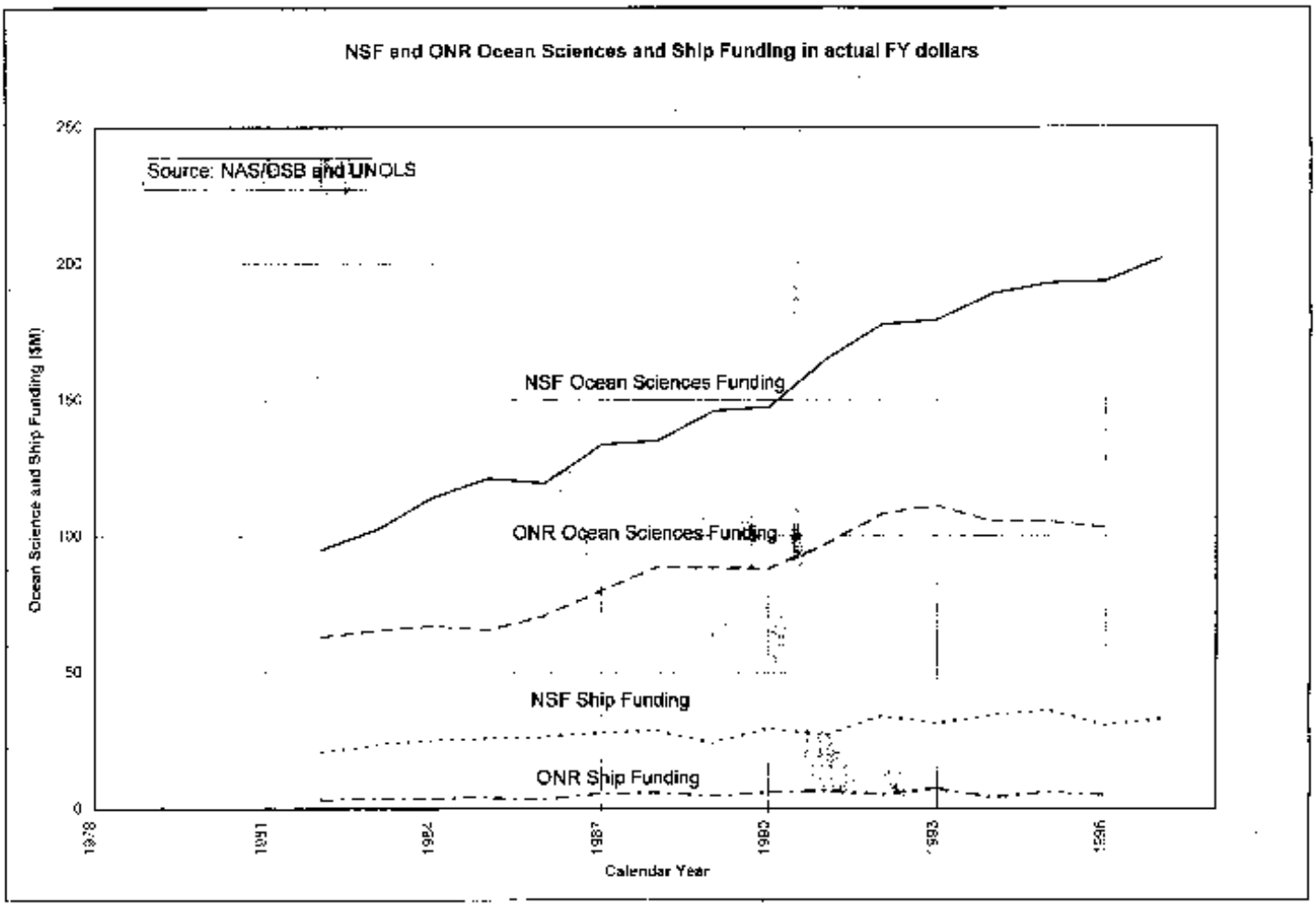
Schedule and Report

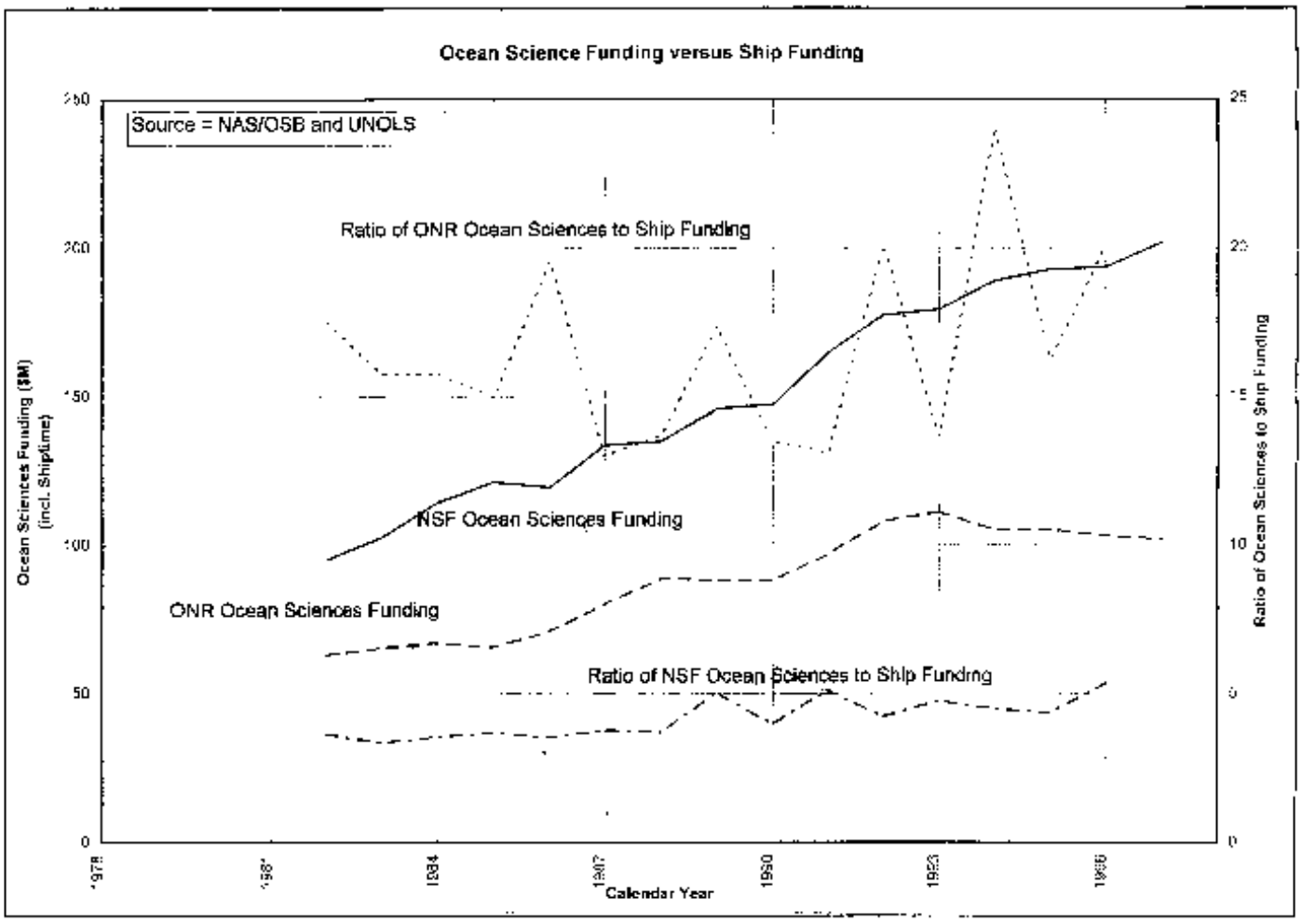
- February 1998
  - NSB concurrence with review plans and schedule
- March 1998
  - Complete review committee appointments
- May - November 1998
  - Committee meetings
  - Formal input from:
    - UNOLS Advisory Structure
    - Federal Oceanographic Fleet Coordination Committee
    - Ship Operator Institutions
    - Sea-going scientists
    - Science programs
    - Industry
    - Office of Naval Research
- December 1998
  - Committee report and recommendations
- February 1999
  - NSF management response to NSB
  - management issues
  - cost issues
  - recompetition issues
- May 1999
  - Renewal of operations awards authority beyond 1999
  - Process and schedule to implement NSF management actions.

