

UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

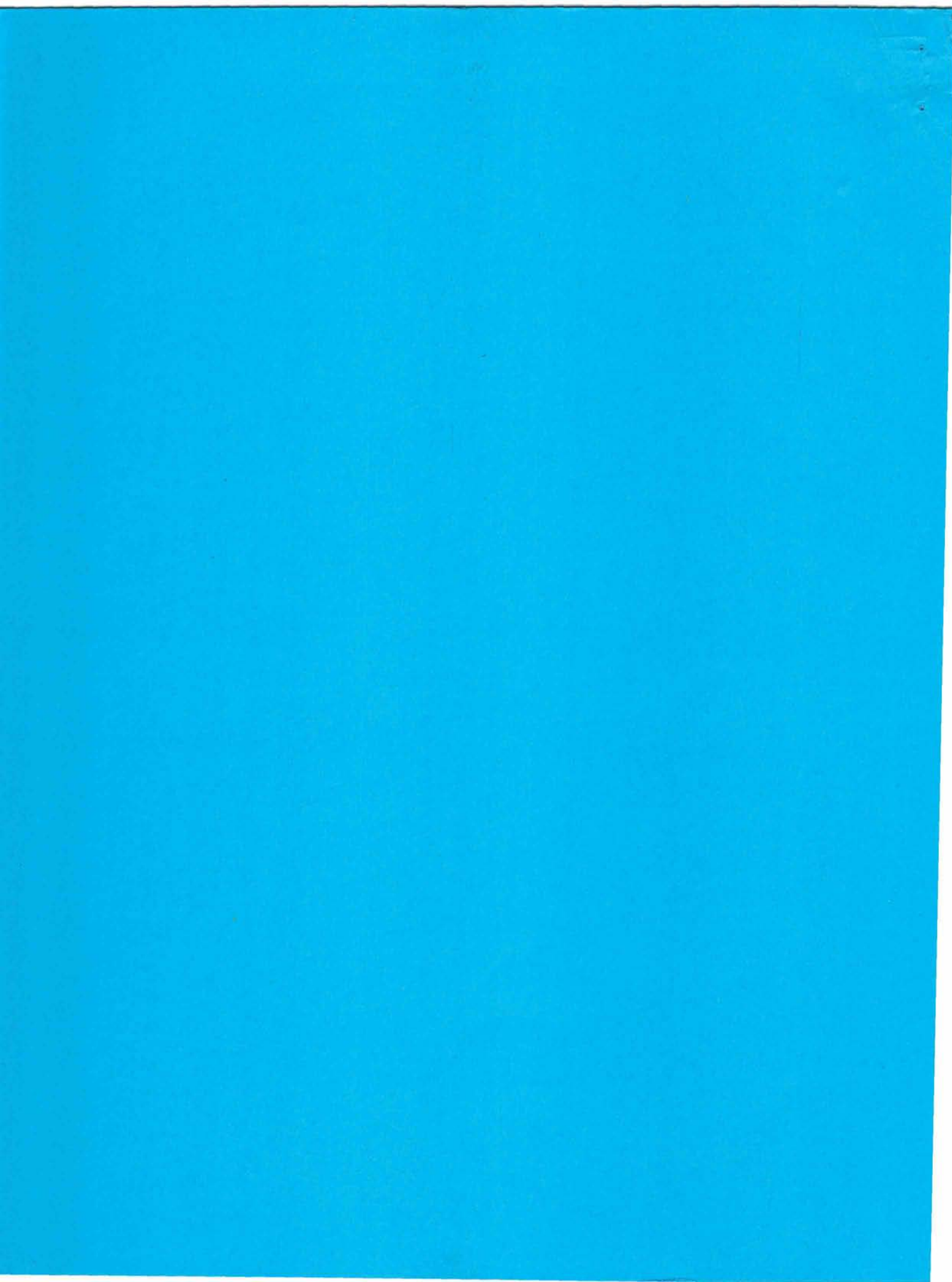
UNOLS COUNCIL MEETING

SUMMARY REPORT

April 24-25, 1995

Hotel Pacific, Soberanes Room
300 Pacific Street
Monterey, CA





SUMMARY REPORT

UNOLS COUNCIL MEETING

April 24-25, 1995

Hotel Pacific, Soberanes Room
Monterey, CA

The UNOLS Council met on 24-25 April, 1995 at the Hotel Pacific, Soberanes Room, Monterey, CA. The meeting was called to order by Ken Johnson, UNOLS Chair, at 8:30 a.m. The participants are listed in *Appendix I* and the meeting agenda is included as *Appendix II*. These minutes reflect the order in which items were addressed.

APPENDICES

- I. Attendance List
- II. Meeting Agenda
- III. Point Paper - UNOLS Regional Research Vessel Consortium Attributes
- IV. Geographic Operating Area Statistics
- V. 1995/1996 Ship Time Summary
- VI. NSF Funding Slides
- VII. USCG Ice Operations
- VIII. UNOLS Ship Classifications
- IX. UNOLS Fleet Improvement Plan Statistics
- X. NSF Modified Proposed Operating Plan
- XI. Correspondences from Senators Johnston and Murkowski
- XII. KNORR/AGOR 25 Plan and KNORR Conversion Summary
- XIII. CALANUS Replacement Specifications
- XIV. KAIMALINO
- XV. Correspondences regarding USCG HEALY
- XVI. Radio Officer Status
- XVII. 1994 Clearance Summary
- XVIII. NEW HORIZON Mid-life Refit Specifications

COUNCIL MINUTES: The minutes of 19 September, 1994 Council Meeting were accepted as written.

COMMITTEE REPORTS

RESEARCH VESSEL OPERATORS' COMMITTEE (RVOC) - Mike Prince, RVOC Chair, reported on plans for the 1995 RVOC Annual Meeting scheduled for 24-26 October in San Diego, CA. The format will be similar to past meetings and the agenda is in the process of being developed. The Safety Standards have been distributed to the Committee for review. Comments are due back no later than 1 May. If there are no substantial modifications, the

changes will be incorporated into the Safety Standards and distributed to the UNOLS Council in the summer.

DEEP SUBMERGENCE SCIENCE COMMITTEE (DESSC) - Mike Perfit gave the report for the DESSC. He provided a summary of: (1) the December DESSC Meeting at AGU, (2) the agency meetings, and (3) the status of the KNORR conversion to DSRV ALVIN support ship.

There was a terrific turn-out at the December DESSC Meeting. The Community was given an overview of ALVIN's 1994 operations and was updated on the progress of imaging improvements. In 1994, ALVIN saw a 99 percent success rate. Numerous proposals and letters of intent were received for work in the Western Pacific, South Pacific, Juan de Fuca, and the Atlantic. Seventeen requests were made for work in the Western Pacific for a total of over 200 dives. Whether or not ALVIN goes to the Western Pacific will be driven by proposal pressure.

In February, Mike, Jeff Fox and Dick Pittenger met with Bob Correll of NSF; Fred Saalfeld of ONR; and Ned Ostenso of NOAA in three separate agency meetings to discuss future plans for deep submergence. Two issues were discussed: (1) the need to identify one agency as a lead agency for deep submergence support and (2) the refit of KNORR to a deep submergence platform. All agencies indicated their interest and dedication for the continuance of a national deep submergence capability; however, there are no intentions at the present time to change their ways of business. The present Memorandum of Agreement (MOA) for support of the National Deep Submergence Facility expires at the end of this year. The agencies have indicated that they will delay initiating a new MOA until the end of 1996. With the uncertainty of the future of the NOAA/NURP program, the agencies would like to wait and see if the picture becomes more clear before signing into a new Agreement.

At the agency meetings, Dick Pittenger presented a proposed plan for conversion of KNORR to a submersible platform. The plan included a summary of the work tasks identified for the conversion, a time schedule, and the estimated cost of the conversion. The optimum schedule proposed for the conversion has ALVIN beginning its overhaul at the start of 1996. KNORR would transit directly back to Woods Hole from Kenya to begin the refit in the early part of the year. The conversion and overhaul would be complete by mid year when deep submergence operations would resume. WHOI has offered to front the money for the conversion. The agencies responded to WHOI's proposal with a letter indicating that a decision whether or not to proceed with the KNORR conversion would not be made for six months. At the very least, the conversion schedule would be delayed by six months. This would allow KNORR to work its way back to Woods Hole with a healthy schedule of operations.

In response to the agencies' letter, DESSC sent a memorandum to the community to alert them of the change in plans and asked them to submit letters of intent for ALVIN operations in 1996. The community responded, and in summary, approximately 60 dives were indicated for the Atlantic, ten of which are funded; approximately 70 dives were requested for the South Pacific, 40 of which are funded; 60 dives were requested for northern East Pacific Rise, six of

which are funded; and approximately 150 dives were requested for Juan de Fuca, fourteen of which are funded. Some of these letters of intents are actually in the form of proposals. DESSC is seeking guidance from the agencies on how to proceed. They are willing to work with NSF to set up a special proposal review panel if necessary. Mike indicated that guidance from the agencies prior to the June DESSC meeting would be helpful to DESSC.

FLEET IMPROVEMENT COMMITTEE (FIC) - Chris Mooers, FIC Chair, provided the report for FIC. He began by giving an overview of the FIC meeting held at the University of South Florida in January. A FIC plan was developed to identify immediate (months to a year), mid-term (a year or two), and long-term (three or more years) goals.

Immediate plans call for establishing Science Mission Requirements (SMRs) for coastal vessels, developing an inventory of small research vessels, a primer on small research vessels, and identifying the regional science needs throughout the community. The next year and a half will be devoted to analyses of SMRs for coastal vessels. Chris provided a point paper he drafted with Otis Brown outlining the attributes of a UNOLS regional research vessel consortium, see *Appendix III*. The inventory of small research vessels is already beginning to materialize and is being posted by region on the World Wide Web (WWW). Jack Bash has been recruiting regional points of contacts to coordinate their local small vessel inventories.

At FIC's January meeting, the committee was tasked to compile statistics to show the past geographic distribution of research operations of the UNOLS fleet and to assess how this distribution of operations matches the geographic distribution of the fleet. The UNOLS Office compiled statistics for a ten year period, 1986 to 1995, for vessels in Classes I/II and III. These statistics are provided as *Appendix IV*. The statistics are based on science days and exclude transit cruises in which science was not conducted. They also exclude days spent in port and days devoted to ship trials and inspections. The statistics for years 1986 through 1993 were collected using cruise reports. The data for 1994 and 1995 is based on the latest ship schedules posted by the UNOLS Office. Statistics were also compiled for 1996 and 1997; however, this data was collected from ship time requests and much of this time is still pending funding decisions.

The Council was asked to review the statistics and provide recommendations on additional information/modifications that should be included in the summary. Mike Prince suggested that geographic statistics for Class IV be included in the compilation. It was also suggested that the geographic grid size possibly should be refined to smaller zones.

Chris Mooers continued the FIC report by explaining that he has been drafting a, "Customer Satisfaction Survey," for chief scientists to complete. A draft of the survey has been circulated to the FIC for comment. It was pointed out that a survey of UNOLS had been conducted a few years ago. The Council recommended that the UNOLS Office provide Chris with the results of this survey. The results may be useful in drafting this latest survey. The new questionnaire should be sent jointly to the chief scientists from both FIC and UNOLS.

A brief discussion evolved on the issue of cruise assessments and their effectiveness. The NSF inspection examines science success through the cruise assessments. Mike Prince recommended that a digital version of the cruise assessments be made available so that assessments can be made and received in real time. Since the issue of cruise assessments is an agenda item to be addressed later in the meeting, further discussions were tabled until that time.

Chris reported that the FIC plans to have a point paper completed by their July meeting on safety responsibilities by the Principal Investigators.

FIC's mid-term and long-term plans were outlined as follows:

Mid-range - 1) Evaluation of NSF inspection. The inspection was reviewed in 1992, but further review may be needed.
2) Arctic Research Vessel oversight activity
3) Development of a long range science plan in coordination with FOFCC (especially for Class I/II & III ships)
4) Nuclear submarine report and follow-up action
5) Use of UNOLS ships for continuous data collection for long term programs. A representative from NOS will be invited to the July meeting.

Long-Term -1) Specialized Facility Oversight
2) Mid-life reviews for NEW HORIZON, POINT SUR and CAPE HATTERAS
3) Update Fleet Improvement Plan by summer 1997
4) FIC acquisition oversight on new vessels (MARCO, Swath at UH, CALANUS/ISELIN). David Karl indicated that efforts to obtain a swath vessel at U. Hawaii are dead. Barry Raleigh will bring the Council up-to-date during his report.
5) Joint effort with DESSC on exploring potential options for ALVIN replacement.

Eric Firing's term has expired, if asked he will serve another term. FIC would like to have Eric stay on-board as a member of FIC.

SHIP SCHEDULING COMMITTEE - Don Moller, Ship Scheduling Committee Chair, reviewed the 1995 ship schedules and presented estimated ship time for 1996, see *Appendix V*. In 1995, COLUMBUS ISELIN is out of service, GYRE is working with a severely reduced schedule and EDWIN LINK and PELICAN are showing low utilization. A large NOAA charter of approximately 60 days may be scheduled on PELICAN. Class III vessels are operating with less than full schedules in 1995. Class I/II vessels are showing an over utilization as a result of operations in the southern oceans, away from home ports, for a large portion of the year. All vessels are operating on or close to schedule, even with KNORR experiencing an engine failure.

Proposal pressure for UNOLS ships in 1996 is low. With the exception of Class IV, most ships are undersubscribed. Large ship operators have had conference calls to address 1996 schedules and identify ways to return the ships to the U.S. All of the large ships will be in distant regions at the start of the year and need to be back in the U.S. by the end of the year. It was also noted that REVELLE will come on line in 1996 and is available for operations in the fall of 1996.

Don listed the total 1996 scheduled days for each of the intermediate vessels:

ENDEAVOR - 230
OCEANUS - 241
SEWARD JOHNSON - 212
CAPE HATTERAS - 211
WECOMA - 80+ days
MOANA WAVE - 176
NEW HORIZON - 245

All of the intermediates are undersubscribed and at least 60 days are quadruple booked among the four east coast intermediates. NEW HORIZON hopes to undergo a mid-life refit in 1996.

RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE (RVTEC) - Rich Findley, RVTEC Chair, reported that the annual RVTEC meeting is scheduled for the week of 16 October in Monterey, CA. Some of the issues to be discussed include establishing data standards, science/technician safety issues, and shipboard equipment inventory sharing. Rich pointed out that the science community needs to be involved in setting data standards. FIC plans to investigate this area and will help suggest ways in which to proceed. RVTEC is exploring the possibility of creating a home page on the World Wide Web which would include a catalog of shipboard equipment. This would provide a means for the community to learn what equipment is available and where it is located for sharing purposes.

AGENCY REPORTS

NATIONAL SCIENCE FOUNDATION (NSF) - Don Heinrichs provided the report for NSF by first reviewing personnel changes at the Foundation. Dolly Dieter's current IPA has been extended to March 1996. Beginning this fall, Lisa Rom will be working remotely for NSF from the University of California, Berkeley. She expects to stay in the Berkeley area for approximately one year. Lisa will spend 50 percent of her time on the NSF instrumentation and technicians program. In other personnel news, the Ocean Science Division of NSF has named Mike Purdy as its new director. He is tentatively planning to be onboard in September.

Don continued his presentation with a series of view graphs on the budget. These have been included as *Appendix VI*. The first view graph provided the 1993-1995 budget for the Ocean Science Division and further expanded on the Oceanographic Facilities portion. The ship operations budget of \$35.2M is a \$2.5M increase over 1994 or 7.6%. The next view graph

provided the 1996 Budget Request. Ocean Science Division is requesting \$205.6M or a 6.3% increase. Overall the Foundation is asking for a 3% increase. Don explained that the "Other Research Activities" line represents the NSF core program support. These are requesting a \$9M increase.

The next series of view graphs outline the NSF National Performance Review. It is titled NSF IN A CHANGING WORLD (Strategic Plan). The thrust of the plan is "reaffirming the core values". The plan includes a statement of the NSF Mission. The next view graph discusses the NSF focus on "Reinventing Government". The planning calls for a static budget for the next three years, then a 3% budget reduction for 1997 and a 2% reduction each year through the year 2000. This equates to a total 9% cut over the present FY96 operating budget request, totaling a \$290M reduction. Don pointed out that all NSF facilities are under review. In the next view graph NSF lists its priorities as: People, Instruments then Infrastructure/facilities.

In Don's final two view graphs he presents NSF Modes of Support and Facilities Planning. The Modes chart divides the NSF budget into Research Projects, Facilities, Centers and Education & Training. Research Projects are planning for a 7.2% increase in 1996 while NSF Facilities is budgeting a 3.7% decrease. Centers are looking for a 3% increase and Education & Training a 0.4% increase. In total this accounts for the 3% budgeted increase for 1996. The final view graph illustrates the facility breakout. Academic Research Fleet/Ship Operations represents 7.3% of the overall facility budget or \$53M of \$710.2M.

Don concluded by reporting that Polar Programs has signed a contract with Edison Choest to lease a replacement for POLAR DUKE. It is a five year lease and is estimated at 10-15 percent higher than the existing POLAR DUKE operation. There was a requirement for the replacement to be a U.S. flag vessel. The expense of converting POLAR DUKE to a U.S. flag vessel was too high to be economical.

OFFICE OF NAVAL RESEARCH (ONR) - Jim Andrews provided the ONR report. He announced that Sujata Millick has been named as Keith Kaulum's replacement. Sujata is presently a Legislative Fellow on Capitol Hill and should be available for the ONR position in late summer. Jim reported that Admiral Watkins of JOI/CORE has been talking with the Chief of Naval Operations (CNO) concerning oceanographic issues. The CNO has established an Executive Board on Oceanography which should raise the visibility of oceanography in the Navy and possibly lead to new activity. They plan to meet in late June. The Oceanographer of the Navy and ONR are involved in this activity. Steve Ramberg and Jim DeCorpo are the ONR contacts. In other action, FLIP completed Phase I of a major maintenance period, funded by NAVSEA. Improvements were made to the structural and electrical systems. A strain gage system was installed to monitor these improvements. In November, FLIP will enter the ship year and review the monitoring results to estimate life expectancy.

On the budget picture, Jim reports that Congress' rescission action for 1995 will cost ONR Science & Technology \$39M. It is unclear where this presently stands. The 1996 facilities' budget is planned for level funding, but uncertain, and growth is not expected in the out years. Jim said that they hope to see more emphasis on field programs.

NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION (NOAA) - The NOAA report was presented by Captain Martin Mulhern. Rear Admiral Sigmund Petersen, Director of the Office of NOAA Corps Operations, will retire at the end of April. Rear Admiral William Stubblefield's nomination as the next Director is pending in the Senate.

Recent progress in NOAA's Fleet Replacement and Modernization Program includes construction of the RESEARCHER (the NOAA AGOR) being about 1/3 complete, with launch expected in June 1996 and delivery in August 1997. Contracts have been awarded for conversion of a former T-AGOS ship to support the TAO array of oceanographic moorings and related oceanographic observations (about \$7.5M, to MCI of Bellingham, WA) and for repairs to extend the service life of DELAWARE II (about \$7.2M, to Bender Shipyard, Mobile, Alabama).

SURVEYOR is presently returning from Antarctic Marine Living Resource research off the Antarctic Peninsula, and is scheduled to go off-line at the end of FY 95. MALCOLM BALDRIGE is in the Indian Ocean conducting WOCE, GLOBEC, OACES, and RITS cruises, and will return across the equatorial Pacific servicing the TAO array, arriving in Miami in January 1996. DISCOVERER has recently been in the Pacific supporting Global Ocean Atmosphere Land System (GOALS), VENTS, and Pan American Climate Studies (PACS) research. NOAA's use of the UNOLS fleet in FY 95 includes approximately 60 days at sea for GLOBEC aboard the SEWARD JOHNSON, and more than 60 days at sea aboard PELICAN in support of fisheries programs.

A variety of other activities are underway. A revised Fleet Replacement and Modernization plan is presently being developed by a committee chaired by John Carey, Associate Deputy Under Secretary of NOAA. A process for disposal of excess ships has been approved, and the OCEANOGRAPHER, FAIRWEATHER, DAVIDSON, HECK, SURVEYOR, and MT MITCHELL are expected to be affected. USGS and NOAA had planned to jointly operate a former T-AGOS vessel, the WORTHY, but USGS has recently decided to defer operations in the near future. It was disappointing to all parties that full operation of WORTHY was precluded by the budget, but this relationship was successful and provided valuable experience for future cooperative activities. NOAA anticipates that its future oceanographic research will require stationing the T-AGOS and DISCOVERER in the Pacific and the NOAA-AGOR in the Atlantic.

UNITED STATES COAST GUARD (USCG) - CDR Rick Rooth gave a summary of the USCG activities. He reported that the Coast Guard has been told to expect a \$100M cut per year for the next five years. Accompanying this would be a 1000 person reduction in their manning per year for this same period. Rick provided copies of the U.S. Coast Guard Ice Operations, see *Appendix VII*.

Over the past year, USCG provided input to two studies:

- 1) GAO &
- 2) Ocean Studies Board (OSB)

Rick reported on the GAO study presented at the Ocean Studies Board Review of the Arctic. GAO's report will state that there is insufficient science funding to support an additional Arctic Research Vessel. The Coast Guard is concerned that if there is not enough funded science in the Arctic to fully utilize the present USCG icebreakers (including HEALY), so why is there a need for the ARV? He said that the Coast Guard will work with NSF in reviewing the findings of the studies. Tom Royer pointed out that the science plan for the Arctic has been completed. Rick said that the Coast Guard would welcome a list of scientists who could be called upon to provide advise on science outfitting issues for HEALY. The Council agreed to provide such a list. There is general concern that there is no organized mechanism for getting access to the Arctic. In response, the Council identified an ad hoc committee to determine whether or not UNOLS should establish a separate committee to discuss and review Arctic facilities issues. The ad hoc committee will also examine the pros/cons of including Antarctic programs in this plan. Members of the ad hoc committee are Tom Royer, David Karl and Cindy Lee.

UNOLS ISSUES

POTENTIAL CHANGES ON THE HORIZON FOR THE UNOLS FLEET - GENERAL DISCUSSION - A series of issues have arisen that could have a major impact on the UNOLS Fleet. The issues were grouped together and addressed in a general discussion. The issues are: The long-range budget picture with REVELLE and ATLANTIS; Ocean Studies Board review of the ARV; KNORR/AGOR 25 as submersible handling ship; Crew stability and crewing standards; Initiatives for new vessels at UNOLS institutions and RSMAS/HBOI plans.

The Long-Range Budget Picture with REVELLE and ATLANTIS - Ken Johnson introduced the discussion session then turned the floor over to Don Heinrichs for a review of the funding picture. Don presented a series of view graphs starting with the "Heinrichs Model" of UNOLS Ship Classification. This divides the UNOLS fleet into four groups: Large Ships, Intermediate Ships, Regional Ships and Local Ships. The classification differs from the traditional divisions of Class I through IV by designating by operating profiles rather than ship length. This method better groups the ships into similar operating cost classifications. This series of view graphs is included as *Appendix VIII*. Don's next view graph provided a three year summary of the UNOLS Operations Support (1993-1995). These figures were derived from the annual NSF ship operations proposals. He pointed out that NSF had increased its fleet support from 30.6M to 37.2M over this period or an increase of 22%. He further pointed out that the other supporters of the fleet (ONR/NRL, NOAA, other and institutional) decreased over this period by 23%.

Don's next view graph divided the funding by ship groups and the cost by sponsor of each operating group. These numbers reflect the dominance of NSF funding for the large ships and the fact that NSF is the largest supporter of all groups. The next view graph "Other Support" for UNOLS Operations defined those funders which are included in the "other" category. This group provides between 5 and 10% of the funding and is spread between eleven different

funding entities. Don remarked that even if this support increased it would not make a serious impact on the total. The 1995 figures for "other" actually declined by 50% over that of 1994.

The 1995 operating days by sponsor were the subject of Don's next view graph. These were broken down by ship in their respective operating areas. This was followed by a profile of support for these ship days. Don then showed the 1995 and 1996 proposed days for the large ships. All large ships return to the U.S. in 1996 with viable schedules, except for the REVELLE, which presently is unscheduled after it starts operations in the second half of 1996. All of these view graphs reflected the dominating support of the ships by NSF. For the large ships, the NSF support increases from 87.8% to 93.1% from 1995 to 1996. Don explained that there was not enough money in the NSF budget to support six large ships. NSF's ship use has been close to what they had predicted in the past, however, other agency support has gone down. The need to drum up support from other agencies was recognized.

Don's next several view graphs, see *Appendix IX* were quotes from the recommendations of the 1995 Fleet Improvement Plan (FIP). He pointed specifically to the recommendation "Agencies that support UNOLS ship operations evaluate geographical distribution of year 2000 fleet." The recommendation goes on to establish a criteria for geographical distributions and suggests that any changes be approached cautiously and based on the cited criteria. Don then provided a view graph with various quotes from the FIP for which comments were not offered, however, the quotes reinforced Don's point that overall funding in the future will be difficult.

Don suggested that he would like to open the discussion on the issue. He said that the federal agencies needed input from the community, however, any decisions for ship lay-ups or changes in geographical distribution would be the responsibility of the agencies.

The next view graph titled KNORR/ATLANTIS framework opened the discussion on the large ship issue suggesting there will be an excess of large ships when ATLANTIS joins the fleet. Don (considering NSF as over 90% supporter of the large ships) listed the requirements for large ships as one MCS/MGG ship, one deep submergence support ship, and three general purpose ships. His expectation is that one general purpose ship will not operate in the late 1990's. He cited the long-term institutional support for REVELLE and THOMPSON and the specialized capability for EWING. Don suggested that three ships (MELVILLE, KNORR and ATLANTIS) were potential options for the deep submergence support ship.

Don followed by saying that both ONR and NSF agree that it is necessary to re-think the selection of a replacement ship for ATLANTIS II since there are no budgeted funds in either agency to support the \$1.9M WHOI proposal to convert KNORR. It may be more logical to convert ATLANTIS as the submersible handling ship. ONR and NSF have told WHOI that it would take six months to evaluate the conversion proposal and to review all of the options.

As one option to save operating funds, Don suggested that it may be necessary to cease operating one of the older large general purpose ships with KNORR and MELVILLE being candidates. Don then provided the current status:

- ONR has requested NAVSEA to review the feasibility/cost for outfitting ATLANTIS as the submersible handling ship.
- KNORR is planned for operations in 1996.
- ATLANTIS II/ALVIN will operate in 1996 if science projects dictate.
- Conversion of the submersible support ship will be done in 1997.

As a final series of view graphs (*Appendix X*) Don presented "A Modest Proposal", his strawman of a possible UNOLS fleet alignment in years 1997-2002. This alignment included the retirement of five ships (COLUMBUS ISELIN, GYRE, MOANA WAVE, ALPHA HELIX and ATLANTIS II) which are the five oldest intermediate/large ships. In addition, two geographical re-locations were suggested. These were OCEANUS to Alaska and MELVILLE to Hawaii. Don pointed out that this is not the ultimate solution, just a suggestion.

Dick Pittenger pointed out that taking ATLANTIS II out of service in 1996 and outfitting ATLANTIS as the submersible support platform may result in a two year hiatus in ALVIN operations. Delivery of ATLANTIS is scheduled for 1997.