Appendix X

ONR Viewgraphs of UNOLS Fleet Statistics




NSF and ONR Ocean Sciences and Ship Funding in actual FY dollars
Source: NAS/OSB and UNOLS
NSF Ocean Sciences Funding
ONR Ocean Sciences Funding
NSF Ship Funding
ONR Ship Funding
Ocean Science and Ship Funding ($M)
Calendar Year
0
50
100
150
200
250
1978
1981
1984
1987
1990
1993
1996


Ocean Science Funding versus Ship Funding
Source = NAS/OSB and UNOLS
Ratio of ONR Ocean Sciences to Ship Funding
NSF Ocean Sciences Funding
ONR Ocean Sciences Funding
Ratio of NSF Ocean Sciences to Ship Funding
Ocean Sciences Funding ($M)
(incl. Shiptime)
Ratio of Ocean Sciences to Ship Funding
Calendar Year
0
50
100
150
200
250
10
20
25
1934
1950
1993

Appendix XI

Glosten Swath Report

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195-7940

School of Oceanography
Box 357940

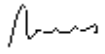
January 21, 1998

Dr. Kenneth Johnson
Moss Landing Marine Laboratory
PO Box 450
Moss Landing, CA 95039

Dear Ken,

I have enclosed two documents which you should feel free to share with the UNOLS Council. The first is a letter summarizing the findings of the conceptual design study Glosten conducted for us along with the relevant drawings. (We also have the details of their analysis, but it is not light reading and I have not included it.) The second document is a discussion of the seakeeping and operability of a SWATH vessel of the size we examined. If you have questions after reading the material, give me a call.

Sincerely,



Russell E. McDuff
Associate Professor
Associate Director

RMcD/ag

Telephone: 206-543-3056(a.m.), 206-685-1947 (p.m.); Fax: 206-543-0073
Internet: mcduff@ocean.washington.edu
URL http://www2.ocean.washington.edu/rmcd.html

GLOSTEN
The Glosten Associates, Incorporated

26 November 1997
File No. 97163

Post-it® Fax Note 7671 | Date 26 NOV | # of pages ▶ 7
To UW | From BILL HINTON
Co./Dept. ROBERT HINTON | Co. GLOSTEN
Phone # | Phone #
Fax # 543-6073 | Fax #

Mr. Robert Hinton
Manager of Marine Operations
School of Oceanography WB-10
University of Washington
Seattle, Washington 98195

Subject: Feasibility of SWATH research vessel

Reference: 1. NAVSEA CBD announcement of 23 October 1997 regarding a SWATH oceanographic research vessel

Dear Robert:

As you have requested we have conducted a brief conceptual design study to determine the feasibility of designing and building a SWATH research vessel at a U.S. shipyard to meet the following requirements:

- Cost ≤ $35 M (actual construction cost)
- Range ≥ 6,000 n.m. at 12.5 knot cruising speed
- Scientific Mission Payload ≥ 100 L.T.
- Crew ≤ 15 persons
- Scientific Party ≥ 26 persons
- Classification: ABS (assumed)
- Certification: U.S. Coast Guard, SOLAS and MARPOL
- Seakeeping capability: unlimited ocean service

Our efforts focused on the feasibility of meeting the stated requirements, and to do so, we developed a very rough concept design based on a combination of parametric methods and first-principles analysis. Our engineering focused on:

- weight and buoyancy calculations
- resistance, powering and fuel consumption calculations
- seakeeping to the level of estimating natural periods for pitch and roll, and comparing to desired values
- use of data on other SWATH vessels to both provide input to our evaluation and provide a realism check of our results

We have determined that your requirements can be mutually satisfied. We estimate that all of your technical requirements can be satisfied with a corresponding rough-estimate cost of about $30M.

Consulting Engineers Serving The Marine Community

NAVAL ARCHITECTURE
MARINE ENGINEERING
OCEAN ENGINEERING
HYDRODYNAMICS
TRANSPORTATION ANALYSIS
CONTRACT ADMINISTRATION

600 Mutual Life Building • 605 First Avenue • Seattle Washington 98104-2224 • Phone: (206) 624-7850 • Fax: (206) 682-91

Because more data is available regarding aluminum SWATH designs in or near the size under consideration, we are more confident at this time, that these requirements can be mutually satisfied by an all aluminum SWATH. However, preliminary indications are that these requirements can also be mutually satisfied by a SWATH with steel hull and aluminum superstructure. It is probable that the steel/aluminum SWATH solution would be slightly larger for the same construction cost, scientific mission payload capacity and range, than the corresponding all aluminum SWATH.

The approximate principal characteristics of an all aluminum SWATH design satisfying the requirements outlined above are as follows:

L	Length	172	feet
B	Maximum beam	76	feet
d	Draft	17	feet
Δ	Displacement	1,225	LTSW
BHP	Installed main propulsion power	2,040	H.P.

The length of a steel/aluminum SWATH might be approximately 20% greater and the draft might be 10% greater than those set forth above for an all aluminum SWATH (assuming that the beam is constrained to not to exceed 76 feet).

We have enclosed a concept sketch of the all aluminum design showing that your requirements regarding space arrangements can be met. These requirements include staterooms for the complement of crew and scientists, a minimum of 3,000 sq. ft. of laboratory space, a moonpool, and space along one side of the main deck for a 90 foot geological core.

Rather than forward you a collection of notes and calculations, we look forward to meeting with you here on Monday at 10 am to review our work. Perhaps we can get comments from you at that time and work Monday afternoon in preparation for your meeting on Tuesday.

Yours very truly,

THE GLOSTEN ASSOCIATES, INC.

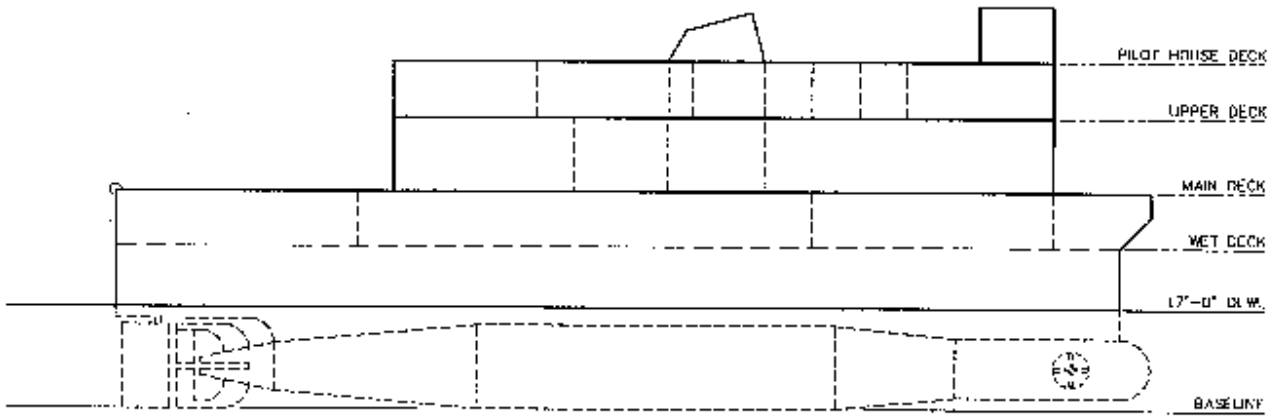
Bruce L. Hutchison

BRUCE L. HUTCHISON, P.E.
Vice President, Ocean Engineering & Analysis

Enclosures: 1. Glosten Dwg. No. 97163-1, UW SWATH Space Allocation Sketch

cc: via facsimile

S:\wp\97163\letters\hinton_1.doc



OUTBOARD PROFILE

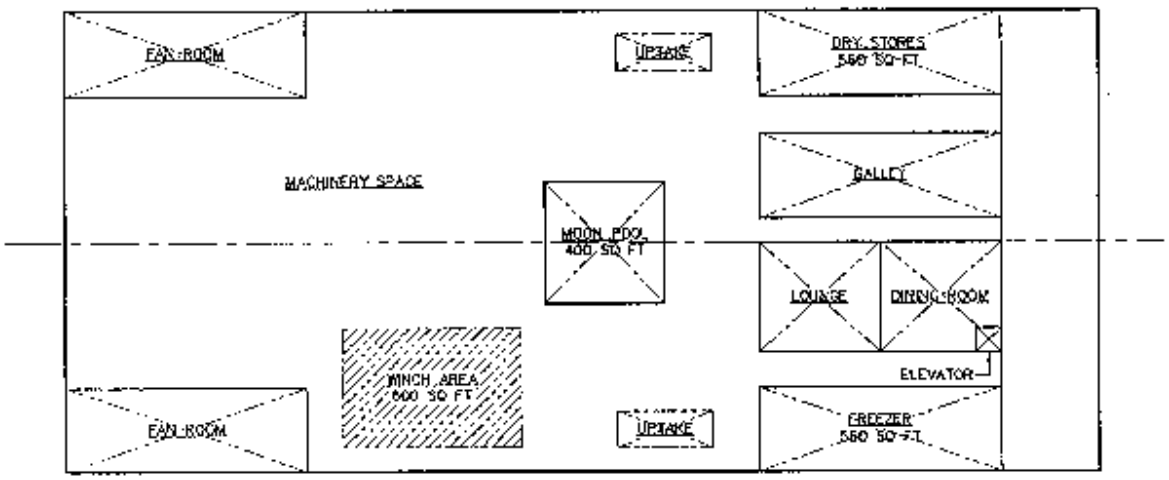
PRINCIPAL CHARACTERISTICS

LENGTH, MAIN DECK	172'-0"
BEAM, MAXIMUM	76'-0"
DRAFT	17'-0"
DISPLACEMENT	1,225 LTSW
INSTALLED MAIN PROPULSION POWER	2,200 H.P.
LAB/STAGING	4,270 SQ. FT.
STATEROOMS	28

GLOSTEN
The Glosten Associates, Inc.
600 Mutual Life Building
605 First Avenue
Seattle, Washington 98104-2202

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON
G.W. SWATH
SWATH APPLICATION STUDY

SEWATHIA.DWG	CWK	12/3/97				
Plotting Scale 1=1	Drawing Scale 1/16"=1'-0"		Drawing No. 97163	1	3	A

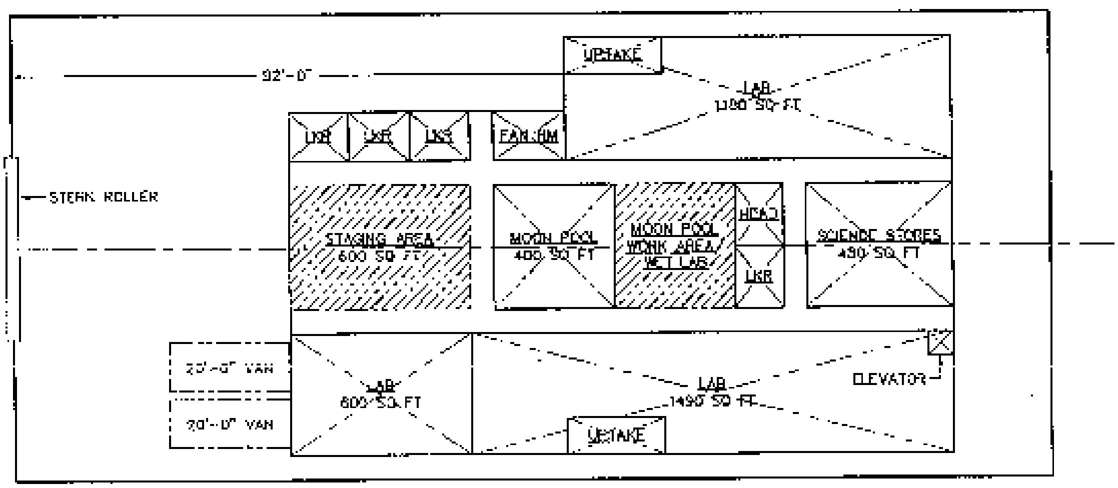


WET DECK PLAN

GLOSTEN
The Glosten Associates, Inc.
600 National Life Building
605 First Avenue
Seattle, Washington 98104-3314

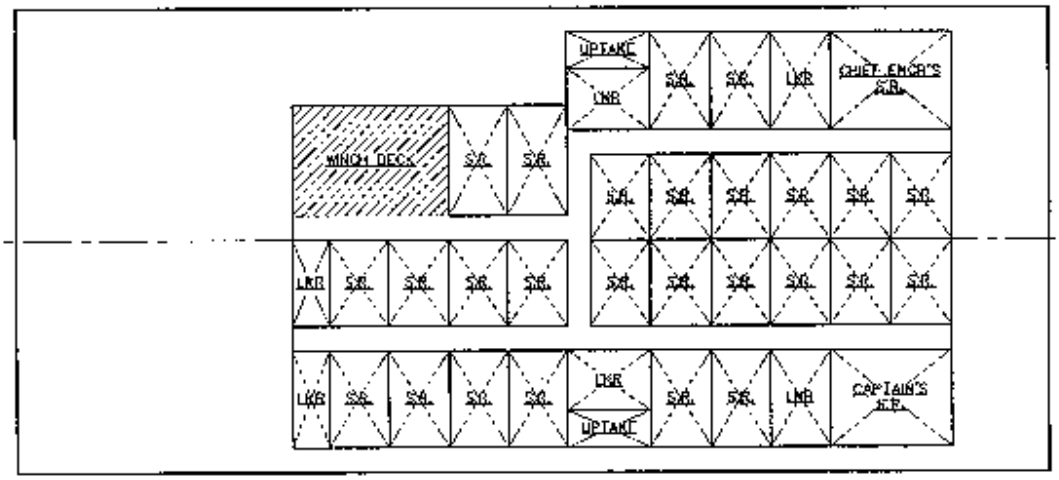
UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON
U.W. SWATH

1630102A.DWG	CWA	12/3/97	CWA		RDZ	CWA	SAP
1=1	1/16"=1'-0"		9716.3-1				A



MAIN DECK PLAN

GLOSTEN The Glosten Associates, inc.	UNIVERSITY OF WASHINGTON SEATTLE, WASHINGTON	1/16"=1'-0"
	O.W. SWATH SPACE ALLOCATION SKETCH	97153-1 A

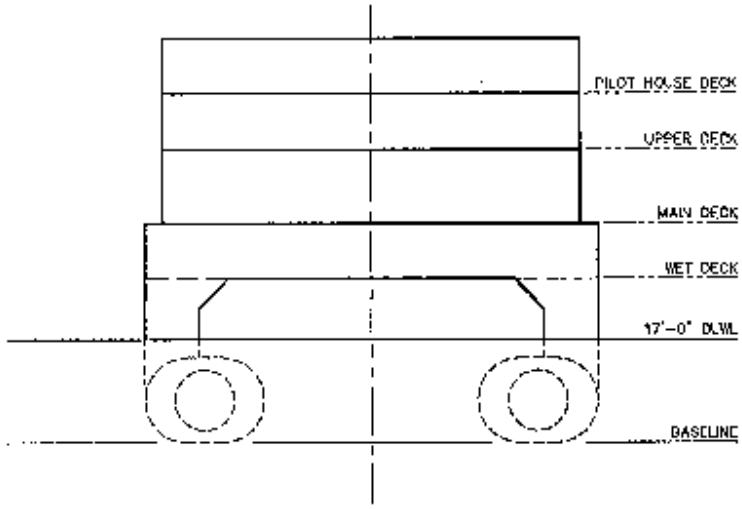


UPPER DECK PLAN

GLOSTEN
The Glosten Associates, Inc.