Don's presentation gave the Council considerable food for thought as Ken closed the meeting for the first day.

Ocean Studies Board Review of the ARV - The Council reconvened at 0830, 25 April 1995 in the Soberanes Room of the Hotel Pacific. Ken opened the meeting with a discussion on the Ocean Studies Board Review of the ARV. A kickoff meeting was held in January at the National Academy to review Arctic research needs. A series of presentations were made including those from USCG, Arctic Research Council, ONR and UNOLS. A GAO preliminary report of their review of the Arctic research requirements was presented to the Oceans Studies Board. This review concluded that the U.S. needed only four icebreakers. With the two Polar Class USCG breakers, the NATHANIEL PALMER and the soon to be built HEALY there was no need for an ARV. GAO did not look at the mix of ships and their scientific capabilities. GAO was asked by Senators Johnston and Murkowski to examine alternative constellations of icebreakers to determine whether or not these ships could support both the USCG mission and scientific requirements of the polar seas. A copy of this request is included as *Appendix XI*.

Ken Johnson reiterated the UNOLS view of the Arctic Research Vessel at the OSB meeting stating that this vessel is needed and should be built as long as its support does not adversely impact other UNOLS assets. The annual operating cost for the ARV is estimated at \$9.1M. Based on UNOLS ship history this largely covers fuel consumption and heavy maintenance. The Polar Class is estimated at \$20M/year. This breaks down to \$11M for fuel and \$9M for maintenance and helo. Ken said he understands there is some pressure to equalize the Antarctic and Arctic budgets. This would be boon for the Arctic since there is significantly

more funding support for Antarctic research. A follow-on OSB meeting was held in Irvine, CA to define the science required for the Arctic.

The final meeting of the Ocean Studies Board is scheduled for 2-4 May. Their recommendations and conclusions are due out by 1 September 1995. It was suggested that Neil Sullivan be invited to the September Council meeting to get his views on the Board's findings and to open a dialog between UNOLS and the Office of Polar Programs. It was also suggested that Garry Brass from the Arctic Research Council and Paul Stoffa, OSB, be invited.

KNORR/AGOR 25 - The next area addressed in the "Potential Changes on the Horizon for the UNOLS Fleet" discussion was the conversion plans for KNORR to a submersible handling ship. Peter Betzer started the presentation with a brief history of the ad hoc committee's work on providing advice to WHOI on the scientific needs for the submersible handling ship. The committee met twice, once in September 1993 and then on the 31st of January 1995. Ken Johnson chaired the first meeting and Karen Von Damm the second. It was a key objective to maintain a general purpose capability on KNORR. The subcommittee also recommended that KNORR's conversion should locate the DSV hangar to port and that the Dynacon winch be permanently installed below deck. Jeff Fox, Mike Perfit and Dick presented the KNORR conversion proposal to NSF, NOAA and ONR in February. Peter noted that the timing of the conversion would be critical if the minimum of down time was to be experienced. KNORR would need to return to Woods Hole early in 1996 to start the conversion in order to dove-tail with the completion of the ALVIN overhaul. This would require a dead-head transit from Kenya to Woods Hole. NSF has indicated that they will not support a dead-head transit and that KNORR must work its way home. This means that KNORR would not be back until mid-1996. Also, the federal agencies (ONR & NSF) would like to delay the conversion funding decision for six months while they explore all options. As a result, the ad hoc committee's timetable for the conversion will be abandoned.

Dick Pittenger followed with a series of view graphs (*Appendix XII*) relating to the delivery of ATLANTIS, KNORR's schedule and ALVIN's overhaul. Dick said that ATLANTIS' construction was on schedule and on budget. Dick's view graphs first listed the major recommendations of the Von Damm subcommittee including the need for KNORR to return to Woods Hole in early 1996 to accommodate the conversion and resume operations. Dick reported that as a result of the agencies' intention to push the conversion decision back six months, Jeff Fox canvassed the community to determine whether or not there is a potential for dives that can utilize ALVIN in the first half of 1996 from ATLANTIS II. Mike Perfit indicated that there is already some funded ALVIN work that could be conducted in 1996 from ATLANTIS II, but weather windows would need to be considered. Don Heinrichs said the results of this canvas should be available at the June DESSC meeting to permit NSF and other agencies to assess procedures to review the new proposals. Dick informed the Council that WHOI is developing a 1996 schedule for KNORR that would include work in the South Atlantic and cruises to bring it north. This tentative schedule would have KNORR back to Woods Hole in the fall of 1996. Dick presented the ATLANTIS construction schedule and pointed out that with delivery scheduled in 1997, to be followed by fitting out periods and sea

trials; ALVIN operations may be impacted by a lengthy hiatus. Mike Perfit indicated that he and Karen Von Damm will keep in touch with the agencies regarding this issue.

Crew Stability and Crewing Standards - Ken Johnson opened the discussion on crew stability by stating that maintaining crew stability during a lay-up is difficult. This could lead to unsafe operations. A discussion followed and questions arose whether vessels with low utilization should be re-examined for safety. Do we have an effective mechanism to evaluate ship's crew performance? Chris Mooers said the FIC was looking at the NSF Inspection process to determine if this is the tool needed and accepted the action for this item. Further discussion was tabled until cruise assessments were addressed.

Initiatives for New Vessels at UNOLS Institutions - Barry Raleigh, Dean of SOEST at the University of Hawaii, provided the first presentation on the initiatives for new vessels. Barry said that SOEST had considered construction of a SWATH vessel as a replacement for MOANA WAVE through federal defense conversion funds, but that it is highly unlikely at this time. SOEST is presently talking with NOAA on the possibility of operating NOAA's new AGOR (presently under construction) in some form of a cooperative agreement where the operating funding may be split 50/50 NOAA/UNOLS. Although this is in the earliest stages of discussion, conversations between Barry and NOAA's Jim Baker suggest that this may fit NOAA's plans for reducing the NOAA Corps.

Barry then opened the subject of the present assignment of the two AGORs under construction (AGORs 24 and 25). He suggested that if the institutional operating agreements are changing, it may be necessary for the agencies to revisit their evaluation process and possibly consider assigning the ships differently. Barry said that Hawaii, in their bid for an AGOR, had proposed state operational support of \$500K per year. This offer still stands. Barry further said, in response to Don Heinrichs' re-alignment strawman, that Hawaii would accept MELVILLE as a replacement for MOANA WAVE if that were the agencies decision. Barry fears that if UH does not get a vessel, it will substantially weaken their program, and impact their state funding. These comments were seconded by Dave Karl. With respect to KAIMIKAI-O-KANOLA (KOK), Barry said that this ship is not a replacement possibility for MOANA WAVE and is only to support the HURL/NURP program. If funding is lost for this program the KOK will be lost as well. KOK is not considered a general purpose ship and it is unclear whether or not it can be converted to one.

RSMAS/HBOI Plans - Tom Lee of the University of Miami and Tim Askew of Harbor Branch Oceanographic Institution opened the discussion on their institutions' ship operating plans. He said that RSMAS and Harbor Branch are working on a MOU that would combine their ship operations and technicians programs. They are making progress but there are still outstanding issues to be resolved. Along with ship-ops, the plans include science collaboration and joint proposals. Presently SEWARD JOHNSON is using the RSMAS technical group and has integrated the Miami technical equipment. HBOI is building a new marine operations building which will include science staging and technician facilities.

RSMAS presently plans to continue operating CALANUS or the CALANUS replacement, but will consider moving its operation to HBOI. COLUMBUS ISELIN is now out of the shipyard and will be in lay-up at the HBOI piers. The ship has new berthing facilities and a new bottom. If conditions warrant ISELIN can be brought back in operation for science in 1996. Both Tom Lee and Tim Askew agreed that the marriage of the two institutions was a good fit with very few duplications. The broad agreement would include facility appointments.

Tom Lee reported that RSMAS is working on a replacement for CALANUS. They feel they need a shallow water, multi-disciplinary vessel that is fast and can carry more scientists than CALANUS. They would like to offer a day rate of \$2000/day, no higher than \$3K. A donor has pledged \$500K and has designated the ship should be a catamaran. Tom said that a RFP is ready for the yards. The total cost of this ship could reach \$3M. The CALANUS replacement specifications are included as *Appendix XIII*. They have held a preliminary meeting with regional users to discuss the vessel's capabilities.

Dick Pittenger followed with a WHOI plan for acquiring the SWATH ship KAIMALINO, see *Appendix XIV*. This ship has been owned and operated by the Navy for over 10 years. WHOI is working with NUWC of Newport, RI on plans to bring the ship from San Diego and operate it out of WHOI. The ship is an 80' SWATH and would be used for coastal work. A three person crew is planned with an operating cost of \$3-4,000/ day. WHOI is putting together a consortium for use of this vessel. Present members planned for this consortium are: WHOI, NUWC, USGS, NMFS, UMASS System, Mass Maritime and the NE Aquarium. The ship transfer has not been finalized. Dick indicated that they do not plan on adding this ship to the UNOLS Fleet, but they will bring it to UNOLS standards.

ACTION - Considerable discussion followed these presentations on "Potential Changes on the Horizon for the UNOLS Fleet". An ad hoc committee was formed to recommend the UNOLS response to these issues. The committee appointed was Peter Betzer, Chair, Bob Wall, Chris Mooers, Dick Pittenger, Bob Knox and Denny Hayes. A charge to this committee will be drafted by Ken Johnson and forwarded to the committee via e-mail for critique and fine tuning. The committee was asked to provide a preliminary report by August so that more action can be addressed at the fall UNOLS Council meeting.

End General Discussion

USCG's ICEBREAKER HEALY - Rick Rooth reported that HEALY is scheduled to start construction in March 1996 with delivery planned for 1998. The ship is expected to have a crew of 75 which is a significant reduction from the original manning plan. This number would drop to 67 without the aviation personnel. To date approximately \$80M has been spent on ordering long lead material for the ship. Approximately \$100M is expected to be spent prior to actual construction. A general discussion followed concerning the exchange of correspondence between Senators Johnston/Murkowski and the Commandant of the Coast Guard. Copies of these letters are included as *Appendix XV*. It is the perception of the UNOLS community that the Coast Guard is not seeking advice from the science community on

the construction designs of HEALY. The Coast Guard, on the other hand, believes that they have offered the community several opportunities to offer advice. The difference of opinion seems to be in the degree and detail of the exchange. CDR Rooth said that the Coast Guard would welcome a standing committee of scientists who would be available for their counsel. UNOLS agreed to establish such a "committee". Ken Johnson assigned the action for this to an ad hoc committee of Tom Royer, David Karl and Cindy Lee. It was also recommended that FIC poll the ARV subcommittee to see if they would be interested in serving on an advisory group for HEALY. This will be discussed further at FIC's July meeting.

UNOLS CHARTER CHANGE PROPOSAL - The UNOLS Charter, as presently written, does not permit the UNOLS Office to remain at a single location for more than six years. The current office has been at URI for four years and if it is to move it would be necessary to start the search process. The current UNOLS Office has requested that the Charter be changed to permit a nine year (3, three year proposal grants) stay at a particular location. After a short discussion the Council unanimously agreed to the Charter change. The Charter change will be presented to the Membership at the Annual Meeting for a vote. Bob Wall pointed out that the entire Charter needs to be reviewed and readopted by the Council this year and any recommended changes be passed around electronically so that they too can be incorporated in the Charter changes recommended above.

FOFCC - Captain Marty Mulhern reported that a Federal Oceanographic Fleet Coordination Council has been formed by the members of the former Subcommittee on Federal Oceanographic Fleet Coordination. There is enthusiasm by all of the agencies, and new charters for both the Council and Coordination Board are nearing approval. NOAA will Chair the new FOFCC through September 1996, and a representative of the Oceanographer of the Navy will Chair the Coordination Board. One of the first action items will be to update the Federal Oceanographic Fleet Report.

SCIENTIFIC OPPORTUNITIES ON NUCLEAR SUBMARINES - Jack Bash informed the Council that the report from the 21-22 September 1994 meeting in Washington, DC on the Scientific Opportunities on Nuclear Submarines is being written by Lloyd Keigwin, WHOI, and should be completed by mid-summer.

SOUTHERN CALIFORNIA MARINE INSTITUTE APPLICATION FOR UNOLS MEMBERSHIP - A UNOLS membership application from Southern California Marine Institute was presented to the Council for approval. The Council had several questions about the appropriateness of membership since two members of the consortium, USC and Occidental are already UNOLS members. It was felt that the application was vague and did not provide adequate rationale for becoming a UNOLS member. The UNOLS Office was instructed to return the application for further clarification.

SHIP CONSTRUCTION - Bob Knox reported that AGOR 24 was launched on 20 April during a well attended ceremony. Bob reported that the construction is going well. Dick Pittenger said that AGOR 25 was also doing well and was on schedule and on budget.

RADIO OPERATOR/GPS - Dick Pittenger said that a bill was before Congress that would remove the requirement for ships to have licensed radio operators, see *Appendix XVI*. He is hopeful that it will pass. Dick further reported that both KNORR and ATLANTIS II have P-Code GPS receivers and a third one is on order for OCEANUS. THOMPSON is equipped with a P-Code receiver and Scripps has three. It has taken three years to complete all the bureaucratic requirements for these installations. NSF will report at the September meeting on the evaluation period. If it is deemed successful efforts will be made to expand the installations to other UNOLS institutions. Both Dick and Bob offered their respective institutions as providers for future units rather than going through the detailed and laborious procedures of having clearance at each institution for the receivers. David Karl requested that MOANA WAVE be given an opportunity to install the P-Code GPS.

LAW OF THE SEA DISCUSSION - Tom Cocke of the U.S. State Department informed the Council that clearances for Mexico, Brazil and Russia continue to be a problem. Tom provided a copy of the 1994 clearance summary which is included as *Appendix XVII*. Tom said that the State Department is hopeful that the Senate will ratify the Law of the Sea now that the required number of countries have approved it and it will come into force.

EXECUTIVE COMMITTEE - Dick Pittenger was appointed as the new member of the UNOLS Executive Committee replacing Ken Palfrey.

COMMITTEE APPOINTMENTS - The Council Chair, with the concurrence of the UNOLS Council, approved the following appointments: Mike Perfit for Chair of DESSC; Mike Prince for Chair of RVOC (second term); Rich Findley for Chair of RVTEC (second term); and Eric Firing for membership on the FIC (second term).

UNOLS COUNCIL MEMBERSHIP - A nominating committee was appointed by the UNOLS Chair to prepare a slate of candidates to replace those Council members completing terms. The terms of Dick Pittenger and Bob Wall are expiring. Both are eligible for second terms. Appointed as the nominating committee were: Bob Knox (Operator institution); David Karl, Chair (Operator institution) and Cindy Lee (Non-operator institution).

RESPONSIBILITY OF THE CHIEF SCIENTIST - Mike Prince reminded the Council that a study into the responsibility of the Chief Scientist was put on hold due to litigation which has now been settled. He said that the RVOC would like to re-open this study. The FIC has this for action. It was suggested that the study reviews what is already in the Cruise Planning Manuals and the Research Vessel Safety Standards to ensure they are consistent and cover all the issues of concern. It is perceived that the Chief Scientist does not always appreciate the level of responsibility he/she has assumed as leader of a scientific cruise.

ASSESSMENT REPORTS - Mike Prince reported that the RVOC is not satisfied that the current assessment reports reflect the true state of operating excellence of the UNOLS Fleet. They believe that this is caused by 1) lack of 100% submission of the assessments, 2) some scientists are intimidated by the report or choose to report problems by other methods and 3) the questions on the assessment report may not elicit the desired response. Mike suggested that we

must first decide what the goals of the assessment reports should be, then work toward meeting those goals. Action for this effort was assigned as the joint responsibility of the RVOC and FIC.

USCG INSPECTION OF UN-INSPECTED VESSELS - Mike Prince cited an example where the USCG wanted to inspect a ship during the process of administering the R/V designation letter. After a review of the NSF Inspection the USCG decided that their inspection was not necessary.

INTERNET - Jack Bash reported that the UNOLS Office is working on different ways to build a communication network using Internet now that OMNET is defunct. He explained that OCEANIC, at the University of Delaware, has acted as a server for posting UNOLS ship schedules, and ship characteristics for small vessel inventories. They also provide a way to utilize group addresses for UNOLS. What is missing is a bulletin board system that can be used by a discreet group for the purpose of exchanging information so vital to oceanographic science and operations. Several groups are working on this. They are NODC, TOS and CORE. Jack was instructed to discuss the issues with Margaret Leinen since she is actively involved in both TOS and CORE.

Jack also discussed further ways to use the Internet. He said the RVOC, RVTEC and UNOLS newsletters would be posted on Internet, probably through OCEANIC. He also suggested that \$10 to 20K per year could be saved if the minutes of the various UNOLS meetings were electronically posted rather than copied and mailed. The Council instructed the UNOLS Office to start immediately with this electronic posting with the idea that a limited number of hard copies would be made up and available upon request. Jack asked the Council to appoint an ad hoc committee that would work with the UNOLS Office to provide advice and direction for future and more advanced uses of electronic communications. An ad hoc committee of Tom Royer, Ken Johnson and Rich Findley was appointed.

NEW HORIZON MID-LIFE REFIT - Bob Knox provided a brief report on the plans for a mid-life refit for NEW HORIZON. The refit would address the current stability problem and increase the ship's operating range. It would fix the admeasurement problem and replace a generator. An estimate of the total package would be \$2M which includes shipboard scientific equipment. Scripps is seeking an 80% Federal to 20% State split in the funding which represents its usage profile. View graphs of the proposed mid-life are included as *Appendix XVIII*.

CALENDAR FOR UNOLS MEETINGS

Meeting	Dates	Location
Arctic Facilities Meeting	30 May	Baltimore, MD (AGU)
DESSC	31 May-2 Jun	Woods Hole, MA
Schedule Review	27 Jun	Arlington, VA
FIC	20-21 Jul	Seward, AK
SSC	11 Sep	Arlington, VA
Schedule Review	11/12 Sep	Arlington, VA
UNOLS Council	PM 12 Sep-13 Sep	Arlington, VA
Annual	14 Sep	Arlington, VA
RVTEC	16-18 Oct	Monterey, CA
RVOC	24-26 Oct	San Diego, CA
DESSC	10 Dec	San Francisco, CA

The meeting was adjourned at 1630 hrs.

APPENDIX I

ATTENDEES

<u>Name</u>	<u>Institution</u>	<u>E-mail address</u>
Jim Andrews	ONR	andrewj@onrhq.onr.navy.mil
Tim Askew	HBOI	askew@hboi.edu
Jack Bash	UNOLS	unols@gsosun1.gso.uri.edu
Peter Betzer	U of South Florida	prb@marine.edu
Tom Cocke	Department of State	tcocke@state.gov
Annette DeSilva	UNOLS	unols@gsosun1.gso.uri.edu
Rich Findley	RSMAS	rfindley@rsmas.miami.edu
Dennis Hayes	LDEO	deph@ldeo.columbia.edu
Don Heinrichs	NSF	dheinric@nsf.gov
David Karl	U of Hawaii	dkarl@soest.hawaii.edu
Bob Knox	SIO	rknox@ucsd.edu
Cindy Lee	SUNY at Stony Brook	cindylee@ccmail.sunysb.edu
Tom Lee	RSMAS	tlee@rsmas.miami.edu
Russ McDuff	U of Washington	mcduff@ocean.washington.edu
Don Moller	WHOI	dmoller@whoi.edu
Chris Mooers	RSMAS	cmooers@rsmas.miami.edu
Marty Mulhern	NOAA	mmulhern@banyan.doc.gov
Mike Perfit	U of Florida	perf@nervm.nerdc.ufl.edu
Dick Pittenger	WHOI	rpittenger@whoi.edu
Mike Prince	MLML	prince@mlml.calstate.edu
Barry Ralieggh	U of Hawaii	
Cdr. Rick Rooth	USCG	cdr_r_rooth/g-nio@ cgsntp.comdt.uscg.mail
Tom Royer	U of Alaska	royer@ims.alaska.edu
Neal Thayer	USCG	nthayer@halcyar.com
Bob Wall	U of Maine	robert_wall@ voyager.umeres.maine.edu

APPENDIX II

FINAL AGENDA

UNOLS COUNCIL MEETING

24-25 April 1995

Hotel Pacific, Soberanes Room

Monterey, CA

Call the Meeting: Ken Johnson, UNOLS Chair, will call the meeting to order at 0830, 24 April 1995.

Accept Minutes of 19 September, 1994 Council Meeting.

COMMITTEE REPORTS

Research Vessel Operators' Committee - Mike Prince, Chair, will provide an update summary of the RVOC activities and plans for the RVOC annual meeting scheduled for San Diego, CA 24-26 October 1995.

DEep Submergence Science Committee - Jeff Fox, Chair, will report on the updated status of ALVIN and ROV activities and the efforts to develop a new funding paradigm.

Fleet Improvement Committee - Chris Mooers, Chair, will report on an update of the Fleet Improvement Committee activities and the plans for the summer FIC meeting in Seward, Alaska.

Ship Scheduling Committee - Don Moller, Chair, will update the Council on the ship scheduling status for 1995 and the prospects for 1996.

Research Vessel Technical Enhancement Committee - Rich Findley, Chair, will report on the current activities of the RVTEC and the plans for their annual meeting to be held in Monterey, CA the week of 16 October 1995.

AGENCY REPORTS: Reports from representatives of NSF (D. Heinrichs), ONR (J. Andrews), NOAA (Capt. M. Mulhern), and USCG (Capt. A. Summy) on funding outlooks and special projects. The State Department (T. Cocke) will provide an update on foreign clearance problems. Pat Dennis of the Oceanographer of the Navy Office will report on OON matters.

UNOLS ISSUES

Potential Changes on the Horizon for the UNOLS Fleet - General discussion.

The Long-Range Budget Picture with REVELLE and ATLANTIS.

Ocean Studies Board Review of the ARV - K. Johnson will discuss the progress of the Board's review.

KNORR/AGOR-25 - D. Pittenger will provide an update.

Crew Stability and Crewing Standards - K. Johnson will lead discussion on UNOLS involvement.

Initiatives for New Vessels at UNOLS Institutions - What role can/should UNOLS play?

RSMAS/HBOI Plans - T. Lee will update Council re COLUMBUS ISELIN. T. Lee and T. Askew will discuss joint operating plans.

USCG's Icebreaker HEALY - General discussion on HEALY and the inter-action of the USCG and UNOLS (see letters from Johnson/Summy and Murkowski, Attachment II).

UNOLS Charter Change Proposed - A Charter Change is proposed to change the period of time for retaining the UNOLS Office at one location from six to nine years. This does not relieve the option of re-competing every three years (see Attachment IX.)

FOFCC - Don Heinrichs will report on the re-establishment of FOFCC.

Scientific Opportunities on Nuclear Submarines - Jack Bash will provide the status of the report from the Nuclear Submarine Workshop that was held on 21-22 September 1994.

Southern California Marine Institute Application for UNOLS Membership - Discussion on the application for UNOLS membership of the Southern California Marine Institute (see Attachment V).

Ship Construction - Bob Knox and Dick Pittenger will provide an update on the construction of ROGER REVELLE (AGOR 24) and ATLANTIS (AGOR 25).

Radio Operator/GPS - Dick Pittenger will update the Council on the status of the Radio Operator problem and the progress of introducing P-Code GPS to the UNOLS Fleet.

Law of the Sea Discussion - Tom Cocke will provide an update of State Department matters and address the issues in Dave Ross' memo to Dick Pittenger dated 20 September 1994 (see Attachment III).

Executive Committee - A new member of the Executive Committee needs to be appointed to replace Ken Palfrey. Attachment VI is a listing of the past committee members.

Committee Appointments - With the concurrence of the Council, Ken Johnson will appoint a new DESSC Chair. A new member of FIC will also need to be appointed.

UNOLS Council Membership - A nominating committee will be appointed by the UNOLS Chair to prepare a slate of candidates to replace those Council members completing terms. The nominating committee will consist of three members, two from UNOLS Operator institutions and one from an institution other than an Operator. Attachment VII provides a full description of duties of the nominating committee along with a description of the terms expiring. The terms of Dick Pittenger and Bob Wall are expiring. Both are eligible for second terms. Attachment VIII lists all past UNOLS Council members and their years in service.

Responsibility of the Chief Scientist - General discussion and tasking to study the responsibility of a Chief Scientist.

Assessment Reports - The RVOC has requested that the UNOLS Council review both the Chief Scientist and Captain/Marine Tech assessment report. A copy of the assessment forms and the summary reports are included as Attachment IV.

USCG Inspection of Un-inspected Vessels - Mike Prince will address the USCG inspections for R/V designation.

Internet - General discussion on Internet communications and what is the best way for the Community to communicate. (NODC? TOS? Oceanic? Other?)

Calendar for UNOLS Meetings

Meeting Schedule:

Meeting	Dates	Location
UNOLS Council	24-25 Apr	Monterey, CA
DESSC	31 May-2 Jun	Woods Hole, MA
Schedule Review	27 Jun	Arlington, VA
FIC	20-21 Jul	Seward, AK
Scheduling	September	Washington, DC
UNOLS Council	September	Washington, DC
Annual	September	Washington, DC
RVTEC	16-18 Oct	Monterey, CA
RVOC	24-26 Oct	San Diego, CA
DESSC	10 Dec	San Francisco, CA

Adjournment

APPENDIX III

UNOLS Regional Research Vessel Consortium Attributes

(Drafted by Profs. Chris Mooers and Otis Brown, 18 MAR 95)

1. One or more ship-operating institutions involved
2. Two or more academic institutions involved
3. A level or 'jointness' associated with the ship operations; e.g.,
 - scheduling
 - pooling of instrumentation
 - pooling of marine techs
 - long range planning of vessel and facility requirements, design, upgrading, equipage, training, regional telemetered data, data processing, etc.
 - proposal preparation
4. Regional faculty (user) oversight
5. Regional management (administrative) coordination
6. A focus on intermediate and small R/Vs; however, large R/V's specialized platforms, and other facilities could be included

NOTE: Items 1 - 5 are considered necessary conditions.