UNIVERSITY OF WASHINGTON
SEATTLE WASHINGTON
U.W. SWATH

10320104A.DWG	CWK	12/2/97		12/8		12/8
1=1	1/16"=1'-0"		9216.3-1		A	



END VIEW

GLOSTEN
The Glosten Associates, Inc.
UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON
U.W. SWATH
:G30105A.DWG
CWK
12/2/97
1/16"=1'-0"
97163-1
A

COMMENTARY ON SWATH MOTIONS AND OPERABILITY

The Glosten Associates have been asked to evaluate the feasibility of designing and building a SWATH research vessel, suitable for unrestricted ocean service, for no more than $35 M, capable of carrying at least 100 L.T. of scientific payload and with a nominal range of 6,000 n.m. at 12.5 knots. This feasibility study is the subject of a separate letter report to the University of Washington. The determination of feasibility was based primarily on design data for all aluminum SWATHs (since data for all aluminum SWATHs was most available in this size range), though it is our judgment that a steel hulled SWATH with aluminum superstructure, with slightly larger principal dimensions, would also constitute a feasible, and perhaps preferable, design solution. The principal dimensions of the all aluminum SWATH considered in the feasibility study are:

L	Length	172	feet
B_{WL}	Waterline Beam	76	feet
B_{MAX}	Maximum Beam	76	feet
Draft	Design Draft	17	feet
Δ	Design Displacement	1,225	LTSW

The length of a steel/aluminum SWATH might be approximately 20% greater and the draft might be 10% greater than those set forth above for an all aluminum SWATH.

The Glosten Associates have been asked to comment on the seakeeping and operability of such a SWATH when compared to the *R/V Thomas Thompson* (285 feet LOA, 3,500 LTSW displacement). An authoritative commentary should be based on seakeeping and operability analyses of both vessels using analytical or model testing methods, and evaluated in the same climatology. Such activities are beyond the scope of the current effort. The commentary which follows is based on generalizations that are readily available in the technical literature.

Comparative Seakeeping Performance

The following commentary is excerpted directly from Section 6.2.4 of reference 1:

> *A relatively large amount of data has been collected on the motions of SWATH ships, considering the limited number of these ships in service. Data are available for KAIMALINO, CREED, HALCYON, and KAIYO. These ships represent a wide variety of SWATH hull form variations over a range of ships sizes from 60 tons to 3,400 tons. Results of these trials are summarized as follows:*
>
> > *The motions of the 200 ton, 90 foot KAIMALINO were found to be comparable to measured motions of a 3,000 ton, 378 foot USCG high endurance cutter in side-by-side trials in moderate seas. Similar results were found for KAIMALINO*

in side-by-side trials with a 1,000 ton, 180 foot USCG oceangoing buoy tender, a lower speed monohull.

Motions of CREED (70 tons, 65 feet) were found to be generally superior to those of the Canadian fisheries patrol vessel GOOSE BAY (110 tons, 66 feet) in seas between sea state 2-4. Exceptional seakeeping was observed during additional tests conducted on CREED throughout the 0-20 knot speed range in sea state 5.

Measurements on the 60 ton, 65 foot HALCYON showed significant roll and pitch amplitudes to be less than 1.5 degrees at 17.5 knots in sea state 4. Accompanying vertical accelerations were less than 0.15 g's on the bridge and in the living spaces.

Measured data on KAIYO showed the 3,400 ton ship pitched less than 4 degrees and rolled less than 6 degrees in seas up to sea state 7. Vertical accelerations were less than 0.15 g's during these measurements.

Motions were measured during side-by-side trials on CREED and the Canadian fisheries protection vessel LOUISBOURG. Similar heave acceleration and pitch levels were measured on the 70 ton, 65 foot SWATH and the 250 ton, 125 foot monohull. Roll and lateral acceleration were generally much higher on the monohull. The superior motions of SWATH ships have been demonstrated in similar trials with KAIMALINO and two USCG CUTTERS (as described above).

The reduced motions possible using SWATH hulls improve ride quality and enhance operational capabilities in rough weather. The commercial utility of these attributes has been documented for operations of SEAGULL II. This 350 ton, 27.5 knot ferry maintained an average operational rate of over 98 percent while carrying 160,000 passengers over a 10 month period. About half of these passengers were transported in sea conditions greater than sea state 3. While the incidence of seasickness increases as rougher seas were encountered, only 6 percent of the passengers aboard in sea state 6 were affected. Overall, seasickness affected relatively few of the passengers, averaging about one-half of one percent of all passengers carried. Performance characteristics such as these confirm the reputation of SWATH ships as ships that provide reliable, comfortable service in rough seas.

The following commentary is excerpted directly from reference 2:

An example of a design-related effort was reported in reference 3. The operational requirements stated that an acceptable hull must safely transit at 12 knots at all headings through Sea State 4, transit at 6 to 10 knots at best heading through Sea State 6. The transiting criteria in the following table were used in conjunction with the winter SOWM database for the general North Atlantic. Calculations are for short-crested seas and roll responses are considered.

Limiting Seakeeping Motion Criteria for Transiting

Roll	8.0 degrees
Pitch	3.0 degrees
Vertical Acceleration	0.4 g's
Slams per Hour	20
Deck Wetness Events per Hour	30

In this investigation, two configurations of about 1675 tons were included. These designs were developed by the Naval Sea Systems Command. The two baseline configurations differed in length: the first, denoted as AGOR1, had a strut length of 170 feet and a lower hull length of 230 feet, while the second, denoted as AGOR2, had corresponding lengths of 146 feet and 173 feet.

An initial investigation of the AGOR1 showed that it did not have acceptable operability at 6, 9, or 12 knots. In the original design the LCF was forward of the LCB by about 1.5 percent of the lower hull length. When the strut was shifted so that LCB and LCF were coincident, operability improved considerably. The designers felt that shifting the location of the strut would not impact the design. The final version of this design meets the specified operational requirements.

An investigation of the AGOR2 showed that it did not meet the operational requirement at 12 knots. Simple variations in the strut did not result in acceptable performance. Consequently, an active control system was designed. This configuration has a relatively low value of GM_L and the performance needed improvement between following and beam seas where encounter periods are low, so that it was likely that activating the stabilizers could improve performance. This approach allows for reduction in roll as well as vertical plane motions. The desired improvements were achieved and the predictions indicate that performance is not limited below a high Sea State 4 so that the hull form meets the stated operational requirements.

Although both hull forms meet the operational requirements, AGOR1 has higher operability than AGOR2. Comparison of the predicted percentage time operable as a function of significant wave height shows that the AGOR1 has better predicted operability than the AGOR2 for the operations and speeds specified in the operational requirements. The AGOR2 also has the disadvantage of requiring machinery to drive the active control system. At the same time, the two hull forms differ considerably in overall length and strut length which impacts various design considerations.