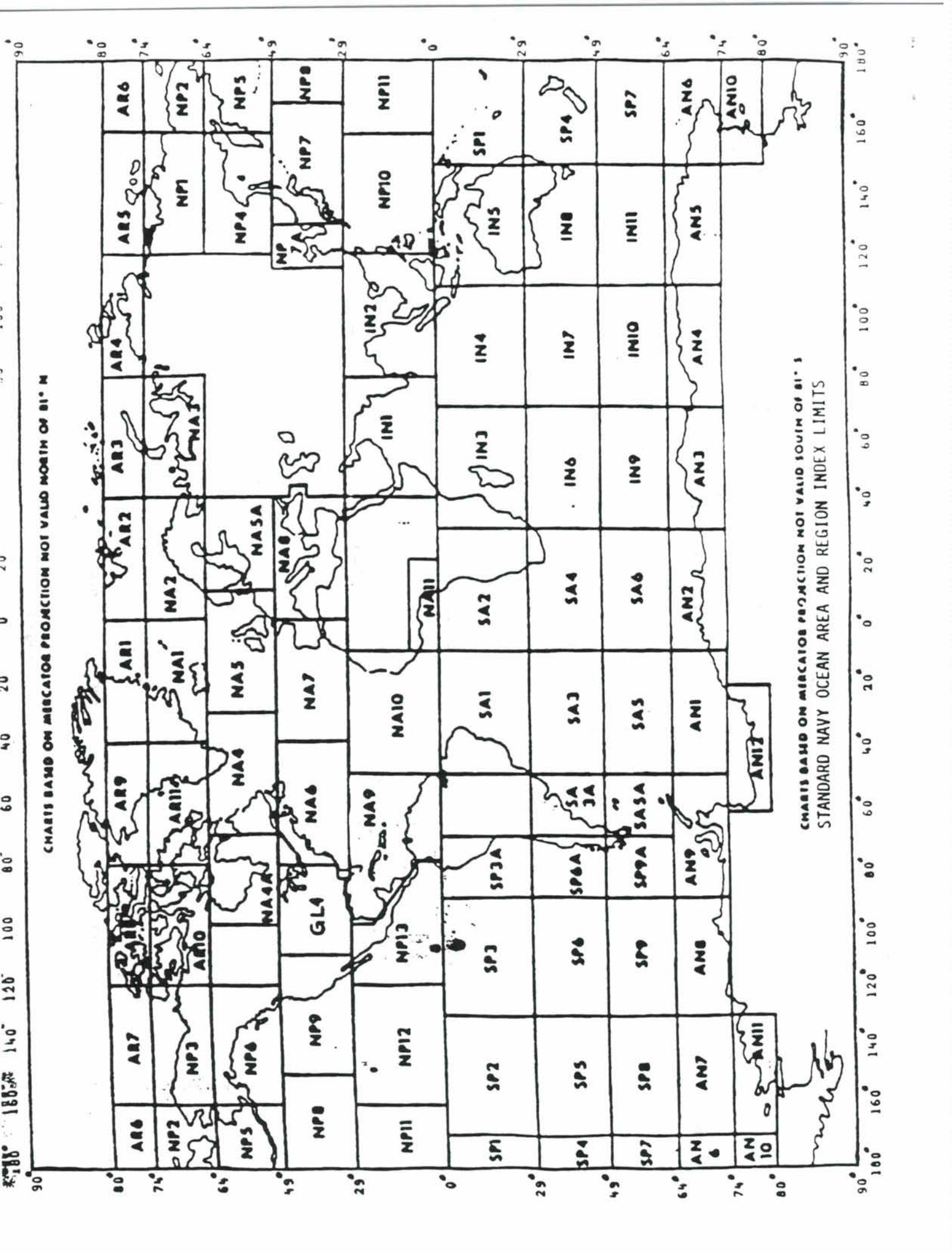
APPENDIX IV

GEOGRAPHIC OPERATING AREAS: 1986 - 1995

OCEAN AREA	1986			1987			1988			1989			1990			1991			1992			1993			1994			1995			TOTALS									
	I/II	III		I/II	III		I/II	III		I/II	III		I/II	III		I/II	III		I/II	III		I/II	III		I/II	III		I/II	III											
ANTARC.	0	0		0	0		0	0		0	0		0	0		0	14		0	30		0	8		0	0		0	0		0	0		0	0		64	0		
ARCTIC																																						6	10	
GREAT LK																																							0	86
INDIAN O.	184	0		0	0		36	0		0	0		0	0		14	12		0	0		0	0		0	179		0	709		0	1120		14						
N. ATL.	133	669		128	603		312	707		200	743		139	947		0	1038		179	968		227	510		150	629		242	443		1710		7257							
S. ATL.	114	40		162	0		178	0		113	10		86	0		43	0		0	46		103	0		92		0	39		891		135								
N. PAC.	596	233		608	349		706	367		352	354		302	368		355	376		472	350		511	411		440	321		409	391		4751		3520							
S. PAC.	128	0		290	0		85	36		45	0		101	51		460	17		512	62		394	172		329	0		164	42		2508		380							
TOTALS	1155	942		1188	952		1335	1120		710	1107		628	1416		884	1431		1193	1441		1243	1093		1190	985		1524	915		10986		11402							

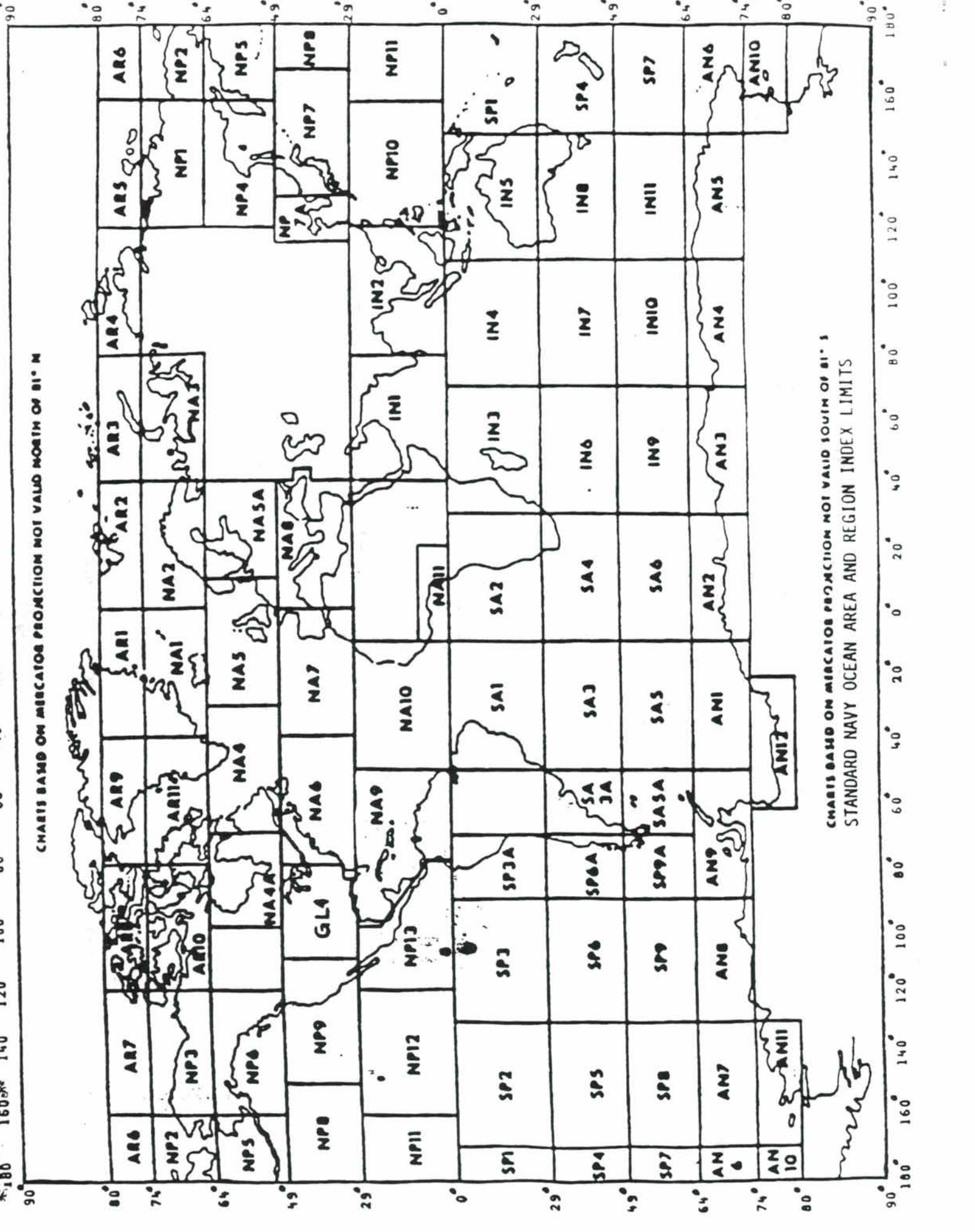
NOTES:

1. Statistics for years 1986 through 1993 were compiled from the ship utilization cruise reports.
2. Statistics for 1994 and 1995 were taken from the latest ship schedules available on OCEANIC as of 4/14/95.
3. Non-science days (port days, transits, and shipop days) were excluded from the statistics.
4. Summaries are provided for the Class I/II and the Class III ships only.
5. Operation days for ATLANTIS II are not included in the summary.



CHARTS BAND ON MERCATOR PROJECTION NOT VALID SOUTH OF 81° S

CHARTS BAND ON MERCATOR PROJECTION NOT VALID SOUTH OF 81° S
STANDARD NAVY OCEAN AREA AND REGION INDEX LIMITS



GEOGRAPHIC OPERATING AREAS: 1986 - 1995

OCEAN AREA	1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		TOTALS	
	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III

ANTARCTIC

AN5																							12	0
AN6													15										15	0
AN7												15											15	0
AN9											14					8							22	0
TOTAL AN	0	0	0	0	12	0	0	0	0	0	14	0	30	0	8	0	0	0	0	0	0	64	0	

ARCTIC

AR2																							6	10
-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---	----

GREAT LAKES

GL4										36					15								0	86
-----	--	--	--	--	--	--	--	--	--	----	--	--	--	--	----	--	--	--	--	--	--	--	---	----

INDIAN OCEAN

IN1	33																						441	0
IN2	15																						62	0
IN4	41																						145	0
IN5	31								14	12													90	14
IN6	36																						59	0
IN7	28																						143	0
IN8																	30						70	0
IN10																							25	0
IN11																							85	0
TOTAL I/O	184	0	0	0	36	0	0	0	14	12	0	0	0	0	0	0	0	179	0	709	0	1120	14	

OCEAN AREA	1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		TOTALS	
	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III

NORTH ATLANTIC

NA1			25	10	35	10	59	15														75	69
NA2			9	18				16														25	18
NA4				5	5			1			23				17	10						23	38
NA5				8		26		60			73				18							78	107
NA6	104	311	58	260	21	260	46	281	22	379	282	19	308	124	198	15	309	78	372			487	3125
NA7		90		32	35	32	9				65	21	121	16	40	32						113	348
NA8					76	129					12			15		21						165	88
NA9	29	188	5	86	30	351	113	281	25	479	434	66	409		246	4	320	164	71			436	2865
NA10		80	31	16	57	23	32	96		89	94	73	120	37	16	78						308	534
NA11										55			10									0	65
TOTAL NA	133	669	128	707	603	312	743	139	947	0	1038	179	968	227	510	150	629	242	443			1710	7257

SOUTH ATLANTIC

SA1	29	40	94		94		73	10			14			27	38							382	116
SA2					33										8							41	0
SA3	18		68		26		32		86		14			19		24						268	19
SA3A					5										10	14						29	0
SA4	16				20		8								28							72	0
SA5	34														10							44	0
SA5A	17									15					9							55	0
TOTAL SA	114	40	162	0	178	0	113	10	86	0	43	0	0	46	103	0	92	0	39			891	135

OCEAN AREA	1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		TOTALS	
	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III	I/II	III

NORTH PACIFIC

NP2			27		44																	71	0
NP5	7		27		75																	151	0
NP6	18		55	8	65	33					9	41	7									230	82
NP7	7				14																	253	0
NP7A	57																					57	0
NP8	62	27	39	32			35								2	17						153	77
NP9	188	184	45	273	129	296	28	326	43	275	56	288	50	201	105	282	73	231	107	301		824	2657
NP10	43				99				55	16	62		48	27	71	25	66					491	68
NP11					62		34		29	9	37		70	41	42	26	19					321	76
NP12	130	22	206	36	73	38	125		102	68	148	31	200	79	93	54	75					1242	328
NP13	84		209		145		130	28	73		43	16	97		44	24	55	74	78	90		958	232
TOTAL NP	596	233	608	349	706	367	352	354	302	368	355	376	472	350	511	411	440	321	409	391		4751	3520

SOUTH PACIFIC

SP1	118		48				38		42		69		122	28	92	25	121				53	703	53	
SP2	10		112		12	36	7		12	51	109	17	160		26	4	48				21	517	108	
SP3			66		12				5		112		62		183	17	24				43	507	17	
SP3A			64		12				13		11			34	13	126	24					42	137	202
SP4									24		11		37								16	88	0	
SP5											33		51								4	88	0	
SP6									5		79		25		21		40					170	0	
SP6A					49								13		23		72					157	0	
SP7													15								27	42	0	
SP8													27									27	0	
SP9											21				7							28	0	
SP9A											15				29							44	0	
TOTAL SP	128	0	290	0	85	36	45	0	101	51	460	17	512	62	394	172	329	0	164	42	2508	380	380	

GEOGRAPHIC OPERATING AREAS: 1996 -1997

OCEAN AREA	1996		1997		TOTALS	
	I/II	III	I/II	III	I/II	III

ARCTIC

AR2	16				16	0
-----	----	--	--	--	----	---

INDIAN OCEAN

IN1	33				33	0
IN3	42			44	86	0
IN4	52			44	96	0
IN5				42	42	0
IN7	16				16	0
IN8				29	29	0
IN9	33				33	0
TOTAL I/O	176	0		159	0	0

NORTH ATLANTIC

NA1	10				10	0
NA2	25				25	0
NA4	11	80		16	11	96
NA5	31			20	51	25
NA6	131	491		70	201	691
NA7	92				92	0
NA9	94	228		30	124	268
NA10	89	10		35	124	10
TOTAL NA	483	809		155	281	1090

SOUTH ATLANTIC

SA1	10	41		18	40	28	81
SA2	10	19				10	19
SA3	11			18		29	0
SA4	15					15	0
SA5	15					15	0
SA6	15					15	0
TOTAL SA	76	60		36	40	112	100

NORTH PACIFIC

NP6				15		15	0
NP8	13					13	0
NP9	99	187		54	35	153	222
NP10	15					15	0
NP11	74					74	0
NP12	110			43	35	153	35
NP13	207			35	34	242	34
TOTAL NP	518	187		147	104	665	291

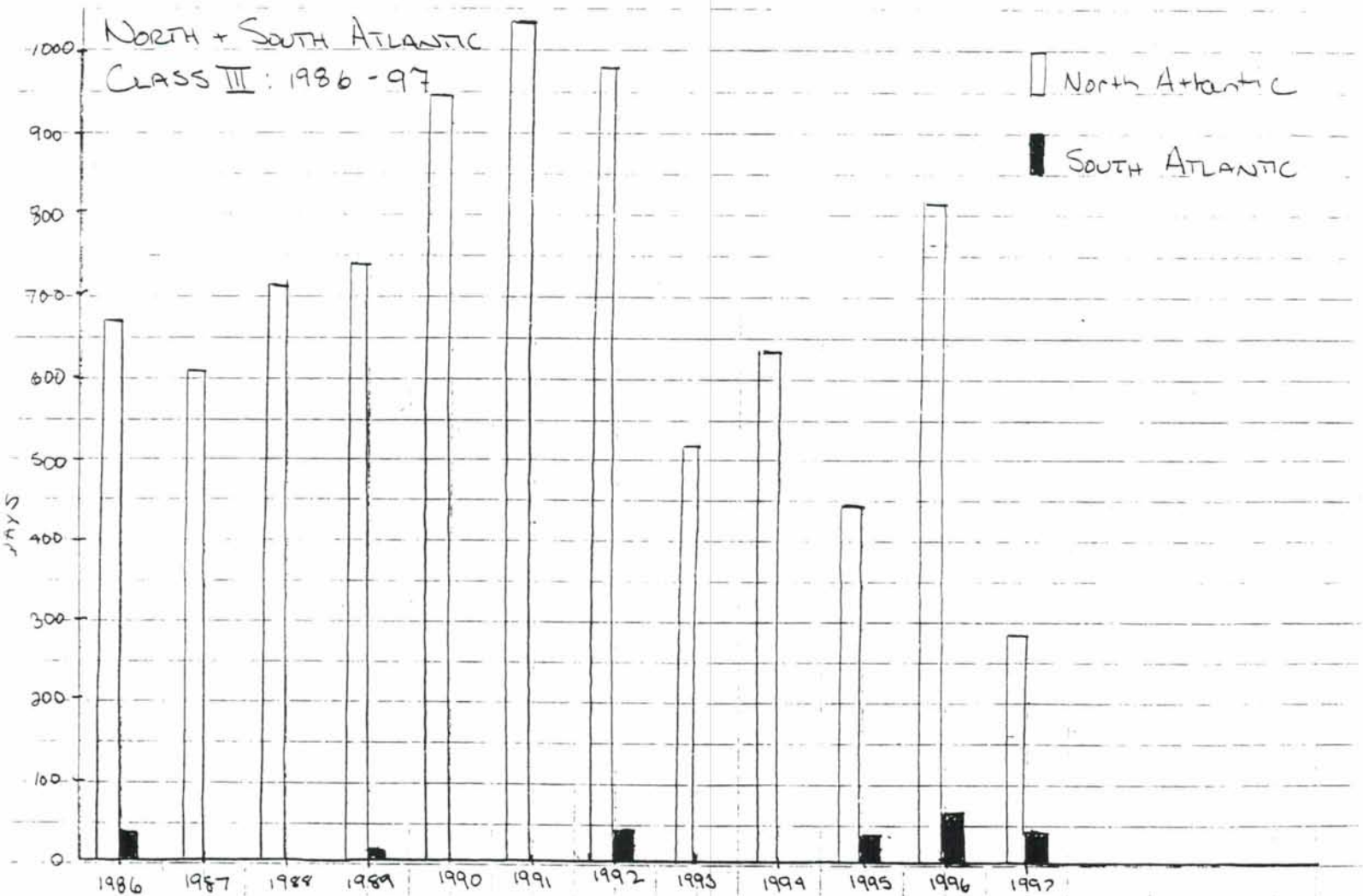
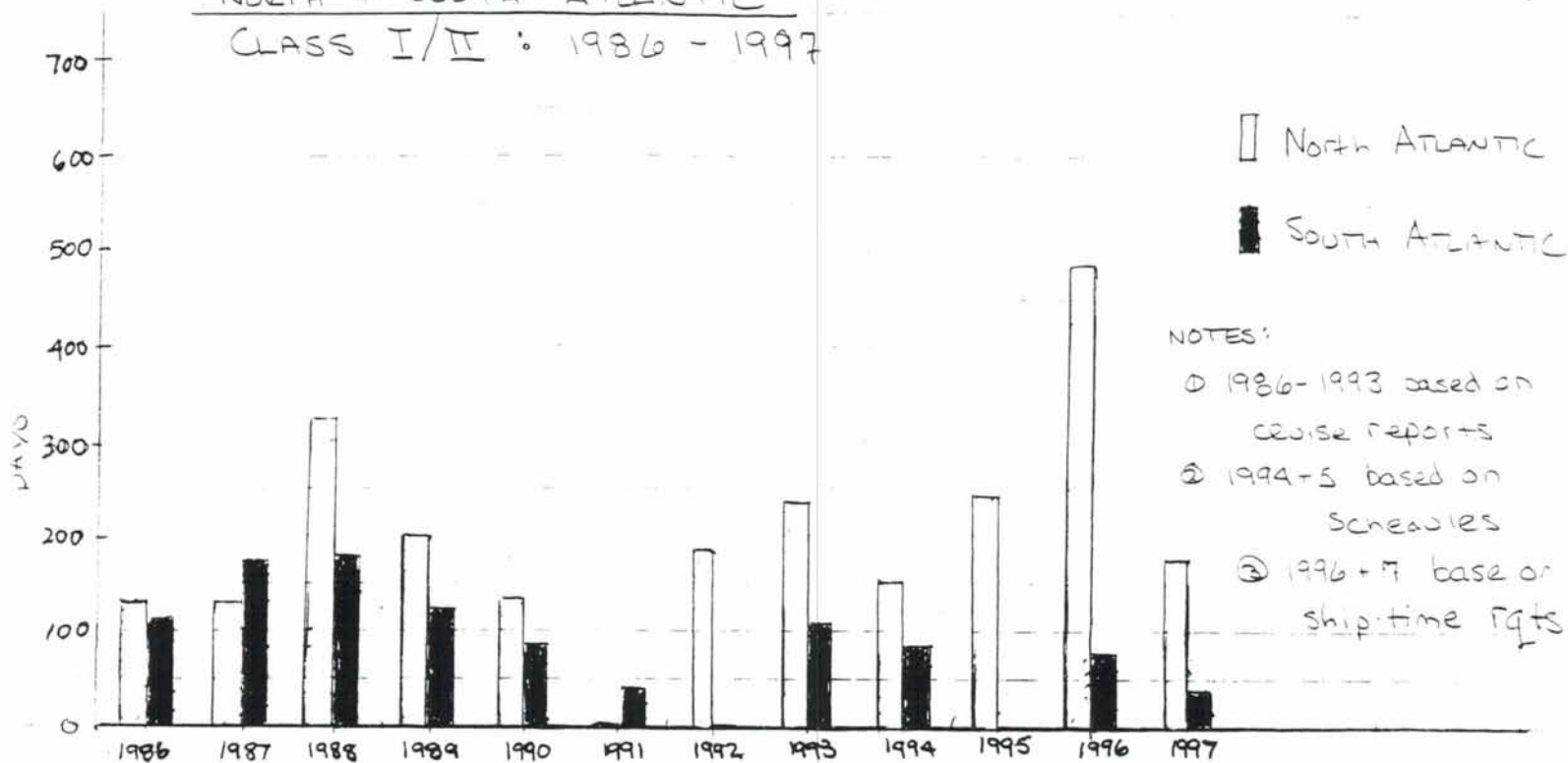
SOUTH PACIFIC

SP1	12					12	0
SP2	75					75	0
SP3	138		20			158	0
SP4	55					55	0
SP5	29					29	0
SP6	55					55	0
SP9	50					50	0
TOTAL SP	414	0	20	0		434	0

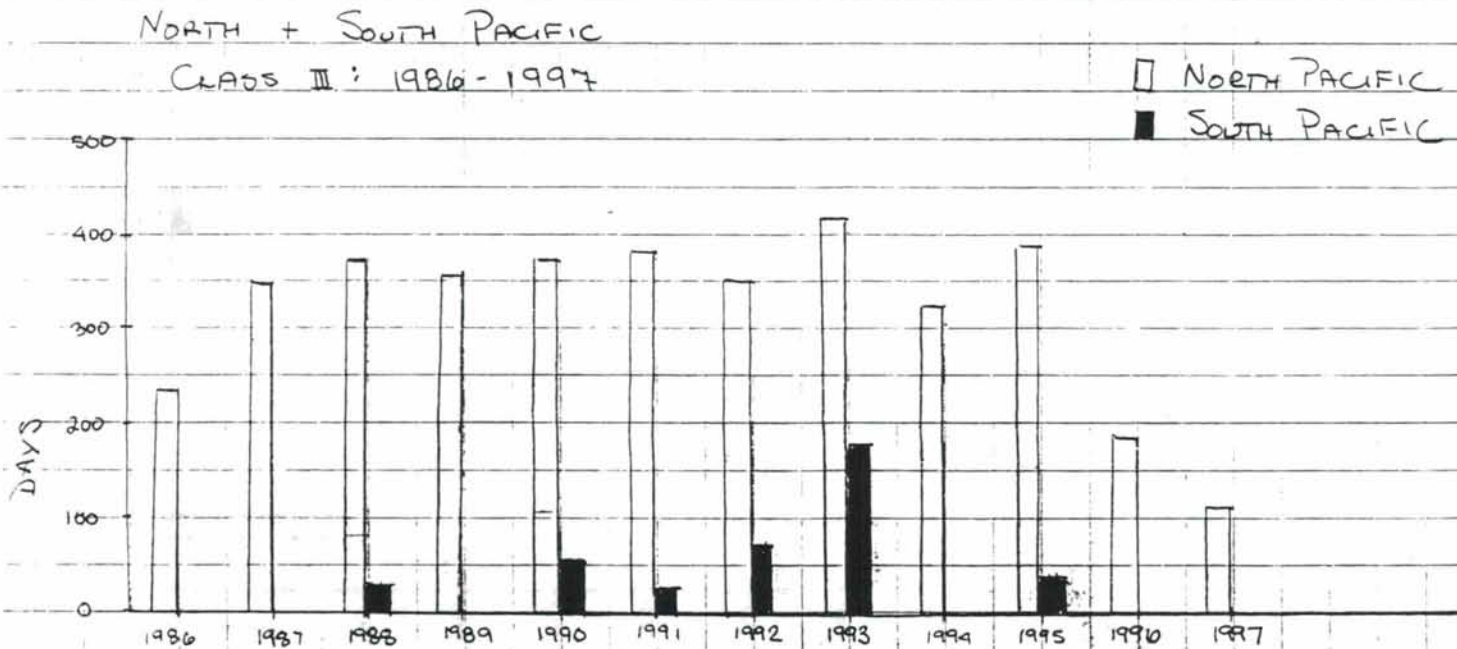
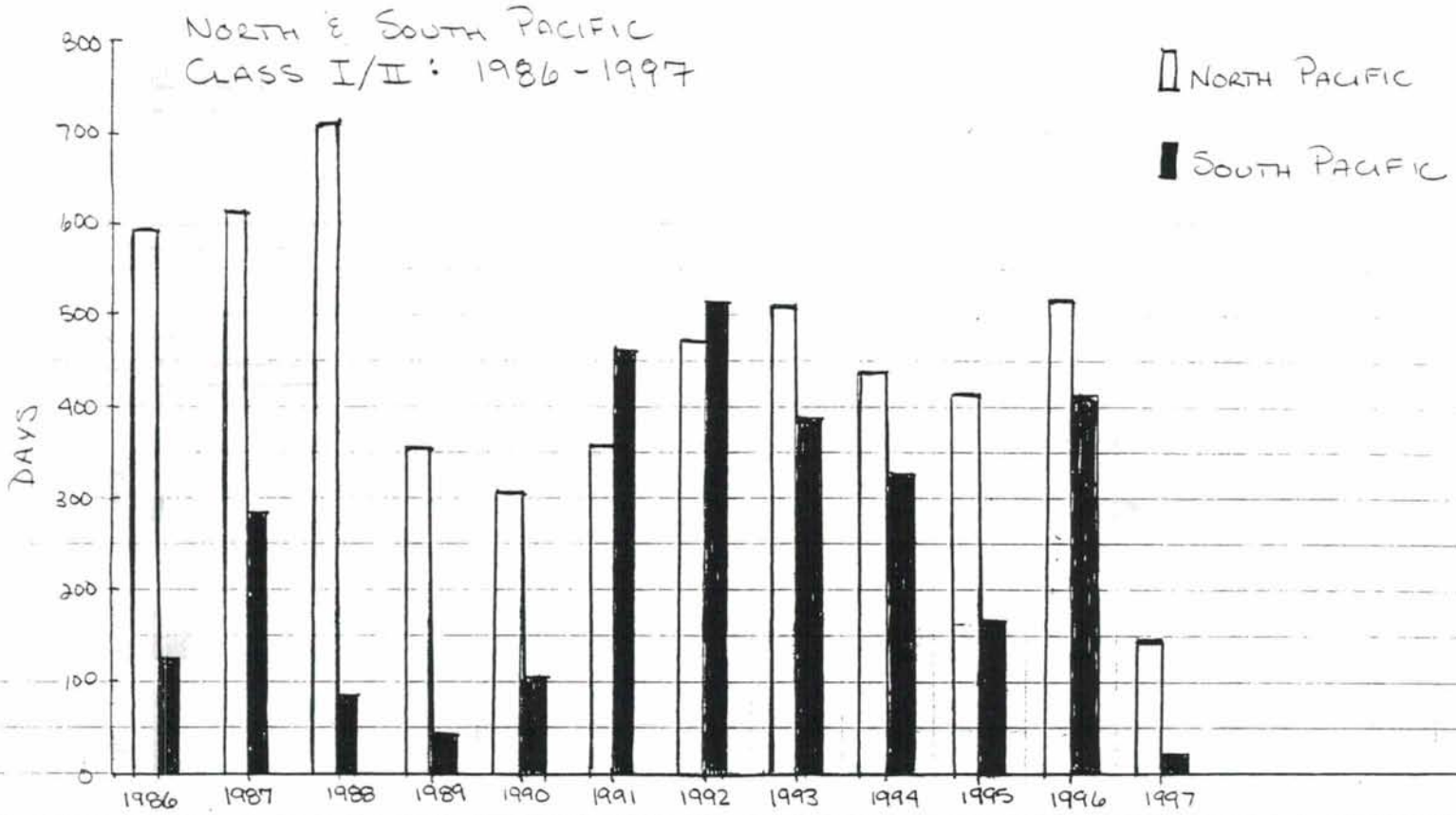
TOTALS	1996		1997		TOTALS	
	I/II	III	I/II	III	I/II	III
	1683	1056	517	425	2200	1481

ATLANTIC

NORTH + SOUTH ATLANTIC
CLASS I/II : 1986 - 1997



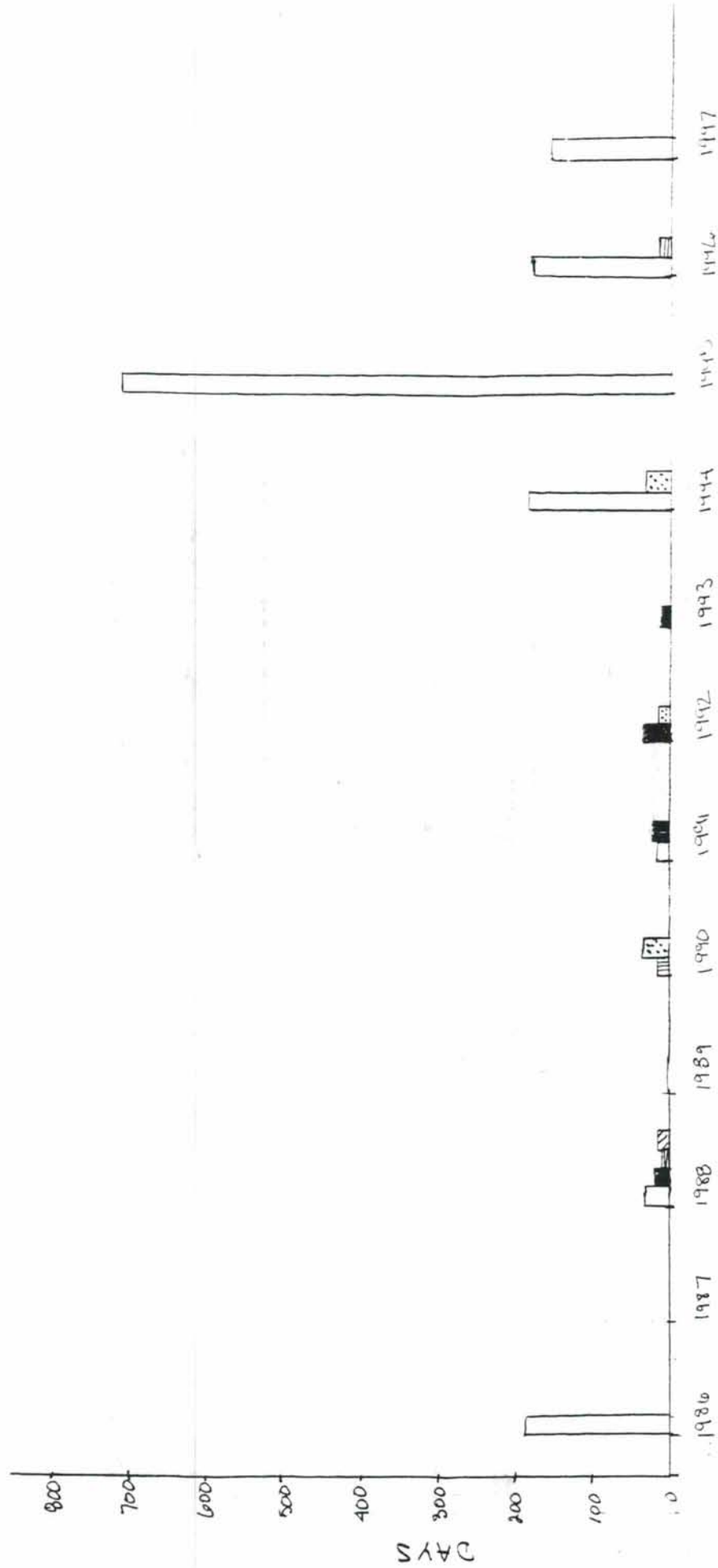
PACIFIC



INDIAN OCEAN, ANTARCTIC, ARCTIC AND GREAT LAKES

1986 to 1997

- INDIAN OCEAN - CLASS I/II
- ▨ INDIAN OCEAN - CLASS III
- ▩ GREAT LAKES - CLASS III
- ANTARCTIC - CLASS I/II
- ▧ ARCTIC - CLASS I/II
- ▦ ARCTIC - CLASS III



APPENDIX V

Charge/Operating Days (1995 & 1996)

	RVOC Opt. Year	1995 Total	1996 Total	Fund.	Pend.
Knorr	275	349	220(+)	184	36(+)
Melville	275	297	310(+)	190	120(+)
Thompson	275	333	280	155	125
Ewing	275	310	274	266	8
Moana Wave	275	209	176	121	55
Seward Johnson	275	230	212	134	78
Endeavor	250	227	230	110	120
New Horizon	250	249	245	-	-
Oceanus	250	196	241	137	104
Wecoma	250	156	80(+)	-	-
Cape Hatteras	180	183	211	28	183
Pt. Sur	180	176	@120	-	-

APPENDIX VI

OCEAN SCIENCES DIVISION

	<u>FY 1993</u>	<u>FY 1994</u>	<u>Estimated</u> <u>FY 1995</u>
Ocean Sciences Division	\$177.7 M	\$ 188.9 M	\$ 193.4 M
Ocean Sciences Research	92.5 M	100.0 M	102.9 M
Ocean Drilling Program	36.0 M	38.7 M	39.9 M
Oceanographic Facilities	49.2 M	50.2 M	50.6 M

OCEANOGRAPHIC FACILITIES DETAIL

Operations			
Ship Operations	29.4 M*	32.7 M*	35.2 M*
ALVIN, Aircraft, etc.	1.4 M	2.2 M	2.4 M
Marine Techs	<u>4.2 M</u>	<u>4.2 M</u>	<u>4.2 M</u>
	\$ 35.0 M	\$ 39.1 M	\$ 41.8 M
Infrastructure			
Science Instruments	1.3 M	2.5 M	2.3 M
Shipboard Equipment	2.1 M	2.1 M	1.4 M
Ships, Upgrades	7.2 M	2.6 M	0.4 M
UNOLS, Misc.	<u>0.5 M</u>	<u>0.5 M</u>	<u>0.6 M</u>
	\$ 11.1 M	\$ 7.7 M	\$ 4.7 M
Centers and Reserves			
AMS	1.0 M	1.2 M	1.4 M
Cross Directorate/Reserves	<u>2.1 M</u>	<u>2.2 M</u>	<u>2.7 M</u>
	\$ 3.1 M	\$ 3.4 M	\$ 4.2 M

*Plus \$1.6 M from ODP (1993 and 1994), \$1.8 M (1995)

NSF FY 1996 BUDGET REQUEST

OCEAN SCIENCES

- Request is \$205.6 Million
- Increase of \$12.2 Million or 6.3%

	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996</u>
OCEAN SCIENCES RESEARCH	\$ 100.0M	\$102.9M	\$110.3M
OCEANOGRAPHIC CENTERS & FACILITIES	50.3M	50.6M	54.2M
OCEAN DRILLING PROGRAM	<u>38.7M</u>	<u>39.9M</u>	<u>41.1M</u>
	\$ 189.0M	\$193.4M	\$205.6M

- Major Research Initiatives

GLOBAL CHANGE PROGRAMS	\$53.7M	\$57.7M	\$59.8M
BIOTECHNOLOGY	4.0M	3.6M	3.8M
HIGH PERFORMANCE COMPUTING	0.4M	0.8M	1.0M
ENVIRONMENTAL RESEARCH	7.3M	7.7M	8.3M
SMETE (EHR)	<u>2.1M</u>	<u>2.1M</u>	<u>2.2M</u>
	\$ 67.5M	\$71.9M	\$75.1M
• OTHER RESEARCH ACTIVITIES	\$121.5M	\$121.4M	\$130.5M

**UNOLS COUNCIL MEETING
MONTEREY, CALIFORNIA
APRIL, 1995**

- **OCEANUS: Reports on Research at the Woods Hole Oceanographic Institution (Fall, 1994)**

"As it is, NSF chronically underfunds ... U.S. research fleet ship time by about 10 percent (\$4 to \$5 million of a proposed \$55 million annual budget)."

**Richard F. Pittenger
Associate Director for
Marine Operations**

- **RESPONSE**

NSF strongly disagrees with the Woods Hole statement. The facts are incorrect and the structure of the US academic research ship support system is misrepresented. The US academic research fleet or UNOLS fleet is a national facility system with many participants and shareholders. Ascribing all sea going research projects and responsibilities to NSF and then accusing us of chronic underfunding is an improper and misleading mechanism to argue a separate issue - i.e. Arctic research facility requirements.

**Donald F. Heinrichs
Acting Division Director**

NSF NATIONAL PERFORMANCE REVIEW

- NSF IN A CHANGING WORLD (Strategic Plan)
Reaffirming Core Values

Committed to supporting and promoting:

- The most creative ideas and capable researchers selected by merit review.
- Path breaking research at many points on the frontiers of science, mathematics, and engineering.
- Excellence in education and in the development of human resources.
- The effective discovery, dissemination, intergration, and application of new knowledge.
- A partnership of trust with scientists and engineers that serves the best interests of the American people.

The NSF Mission

Initiate and Support:

- basic scientific research and research fundamental to the engineering process,
- programs to strengthen scientific and engineering research potential,
- science and engineering education programs at all levels and in all the various fields of science and engineering,
- programs that provide a source of information for policy formulation,
- and other activities to promote these ends.

NSF NATIONAL PERFORMANCE REVIEW

- Reinventing government
 - Examination of all aspects of NSF operations
 - Emphasis on procedures to gain efficiencies
 - Planning issues
 - Potential changes in funding levels
 - Elimination of current programs
 - Addition of new programs
 - Infrastructure requirements
 - Reorganization plans
 - Staff needs
- Initial planning assumptions
 - Static budget over next three years
- Administration 3, 5, 7, 9 discussions
 - FY 1996 budget is base
 - FY 1997 budget down 3%
 - FY 1998 budget down 5% (or additional 2%)
 - FY 1999 budget down 7%
 - FY 2000 budget down 9%
- NSF as whole
 - FY 1996 operating budget is \$3,223M
 - FY 2000 operating budget of \$2,933M

Reduction - - - \$290M

NSF NATIONAL PERFORMANCE REVIEW

- NSF facilities planning
 - Infrastructure planning
 - All facilities under review
 - Congressional interest
 - Advisory committees
 - Are all activities supported by the NSF appropriate?
 - Are the modes of support appropriately balanced?
Issue: Appropriate balance between support of research and support of research facilities or instrumentation.
 - Plus issues on NSF university relations, budgets and innovative programs, merit review improvements, and performance measures.
- NSB priority statement
 - People
 - Instruments
 - Infrastructure/facilities

“The physical infrastructure is an enabling aspect of NSF’s activities. It helps create an environment in which effective progress is possible.”

“Many areas of science ... require dedicated research platforms that are beyond the size and scale available to individuals or small groups. NSF must provide a variety of instruments and facilities necessary for the conduct of pioneering research and education.”

NSF FACILITIES

The National Science Foundation supports large, multi-user facilities which require long-term commitments for support. These facilities are usually of a scale too large, complex, or expensive for individual or small groups of researchers to construct. They meet the need for multi-user access to state-of-the-art research facilities that would otherwise be unavailable. Support for these unique National facilities is essential to advance U.S. research capabilities required for world-class research. Support also includes funding for staff and support personnel to assist scientists in conducting research at the facilities.

NSF supports the following facilities:

(Millions of Dollars)

	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Estimate	% Change 95 - 96
Advanced Scientific Computing Centers	66.90	70.90	74.90	5.6%
NSFNET	39.11	45.22	46.22	2.2%
National Center for Atmospheric Research	53.30	59.18	65.63	10.9%
National Astronomy Centers	65.45	63.38	70.39	11.1%
Laser Interferometer Gravitational Wave Observatory	0.03	85.00	70.00	-17.6%
National High Magnetic Field Laboratory	12.00	12.00	15.00	25.0%
GEMINI 8-Meter Telescopes	17.01	41.00	0.00	-100.0%
National Nanofabrication Users Network	3.45	3.55	3.80	7.0%
Academic Research Fleet/Ship Operations	49.06	49.20	53.00	7.7%
Academic Research Infrastructure	53.04	59.07	50.00	-15.4%
Polar Facilities	168.64	166.77	177.77	3.0%
Other Facilities ¹	75.56	82.49	89.49	8.5%
TOTAL	\$603.55	\$737.76	\$710.20	-3.7%

¹ Other facilities include physics, materials research, ocean sciences, atmospheric sciences, and earth sciences facilities.

NSF MODES OF SUPPORT

The National Science Foundation funds a broad range of activities focused on strengthening the nation's scientific and engineering research enterprise. Support for research and education activities comes in many forms. Research project awards are made to individuals and small groups of investigators and include support for postdoctoral researchers and students. NSF also supports research centers, national user facilities, development and acquisition of instrumentation for individual or shared use, graduate and postdoctoral fellowships, systemic educational reform activities, and workshops and conferences. These activities can be characterized as follows:

(Millions of Dollars)

Modes of Support	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Estimate	% Change FY 1995 - 1996
Research Projects	\$1,485	\$1,560	\$1,672	7.2%
Facilities	604	738	710	(3.7%)
Centers	186	202	208	3.0%
Education & Training	585	630	633	0.4%
TOTAL	\$2,860	\$3,131	\$3,223	3.0%

(From NSF budget book)

APPENDIX VII

U.S. COAST GUARD ICE OPERATIONS

Commander Richard R. Rooth, USCG

- * THE COAST GUARD'S POLAR ICEBREAKER FLEET TODAY
- * THE COAST GUARD'S RESEARCH EXPERIENCE
- * THE COAST GUARD'S USCGC HEALY (WAGB-20)
- * THE RELIABILITY IMPROVEMENT PROJECT (RIP)
- * CURRENT AND PROJECTED ICEBREAKER AVAILABILITY FOR SCIENTIFIC RESEARCH
- * COSTS OF OPERATING POLAR ICEBREAKERS:
THE OMB MANDATED REIMBURSEMENT EQUATION

U.S. COAST GUARD POLAR-CLASS ICEBREAKERS

USCGC POLAR STAR (WAGB 10) & USCGC POLAR SEA (WAGB 11)

Built: Lockheed Shipbuilding and Construction Company, Seattle, Washington

Commissioned: 1976 (Polar Star), 1978 (Polar Sea)

Length:	399'	Bow crane (1):	3 ton - 10' reach
Beam:	84'	Fantail crane (2):	15 ton - 65' reach
Draft:	32'	Articulated crane (1):	2 ton, 6' reach
Displacement:	13,400	Endurance Days:	60
Ice (@ 3 kts):	6.0'	Provisioning:	60-150 days
Ice ridge:	21.0'	Fuel, Diesel:	1,359,200
Propulsion:	DE / Gas turbine	Fuel, Aviation:	46,419
Combined Shaft HP:	18,000 / 60,000	Lube oil:	13,660
Screws:	3, CP, 4 bl. 17'	Water:	26,586 gal storage
Elec. System:	440v AC 3Phase	Cargo Capacity:	15,000 cubic ft
Economic Speed:	12.5	Dive capability	full team
Range @ Econ Speed:	28,000	Flight capability	2 HH-65 dolphins
Max Speed:	17.00 / 20.00	Crew:	152
Range @ Max Speed:	15,500 / 9,000	Science Party:	20/35

U.S. COAST GUARD POLAR-CLASS ICEBREAKER SCIENCE SUPPORT CAPABILITIES

NEW OCEANOGRAPHIC WINCHES (2)

- * 2 NEW INTEROCEAN HYDROGRAPHIC WINCHES:
- * 26,000 LBF MAX. PULL
- * 10,000 M 3/8" WIRE, 10,000M OF .322 " EM,
- * 1 SPARE DRUM OF 10,000 M 1/4" ABILITY TO SWAP

NEW CORING / TRAWLING WINCH

- * NEW INTEROCEAN C/T WINCH:
- * 10,000 M 9/16" WIRE, 40,000 LBF MAX. PULL

INCREASED LABORATORY SPACE

- * WET LAB: EXPANDED TO 490 SQ FT
- * NEW ELECTRONICS & COMPUTER LAB: 100 SQ FT
- * NEW GEOLOGY LAB: 200 SQ FT
- * BIO/CHEM LAB: 264 SQ FT
- * NEW STAGING AREA: 140 SQ FT

UPGRADED VAN CAPABILITY

- * SEVEN 20' CONEX VANS
- * - OR - TWO 40' & THREE 20' VANS

INCREASED SCIENTIST BERTHING & FACILITIES

- * NEW SENIOR SCIENTIST STATEROOM
- * ABILITY TO ACCOMMODATE UP TO 35 SCIENTISTS
- * UPGRADED SCIENCE LIBRARY / MEETING ROOM

INCREASED OCEANOGRAPHIC INSTRUMENTATION

- * ROSETTE BOTTLE ARRAY
- * CONDUCTIVITY, TEMPERATURE AND SALINITY SENSOR
- * UNCONTAMINATED SEAWATER SYSTEM

NEW CORING TRACK

- * WHOI DESIGN, PERMITS ON-DECK ASSEMBLY OF CORES

UPGRADED SATELLITE RECEIVERS

- * TERASCAN IMAGE RECEIVER: DOWNLINKS, PROCESSES, GEOGRAPHICALLY REFERENCES AND DISPLAYS SATELLITE DATA:
- * ACCESSES NOAA TIROS-N SATELLITES:
AVHRR IMAGES: VISUAL AND IR DATA
1KM RESOLUTION, WEATHER PREDICTION, LOCATION OF OCEAN FEATURES AND ICE RECONNAISSANCE, TOVS DATA
- * PROVIDES ON-SITE ARGOS INFORMATION
- * ACCESSES DMSP SATELLITES:
OLS IMAGES: HIGHER RESOLUTION VISUAL AND IR IMAGES
SSM/I IMAGES: CLOUD PENETRATING ICE IMAGES.

U.S. COAST GUARD RESEARCH EXPERIENCE:

OPERATION DEEP FREEZE 1991/1992:

Antarctic Automatic Weather Station / Climate Program

Physical Properties and Structural Stratigraphic Variations of Frazil, Platelet and Congelation Sea Ice, Ross Sea, Antarctica

Sinking and Suspended Particulate Matter in the Antarctic Continental Margin

The Preservation and Accumulation of Biogenic Silica and Organic Carbon in a High-Latitude Environment: the Ross Sea

The Geodetic Control Survey of the Marie Byrd Land Coast, Antarctica

The South Pacific Rim International Tectonic Expedition: Marie Byrd Land, Antarctica

ARCTIC WEST SUMMER (AWS) 92:

Geological Framework of the Chukchi Borderland and the Tectonic Evolution of the Amerasia Basin, Arctic Ocean

The Oceanography of the Northwind Ridge

Synthetic Aperture Radar Signatures of Autumn Sea Ice In The Arctic Ocean

Paleo-climate and Paleoceanography of the Western Arctic Ocean

Investigation of the Dropstone Content in the Surface Sediments of the Northwind Ridge Area / Water Sampling for Rare Element Chemistry

Sea Ice Rafted Sediment Signal in the Arctic Basin

Paleoclimate Record of Northwind Ridge Region, Arctic Ocean

U.S. COAST GUARD RESEARCH EXPERIENCE (cont.):

NORTHEAST WATER POLYNYA PROJECT: 1992/1993

Microbiology & Radioisotope Studies

Phytoplankton Biology and Primary Productivity

Benthic Biology and Benthic Studies

Physical Oceanography and Current Studies

OPERATION DEEP FREEZE 1992/1993:

Antarctic Automatic Weather Station / Climate Program

High Resolution Measurement of the Transmissivity of Sea Ice.

Fission-Track Age Dating in the Terra Nova Bay Region: Determining the Uplift Rate and the Age of the Transantarctic Mountains

Seal Tracking Study

New Zealand Antarctic Programme Sub-Bottom Profiling

ARCTIC WEST SUMMER 1993

Radionuclide Contamination in the Arctic Basin Ecosystem

Physical Oceanography / Biological Oceanographic Studies

Geological Framework and Tectonic History of the Amerasia Basin, Arctic Ocean

Radionuclide Contamination in the Canada Basin Region

Seismic Refraction Program / Climate History of the Western Arctic Basin

Oceanography of the Canada Basin and Northwind Ridge

Ice Physics

Studies of Sediment in Sea Ice

U.S. COAST GUARD RESEARCH EXPERIENCE (cont.):

ARCTIC WEST SUMMER 1993

Determination of Paleoclimate and Paleoceanography in the Amerasian Basin

Sea Ice Mechanics Initiative (SIMI)

Evolution of Formed Ice Masses in Pack Ice / Floe-Scale Sea Ice Deformation

In-Situ Measurement of Pack Ice Stresses

Strain, Tilt and Horizontal & Vertical Accelerations of Sea Ice

Simultaneous Tomographic and Acoustic Emission Imaging of Sea Ice

Technological Development of Autonomous Underwater Vehicles (AUV's)

Cadmium Distribution in the Chukchi Sea, Bering Sea and Gulf of Alaska.

OPERATION DEEP FREEZE 1993/1994:

Carbon / Nitrogen Uptake Coupling, Environmental Controls of the Nitrogen Uptake in the Southern Ocean

Particulate Measurement and Sediment Rates on the Antarctic Shelf, Ocean Currents in the Ross Sea

Ocean Circulation Beneath Glacial Ice

New Zealand Antarctic Programme Mapping of the Ross Ice Shelf

U.S.C.G. POLAR ICEBREAKER HEALY (WAGB-20) FEATURES / CAPABILITIES

MISSION CAPABILITIES

- * OPERATE IN -50 TO +95 F WEATHER
- * INSTALLATION OF UP TO 8 SCIENCE VANS
- * FORE AND AFT CRANE SERVICE
- * TRAWLING/CORING & HYDROGRAPHIC WINCHES
- * DATA PROCESSING: DEDICATED SCIENCE DATA NETWORK
- * LARGE, FLEXIBLE LAB SPACES
- * DEDICATED SCIENCE FREEZER
- ** CLIMATE CONTROL ROOMS
- * TWO HH-65A or HH-60 SERIES HELICOPTERS

ICEBREAKING CAPABILITIES

- * 4.5 FEET OF LEVEL ICE AT 3 KNOTS
- * 8+ FEET OF LEVEL ICE BACKING & RAMMING
- * MINIMUM OF 30,000 SHP INSTALLED
- * CONVENTIONAL HULL, GOOD OPEN WATER PERFORMANCE

USCGC HEALY (WAGB 20) SCIENCE SPACES

<u>DESCRIPTION:</u>	<u>AREA</u>
MAIN LAB:	2000 sq. ft.
WET LAB:	400 sq. ft.
BIO / CHEM LAB:	300 sq. ft.
ELECTRONICS / COMPUTER LAB:	600 sq. ft.
STAGING AREA:	300 sq. ft.
CLIMATE CONTROLLED ROOM:	100 sq. ft.
SCIENCE FREEZER:	100 sq. ft.
AFT WORK AREA:	3000 sq. ft.
SCIENCE CARGO:	20,000 cu. ft.