SWATHs in this size range offer larger deck areas and can have higher operability than monohulls designed for the same mission, particularly at lower speeds. The 1675 ton design investigation demonstrates that hull form modifications can help assure good operability. However, it is difficult to design a SWATH in this size range with high predicted operability, particularly if operability in the winter is of primary importance. This is due, in part, to size; a reasonably well designed larger ship will naturally be able to operate well in the lower sea states. The challenge

then is to design a hull form which will operate well in the higher sea states. A smaller ship must be designed first to be seaworthy in the lower sea states. This is challenging because high Sea States 4 and 5, corresponding to significant wave heights of 8.2 feet and 13.1 feet, have a wide range of highly probable modal periods. In the winter, these modal periods have nearly equal probabilities of occurrence. Therefore, the advantage which the SWATH geometry offers the designer – of shifting responses away from likely spectra – is of less consequence in this size range than it is for larger displacement designs.

Based on full-scale seakeeping trials, as described in reference 4, the Navy's 164 foot, 560 ton A-frame SWATH known as *SEA SHADOW* meets the Navy's operability criteria (same as given in table above) through Sea State 4 and even meets all of the operability criteria through Sea State 5 except in following waves where pitch exceeds the mobility criteria (the design requirement was only for survivability in Sea State 5). Ride quality in terms of standards for human exposure to whole body vibrations is also good.

Reference 5 reports on design studies of naval combatants for North Atlantic deployment. Three designs were developed, two monohulls and a SWATH. One monohull and the SWATH were both designed to carry the design mission payload. The second monohull was designed to equal the seakeeping performance of the SWATH. The principal dimensions of these three designs are given in the following table:

	Payload Monohull	SWATH	Seakeeping Monohull
LOA (ft)	455	380	619
LBP (ft)	420	310	554
Beam (ft)	49	90	62
Draft (ft)	19	28	18
Displacement (LTSW)	5373	7070	9116

"The seakeeping monohull was required to have equivalent seakeeping performance to the SWATH based on a set of motions limitations criteria, but was not required to have equivalent ship motions. For example, even though the roll amplitudes for the SWATH and seakeeping monohull were different for a given sea condition, the two ships were judged to have equivalent performance for roll if neither violated the roll motions criterion. In general, the magnitude of the ship motions are less for the SWATH than for the seakeeping monohull. A monohull with equivalent ship motions would be much larger than the seakeeping monohull."

The seakeeping criteria used in the design study of reference 5 may be summarized as follows:

Limiting Seakeeping Motion Criteria for Transiting

Roll	8.0 degrees
Pitch	3.0 degrees
Vertical Acceleration (bridge)	0.4 g's
Vertical Velocity for Helo Ops	6.5 fps
Bow Sonar Emergences per Hour	24
Slams per Hour	20
Deck Wetness Events per Hour	30

Summary and Conclusion

The generally supported evidence in the readily available technical literature all seems to support the idea that SWATH hull forms can offer comparable seakeeping performance and operability at smaller size than monohulls. It still follows, however, that larger SWATHS are better than smaller SWATHS.

The findings of the various design studies and full-scale, side-by-side, seakeeping experiments, suggests that a SWATH needs to be 60% to 65% of the length of a monohull to obtain comparable seakeeping performance and operability. There may also be a size below which a SWATH can no longer be considered an unrestricted ocean going vessel.

Applying the rule of thumb to the length of the *R/V Thomas Thompson*, a SWATH should be perhaps 164 to 177 feet in length to offer comparable seakeeping performance and operability.

As regards the size below which a SWATH can no longer be considered an unrestricted ocean going vessel, it is noted that SWATH hull forms down to 173 feet were considered in the Navy's AGOR 23 studies, and were regarded as suitable for unrestricted ocean going service. The question of unrestricted ocean service for a SWATH is probably only weakly associated with the length, and more strongly associated with the air gap. For a SWATH of the size under consideration an air gap of 11 or 12 feet is thought to be adequate for unrestricted ocean service.

Finally there is the question of operability for specific on-board activities, such as deployment and retrieval of scientific packages through the moonpool. There is relatively little experience with SWATH research vessels with moonpools. Based on such experience as their is, and the findings of various theoretical studies and model tests, it is anticipated that such activities should be possible, on a vessel such as that proposed, up to sea state 5 or perhaps even to high sea state 5.

Because of the superior ride quality of SWATH designs it is anticipated that it will be possible to maintain many other on-board science activities (other than deployment/retrieval) in sea conditions greater than those in which these activities must be curtailed in a monohull such as the *Thomas Thompson*.

References

1) Kennell, Colen, "SWATH Ships," SNAME Technical and Research Bulletin No. 7-5, 1992

2) McCreight, Kathryn K., "Assessing the Seaworthiness of SWATH Ships," SNAME *Transactions*, Vol. 95, 1987, pp. 189-214

3) McCreight, Kathryn K., Hering, J.A., and Waters, R.T., "Seakeeping and Maneuvering Assessment of SWATH AGOR 23 Configurations," DTNSRDC Report SPD-1198-01, July 1986

4) Reed, Arthur M.; Dipper, Martin J. Jr.; Brady, Thomas F.; Turner, Charles R.; and Dinsenbacher, Alfred L., "Seakeeping and Structural Performance of the A-Frame SWATH Vessel SEA SHADOW," 1998 SNAME Annual Meeting, Ottawa, Ontario, Canada, October 16-18

5) Kennell, Colen G.; White, Brian L.; and Comstock, Edward N., "Innovative Naval Designs for North Atlantic Operations," SNAME Transactions, Vol. 93, 1985, pp. 261-281

Appendix XII

R. Knox Message on Mexican Clearance Problem

Mexico Clearance Chronology - Langmuir/Bender Cruise - RN Melville Background

In early November, 1997 a research cruise on RIV Melville of the Scripps Institution of Oceanography, led by Dr. Charles Langmuir of LDEO and Dr. John Bender of the University of North Carolina, sustained a loss of planned scientific operations due to lack of research clearance from the Government of Mexico until about four days after the departure of the ship from San Diego. The following chronology and notes are an attempt to set forth the facts of the situation, as one input into any future discussions - American, Mexican or bilateral - of ways to reduce or avoid such losses to science in the future.

Except as noted, all references to "DOS" mean the US State Department Office of Oceans Affairs, represented by Tom Cocke. "Embassy" means the principal vessel clearance contact person, Angelica Narvaez, at the US Embassy in Mexico City. "SRE" means Dolores Viaga, principal contact on research clearance matters at the Mexican Foreign Ministry (Secretaria de Relaciones Exteriores). "Navy" means the Mexican Navy. "SIO" means the Ship Scheduling Office at SIO, Rose Dufour and Elizabeth Rios, Schedulers/Clearance Officers. Times are Pacific Standard Time.

Chronology

3/21/97 Clearance package taxed by SIO to DOS/Embassy requesting clearance for Oct. 24 - Dec. 21. A large window was requested to allow for adjustments to the schedule.
This action was 217 days before the clearance was needed; giving the
DOS/Embassy 37 days to prepare a diplomatic note to arrive at SRE in time.

4/4 SIO received from J. Bender a Mexican support letter stating that students of Luis Delgado of CICESE in Ensenada would participate, and taxed this letter that same day to Embassy.

8/12 SIO sent email to Embassy with correct dates of cruise, since R/V Melville schedule had finally been settled.

9/25 SIO checked on clearance status with Embassy; no information yet.

10/14 SIO called Embassy asking for the status on this cruise, and was advised that all agencies had approved, so approval was just awaiting action at SRE. Called J. Bender with this info (C. Langmuir was out of country)

10/23 SIO called Embassy to check status of observers, and discovered that Embassy had sent dip. note based on SIO email dated 8/12, but with a typo. Start date of 11/ 3 in SIO email had been sent in dip. note as 11/ 13.

Also Embassy had misspoken in saying on 10/14 that all agencies had approved; in fact Navy approval was unresolved.

10/24 W. Gibbonsfly of Embassy called SRE to explain typo. He reported to SIO that SRE was not greatly concerned about the typo, since SRE had been working with the original 10/24 sailing date. He said everything appeared to be back on track, although final approval was now unlikely to happen until just before sailing.

10/28 Embassy informed SIO that two Mexican observers were named, Jose Luis Frias of INEGI and one other, name/agency not given.

10/29 SIO called C. Langmuir about observers. He said he did not have the money to pay for observers and was already paying for L. Delgado's students per the 4/4/97 entry above. He asked that these students be the "official" observers. SIO said it would indicate that the two additional observers of 10/28 were welcome, but that the scientific project did not have money for their travel support.

10/29 SIO spoke with L. Delgado regarding the observer situation. L. Delgado called Embassy.

10/30 SRE and INEGI revised their stance and chose not to send the additional observers, but said that they would instead be sent on the subsequent cruise leg (N. Kanjorski, chief scientist). Embassy said that L. Delgado had perhaps given J. Bender/C. Langmuir an incorrect impression with regard to the status of observers, as he himself was misinformed. Embassy explained that even though US scientists collaborate with Mexican counterparts and make official requests that these collaborators be the "official observers," Mexico has the right to appoint observers from a government agency, e.g. INEGI or Navy. SRE via Embassy told SIO that unfortunately clearance would not be in by Friday 10/3 1, but that clearances would be in by noon 11/3 (10/31 was a Friday; Mexico City is 2 hours ahead of PST). Embassy explained that SRE was probably very busy with President Zedillo's visit to the US.

11/2 Shipsailed on schedule; initial tests in US waters off San Diego

11/3 Embassy informed SIO that in fact the Navy had not approved clearance by the end of the previous workweek. Embassy had no reliable Navy contact and at this point felt that any phone call from SIO or Embassy would do more harm than good. Embassy said it was hoping for clearance in AM on 11/4.

Note - in all these conversations SIO stressed that ship would enter Mexican waters, thus need clearance, 1 1/3.

11/4 00:12 AM Ship entered the Mexican EEZ, unable to make underway geophysical observations as

planned, for lack of clearance. Therefore science was being lost as of this time.

6:15 AM SIO called Embassy about clearance; still no information.

9:30 AM SIO called Embassy again, asked for the phone number at Navy in order to find out status directly. Embassy gave the number, with the advice that a Mexican national, not an American, make any calls to Navy.

SIO spent the day trying to locate L. Delgado to make such a call; he was out of town. SIO finally called ship at 3:00 PM asking that Mexican students aboard try to find L. Delgado, and/or call Navy to explain. At 4:30 these students on the ship found out that within the Navy Capt. Francisco Arias had given approval that day. But Capt. Arias' approval was not the final Navy approval, only a step; this fact was not learned until 11/6.

11/5 SIO spent another day on the phone with Embassy and ship. SRE told Embassy that it expected resolution today of this issue and others. Shipboard personnel wanted to begin calling SRE themselves. Embassy advised ship not to call SRE until after 3PM since Embassy wished to credit SRE's intent to get dip note out today. After 3PM the ship called SRE directly. SRE was forthcoming with information but said that approval from Navy had not yet been received and that in fact that Melville did not have clearance to be in Mexican waters! Embassy was informed of same information from SRE, DOS advised. Embassy asked that ship contact Navy again and get copy of the approval. If in fact the approval has been made by Navy, Embassy advised ship to contact Dolores Viaga's supervisor to show proof of such approval. Capt. Buck on Melville felt uneasy about SRE's statement of ship not having clearance to be in Mexican waters. Ship called Capt. Arias and was told ship was OK to be in Mexican waters, and that he had approved the note but that it was against policy to fax the note to the ship.

11/6 Morning: some confusion at Navy due to several offices involved. At SRE Sergio Gomez, supervisor of Dolores Viaga, informs Embassy that the permit was signed the previous night by Navy and that he had the permit physically in his office.

Ship informs SIO that ETA at work area is 2:30 PM, so need to know whether to stay at that site and wait, or abandon the site and sail on.

SIO asks Embassy to pass this request on to SRE. SRE asks Embassy (Paul Maxwell) to have both Embassy and SIO be patient, let SRE do its job.

3:15 PM: The Mexican students on the ship were able to call SRE and to find out that clearance was done and would arrive in an hour; ship informs SIO. SIO calls Embassy (Paul Maxwell) to ask for confirmation- he confirms.

3:45 PM: Ship arrived at first dredging station, unable to dredge for lack of clearance. Ship stopped on station, awaiting clearance and losing time.

11/6 Clearance came in at 4:30 PM was immediately faxed to ship. Scientific work began.

The net result is that from 00:12 on November 4 until 15:45 on November 6 the ship was unable to conduct underway geophysical observations as planned (so those data are irretrievably lost for this cruise), and that the ship remained idle at the first station for about two additional hours awaiting clearance to begin sampling operations. Any practicing scientist, Mexican or American, will recognize this outcome as an extremely large waste of valuable ship and personnel time and capability. The question is what to do to prevent repetitions of such outcomes in the future.

This is a matter of considerable importance for SIO and also for the UNOLS fleet as a whole. Although SIO has had considerable experience of obtaining Mexican clearances only barely in time, this is the first instance in recent memory in which a tangible loss of planned science occurred for lack of clearance. On behalf of SIO I will attempt to bring this unfortunate history to bear on the problem of creating a more science-friendly regime for the future. I will also be presenting the matter to UNOLS and to US science agencies for their information and support in establishing such a regime.

Robert A. Knox
Associate Director, SIO

Appendix XIII

UNOLS Membership Application from UCSC

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

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

APPLICATION FOR MEMBERSHIP

Revised 4/97

Pursuant to the UNOLS Charter the below named organization hereby submits application for membership in the University-National Oceanographic Laboratory System. In doing so the applicant understands and agrees to work for the objectives set forth in the UNOLS Charter (Attached).

Name of Institution: University of California at Santa Cruz

Name of person delegated to act as representative to UNOLS

Name: Bess Ward

Title: Professor

Address: A 316 EMS Ocean Sciences Department
UCSC, Santa Cruz, CA 95064

Telephone Number: 408-459-3171

Fax Number: 408-459-4882

E-mail: bbw@cats.ucsc.edu

General information on oceanographic, Sea Grant and other marine science programs

No. Professional Personnel: 60 No. Graduate Students: 35

Approximate Annual Budget: $1M university ($30M extramural)

List of research vessel(s) owned or operated

NAME: David Johnston SIZE: 63 ft

RECEIVED
NOV [illegible] 1997
UNOLS OFFICE

NOTE: Please attach a brief list of the names and addresses of key individuals to whom the following information sent out by UNOLS would apply. (Note: The UNOLS Institution Representative receives all information.)