USCGC HEALY (WAGB 20) SCIENCE EQUIPMENT

WINCHES:

- * 1/4" WIRE ROPE
- * 3/8" 3 CONDUCTOR CABLE
- * 9/16" CORING TRAWLING CABLE

VANS (8 TOTAL):

- * 4 VANS : ACCESS FROM INSIDE SHIP
- * 2 VANS: AFT WEATHER DECK
- * 2 VANS: FORECASTLE

ACOUSTICAL SYSTEMS:

- * 12 AND 3.5 kHz ECHO SOUNDING
- * DOPPLER SPEED LOG
- * 150 AND 300 kHz ADCP
- * 2 SPARE 30" TRANSDUCER WELLS

USCGC HEALY (WAGB 20) ACCOMPLISHMENTS

- * APPROXIMATELY 2/3 OF MATERIAL ORDERED, EQUATING TO APPROXIMATELY \$60 M
- * HULL FORM FINALIZED - PREDICATED TO MEET OR EXCEED MANEUVERING, STABILITY, ENDURANCE SPEED AND ICEBREAKING REQUIREMENTS
- * SCIENCE ARRANGEMENTS, SCIENCE DATA NETWORK, BRIDGE INTEGRATION, VAN SERVICES ALL BEING REFINED TO BETTER SERVE THE SCIENCE COMMUNITY

**U.S. COAST GUARD POLAR-CLASS ICEBREAKER
RELIABILITY IMPROVEMENT PROJECT (RIP)**

Major systems to be improved:

- * Sewage system
- * Distilling plant
- * Oily Water Separator / Lube Oil Purifier
- * Compressed Air System
- * Ship's Service Boilers
- * Gas Turbine Logistics Support
- * Controllable Pitch Propeller System
- * Heeling System
- * Central Hydraulic System / Boat Davit System
- * HVAC system / Sea Water Cooling System
- * Main Diesel Engines / Ship's Service Generators

U.S. COAST GUARD POLAR-CLASS ICEBREAKER SCHEDULE: FY '95 - FY '97

<u>DATES:</u>	<u>MISSION:</u>	<u>AREA:</u>	<u>SPONSOR:</u>
AUG '95 - SEP '95	AVAILABLE	(TO BE DETERMINED)	
NOV '95 - APR '96	DEEP FREEZE	ANTARCTICA	NSF
JUL '96 - SEP '96	AVAILABLE	(TO BE DETERMINED)	
NOV '96 - APR '97	DEEP FREEZE	ANTARCTICA	NSF
JUL '97 - SEP '97	AVAILABLE	(TO BE DETERMINED)	
NOV '97 - APR '98	DEEP FREEZE	ANTARCTICA	NSF

U.S. COAST GUARD POLAR-CLASS ICEBREAKER COSTS: FY '94

PERSONNEL (141):	\$3,832,000
PERSONNEL OVERHEAD TRAINING:	\$742,000
OPERATIONS:	\$1,690,000
ENGINEERING SUPPORT:	\$2,975,000
FUEL:	\$1,811,000
TOTAL:	\$11,050,000

ICEBREAKER REIMBURSEMENT SYSTEM

1. REIMBURSEMENT COST METHODOLOGY IS AS FOLLOWS:

<u>EXPENSE ITEM</u>	<u>FUNDING SOURCE</u>	
	<u>USCG</u>	<u>USER</u>
PERSONNEL:	100 %	
PERSONNEL OVERHEAD / TRAINING:	100 %	
OPERATIONS:	100 %	
VESSEL MAINTENANCE:	65 %	35 %
HELO MAINTENANCE:	40 %	60 %
FUEL	41 DAYS	144 DAYS

THE DAYS STANDARD IS BASED ON THE 1990 PRESIDENTIAL REPORT;

**THE COST DISTRIBUTION IS BASED ON THE 1985 POLAR ICEBREAKER
USERS COUNCIL AGREEMENT.**

2. DAILY USER FEES FOR FY95 (NOT INCLUDING FUEL)

ICEBREAKER:	\$6,854
HELICOPTERS (2)	\$2,732
TOTAL:	\$9,586

**3. BASED ON PROJECTED FUEL USE ESTIMATES FOR THE 1994/1995 DEEP FREEZE MISSION,
THE DAILY USER FEE WILL APPROXIMATE \$19,137.**

APPENDIX VIII

**UNOLS SHIP CLASSIFICATION
(HEINRICHS MODEL)**

LARGE SHIPS

THOMPSON
KNORR
MELVILLE
EWING
ATLANTIS II
REVELLE (1996)

INTERMEDIATE SHIPS

MOANA WAVE
OCEANUS
WECOMA
ENDEAVOR
ISELIN
GYRE
NEW HORIZON
S. JOHNSON
E. LINK

REGIONAL

ALPHA HELIX
POINT SUR
CAPE HATTERAS
SPROUL
CAPE HENLOPEN
WEATHER BIRD

LOCAL

PELICAN
LONGHORN
BLUE FIN
SEA DIVER
BARNES
CALANUS

**UNOLS OPERATIONS SUPPORT
(1993 - 1995)**

UNOLS TOTALS	ACTUAL	ESTIMATE	ESTIMATED
	1993	1994	1995
NSF	30,558	34,012	37,166
ONR/NRL	6,484	3,183	5,133
NOAA	1,981	1,975	2,280
OTHER	3,266	4,484	1,957
INST	<u>2,790</u>	<u>2,342</u>	<u>1,787</u>
	\$45,079	\$45,996	\$48,323

* DATA SOURCES

- 1993 - 1995 NSF Ship Operations Proposals (Revised 1995)

(April 1995)

1993 - 1995 UNOLS OPERATIONS SUPPORT

<u>SPONSORS</u>	<u>LARGE SHIPS</u>			<u>INTERMEDIATES</u>		
	1993	1994	1995	1993	1994	1995
NSF	16,204	19,081	21,015	8,551	8,973	9,712
ONR/NRL	2,671	1,315	2,241	3,351	1,169	2,393
NOAA	531	343	265	956	1,368	1,791
OTHER	510	925	298	1,364	2,140	404
INST	<u>725</u>	<u>911</u>	<u>17</u>	<u>1,626</u>	<u>785</u>	<u>1,144</u>
	\$20,641	\$22,575	\$23,836	\$15,848	\$14,435	\$15,444

<u>SPONSORS</u>	<u>REGIONAL</u>			<u>LOCAL</u>		
	1993	1994	1995	1993	1994	1995
NSF	4,920	5,213	5,378	880	745	1,061
ONR/NRL	440	529	486	23	170	12
NOAA	56	49	-	437	215	224
OTHER	1,000	752	1,097	393	668	160
INST	<u>337</u>	<u>159</u>	<u>292</u>	<u>101</u>	<u>487</u>	<u>334</u>
	\$6,753	\$6,702	\$7,253	\$1,834	\$2,285	\$1,791

*Data Source 1995 ship operations proposals
 1993 - Actual, 1994 - Estimate, 1995 - (Revised budgets).

**“OTHER SUPPORT” FOR UNOLS OPERATIONS
(1993 - 1995)**

SPONSOR	ACTUAL <u>1993</u>	ESTMATED <u>1994</u>	PROJECTED <u>1995</u>
“NAVY LABS”	521	850	61
DOE	401	782	17
ARPA	44	472	193
MMS	325	241	22
CNOC	322	305	280
USGS	15	88	112
EPA	-	-	65
STATES	284	743	436
INDUSTRY	467	347	13
INTERNATIONAL	815	208	653
OTHER	<u>72</u>	<u>448</u>	<u>105</u>
	\$3,266	\$4,484	\$1,957

NOTES

NAVY LABS -- NRAD, NOSC, ARL, NUSC, “NAVY” JHUI/APL.
OTHER -- MBARI, NIH, JOI, MUSEUMS, ETC.

UNOLS SPONSORS - 1995
(PRELIM/PARTIAL) **
OPERATING DAYS

	<u>LARGE SHIPS - GLOBAL</u>						<u>TOTAL</u>
	<u>ATLANTIS II</u>	<u>EWING</u>	<u>KNORR</u>	<u>MELVILLE</u>	<u>REVELLE</u>	<u>THOMPSON</u>	
NSF	295	292	349	257	0	219	1412
ONR/NRL	1	0	0	36	0	114	151
NOAA	20	0	0	0	0	0	20
OTHER	<u>2</u>	<u>20</u>	<u>0</u>	<u>4</u>	<u>0</u>	<u>0</u>	<u>26</u>
	318	312	349	297	0	333	1609

WEST COAST - INTERMEDIATE/REGIONAL

	<u>MOANA WAVE</u>	<u>NEW HORIZON</u>	<u>WECOMA</u>	<u>PT.SUR</u>	<u>SPROUL</u>	<u>ALPHA HELIX</u>	<u>TOTAL</u>
NSF	180	203	74	107	96	89	749
ONR/NRL	0	12	95	0	23	19	149
NOAA	39	0	0	0	0	0	39
OTHER	<u>0</u>	<u>39</u>	<u>0</u>	<u>63</u>	<u>17</u>	<u>50</u>	<u>169</u>
	219	254	169	170	136	158	1106

EAST/GULF - INTERMEDIATE/REGIONAL ATLANTIC *

	<u>ENDEAVOR</u>	<u>OCEANUS</u>	<u>CAPE HATTERAS</u>	<u>JOHNSON</u>	<u>LINK</u>	<u>ISELIN/GYRE</u>	<u>TOTAL</u>
NSF	193	127	139	116	20	0	771
ONR/NRL	28	66	10	36	0	0	157
NOAA	0	0	0	66	99	0	165
OTHER	<u>0</u>	<u>3</u>	<u>22</u>	<u>0</u>	<u>0</u>	<u>?</u>	<u>28</u>
	221	196	171	218	119	?	1121

* ADD CAPE HENLOPEN, WEATHERBIRD II (NSF-176 days, ONR -17days, OTHER-3 days)

** LOCAL SHIPS NOT INCLUDED.

UNOLS SPONSOR PROFILE - 1995
 (PRELIM./PARTIAL) **
 OPERATING DAYS

<u>NSF</u> - 2932 days	76.4%	<u>NOAA</u> - 224 days	5.8%
Large Ships - 87.8%		Large Ships - 1.2%	
West Coast - 67.7%		West Coast - 3.5%	
East Coast - 68.8%		East Coast - 14.7%	
<u>ONR/NRL</u> - 457 days	11.9%	<u>OTHER</u> - 223 days	5.8%
Large Ships - 9.4%		Large Ships - 1.6%	
West Coast - 13.5%		West Coast - 15.3%	
East Coast - 14.0%		East Coast - 2.5%	

NOTES : OTHER:

 Large Ships - 76.9% Taiwan/NSF
 West Coast - 19.5% State of California
 - 25.4% Navy Postgraduate School
 - 20.7% Japan/NSF
 East Coast - 50.0% USGS
ONR/NRL: 80/20 Ratio

** LOCAL SHIPS NOT INCLUDED.

FY 1995/1996 UNOLS SPONSORS FOR LARGE SHIPS

(PRELIMINARY DATA-APRIL 1995)
OPERATING DAYS

	<u>1995</u>					<u>TOTAL</u>
	<u>ATLANTIS II</u>	<u>EWING</u>	<u>KNORR</u>	<u>MELVILLE</u>	<u>REVELLE</u>	<u>THOMPSON</u>
NSF	295	292	349	257	0	219
ONR/NRL	1	0	0	36	0	114
NOAA	20	0	0	0	0	0
OTHER	2	20	0	4	0	0
	318	312	349	297	0	333
						<u>1609</u>

	<u>1996</u>					<u>TOTAL</u>
	<u>ATLANTIS II</u>	<u>EWING</u>	<u>KNORR</u>	<u>MELVILLE</u>	<u>REVELLE</u>	<u>THOMPSON</u>
NSF	?	295*	220	300 *	0	216
ONR/NRL	?	0	0	0	0	13
NOAA	?	0	0	0	0	0
OTHER	?	0	0	2	0	62
	?	295	220	302	0	291
						<u>1108</u>

* EWING & MELVILLE LIST OPTIONS WITH OVER 300 NSF DAYS.
REDUCED BY NSF.

1995/1996 COMPARISON

NSF - 87.8% TO 93.1% OF PROJECTED USE.

ONR - 9.4% TO 1.2% OF PROJECTED USE.

AVAILABLE DAYS (non-ALVIN)

1995 - 1200 days; 1291 used

1996 - 1350 days; 1108 projected

APPENDIX IX

UNOLS FLEET IMPROVEMENT PLAN 1995

RECOMMENDATIONS

- ENCOURAGE AGENCIES TO REQUIRE LONG-RANGE (5-10 YEAR) FACILITIES PROJECTIONS FROM THEIR EXISTING AND ONGOING PROGRAMS.
- ARCTIC RESEARCH VESSEL BE THE HIGHEST PRIORITY ACQUISITION FOR OCEANOGRAPHIC RESEARCH.
- SCIENCE MISSION REQUIREMENT AND CONCEPTUAL DESIGN FOR SHALLOW-WATER, HIGH CAPABILITY, MULTIDISCIPLINARY COASTAL VESSEL.
- ENCOURAGE REGIONAL OR NATIONAL ARRANGEMENTS TO SHARE CERTAIN EXPENSIVE EQUIPMENT AND FACILITIES USED IN COASTAL RESEARCH.
- FEDERAL AND ACADEMIC SEAGOING SCIENTISTS IMPROVE COOPERATION.
- UNOLS VESSELS CONTINUE AS PRIMARY SOURCE OF SEAGOING FACILITIES FOR THE ACADEMIC OCEANOGRAPHIC COMMUNITY.
 - COLLABORATION BETWEEN AGENCIES AND UNOLS THAT PRESERVES DISTRIBUTED OPERATION.
 - RECOMMENDS AGAINST CENTRAL MANAGEMENT BY FEDERAL GOVERNMENT OR PRIVATE INDUSTRY.
- AGENCIES THAT SUPPORT UNOLS SHIP OPERATIONS EVALUATE GEOGRAPHICAL DISTRIBUTION OF YEAR 2000 FLEET.
 - ASSIGN EXISTING AND / OR NEW SHIPS TO MAINTAIN BALANCE.
 - STRONG SCIENTIFIC JUSTIFICATION FOR GEOGRAPHICALLY BROAD DISTRIBUTION.

UNOLS FLEET IMPROVEMENT PLAN 1995

- LONG RANGE FACILITIES PROJECTIONS
"QUOTES WITHOUT COMMENT"
 - "PROGRAM DEVELOPMENT AT NSF HAS CONSISTENTLY LAGGED BEHIND EVEN PESSIMISTIC PROJECTIONS ..."
 - "OCEANOGRAPHIC RESEARCH AT ONR HAS NOT BEEN GROWING... NO OBVIOUS REASON FOR EXPECTING ANY SUBSTANTIAL INCREASE IN THE 1990s.."
 - "DOE OCEANS MARGIN PROGRAM (HAS) BEEN SMALL AND DECLINING...."
 - "NO MAJOR INITIATIVES IN OCEAN SCIENCE SEEM LIKELY FROM MMS, DOE, EPA, USGS OR ANY OTHER AGENCY."
 - "MODEL 1 - PROSPERITY"
 - "MODEL 2 - AUSTERITY"
 - "BUDGET PROJECTIONS ... STRONGLY SUGGEST THAT OCEAN SCIENCE ... WILL BE FACING SLOWLY RISING OR LEVEL FUNDING DURING .. DECADE."
 - "TWO INITIATIVES MAY CHANGE PROJECTION: ... COASTAL OCEAN SCIENCE AND ... RESEARCH IN ... THE ARCTIC."

UNOLS FLEET IMPROVEMENT PLAN 1995

- **GEOGRAPHICAL DISTRIBUTION OF FLEET**

BENEFITS

- **COMPETITION**
- **DIVERSITY**
- **REDUCED TRANSITS AND GREATER LOGISTICAL CONVENIENCE**
- **FACILITATION OF LOCAL STUDIES**
- **EDUCATION OF STUDENTS & FACULTY RECRUITMENT**

POSSIBLE DISADVANTAGES

- **LACK OF STANDARDIZATION**
- **INCREASED COST PER DAY OF SHIP USE**

CONCLUSION

- **ANY CHANGE IN THE PRESENT DISTRIBUTION OF SHIPS SHOULD BE APPROACHED CAUTIOUSLY..**
- **CHANGES, IF ANY, SHOULD BE BASED ON THE CRITERIA ABOVE**

R/V ROGER REVELLE (AGOR 24) ANNOUNCEMENT OF AVAILABILITY FOR USE IN 1996

Scripps Institution of Oceanography
University of California, San Diego
October, 1994

Scripps Institution of Oceanography is please to inform the oceanographic community that R/V *Roger Revelle* (ACOR 24) will begin service as a UNOLS ship in mid-1996. The following preliminary information about the ship is offered to assist scientists in writing research proposals to use the ship in the latter part of 1996. ...

Background

SIO was competitively selected by the U.S. Navy in mid-1991 to operate AGOR 24. The construction contract for the vessel was awarded by the navy to Halter Marine, Inc. of Moss Point, Mississippi, in January 1993. The ship is scheduled for launch in early 1995, and for delivery to SIO in mid-1996. The delivery date could be somewhat earlier, perhaps March-April 1996, but this will not be known until nearer the date.

Following delivery, SIO contemplates a period of 1-2 months of additional work to make the ship fully ready for service, to bring her to San Diego, and to test various scientific and ship systems. Once this is done, the ship should be ready for general oceanographic work across the disciplines, for approximately the last half of 1996 and beyond. Prudence dictates that the early cruises of the ship take place in the Pacific, within reasonable range of a useful port. About 9 months after delivery the ship must be back in San Diego for final navy inspections and any required repairs of problems emerging in early service. Otherwise the scheduling and track of the ship are unconstrained. ...

Scheduling

R/V Roger Revelle will be a regular member of the UNOLS fleet. Research proposals and ship time requests for use of the ship should follow the same UNOLS and funding agency procedures as for existing vessels.

APPENDIX X

**POSSIBLE UNOLS FLEET ALIGNMENT
1997 - 2002**

ATLANTIC/GULF COAST REGION

NORTHEAST

● KNORR	GENERAL PURPOSE	GLOBAL	WOODS HOLE
● ENDEAVOR	GENERAL PURPOSE	NORTH ATLANTIC	RHODE ISLAND
● EWING	MCS/MGG/GP	GLOBAL	LAMONT
● ATLANTIS	SUBMERSIBLE	GLOBAL	WOODS HOLE

MID - ATLANTIC

● CAPE HATTERAS	GENERAL PURPOSE	NORTH ATLANTIC	DUKE ETAL
● CAPE HENLOPEN	GENERAL PURPOSE	CHESAPEAKE BAY	DELAWARE

BERMUDA

● WEATHERBIRD II	GENERAL PURPOSE	BERMUDA	BERMUDA
------------------	-----------------	---------	---------

SOUTHEAST/GULF

● SEWARD JOHNSON	GP/SUBMERSIBLE	N. ATLANTIC, CARIBBEAN	HBOI/MIAMI
● EDWIN LINK HBOI	SUBMERSIBLE	GULF (BOTH SHIPS)	

LOCAL SHIPS

● BLUE FIN	GP	S.E. LOCAL WATERS	GEORGIA
● SEA DIVER	SUBMERSIBLE	FLORIDA WATERS	HBOI
● CALANUS	GP	FLORIDA LOCAL	MIAMI
● PELICAN	GP	LOUISIANA, GULF	LUMCON
● LONGHORN	GP	TEXAS, GULF	U. TEXAS

**POSSIBLE UNOLS FLEET ALIGNMENT
1997 - 2002**

PACIFIC REGION

<u>ALASKA</u>				
• OCEANUS	GENERAL PURPOSE	N.E. PACIFIC, BERING	ALASKA	
<u>NORTHWEST</u>				
• THOMPSON	GENERAL PURPOSE	GLOBAL	U. WASH.	
• WECOMA	GENERAL PURPOSE	NORTH PACIFIC	OREGON	
<u>CENTRAL CALIF.</u>				
• PT SUR	GENERAL PURPOSE	N.E. PACIFIC	MOSS LANDING	
<u>HAWAII</u>				
• MELVILLE	GENERAL PURPOSE	GLOBAL, WEST PAC.	HAWAII	
<u>SOUTHERN CALIF</u>				
• REVELLE	GENERAL PURPOSE	GLOBAL	SCRIPPS	
• NEW HORIZON	GENERAL PURPOSE	NORTH PACIFIC	SCRIPPS	
• SPROUL	GENERAL PURPOSE	N.E. PACIFIC	SCRIPPS	
<u>LOCAL SHIPS</u>				
• BARNES	GENERAL PURPOSE	PUGET SOUND	U. WASH.	

REQUIRED UNOLS FLEET CHANGES

1997 - 2002

" A MODEST PROPOSAL "

- RETIRE
 - ISELIN (1996)
 - GYRE
 - MOANA WAVE
 - ALPHA HELIX
 - ATLANTIS II (1996)
- FLEET PROFILE
 - ATLANTIC/GULF
 - 3 LARGE SHIPS
 - 3 INTERMEDIATES
 - 3 REGIONAL
 - 5 LOCAL
 - PACIFIC
 - 3 LARGE SHIPS
 - 3 INTERMEDIATES
 - 2 REGIONAL
 - 1 LOCAL
- MAJOR PLAYERS
 - NSF
 - OCEANUS, ALPHA HELIX, ATLANTIS II, ISELIN
 - ONR
 - KNORR, ATLANTIS, MELVILLE, MOANA WAVE
 - INSTITUTIONS
 - WHOI, SCRIPPS, HAWAII, ALASKA, MIAMI, TEXAS A&M
- FLEET COSTS - 1997
 - ESTIMATED AT \$50.5 MILLION
 - UNCHANGED UNOLS FLEET - \$60.0 MILLION
 - 1995 ESTIMATED FUNDING - \$48.3 MILLION

APPENDIX XI

FRANK H. MURKOWSKI, ALASKA, Chairman

MARK O. MATFIELD, Oregon
 PETE V. DOMENICI, New Mexico
 DON NICHOLS, Oklahoma
 LARRY E. CRAIG, Idaho
 CAROL THOMAS, Wyoming
 JON KYL, Alaska
 ROY BARNES, Missouri
 JAMES M. JOHNSON, Vermont
 CONRAD SUPPES, Missouri

J. BENNETT JOHNSTON, Louisiana
 DALE BUMPERS, Arkansas
 MICHAEL A. BOND, Kentucky
 H.J. BRADLEY, New Jersey
 JEFF BENJAMIN, New Mexico
 DANIEL K. AKAKA, Hawaii
 PAUL WELLSTONE, Minnesota
 BEN NIGHTHORSE CAMPBELL, Colorado

GREGG O. MENCKE, STAFF DIRECTOR
 GARY S. ELLSWORTH, CHIEF COUNSEL
 BENJAMIN S. COOPER, STAFF DIRECTOR FOR THE MINORITY

United States Senate

COMMITTEE ON
 ENERGY AND NATURAL RESOURCES

WASHINGTON, DC 20510-6150

March 28, 1995

The Honorable Charles A. Bowersher
 Comptroller General of the United States
 U.S. General Accounting Office
 Washington, D.C. 20548

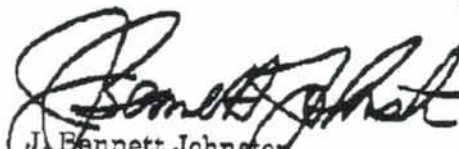
Dear Mr. Bowersher:

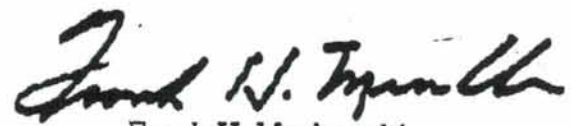
The General Accounting Office (GAO) is currently working on a report concerning the national requirement for an Arctic Research Vessel (ARV), and we know that your analysts have reviewed various options concerning the acquisition of such a vessel. In the course of this review, it is important that the GAO consider alternative "constellations" of icebreakers that could be employed to satisfy the nation's Arctic research and Coast Guard missions in the most cost effective manner possible.

The nation currently has three icebreakers: Coast Guard vessels *Polar Sea* and *Polar Star*, and the National Science Foundation's Antarctic research vessel *Palmer*. The Coast Guard has contracted to build *Healy*, a fourth icebreaker. The proposed ARV would constitute a fifth icebreaker. Fiscal limitations and other factors might easily lead the GAO to conclude that the ARV is not needed, but we believe that further analysis to explore the costs of operations and upgrades to ships in the existing icebreaker fleet is needed to guide our deliberations in this matter.

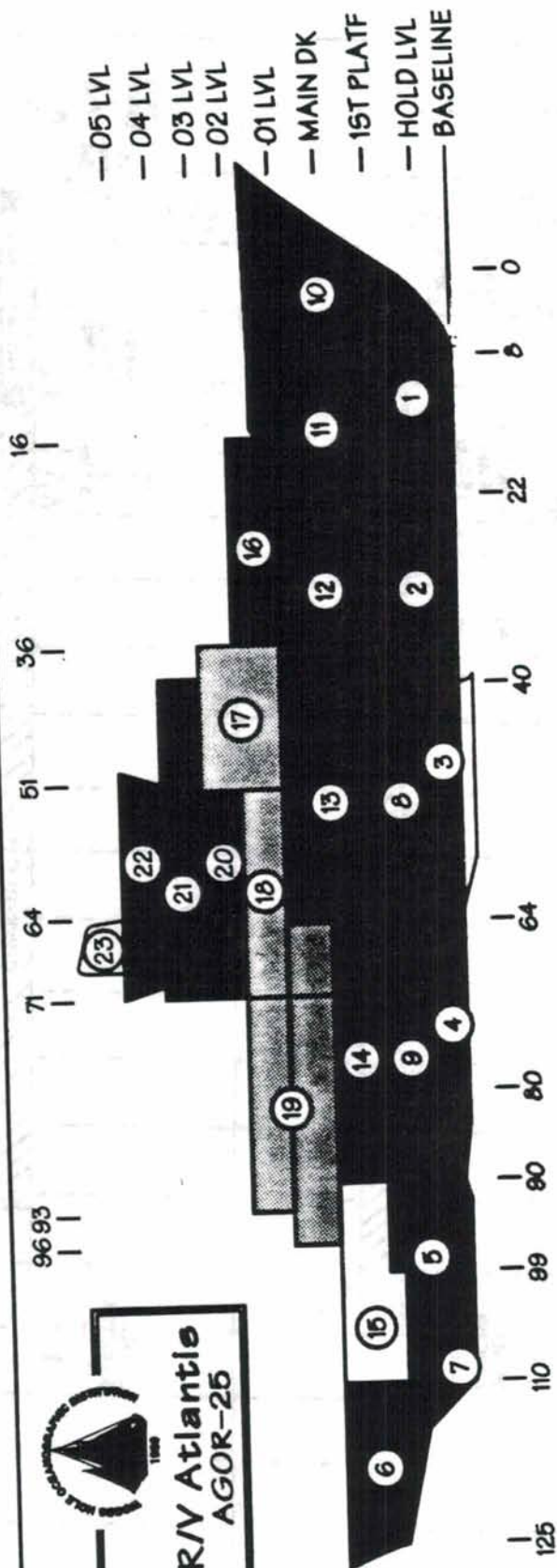
Indeed, some initial analyses made available to us from members of the scientific community indicate that the retirement of one of the Polar class vessels combined with the construction of the ARV could provide more scientific capability at a lower cost. Given our long interest in Arctic research, and the interest of the Committee in ensuring that the best scientific information is available to assist in the responsible development of Arctic resources and protection of the Arctic environment, we request that these factors be included in the GAO's evaluation of this matter. Should your staff have questions or require additional information, our staff contacts are David Garman of the Committee staff (224-7933) and Michael Gougisha of Senator Johnston's staff (224-5824).

Sincerely,


 J. Bennett Johnston
 Ranking Minority Member


 Frank H. Murkowski
 Chairman

APPENDIX XII



- 05 LVL
- 04 LVL
- 03 LVL
- 02 LVL
- 01 LVL
- MAIN DK
- 1ST PLATF
- HOLD LVL
- BASELINE

CHARACTERISTICS

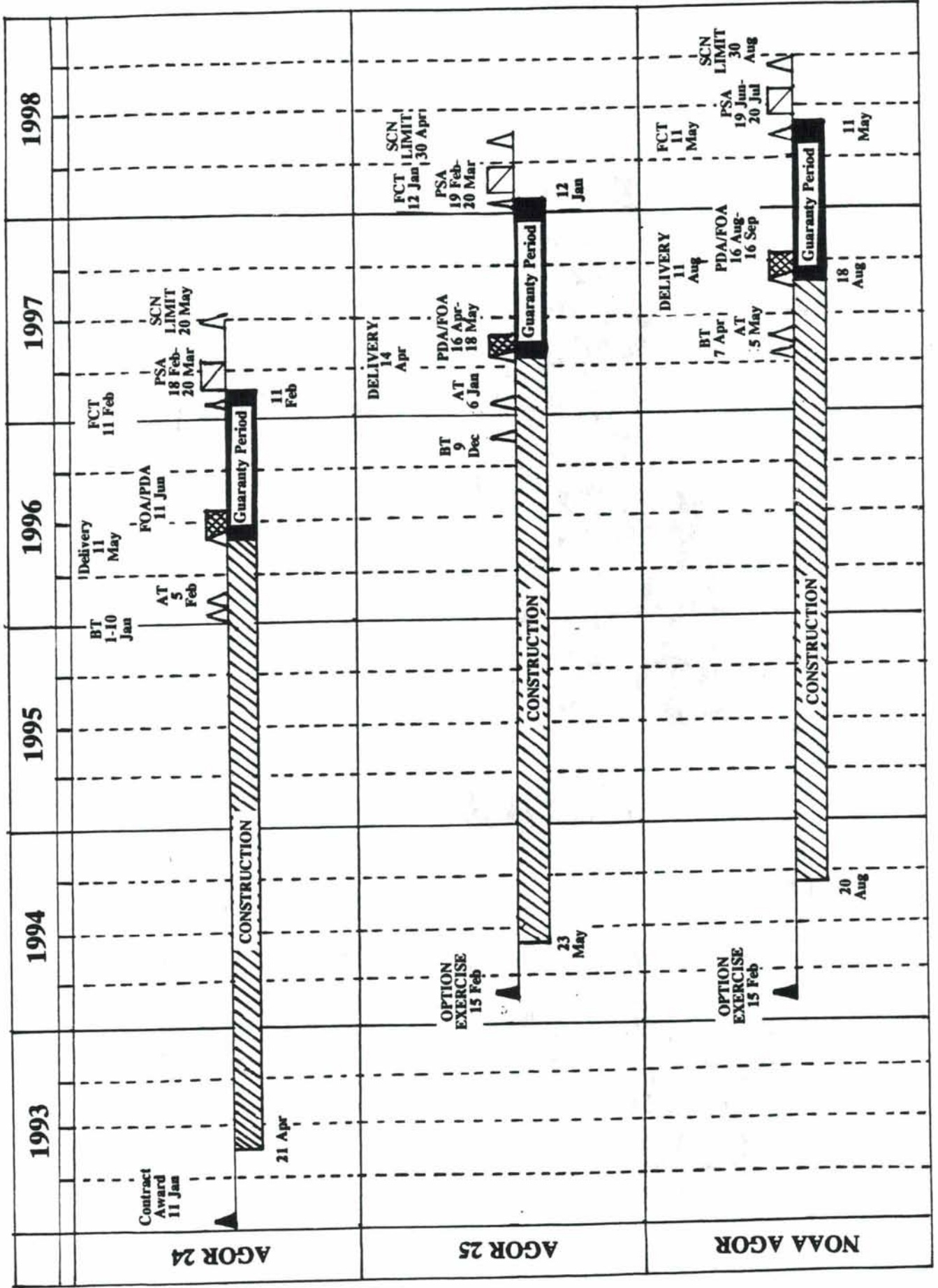
LENGTH 273'-6"
 BREADTH 52'-6"
 DEPTH 26'-6"
 DWL 17'-0"

**Construction Progress
 as of 1 MARCH 1995**

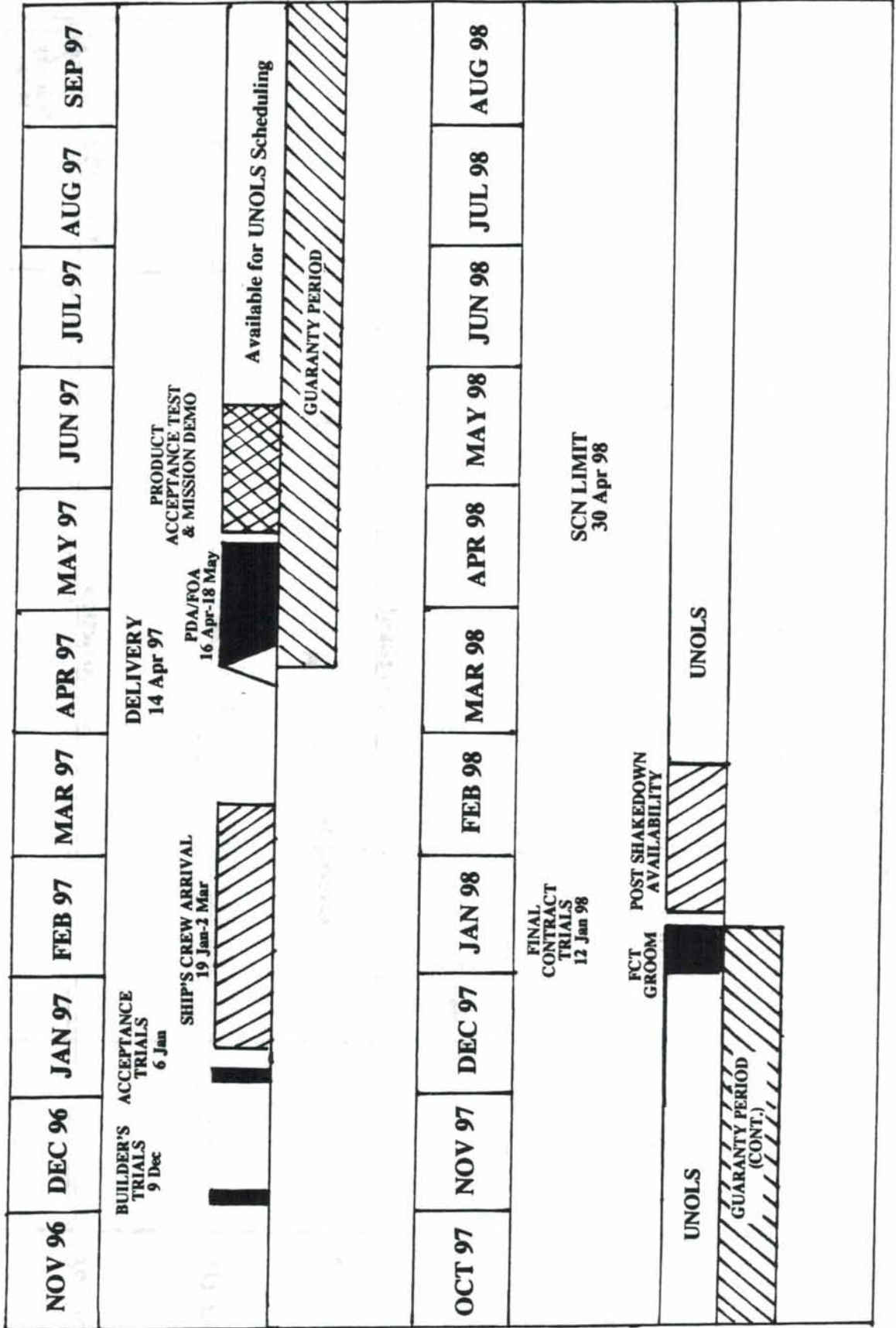
- Erected - on ways
- Complete - not erected
- Under Construction - TMG
- Under Construction - HMI

AGOR PROGRAM SCHEDULE SUMMARY

as of 08 MAR 1994

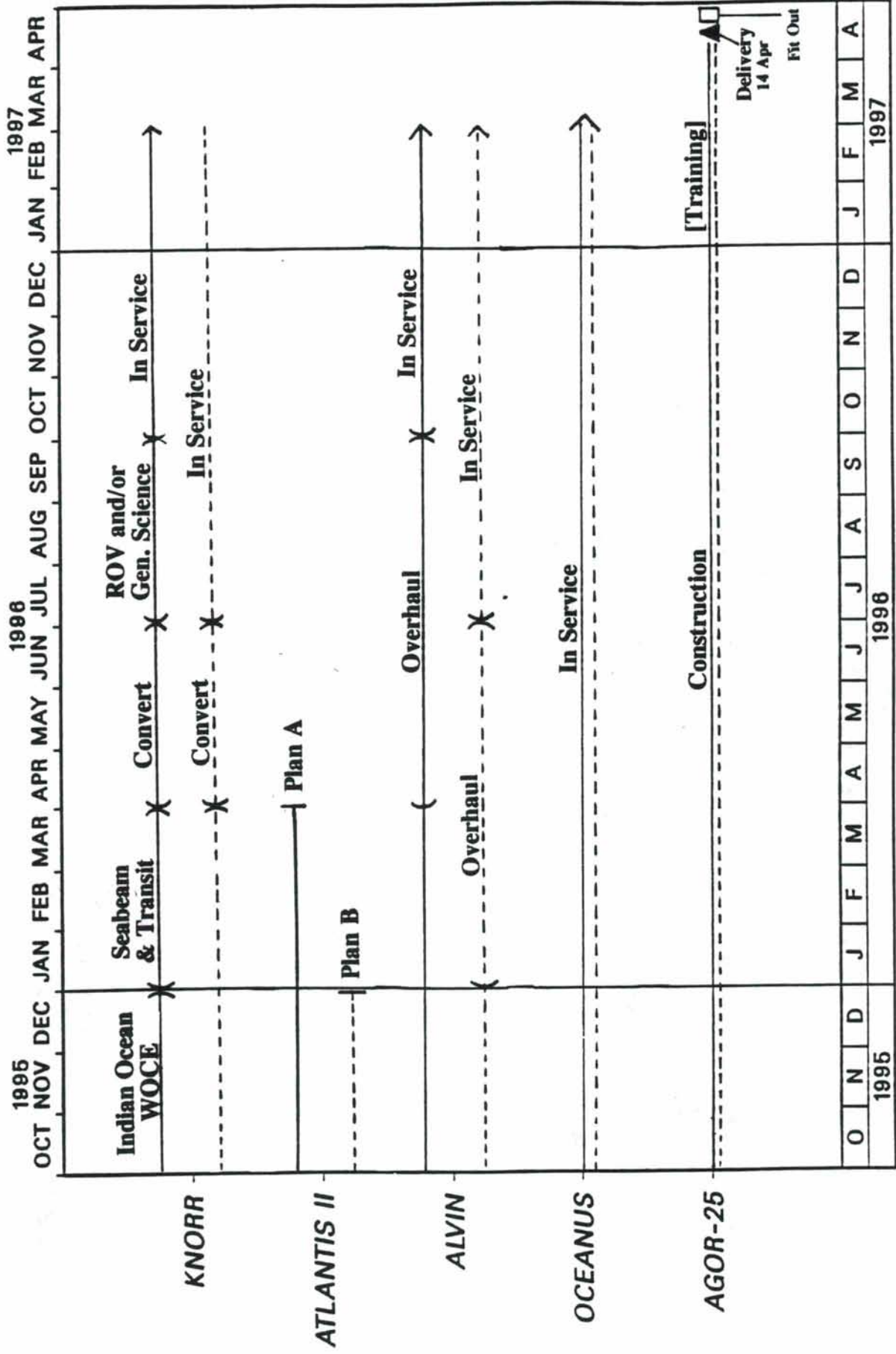


AGOR 25 TEST, TRIAL and DELIVERY SCHEDULE



WHOI Ships

Schedule Options for 1995-1997



Plan A (Normal A-II Retirement)

Plan B (Early A-II Retirement)

Deep Submergence Community Guidance

February 1995 Letter (Karen Von Damm, Subcommittee Chair)

Major recommendations:

- The timing of the conversion is critical.
 - ◊ Conversion and *Alvin* overhaul should begin early enough in CY 1996 to permit testing in waters close to Woods Hole and work in the North Atlantic in fall 1996.
- The proposed plan to have the DSV hangar located to port be adopted.
 - ◊ Most cost effective
 - ◊ Retains deck space
 - ◊ Some of the DSV transport rails removable
- DYNACON winch be permanently installed below decks.
- Added weight from the A-frame, ballast, and other proposed work will increase the draft of *Knorr* by 0.5-0.8 feet. Models suggest this will reduce stern slamming by 50%. Defer the rapid ballast system for the present time.
- It is not recommended that more bunks be added at the present time.
- A multi-beam system (SeaBeam 2100) has already been met.
- Recommend wet and dry ends of a combined short and long baseline navigation system be installed and integrated into a single navigation system.
- To enhance the "livability" on *Knorr*. Find permanent space for exercise equipment.
- Small boat handling on *Knorr* is less than ideal. Defer any relatively costly resolution unless it becomes a significant limiting factor.

The deep submergence science community is firmly behind the retirement of *Atlantis II* and the conversion of *Knorr* to the support vessel. While *Atlantis II* has served the community well, its limited space for science, personnel, lab and hold space has been limiting. *Knorr* will be a significant enhancement over those capabilities. *Knorr* will allow us to truly integrate submersible and ROV operations. It will open new investigative horizons. While not trivial (cost/structural), it will serve the community well throughout the next decade.

Work Tasks

- Relocate *Alvin*
 - Move A-Frame
 - Renovate, Replace Hydraulics
 - Handling System
 - Hangar
 - Topside Control/Navigation
 - Shops/Stores
 - Battery Service
 - Weight Stowage & Handling
- Accommodate ROVs
 - Handling/Tending Systems
 - Topside Control/Navigation
 - Shops/Stores
 - Service/Storage
- Retain *Knorr* General Purpose
- Related Science Issues
 - P-Code GPS
 - SeaBeam
 - Dynamic Positioning
- Related Ship Impact Issues
 - Laboratory Space
 - Berthing
 - Stores

Plan Overview - 1

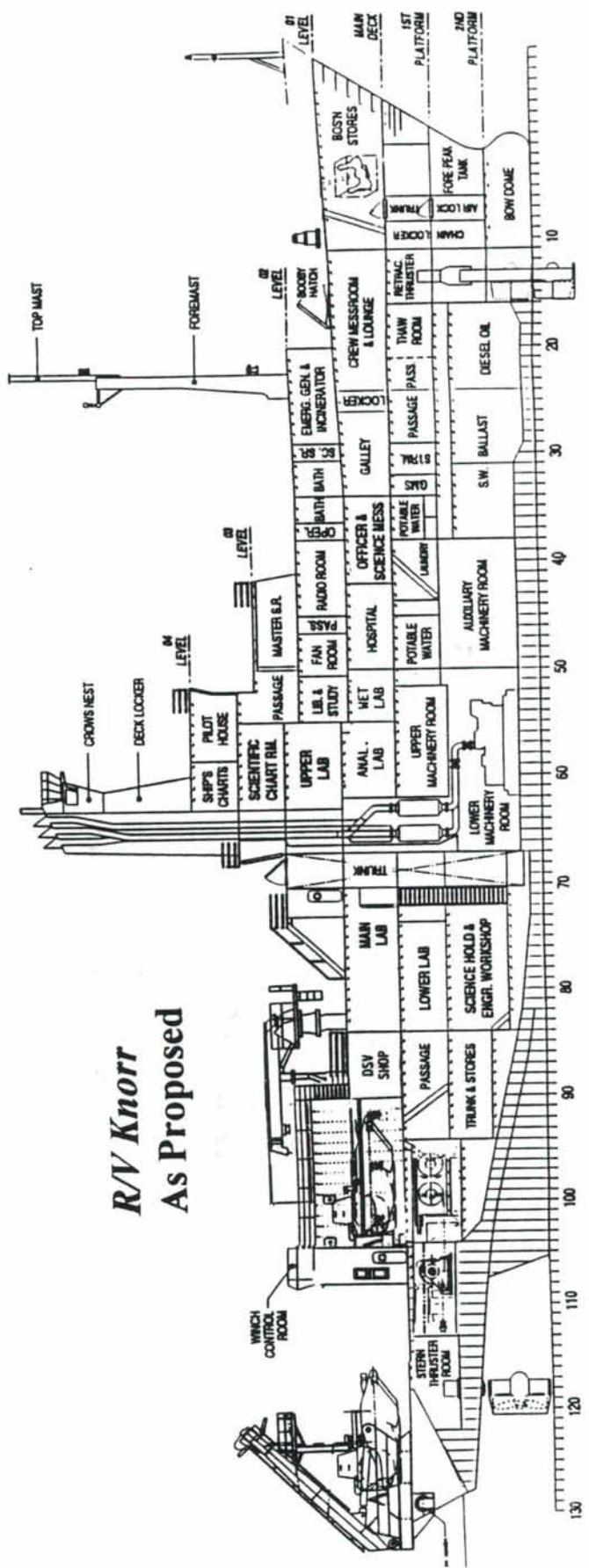
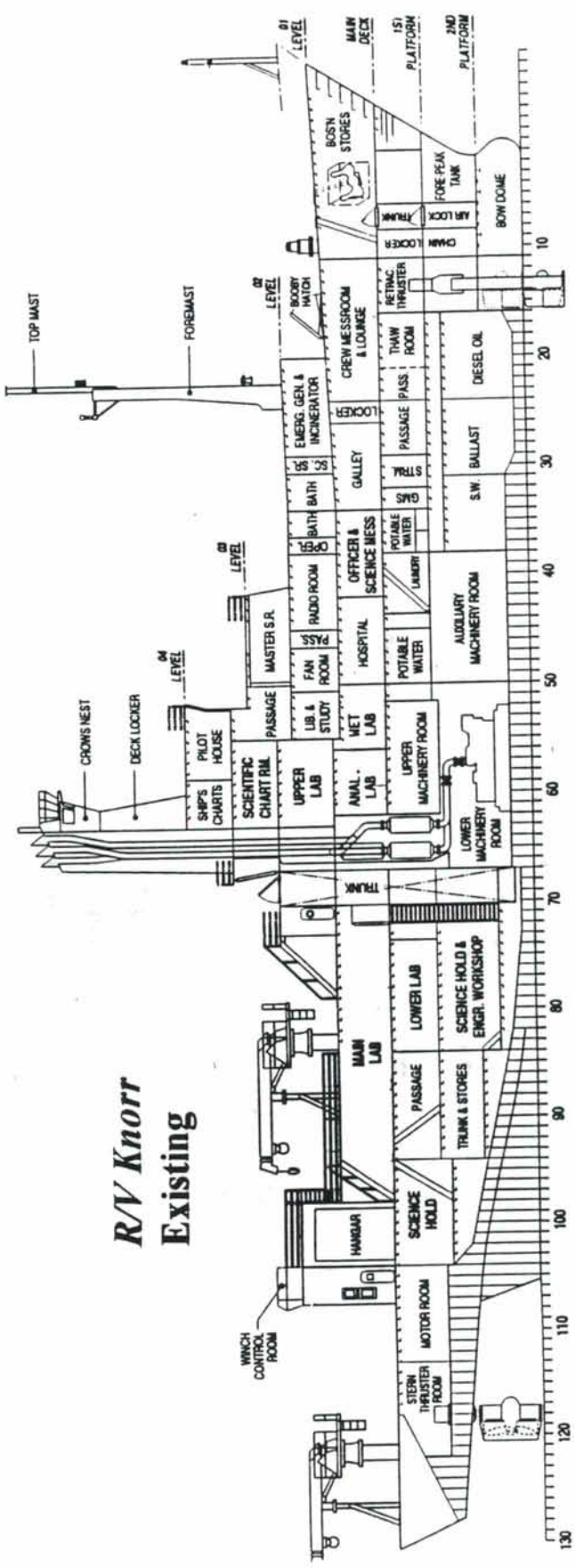
- **Objectives**
 - ◇ *Alvin* and ROV Support
 - ◇ Maintain maximum general science capability consistent with above.
Secondary to *Alvin* and ROV Support
- **Funding**
 - ◇ **WHOI Cost Sharing**
Proceeds from sale of *Atlantis II*, guaranteed to \$900,000 plus WHOI-
owned traction winch and fiber optic cable

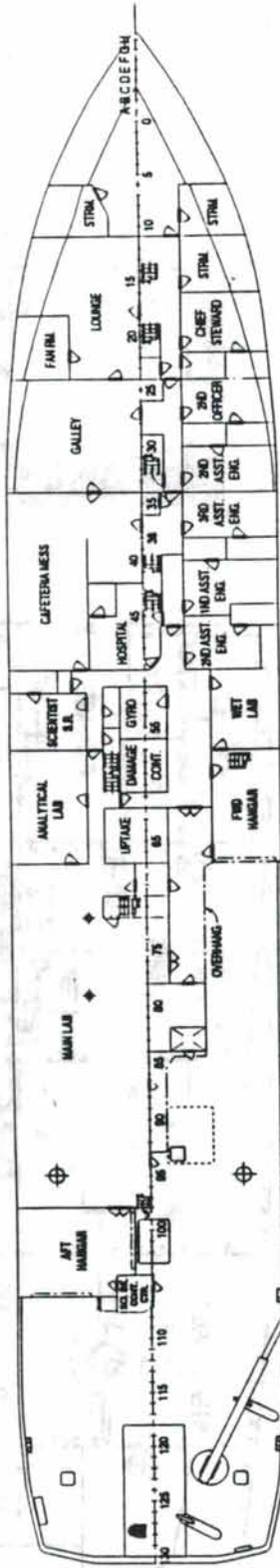
Plan Overview - 2

- **Design Approach**
 - ◇ **Phase 1 Design**
Glosten visits to *Knorr & Atlantis II* (twice)
 - ◇ **Phase 2 Design**
**Needed because best information generated late revisions to:
Hanger, track arrangement
Weight handling**
 - ◇ **Final focus and control of inputs to designer**
 - ◇ **Design products**
**Resolve arrangements and concepts
Set of drawings
Complete shipyard specs
Weight and stability calculations
Material for submission to ABS & USCG**

Plan Overview - 3

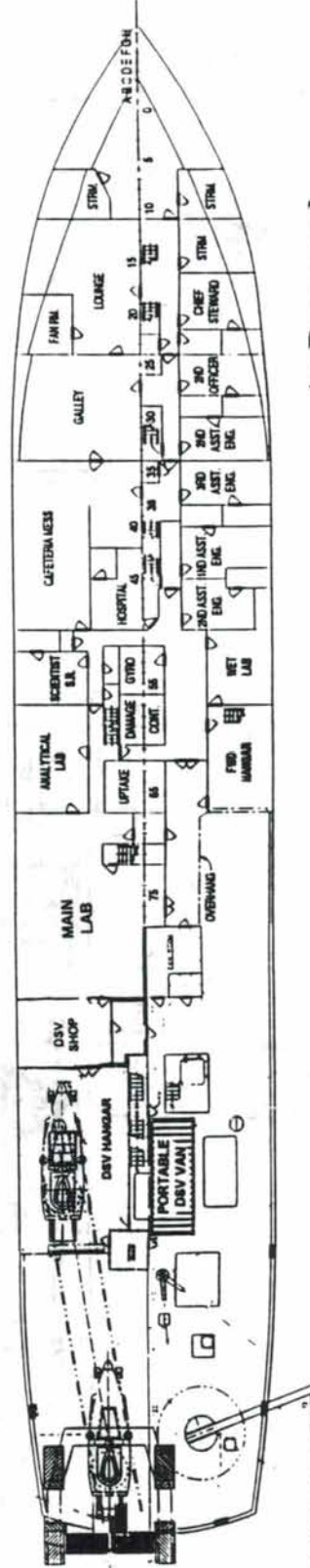
- **Management Approach**
 - ◇ **Strong Central Control**
 - ◇ **Management Objectives**
 - Quality conversion:**
 - Control growth (cost)
 - Minimize down time
 - Minimize risks
 - ◇ **Similar to *Oceanus* Mid-Life Overhaul**
 - Incorporating “lessons learned”
 - Single all-encompassing contract
 - Minimum (zero) owner furnished equipment
 - ◇ **Bid base (minimum) job plus options**
 - ◇ **Regular dry-docking work**
 - ◇ **Task shipyard to:**
 - Remove A-Frame
 - Order Caley components
 - Mod A-Frame under Caley’s direction
 - Install all new components
 - Completely test system





Existing

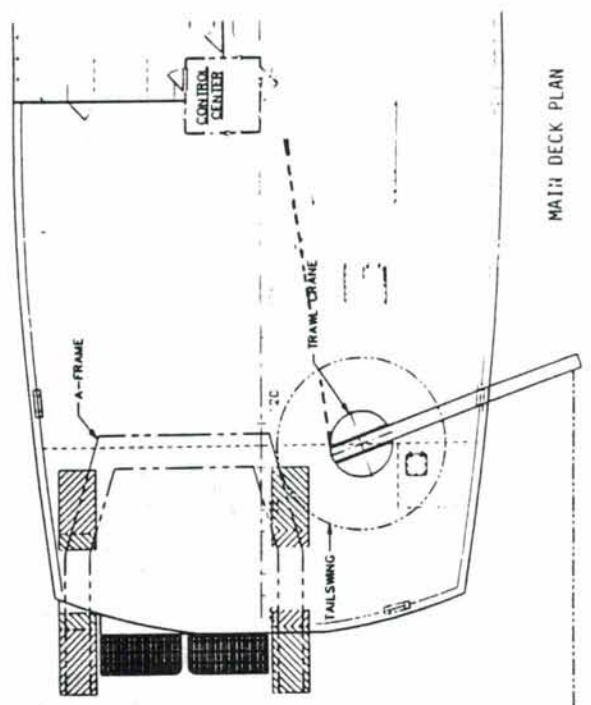
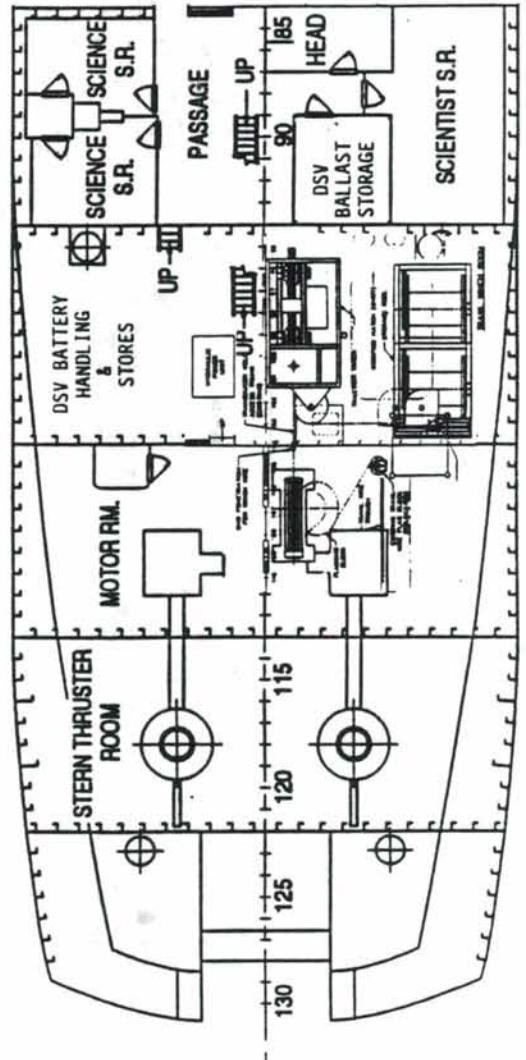
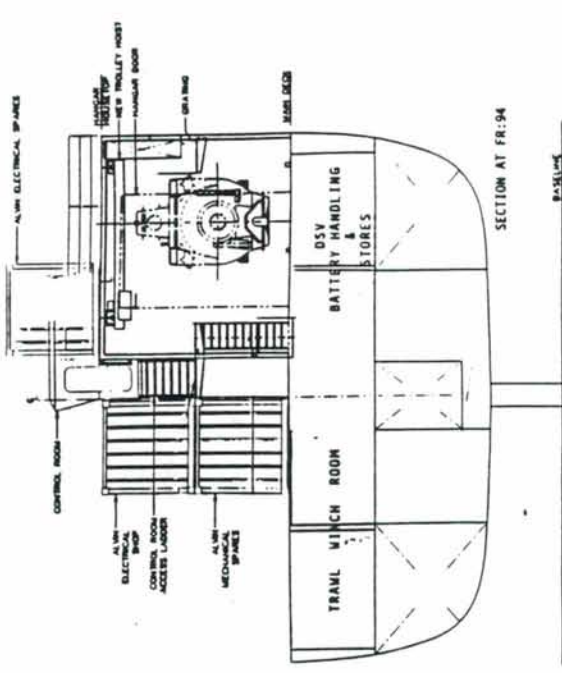
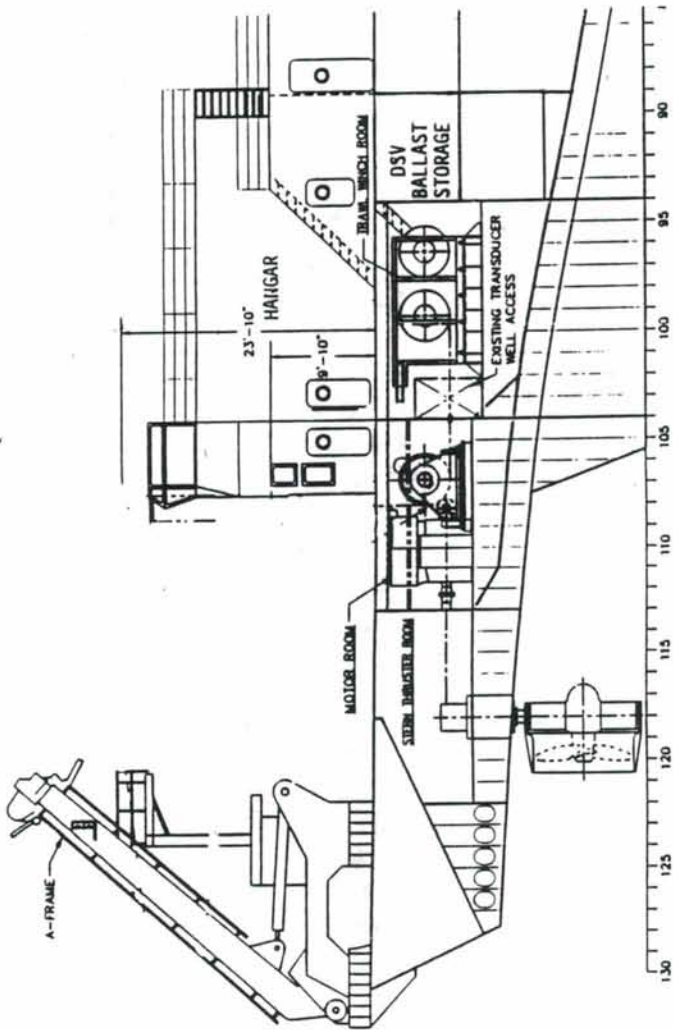
**R/V Knorr
Main Deck**