Summary information: research ship schedules, ship availability, etc. (for [illegible] and [illegible])

Research ship operations and maintenance: for Marine Superintendents and [illegible] Captains

none

SUBMITTED

Signature: [signature]

Name: Bess B. Ward

Title: Professor

Date: 18 November 1997

Phone (401) 874-6823
Fax (401) 874-6157

Names and addresses of individuals who should receive Ship User Information

Asst. Professor Giacomo Bernardi
Biology Department
A316 EMS
University of California
Santa Cruz, CA 95064

Professor Kenneth Bruland
Ocean Sciences Department
A316 EMS
University of California
Santa Cruz, CA 95064

Dr. Jane Caffrey
Institute of Marine Sciences
A316 EMS
University of California
Santa Cruz, CA 95064

Professor Dan Costa
Biology Department
A316 EMS
University of California
Santa Cruz, CA 95064

Dr. David Garrison
Institute of Marine Sciences
A316 EMS
University of California
Santa Cruz, CA 95064

Dr. Marcia Gowing
Institute of Marine Sciences
A316 EMS
University of California
Santa Cruz, CA 95064

Professor Casey Moore
Earth Sciences Department
A232 EMS
University of California
Santa Cruz, CA 95064

Professor Donald Potts
Biology Department Department
A316 EMS
University of California
Santa Cruz, CA 95064

Professor Eli Silver
Earth Sciences Department
A232 EMS
University of California
Santa Cruz, CA 95064

Dr. Mark L. Wells
Institute of Marine Sciences
A316 EMS
University of California
Santa Cruz, CA 95064

Appendix XIV

Ship Scheduling Improvements

UNOLS SHIP TIME REQUEST FORM - SECTION ONE

P.I. Name	Last	First	MI.
Institution			Research vessel require
Address			**Ancillary Only**
			Principal Use
Phone:	Fax:	**E-mail:**	
Co P.I. Name	Institution	Co P.I. Name	Instituti
Title:			

- New Proposal?

Inst. Proposal #

Proposal #

Renewal

Grant #

Agency submitted to: NSF/OCE/BO

Amount Requested:

Start Date: (mm/dd/yy)

End Date: (mm/dd/yy)

Foreign EEZ? No Yes - see Handbook

(List countries' clearance required)

Area of Operations Code (from standard Naval Chart)

Area of Operation: AN1

Latitudes & Longitudes (ie 30W 20N)

Beginning: Ending:

Year	Ship(s) Requested Name or size	Science Days Required	Optimum Dates Month/Day/Year	Alternate Dates Month/Day/Year
1997	Large			
Total Science & Ship Days Needed:		Start Port:	Intermediate Port:	End Port:
Number in Science Party:				

Equipment Required: ☐ Vans	☐ P-Code	☐ MCS	☐ ALVIN	☐ AMS 120
☐ Dynamic Positioning	GPS ☐ Multibeam	☐ SCS	☐ ROV	☐ .680 Cond.

Other Special Equipment; Comments:

Inorder to recall this form for reprinting or modification, enter an 4-10 character password.
Password:

After submission, a copy of section one of this form will be sent to the UNOLS office and forwarded to the appropriate institution(s) operating the ship(s) and federal funding agency. This information will be part of a UNOLS database.

To submit section one of the form press either the DRAFT button to enter a partially completed form into the system or the FINAL button to submit a completed version of section one to UNOLS. Your request will not be sent to UNOLS until the FINAL button is pressed. The Draft version of your form will then be purged. Draft forms will be purged from the system after 30 days.

Include a copy of section one with your research proposal. Print the completed section one screen from your browser, or print the email return copy you receive. Either will substitute for NSF Form 831.

Complete section two (below) only after funding has been approved. Recall the form using your password, complete section two, then submit the form by hitting the FINAL submit button at the bottom of section two. Your completed form (sections one and two) will then be forwarded to UNOLS, appropriate funding agencies, and concerned ship operators. You will receive a receipt copy also.

DRAFT form submittal	FINAL form submittal	Clear form

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UNOLS SHIP TIME REQUEST FORM - SECTION TWO

(To be completed after funding of your cruise has been confirmed)

Submit this portion of the UNOLS Ship Time Request Form only after funding of your cruise has been confirmed or upon notification of your Program Manager. This form is an extension of section one. If there are changes needed to section one they can be made and will be included upon submission of this section. The purpose of this section is to permit the ship operator to understand better the science mission of the cruise and therefore provide the services needed for a successful cruise.

A message file will also be opened for each cruise. Anyone associated with the cruise can file messages here. The messages will be filed automatically by copying unols@gso.uri.edu on your messages and including in the subject lines the last 6 digits of the UNOLS Request ID number found on your comeback copy of the first submission above. Access to the file can be found through the Ship Time Request menu on the UNOLS Homepage.

When submitted, the entire UNOLS Ship Time Request Form (sections one and two) will automatically be forwarded to the PI, funding agency, ship(s) involved in the cruise and the UNOLS Office. The form will be accessible to the public via the Web through the UNOLS Homepage. It will be indexed by PI and, through a world

chart, by geographical location of your planned cruise.

Please review the information submitted on section one of this form and update changes.

Other Scientists Involved in Multi-P.I. Program:			
Name	Institution	Phone	E-mail

Are there special considerations of the science party or cruise scheduling? Consider science time constraints; coordination of equipment shipping; two-ship operations; weather windows; mooring turn-around; teaching schedules and others that will affect scheduling decisions.

SCUBA Diving? No Yes -- Designate Lead Institution:

Individual dives: # Divers on board:

A list of all divers and their certification information must be submitted to the ship's marine superintendent.

Special Science Party Considerations

☐ Foreign Nationals ☐ Medical Conditions ☐ Disabled Persons ☐ Other

Please explain

Use of Hazardous Materials ? No Yes, (List type, quantity, and disposal plans)

Radioactive? Type Quantity

Disposal Plan

Explosives? Type Quantity

Disposal Plan

Other? Type Quantity

Disposal Plan

Equipment to be used:

Winches:	Wire:	Conductor	Navigation:	Communication
☐ Dredge/Trawl	Mechanical	☐ 0.680"	☐ GPS	☐ Inmarsat
☐ Hydro	☐ 9/16"	☐ 0.322"	☐ DGPS	☐ ATS
☐ CTD	☐ 1/2"	☐ .225"	☐ Loran	☐ FAX
☐ Capstans	☐ 1/4"	☐ Single	☐ Dynamic Positioning	☐ Cellular
		☐ Multi	☐ Other	☐ SEANET

☐ Pingers ☐ Gravity Corers ☐ Piston Corers ☐ Box Corers ☐ Rock Dredges ☐ Airgun/watergun system ☐ Explosive Handling Gear ☐ Thermometers ☐ CTD ☐ Rosette Sys. ☐ Niskin bottles -Size ☐ and number ☐	Vans: ☐ Refrigerated ☐ Magazine ☐ Isotope Isolation ☐ Lab ☐ Storage ☐ Berthing ☐ Chest Freezers ☐ Refrigerators ☐ Auto Analyzer ☐ Salinometer ☐ Nutrients ☐ Oxygen titration ☐ Liquid Scintillation Counter ☐ Uncontaminated seawater intake	Nets: ☐ Dip net ☐ Plankton ☐ Neuston ☐ Bongo ☐ Mid-water trawl ☐ MOCNESS (Size) ☐ ☐ Work boats ☐ Computer/peripherals ☐ PC computers ☐ SAIL system ☐ Digital XBT ☐ ADCP ☐ Gravimeter ☐ IMET

Other Special Equipment; Equipment Requiring Special Handling, Storage or Installation; Comments:

All members of the science party are expected to have read the RVOC Safety Training Manual - Chapter 1 . Access it here. Copies should also be available aboard ship.

FINAL form submittal | Clear form

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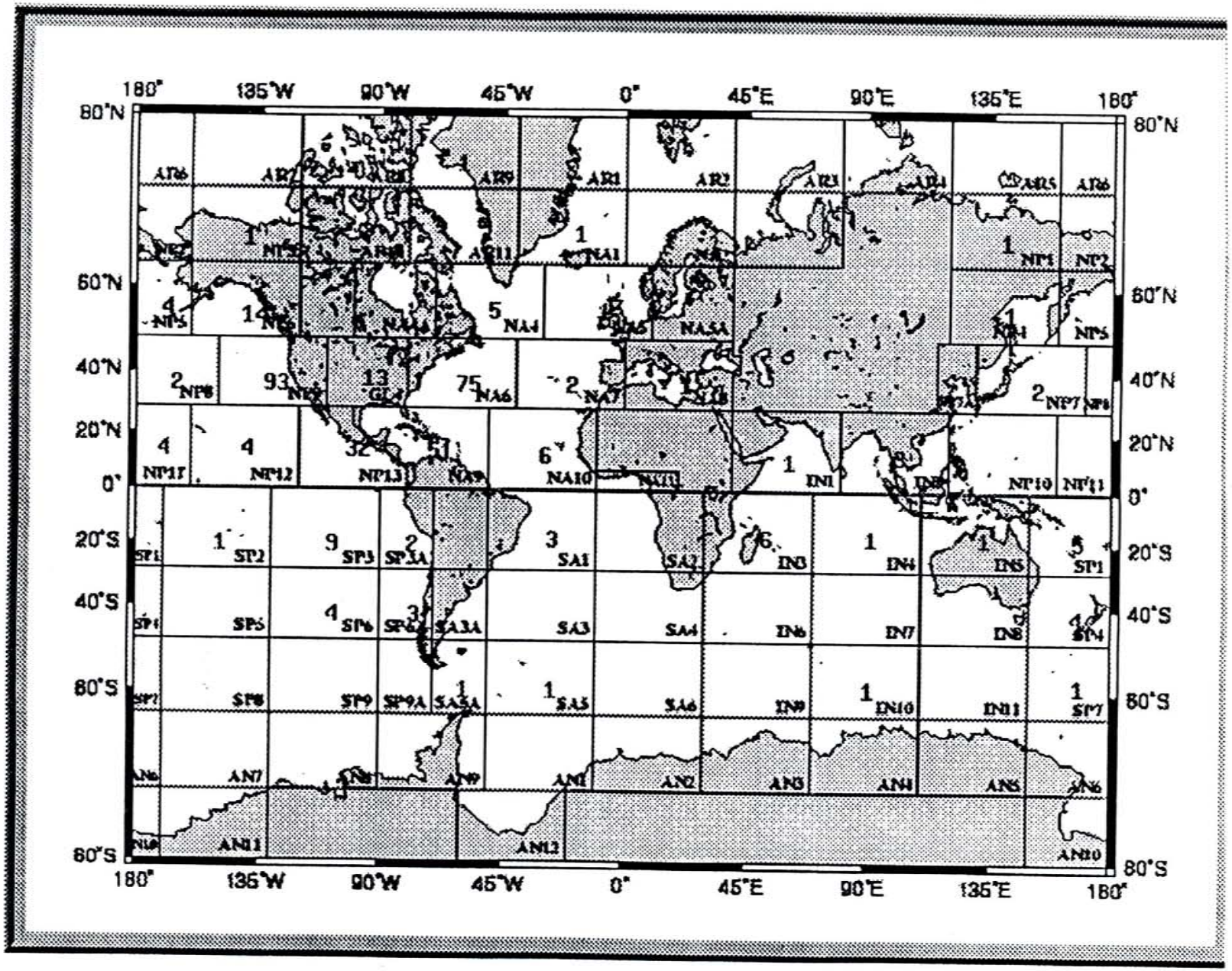
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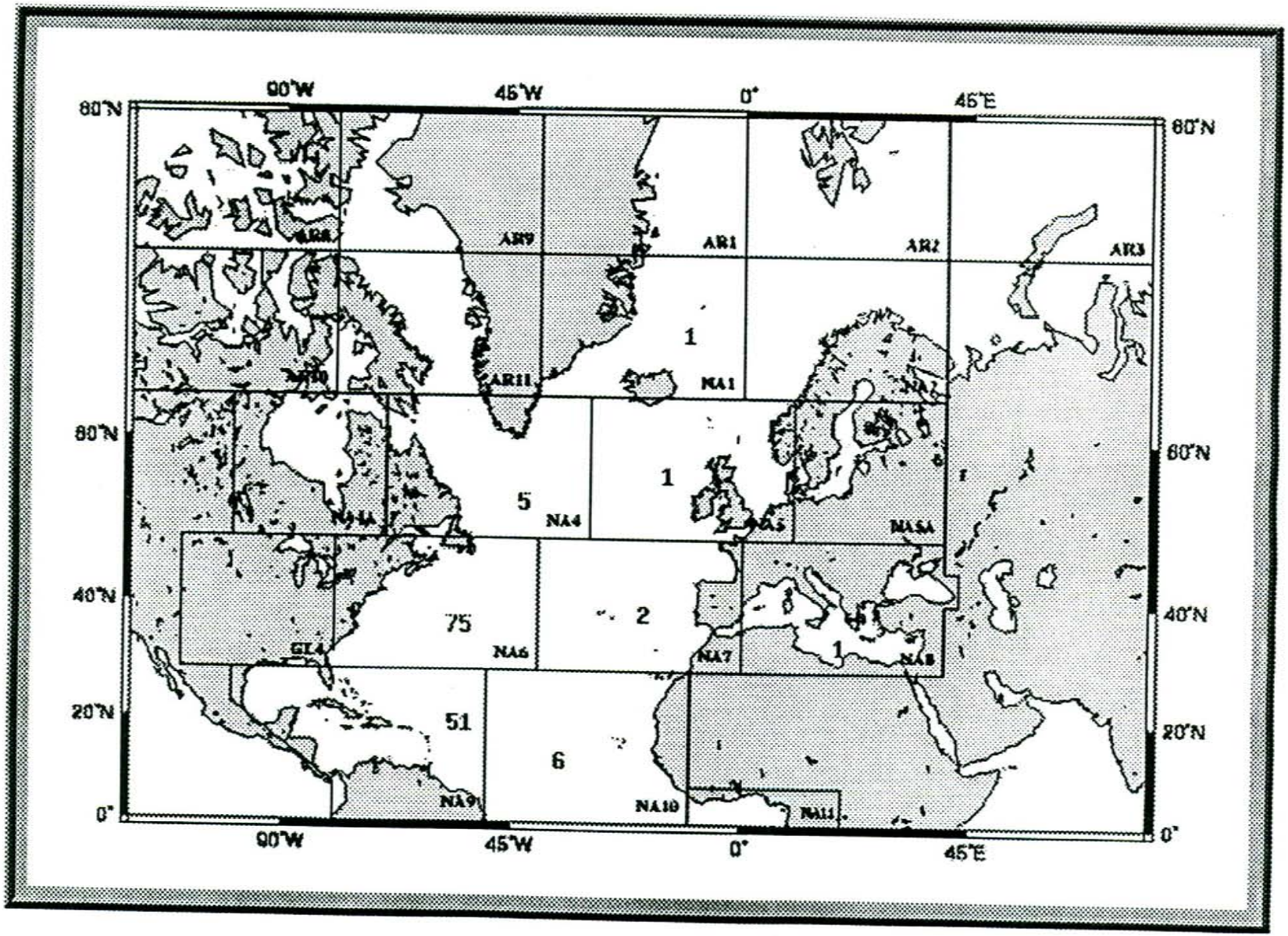
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Appendix XV

Z-Drive Report

Diagram of a Z-drive, graph of torque vs. contact area, and summary of failures may be requested from the UNOLS office.

Z-Drive Population in the U.S. Oceanographic Fleet

Knorr, Melville	**3 each**
Thompson, Revelle, Atlantis, Brown	**2 each**
TAGS 60, 61, 62, 63, 64, 65	**3 each**

Failures to Date

	Probable Cause
Thompson **- lower units (Port and Starboard)**	**Manufacture/Grounding**
Melville **- lower unit**	**Manufacture**

Melville - lower unit	Manufacture
Knorr - lower - Port (Derated to 70% torque by ABS)	Unknown
Thompson - upper gear box	Unknown

Z-Drive
Knorr

Upgrade of :

- Lower gears
- Lower thrust bearing

Next Shipyard (March - April '98):

- Replace lower gears
- Replace all bearings
- Inspect upper gears
- Replace all bearings