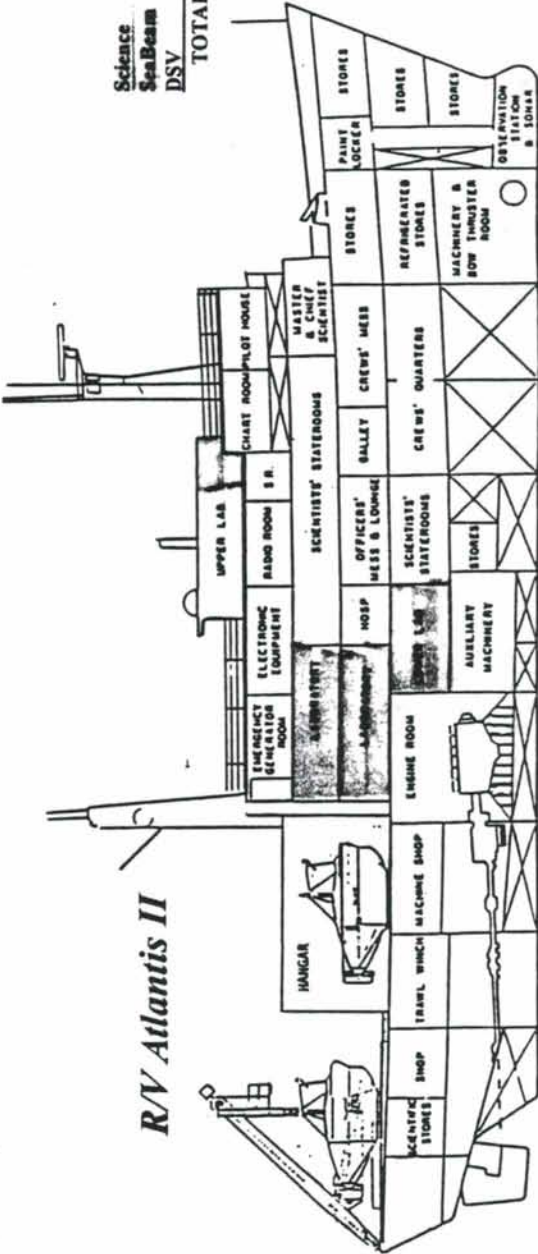
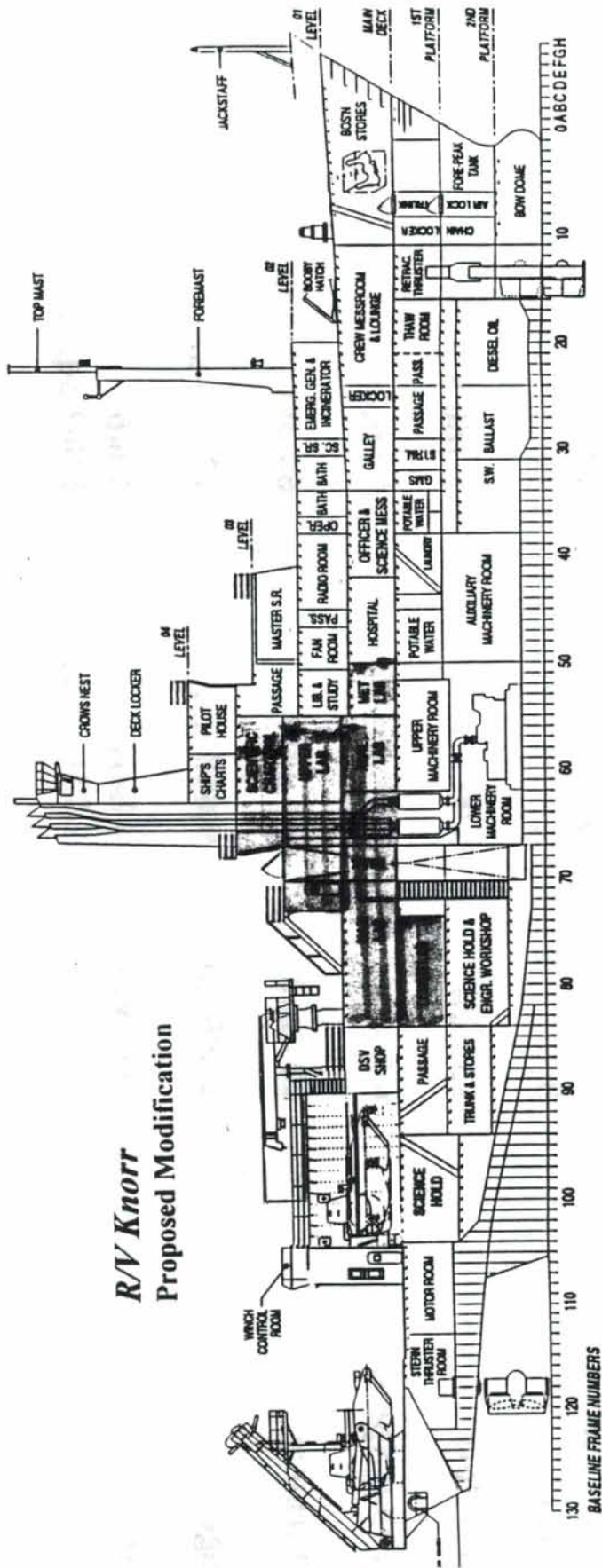
As Proposed

**R/V Knorr
Main Deck**

Traction Winch Installation



R/V Knorr Proposed Modification



Lab Space Comparison

	<i>Atlantis II</i>	<i>Knorr</i> (Existing)	<i>Knorr</i> (Proposed)
Science	1,031	2,269	1,981
Sea Beam	164	103	103
DSV	680	—	288+YARD
TOTAL	1,875	2,372	2,372

Lulu Atlantis II Knorr

LOA	105 ft.	210 ft.	279 ft.
Beam	48 ft.	44 ft.	46 ft.
Displacement	480 Ltons	2,300 Ltons	2,685 LTons
Crew	9	22	22
Science:			
DSV/Tech	9	9	13
Party	8	19	21
Generators	150 kw	600 kw	1,780 kw
Cruising Speed	6.5 kts	10.5 kts	12 kts
Endurance	20 days	30 days	60 days
Range	2,000 mi.	9,000 mi.	12,000 mi.
Labs	One Van	4 labs	6 labs
		1,031 sq. ft.	1,981 sq. ft.

APPENDIX XIII

REPLACEMENT VESSEL FOR THE R/V CALANUS

GENERAL CHARACTERISTICS

Shallow draft, multi discipline coastal zone research vessel.

Hull type: Catamaran, material aluminium

Length: 79 feet maximum

Draft: 4.5 feet maximum with full science payload, fuel, water, stores, etc.

Underwing clearance: Minimum 4 feet at full load

Propulsion: Twin diesel with controllable pitch propellers. Design will allow for addition of bow thrusters at a later stage. Jet drives may be an alternative.

Generators: Twin diesel driven generator sets, 50 kw minimum each, 440vac, 3 phase, 60 Hz capable of being paralleled

UPS power: 7kw, 120\240vac, 60 Hz. distributed to all labs, bridge, and cabins.

Endurance: 10 days minimum

Range: 1500 nautical miles

Operation: 24 hours per day

Science accomodation: 12 in two person cabins

Crew accomodation: Four in two person cabins.

Heads and showers: Four total in accomodation areas and one head on main deck.

Cruise speed: 12 knots minimum in 2-4 foot seas

Operating sea state: 8-12 foot seas while maintaining minimum safe headway.

Station keeping: Capable of station keeping in 5-7 foot seas and 20-25 knot winds. Capable as well of towing equipment at speeds of one knot.

After working deck area: Minimum 625 square feet with ~~minimum~~ width of 25 feet and minimum length of 25 feet.

Wet and dry lab: Minimum 600 square feet

Electronic lab: Minimum 120 square feet

Conductor winch:

Hydro winch:

A - frame: 4000 pound capability

Crane: Hiab articulated or equivalent

Work boats: 18 foot RIB

Dive support: Ladders and stairwells as typical of commercial dive vessels.

Mooring: Three point capability.

Air conditioning: Throughout labs, accomodation, bridge, galley, mess areas with individual controls in each cabin, lab, bridge, mess, etc. Capacity to handle full heat loads from all scientific instrumentation and complement of 16 persons in tropical conditions.

Survey: ABS standards, UNOLS Safety Rules, and USCG rules for passenger carrying vessels.

Hydraulics: Appropriate for operation of winches, crane, and A - frame. System to allow simultaneous operation of A - frame and winches.

Transducer wells: Typical installation to include 150 and 600kHz acoustic doppler current profiler transducers, 12 kHz depth transducer, and 3.5 kHz sub-bottom profiling transducers.

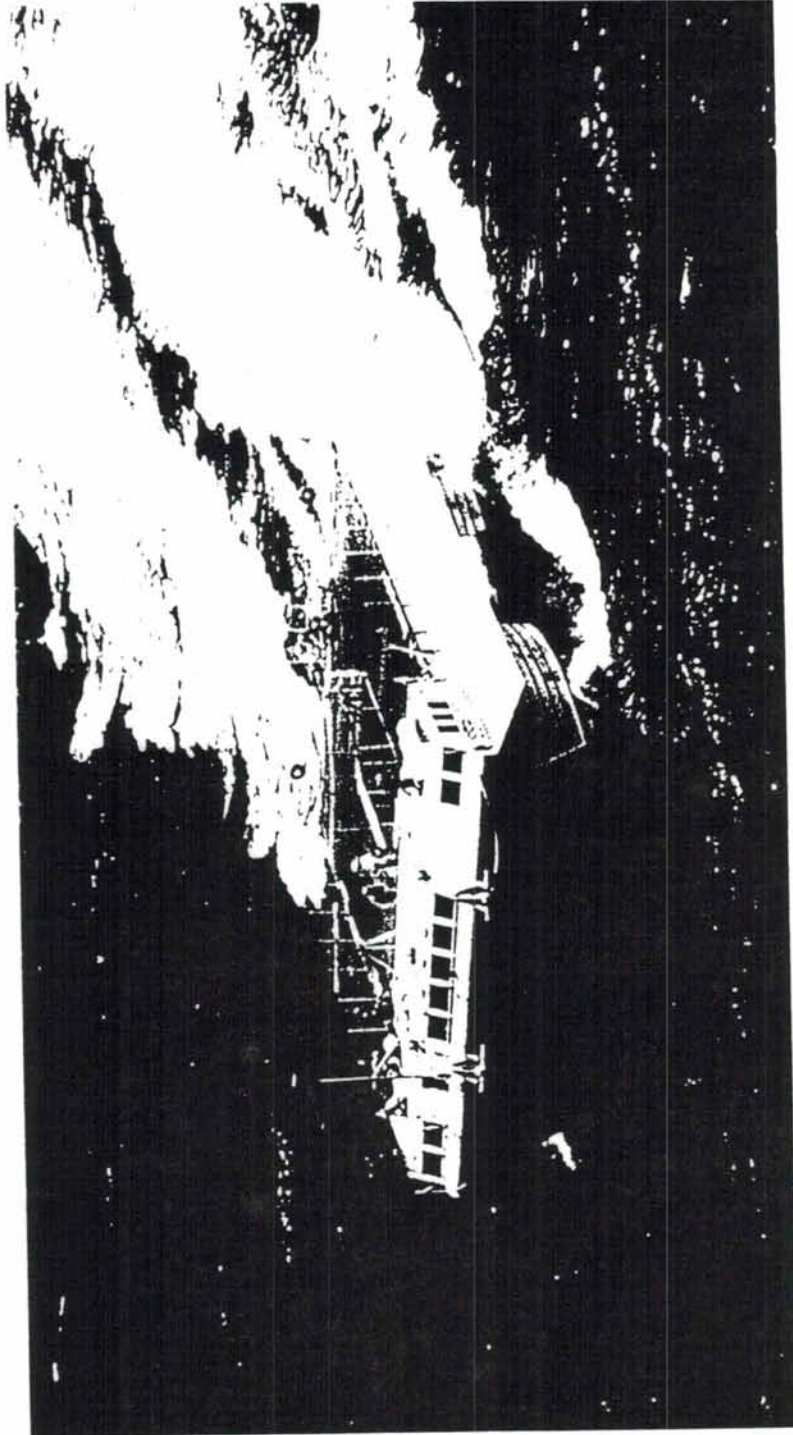
Spud mounts: Hard mounting points located at four places on the outside of the hulls for future capability to add spuds for drilling or coring operations. Water depth of 15 feet, two foot seas, and 10-15 knots of wind being typical operating conditions.

Well: Under consideration; removable section of deck for between hulls operations, typical dimensions of 8 by 10 feet.

Center A - frame: Under consideration re well.

Notched stern: Capability to remove a section of the after deck for lowering instrumentation, coring, drilling, etc. between hulls. May also incorporate relocation of A-frame.

APPENDIX XIV



KAIMALINO

APPENDIX XV

U.S. Department
of Transportation

United States
Coast Guard



Commandant
U. S. Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Staff Symbol: G-CC
Phone: 202-366-4280

5730

The Honorable Frank H. Murkowski
United States Senate
Washington, DC 20510

JAN 30 1995

1994 FEB -6 AM 11:05

Dear Senator Murkowski:

This is in response to your letter of November 22, 1994 regarding the polar icebreaker acquisition and polar icebreaking program.

The new polar icebreaker, USCGC HEALY, is under contract with Avondale Industries, Inc. (AII). The contract was awarded by the U.S. Navy on behalf of the U.S. Coast Guard. The contract calls for AII to design and construct a polar icebreaker that meets certain technical and performance criteria, as cited in the Specification of Requirements (SOR). AII is over halfway through the detail design phase, has ordered tens of millions of dollars of materials and equipment and will commence construction next year.

I share with you the desire to provide the Nation with a capable vessel that will perform as outlined in the SOR. Currently the Navy is acquiring for the Coast Guard and the Nation a world class science research ship that is capable of operating alone in the high polar latitudes. I have the utmost confidence that the science community will be very satisfied with HEALY, which is scheduled for delivery in Fiscal Year 1998.

I will now address each of the issues you raised in your letter:

ISSUE #1 - HULL DESIGN - We did not use "1930's technology" when finalizing the hull design for HEALY. The hull form was developed for AII by Kvaerner Masa yards of Finland, the recognized world leader in this area. It is based on an evolutionary series of designs started in the 1970's which continue to evolve and be built for many countries engaged in worldwide polar research. Great Britain, Russia, Japan, and Argentina have all selected similar designs which efficiently maximize icebreaking capability while minimizing the poor performance experienced by more radical icebreaking designs in open ocean transits. These transits are required of ships homeported in the United States which travel to polar regions.

As was briefed to your staff, our HEALY model has never failed a model test. It was able to break the level of ice required in the SOR in the preliminary testing completed. The only issue was the amount of installed horsepower required. The original SOR contained a contractual performance requirement to break 4.5 feet of level ice at 3.0 knots. The ability to predict and prove the design would meet the requirement beyond a reasonable doubt was

Subj: RESPONSE TO SENATOR MURKOWSKI'S LETTER DATED
NOVEMBER 22, 1994

JAN 30 1995

leading the shipyard to schedule test after test to gather additional data. Their concerns were contract risk avoidance; ours were cost and schedule impacts. In order to remove the impasse to design development and allow progress to resume, the government concurred that installing 30,000 shaft horsepower would meet our performance requirements. Since every parametric and analytic prediction and every model test but one, one which is suspect in its own right, agreed, the Navy and I concur that this was the right way to proceed to minimize technical risks while mitigating the cost and schedule impact.

I am unable to comment on any specific Icetech concerns, as I have not received any. The HEALY's hull was not the subject of, or addressed in, any of the formal presentations. However, one paper presented by Russian authors strongly supported the design approach reflected in HEALY's hull form. My Polar Operations Program Manager and my Chief of Naval Engineering were both at this meeting and do not recall the hull design of HEALY being a contentious issue.

ISSUE #2 - CASPPR - The Navy has determined that HEALY will meet current CASPPR regulations. The Canadian government has recently announced their intent to issue a revised CASPPR early in 1995. As currently designed, HEALY will not meet the proposed CASPPR requirement to have separation between the outer hull and any oil tanks. This new provision, which would apply to future ships, is not met by any icebreakers currently operated by Canada. It is unclear at this time whether the Canadians intend to apply this new standard to ships that are under construction at the time the proposed CASPPR takes effect. It is technically possible to alter the HEALY design, should it be required to accommodate this new CASPPR requirement. The issue of a U. S. flag vessel submitting to CASPPR certification will be decided by the State Department after appropriate deliberations.

ISSUE #3 - SWATH MAPPING SYSTEM - When the requirements for the HEALY were reviewed and updated in 1992, the science community did not generally support the need for a bottom mapping sonar system. We deleted this requirement due to its high cost and the limited funding available for construction. The contractors' prices for the system specified averaged \$12M. However, it was only deleted after consulting with the science community and our determination that it was an "enhancing," rather than required, system. More recently, as the focus of polar research shifted somewhat, my Polar Operations Program Manager requested the Navy investigate design changes to permit a possible future installation. This request was made in response to changing scientific community desires and our commitment to be as responsible as possible to our customers. This future installation, if desired, represents the most cost effective approach to this issue at the present stage.

Subj: RESPONSE TO SENATOR MURKOWSKI'S LETTER DATED JAN 30 1995
NOVEMBER 22, 1994

I am not completely familiar with the system installed on PALMER, but I am concerned when I hear about comparisons between systems installed on PALMER, a privately owned ice capable research vessel, and on HEALY, a polar icebreaking capable research vessel. The installation and modification problems required to successfully install a system on a ship operating in the environment for which HEALY is designed will be much greater than those encountered on the PALMER installation. By taking action now to plan for possible funding and retrofit, we are minimizing future installation costs and maintaining the flexibility to meet new scientific needs and adopt future technological advances.

ISSUE #4 - SCIENCE MISSION REQUIREMENTS - I am unaware of any specific science requirement, as specified by UNOLS, that HEALY fails to meet. The science community has contributed to the design of HEALY since its inception. The program manager travelled to AII after contract award to review the science space arrangements after receiving input from Mr. Jack Bash of UNOLS concerning requested changes. Later, a full science systems review was held at the shipyard to make additional recommendations. This meeting included a broad spectrum of past users and Dr. Brass, the chairman of UNOLS. We instigated the meeting, solicited their input and funded their travel. These changes were extensive and were incorporated into the design. All of HEALY's scientific systems are designed to "UNOLS standards," as we can best determine through frequent contact with UNOLS. We have been extremely conscious of our ultimate customer and the demands they will have to meet, and we have made every effort to ensure their needs will be met.

ISSUE #5 - CREW SIZE AND COSTS - The level of assistance that a research vessel (R/V) provides the embarked science party varies from ship to ship. Twenty-four hour operations on some ships mean the pilothouse is operational and the engines are running. The Coast Guard routinely provides a much higher level of support than found on civilian run R/V's. This includes 24-hour communications support, flight support and on-deck support, including rigging, running winches, coring, and casting. Crew overtime charges are not a concern due to the military crew. However, since military members do not serve in the same billet throughout their career, it is necessary to increase the staffing to allow for some training time and overlap of duties. The scientific community is aware of the high level of support available on our ships and reduces their party size accordingly, taking few, if any, technicians. In fact, a recent Department of Transportation Inspector General audit report expressed concern that the HEALY's projected crew size might be too small. We will continue to review the crew size and composition to ensure that, when finalized, it will be as small and efficient as possible consistent with meeting the operation and support requirements of

Subj: RESPONSE TO SENATOR MURKOWSKI'S LETTER DATED
NOVEMBER 22, 1994

5730
JAN 30 1995

the science community.

ISSUE #6 - RESPONSIVENESS TO THE SCIENTIFIC CUSTOMER - I appreciate greatly your recognition of the advances made in the execution of the Coast Guard polar operations program. I feel we have made tremendous strides in our responsiveness to customer needs and have continued this trend in the design of HEALY. "Mechanical shortcomings" are a routine occurrence when operating in areas of the world where very few ships can go. Our crew size, which is comparable to other heavy polar icebreakers, such as the Russian icebreaker YAMAL's 130 person crew, allows us the flexibility to meet these challenges, complete extended excursions deep into polar regions, and return safely.

I am concerned about the misconceptions people may have about our polar icebreaking performance. A major engineering casualty, coupled with the crash of an embarked helicopter, forced the termination of one mission in 1991. Every mission since then has been successfully completed. Every Deep Freeze mission to Antarctica for the past 20 years has been accomplished. When public attention was focused on the fate of trapped whales, all Coast Guard icebreakers were being employed in areas which precluded their timely assistance. However, we did provide the services of an experienced icebreaker commanding officer to assist in rescue operations. We, then and now, were suffering from a shortfall in the number of icebreakers, not in their capability. Although POLAR SEA had a propeller casualty in the most recent U.S. Arctic mission, all of the science mission goals were met and the customer was completely satisfied. Also, assistance was not requested from, offered or rendered by the YAMAL to the POLAR SEA or CCGS LOUIS ST. LAURENT.

I appreciate the opportunity to provide you additional information on the HEALY and the Coast Guard's polar icebreaking mission. I am sure you can now understand why I am justifiably proud of both.

Thank you for your interest in and support of the United States' next polar icebreaker.

Sincerely,



ROBERT E. KRAMEK
Admiral, U.S. Coast Guard
Commandant

FRANK H. MURKOWSKI
ALASKA

COMMITTEES:

VETERANS' AFFAIRS (RANKING)
ENERGY AND NATURAL RESOURCES
FOREIGN RELATIONS
INDIAN AFFAIRS

United States Senate

WASHINGTON, DC 20510-0202
(202) 224-6663

November 22, 1994

Admiral Robert E. Kramek
Commandant
United States Coast Guard
2100 Second Street, S.W.
Washington, D.C. 20593

Dear Admiral Kramek:

I am writing in reference to the Coast Guard's new polar icebreaker, the USCGC HEALY (WAGB 20). Although my staff recently met with the program manager and other Coast Guard officials about the program, there remained a number of questions that I wanted to pose to you in writing, as well as some follow up questions arising as a result of the meeting.

The past performance of Coast Guard icebreakers in the Arctic has not always been a source of national pride. In 1991, POLAR STAR broke down during a scientific mission. When public attention was focused on the fate of trapped whales near Barrow, Alaska, it was a Russian icebreaker that came to the rescue. Even during the most recent scientific cruise this past summer, POLAR SEA broke one propeller and damaged another, forcing drastic modifications in the scientific mission. In this instance, the Russian icebreaker YAMAL rendered assistance.

It is my hope that we can avoid these embarrassments in the future and rebuild our international reputation by providing the nation with a capable vessel that performs as intended. In that spirit, I raise the following issues:

Issue #1—Hull Design. I have previously expressed concern about HEALY's hull design to your predecessors. If our goal is to build a modern, capable polar icebreaker, I do not understand why we are using 1930's technology. During the recent meeting with my staff, the program manager said that modern designs exhibited poor seakeeping characteristics. While it is a fact that some modern designs such as Sweden's ODEN do have poor seakeeping characteristics in the open ocean, newer hull designs such as FENNICA and that proposed for the Arctic Research Vessel (ARV) have performed superbly in model icebreaking and seakeeping tests. In fact, I understand that technicians at the HSVA test facility in Hamburg called the ARV design the best icebreaking design they had ever tested. Meanwhile, I understand that HEALY's design has recently and repeatedly failed model icebreaking tests. Not only was the HEALY model unable to break ice at the required level, a substantial amount of ice ran through the propellers during the model test. Given the history of shaft and propeller problems in POLAR class ice breakers, isn't this a serious design flaw?

222 WEST 7TH AVENUE, BOX 1
ANCHORAGE, AK 99513-7570
(907) 271-3736101 12TH AVENUE, BOX 7
FARMER, AK 99701-6278
(907) 456-0233P.O. BOX 21847
JUNEAU, AK 99802-1847
(907) 686-7400130 TRADING BAY ROAD, SUITE 250
KETCHIKAN, AK 99811-7716
(907) 283-5908109 MAIN STREET
KETCHIKAN, AK 99801-8488
(907) 226-6880

November 22, 1994

Page 2

In addition, it is noteworthy that at an Icetech international meeting of technical experts last summer, the audience was virtually unanimous in their opposition to the design selected by the Coast Guard for HEALY.

Nevertheless, the Coast Guard has determined that it will proceed with HEALY's hull design. I understand that the Coast Guard will even absolve the shipbuilder from any liability should HEALY fail to meet its icebreaking specifications. In my view, this is a prescription for disaster. We are at risk of asking the taxpayer to spend in excess of \$300 million for an icebreaker that cannot break ice. Please provide me with an explanation of the decision to proceed with a design that has failed its icebreaking tests. In your explanation, I would appreciate a justification for the use of a design that international experts agree is outmoded and outdated.

Issue #2—CASPPR. I have heard from several individuals who are concerned that HEALY will not meet Canadian Arctic Shipping Pollution Prevention Regulations (CASPPR). The HEALY program manager assured my staff that HEALY would meet current CASPPR, but that the Coast Guard would not seek certification due to State Department guidance. It is my understanding that clearance to conduct research in foreign waters is the responsibility of the Chief Scientist of the cruise. In processing clearance requests for the Canadian Arctic, Canadian authorities will, no doubt, require evidence of compliance with CASPPR. Please provide me with the basis for your assurance that the Canadians will not deny scientists aboard HEALY permission to conduct their research in Canadian waters.

Issue #3—Swath Mapping System. The Coast Guard is not planning to have a swath mapping system aboard HEALY, reportedly due to the high costs of such a system, although they will retain the flexibility to install one in the future. I understand that the National Science Foundation has installed a swath mapping system aboard PALMER for a total cost of \$1.8 million. When my staff raised this issue and the reasonable cost of the NSF installation, the program manager pointed out that PALMER's installation didn't perform well. After making further inquiries, we learned that there were indeed problems with the PALMER installation—but that they were due to software problems and the fact that a supplier did not deliver a part to specifications. These corrections will be made at no charge to the government. If there is merit in having a swath mapping system aboard HEALY, doesn't it make sense to incorporate it in the design rather than subjecting the taxpayer to the additional costs of retrofitting at some future point?

Issue #4—Science Mission Requirements. HEALY design does not meet the minimum science requirements specified in the University-National Oceanographic Laboratory System (UNOLS) science mission requirements for an Arctic Research Vessel, even though it will cost more than twice as much as the proposed Arctic

November 22, 1994
Page 3

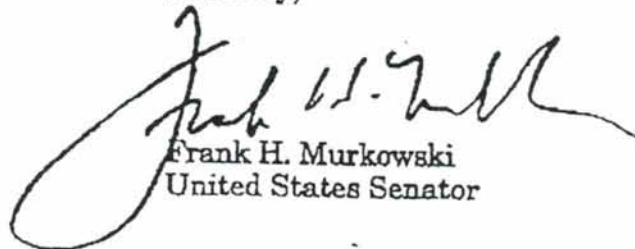
Research Vessel. Some have suggested that we cannot afford both the ARV and HEALY. If that is indeed the case, it is particularly important that HEALY meet the science requirements established by the research community. Will any effort be made to assure that HEALY meets these requirements?

Issue #5—Crew size and costs. The proposed ARV can perform its mission with a crew of 27. The POLAR class has a crew size of 140, while HEALY has a crew size that has been "downsized" to 80. In discussions with my staff, Coast Guard representatives said that one advantage of the large crew was to facilitate 24-hour scientific operations. I have since learned that large UNOLS vessels (e.g. RV THOMPSON, with a crew of 21) routinely conduct 24 hour operations and that the ARV can accomplish the same with its small crew. Have we done the very best we can do in keeping the crew size and associated costs as small and manageable as possible?

Issue #6—Responsiveness to the scientific "customer." The Coast Guard has made tremendous improvements over the past several years in being responsive to its scientific "customers." Despite the mechanical shortcomings of POLAR SEA during the 1994 Arctic cruise, I received outstanding reports of the performance and cooperation of the Captain and crew in achieving the scientific mission. This is a tremendous change from the past, and I wanted to express my thanks and appreciation for the efforts made on behalf of the scientific users of polar icebreakers.

I appreciate your attention to the issues raised above, and I will look forward to your detailed, written response.

Sincerely,



Frank H. Murkowski
United States Senator

APPENDIX XVI

Radio Officer - Legislation Status

- **Senate Commerce Committee approved a bill, S 652.**
 - **Rewrites the nation's telecommunications law.**
 - **A lot of big issues here.**
 - **As of 5 April, the bill slipped off the fast track.**
 - **Democrats refuse to agree to limit debate.**
- **Chairman of the House Commerce Committee has promised to introduce the House version of this legislation during the first week of May.**
 - **Hopeful the House version will contain language identical to the Senate bill.**

Sec. 306:
Automated Ship Distress and Safety Systems

Notwithstanding any provision of the Communications Act of 1934 or any other provision of law or regulation, a ship documented under the laws of the United States operating in accordance with the Global Maritime Distress and Safety System provisions of the Safety of Life at Sea Convention shall not be required to be equipped with a radio telegraphy station operated by one or more radio officers or operators.

APPENDIX XVII

RESEARCH CLEARANCE SUMMARY 01/01/1994 TO 12/31/1994

CRUISE SHIP TITLE	COASTAL STATE	START	END
93-072 COLLECTION PERMIT-WILKIE	Mexico	01/01/1994	12/31/1994
93-116 HMBS TRIDENT	Dominica Martinique St. Lucia St. Vincent Grenada	01/01/1994	12/31/1995
93-076 R/V MELVILLE	French Polynesia New Zealand	01/03/1994	02/08/1994
93-065 R/V MAURICE EWING	Brazil French Guiana Falklands/UK Malvinas/Arg.	01/04/1994	03/21/1994
93-114 NOAA DELAWARE II	Canada	01/04/1994	01/21/1994
93-094 R/V CORWITH CRAMER	Bahamas	01/13/1994	01/19/1994
93-095 R/V CORWITH CRAMER	Bahamas	01/23/1994	01/29/1994
94-001 NOAA DELAWARE II	Canada	01/24/1994	02/18/1994
93-063 R/V THOMAS G. THOMPSON	Fiji Wallis and Futuna French Polynesia Western Samoa Tokelau Cook Islands	01/25/1994	02/19/1994
93-098 NOAA DISCOVERER	Chile Clipperton Island Mexico	01/30/1994	04/28/1994
93-102 R/V ATLANTIS II	Costa Rica	02/01/1994	03/04/1994
93-088 R/V WESTWARD	Bahamas Dominican Republic Turks and Caicos Cayman Islands Jamaica Honduras Belize	02/07/1994	03/18/1994
93-087 R/V CORWITH CRAMER	Bahamas Dominican Republic Cayman Islands Turks and Caicos	02/08/1994	03/19/1994

CRUISE	SHIP TITLE	COASTAL STATE	START	END
		Jamaica Honduras		
93-070	R/V MELVILLE	New Zealand Chile	02/14/1994	03/21/1994
93-092	R/V THOMAS G. THOMPSON	Tokelau	02/22/1994	03/07/1994
94-004	NOAA ADVENTUROUS	Canada	02/24/1994	03/14/1994
94-005	NOAA DELAWARE II	Canada	03/07/1994	04/29/1994
93-121	R/V MOANA WAVE	Micronesia Kiribati Nauru	03/15/1994	04/06/1994
93-071	NOAA SURVEYOR	Chile Peru Ecuador Costa Rica	03/19/1994	04/16/1994
93-096	R/V WESTWARD	Bahamas Turks and Caicos Cayman Islands Jamaica Honduras Belize	03/24/1994	04/30/1994
93-107	R/V CORWITH CRAMER	Bahamas	03/25/1994	04/08/1994
93-115	R/V NEW HORIZON	Mexico	03/25/1994	04/01/1994
93-093	R/V MELVILLE	Peru French Polynesia New Caledonia Cook Islands Niue Tonga Fiji Vanuatu Australia	03/27/1994	06/24/1994
93-117	NOAA MALCOLM BALDRIGE	Bahamas British Virgin Is. Anguilla Antigua and Barbuda Guadeloupe Martinique Dominica St. Lucia St. Vincent	03/28/1994	04/12/1994

CRUISE	SHIP TITLE	COASTAL STATE	START	END
		Grenada Barbados Trinidad and Tobago		
93-090	R/V JOIDES RESOLUTION	Brazil	03/30/1994	05/26/1994
92-096	R/V KNORR	Brazil	04/02/1994	05/21/1994
94-032	NOAA ALBATROSS IV	Canada	04/04/1994	04/15/1994
94-017	R/V COLUMBUS ISELIN	Canada	04/07/1994	04/15/1994
93-122	NOAA JORDAN/MCARTHUR/MAKO	Mexico	04/11/1994	05/12/1994
94-002	R/V MOANA WAVE	Micronesia Marshall Island Kiribati Nauru Solomon Islands Papua New Guinea	04/11/1994	05/12/1994
94-010	NOAA MALCOLM BALDRIGE	Marquesas Island Panama Mexico	04/14/1994	06/26/1994
94-033	NOAA ALBATROSS IV	Canada	04/18/1994	04/29/1994
94-012	R/V ARGO MAINE	Canada	04/25/1994	04/29/1994
94-020	NOAA ALBATROSS IV	Canada	05/02/1994	05/13/1994
94-036	NOAA DELAWARE II	Canada	05/02/1994	05/27/1994
93-108	R/V ALPHA HELIX	Russia	05/03/1994	06/04/1994
93-105	R/V CORWITH CRAMER	Bahamas Bermuda Canada	05/04/1994	06/13/1994
93-106	R/V WESTWARD	Bahamas Bermuda Canada	05/04/1994	06/15/1994
94-014	R/V COLUMBUS ISELIN	Canada	05/07/1994	05/10/1994
93-099	NOAA MALCOLM BALDRIGE	Bahamas Azores Canary Islands	05/12/1994	07/10/1994
94-018	R/V COLUMBUS ISLEIN	Canada	05/13/1994	05/20/1994

CRUISE	SHIP TITLE	COASTAL STATE	START	END
94-062	USNS MAURY	Korea	05/14/1994	08/01/1994
94-031	NOAA ALBATROSS IV	Canada	05/16/1994	05/29/1994
94-019	NOAA DISCOVERER	Kiribati Tokelau Tuvalu	05/17/1994	06/19/1994
94-022	R/V CAPE HATTERAS	Bermuda	05/17/1994	05/31/1994
94-008	R/V GYRE	Bahamas Turks and Caicos Anguilla Montserrat British Virgin Is. St. Martin St. Barthelemy Guadeloupe Martinique Sint Maarten Saba Antigua and Barbuda St. Kitts and Nevis Dominica St. Lucia Barbados	05/20/1994	06/20/1994
94-011	R/V MOANA WAVE	Japan	05/20/1994	06/01/1994
94-009	R/V COLUMBUS ISELIN	Canada	05/25/1994	06/16/1994
94-028	R/V LONE STAR	Bahamas	05/26/1994	06/30/1994
93-104	R/V KNORR	Brazil	05/28/1994	06/15/1994
93-112	R/V JOIDES RESOLUTION	Martinique	05/29/1994	07/26/1994
94-037	NOAA ALBATROSS IV	Canada	05/31/1994	06/10/1994
94-043	NOAA DELAWARE II	Canada	05/31/1994	06/15/1994
94-054	NOAA RELENTLESS	Bahamas	05/31/1994	06/03/1994
94-067	USNS KANE	Norway	06/02/1994	06/21/1994
94-060	F/V CORSAIR	Canada	06/06/1994	06/10/1994
94-042	R/V ATLANTIS II	Canada	06/16/1994	07/09/1994
94-049	NOAA ALBATROSS IV	Canada	06/20/1994	07/20/1994

CRUISE	SHIP TITLE	COASTAL STATE	START	END
94-053	NOAA DELAWARE II	Canada	06/20/1994	07/01/1994
94-046	AIRBORNE RESEARCH	Russia	06/23/1994	07/02/1994
94-015	R/V ENDEAVOR	Canada	06/27/1994	07/02/1994
94-047	M/V ABEL-J	United Kingdom Denmark Germany Netherlands Norway	06/27/1994	07/31/1994
94-007	USNS LITTLEHALES	Tunisia	07/01/1994	09/30/1994
94-029	R/V MOANA WAVE	New Zealand Niue Cook Islands Kiribati	07/03/1994	08/25/1994
93-119	NOAA MILLER FREEMAN	Russia	07/04/1994	09/15/1994
94-026	R/V WESTWARD	Canada	07/05/1994	08/01/1994
94-025	R/V CORWITH CRAMER	Canada	07/07/1994	08/02/1994
93-109	R/V ALPHA HELIX	Russia	07/09/1994	07/22/1994
93-118	NOAA MALCOLM BALDRIGE	Bahamas British Virgin Is. Anguilla Antigua and Barbuda Guadeloupe Martinique Dominica St. Lucia St. Vincent Grenada Barbados Trinidad and Tobago	07/12/1994	08/01/1994
94-003	NOAA SURVEYOR	Russia	07/12/1994	09/02/1994
94-048	R/V NEW HORIZON	Canada	07/12/1994	08/01/1994
93-123	R/V POLAR DUKE	Chile	07/14/1994	08/13/1994
94-065	R/V ATLANTIS II	Canada	07/14/1994	07/30/1994
94-055	NOAA AIRCRAFT	Mexico	07/15/1994	10/15/1994
94-058	NOAA DELAWARE II	Canada	07/18/1994	08/26/1994

CRUISE	SHIP TITLE	COASTAL STATE	START	END
94-052	R/V ENDEAVOR	Canada	07/22/1994	07/26/1994
94-040	R/V EDWIN LINK	Canada	07/23/1994	07/28/1994
94-059	NOAA ALBATROSS IV	Canada	07/25/1994	08/05/1994
94-063	USNS WILKES	Korea	07/25/1994	08/01/1994
94-074	F/V TRADITION	Canada	07/26/1994	08/09/1994
94-071	NOAA DISCOVERER	Canada	07/27/1994	09/30/1994
93-124	R/V JOIDES RESOLUTION	Canary Islands	07/28/1994	09/23/1994
94-041	R/V EDWIN LINK	Canada	07/28/1994	08/08/1994
93-110	R/V ALPHA HELIX	Russia	08/01/1994	08/25/1994
94-045	R/V NEREID	Canada	08/01/1994	10/15/1994
94-038	NOAA MALCOLM BALDRIGE	Clipperton Island Panama	08/03/1994	10/02/1994
93-125	R/V MAURICE EWING	Russia	08/06/1994	09/01/1994
94-078	R/V ENDEAVOR	Bermuda	08/16/1994	08/28/1994
94-027	R/V LAURENTIAN	Canada	08/18/1994	08/28/1994
94-073	NOAA RELENTLESS	Canada	08/22/1994	09/09/1994
94-077	NOAA ALBATROSS IV	Canada	08/22/1994	09/02/1994
93-113	R/V MELVILLE	Tonga Fiji Niue New Caledonia Australia	08/30/1994	10/07/1994
94-044	USNS LITTLEHALES	Egypt	09/01/1994	12/31/1998
94-087	NOAA ALBATROSS IV	Canada	09/06/1994	10/28/1994
93-120	R/V ALPHA HELIX	Russia	09/10/1994	10/13/1994
93-085	R/V MAURICE EWING	Canada	09/12/1994	09/22/1994
94-013	R/V POINT SUR	Mexico	09/21/1994	10/09/1994
94-084	R/V WESTWARD	Canada	09/22/1994	10/06/1994

CRUISE	SHIP TITLE	COASTAL STATE	START	END
94-086	R/V KNORR	Italy	09/22/1994	09/26/1994
94-023	R/V ATLANTIS II	Mexico	09/30/1994	10/10/1994
93-068	R/V THOMAS G. THOMPSON	Oman	10/01/1994	03/31/1996
94-039	NOAA DISCOVERER	Marquesas Island Kiribati Tokelau Tuvalu	10/05/1994	11/26/1994
94-006	R/V MELVILLE	Tonga New Zealand	10/07/1994	11/13/1994
94-061	R/V ENDEAVOR	Bermuda	10/11/1994	10/22/1994
94-035	R/V WESTWARD	Antigua and Barbuda Barbados Bermuda British Virgin Is. Dominica Grenada Guadeloupe Martinique Montserrat Saba St. Kitts and Nevis St. Lucia St. Vincent Trinidad and Tobago	10/12/1994	11/22/1994
94-034	R/V CORWITH CRAMER	Antigua and Barbuda Barbados Bermuda British Virgin Is. Dominica Grenada Guadeloupe Martinique Montserrat Saba St. Kitts and Nevis St. Lucia St. Vincent	10/13/1994	11/23/1994
93-111	R/V ALPHA HELIX	Russia	10/14/1994	10/30/1994
94-024	R/V ALPHA HELIX	Russia	10/14/1994	11/02/1994
94-100	M/V BABY MAX	Bahamas	10/14/1994	10/31/1994

CRUISE	SHIP TITLE	COASTAL STATE	START	END
94-092	NOAA DELAWARE II	Canada	10/17/1994	11/01/1994
94-016	R/V ENDEAVOR	Canada	10/25/1994	11/01/1994
94-030	R/V EDWIN LINK	Turks and Caicos	10/29/1994	12/03/1994
94-076	R/V ATLANTIS II	Mexico	11/01/1994	11/05/1994
94-095	M/V BABY MAX	Bahamas	11/01/1994	09/30/1995
94-096	R/V ARGO MAINE	Canada	11/01/1994	11/08/1994
94-021	R/V ENDEAVOR	Canada	11/04/1994	11/27/1994
94-093	NOAA DELAWARE II	Canada	11/07/1994	11/18/1994
94-097	NOAA ALBATROSS IV	Canada	11/07/1994	11/18/1994
94-075	R/V MELVILLE	Australia New Zealand	11/17/1994	12/06/1994
94-105	R/V KNORR	Australia	11/19/1994	11/23/1994
94-101	NOAA DELAWARE II	Canada	11/28/1994	12/13/1994
94-104	R/V MAURICE EWING	Cayman Islands Jamaica Haiti	11/28/1994	12/08/1994
94-050	R/V WESTWARD	Antigua and Barbuda Dominica Dominican Republic Grenada Guadeloupe Honduras Jamaica Martinique Montserrat Saba St. Kitts and Nevis St. Lucia Venezuela British Virgin Is. St. Vincent Anguilla Bonaire Belize	11/29/1994	01/09/1995
94-051	R/V CORWITH CRAMER	Antigua and Barbuda British Virgin Is.	11/30/1994	01/10/1995

CRUISE	SHIP TITLE	COASTAL STATE	START	END
		Dominica		
		Dominican Republic		
		Grenada		
		Guadeloupe		
		Honduras		
		Jamaica		
		Martinique		
		Montserrat		
		Saba		
		St. Lucia		
		St. Vincent		
		Venezuela		
		St. Kitts and Nevis		
		Anguilla		
		Bonaire		
		Belize		
93-086	R/V KNORR	Australia	12/01/1994	01/19/1996
		Bangladesh		
		Diego Garcia		
		Djibouti		
		India		
		Indonesia		
		Kenya		
		Madagascar		
		Maldives		
		Mauritius		
		Mozambique		
		Oman		
		Pakistan		
		Reunion		
		Seychelles		
		South Africa		
		Sri Lanka		
		Thailand		
		United Arab Emirates		
		Yemen		
		Burma		
94-085	NOAA SURVEYOR	Chile	12/08/1994	05/15/1995
		Peru		
		Ecuador		
		Costa Rica		
		South Georgia/UK		
		South Sandwich Is.		
94-079	R/V MELVILLE	Australia	12/10/1994	01/23/1995
94-056	R/V MOANA WAVE	Tonga	12/28/1994	01/31/1995
		Fiji		
		Niue		

CRUISE CANCELLATION, DENIALS AND COMMENTS

- 93-116 HMBS TRIDENT 01/01/1994 12/31/1995
- French approval for Martinique is being sought by Barbados Coast Guard.
- 93-065 R/V MAURICE EWING 01/04/1994 03/21/1994
- Brazilian Embassy was completely unable to provide either status of request, or what if any, additional information might be required. We had to rely entirely on Amembassy Brasilia (which usually is not even involved in clearance procedures) to provide all communication regarding this research clearance request. Although the official authorization was provided by Brazilian Foreign Ministry to Amembassy Brasilia after ship departed, Brazilian Naval Officer was aboard, so that proposed research was conducted on schedule.
- 93-098 NOAA DISCOVERER 01/30/1994 04/28/1994
- Request was submitted late for three problem coastal states: Mexico, France and Chile. Schedule was then revised twice, making this an extremely troublesome request.
- 93-070 R/V MELVILLE 02/14/1994 03/21/1994
- Ship's port call in Iquique, Chile, was disrupted when Chilean Navy demanded the ship turn over SeaBeam data immediately and to also provide a preliminary report before the ship left port, even though they had not asked for this as an advance condition. Although the ship managed to comply, State made it clear that this was a one-time-only occurrence, that we would not comply with again. Later, Chile requested data collected outside Chilean waters. Scripps refused to comply with the concurrence of State.
- 94-004 NOAA ADVENTUROUS 02/24/1994 03/14/1994
- NOAA ADVENTUROUS replaces NOAA DELAWARE II just prior to start of research.
- 94-005 NOAA DELAWARE II 03/07/1994 04/29/1994
- NOAA ALBATROSS IV was replaced by NOAA DELAWARE II for this research.
- 93-071 NOAA SURVEYOR 03/19/1994 04/16/1994
- Peru request denied owing to inability to accept scientific participation. This resulted in a revised cruise track which necessitated the cancellation of requests to Ecuador and Costa Rica. Only Chilean clearance was utilized.
- 93-115 R/V NEW HORIZON 03/25/1994 04/01/1994
- Cruise cancelled
- Port call only.
- 93-090 R/V JOIDES RESOLUTION 03/30/1994 05/26/1994

- Brazilian Embassy failed to advise regarding status of approval and Brazilian Naval participation. Brazilian Naval Officer missed sailing of ship and had to be boarded later in the cruise. Brazilian Embassy failed even to provide copy of Brazilian authorization. However, ODP received a copy from the Naval observer.

- 92-096 R/V KNORR 04/02/1994 05/21/1994
- Originally submitted for the R/V MAURICE EWING, but changed to the R/V KNORR during the same period. Although this research clearance request was under consideration by Brazil for two years, the Brazilian Embassy was unable to provide the final authorization. However, we had been informed by our Embassy in Brasilia that the request was approved, and the Brazilian Naval Officer sailed with the ship. American Embassy Brasilia later provided copy of authorization.
- 94-032 NOAA ALBATROSS IV 04/04/1994 04/15/1994
- NOAA DELAWARE II replaced by NOAA ALBATROSS IV for this research.
- 94-017 R/V COLUMBUS ISELIN 04/07/1994 04/15/1994
- Research shifted from R/V ENDEAVOR immediately prior to start of research.
- 93-122 NOAA JORDAN/MCARTHUR/MAKO 04/11/1994 05/12/1994
- Clearance received late, however, research was conducted on revised schedule.
- 94-010 NOAA MALCOLM BALDRIGE 04/14/1994 06/26/1994
- Port calls only for Panama and Mexico.
- 94-033 NOAA ALBATROSS IV 04/18/1994 04/29/1994
- NOAA DELAWARE II replaced by NOAA ALBATROSS IV for this research.
- 94-012 R/V ARGO MAINE 04/25/1994 04/29/1994
- Research initially approved for 1-7 April 1994 had to be revised to the period 25-29 April 1994 owing to equipment problems.
- 93-108 R/V ALPHA HELIX 05/03/1994 06/04/1994
- Request denied
 - Denied by the Russians at the last minute. All attempts to obtain approval were unsuccessful.
- 93-105 R/V CORWITH CRAMER 05/04/1994 06/13/1994
- SEA cancelled requests for Canada and Bermuda just prior to start of research. Research conducted only in Bahamas.
- 94-014 R/V COLUMBUS ISELIN 05/07/1994 05/10/1994
- Research shifted from R/V ENDEAVOR.
- 93-099 NOAA MALCOLM BALDRIGE 05/12/1994 07/10/1994
- Cruise cancelled
 - Cruise cancelled owing to revised research plans.

94-018 R/V COLUMBUS ISLEIN 05/13/1994 05/20/1994
 - Research shifted from R/V ENDEAVOR.

94-062 USNS MAURY 05/14/1994 08/01/1994
 - Military oceanographic surveys.

94-008 R/V GYRE 05/20/1994 06/20/1994
 - R/V GYRE replaced R/V COLUMBUS ISELIN for this research which was then postponed one month. Approval was never received from Antigua and Barbuda.

94-009 R/V COLUMBUS ISELIN 05/25/1994 06/16/1994
 - Research shifted from R/V ENDEAVOR.

94-028 R/V LONE STAR 05/26/1994 06/30/1994
 - Bahamas Dept. of Fisheries dealt directly with the University of Miami and the research dates were rescheduled for these dates from the original dates of 8 May - 6 June 1994.

93-104 R/V KNORR 05/28/1994 06/15/1994
 - Although Brazilian Embassy was able to provide marginal information regarding status of research clearance request, and did eventually provide copy of approval, we still had to rely heavily on our Embassy in Brasilia for any semblance of the status of the request, and whether it would be approved.

94-067 USNS KANE 06/02/1994 06/21/1994
 - Cruise cancelled
 - Military operations in territorial sea.

94-046 AIRBORNE RESEARCH 06/23/1994 07/02/1994
 - Request denied
 - Request denied by Russians owing to insufficient notice.

94-047 M/V ABEL-J 06/27/1994 07/31/1994
 - This request was made by the U.S. Department of State on behalf of the U.K. at the request of NERC.

94-007 USNS LITTLEHALES 07/01/1994 09/30/1994
 - U.S. Navy hydrographic survey in the territorial sea of Tunisia. Originally requested for the period 15 May - 30 September 1994, but the response came late, hence the revised dates.

94-029 R/V MOANA WAVE 07/03/1994 08/25/1994
 - Cruise cancelled

93-109 R/V ALPHA HELIX 07/09/1994 07/22/1994
 - Cruise cancelled

94-003 NOAA SURVEYOR 07/12/1994 09/02/1994
 - Request denied
 - Request was denied by the Russians with no reason

given. Upon request from Department of State, the reason obtained was that the details of the research had not been agreed upon by the Russian collaborators. Research was inside the Russian territorial sea, so no formal protest was appropriate.

- 93-123 R/V POLAR DUKE 07/14/1994 08/13/1994
- Request denied
- Request for research in the Chilean canals denied by the Chilean Navy, because they "did not support such research." Unfortunately, this was the second part of continuing research funded by NSF. Since this research was proposed inside Chilean national waters, only a token protest was appropriate.
- 94-063 USNS WILKES 07/25/1994 08/01/1994
- Military oceanographic surveys. Approval received at last minute. Major problem was convincing Embassy to submit request.
- 93-110 R/V ALPHA HELIX 08/01/1994 08/25/1994
- Cruise cancelled
- 94-038 NOAA MALCOLM BALDRIGE 08/03/1994 10/02/1994
- Port call request only for Panama.
- 93-125 R/V MAURICE EWING 08/06/1994 09/01/1994
- Request denied
- Russian approval conditional that there be no research in territorial sea, and that research in EEZ not begin until 21 September 1994.
- 94-073 NOAA RELENTLESS 08/22/1994 09/09/1994
- Owing to problems with the electrical-mechanical systems on NOAA ALBATROSS IV, for which the approval was issued, this research was conducted by NOAA RELENTLESS.
- 94-077 NOAA ALBATROSS IV 08/22/1994 09/02/1994
- Originally approved for the period 8-19 August, the research had to be rescheduled owing to problems with the ship's electrical-mechanical systems.
- 93-113 R/V MELVILLE 08/30/1994 10/07/1994
- Late requests for Australia and New Caledonia were not submitted owing to lack of sufficient notice.
- 94-044 USNS LITTLEHALES 09/01/1994 12/31/1998
- Hydrographic Survey. Survey was not conducted because the details could not be worked out with Egyptian authorities.
- 93-120 R/V ALPHA HELIX 09/10/1994 10/13/1994
- Russians gave provisional approval: No placement of buoys in EEZ, and no research prior to 21 September 1994.

- 94-013 R/V POINT SUR 09/21/1994 10/09/1994
 - Request denied
 - Although a Mexican scientist was embarked, Mexican approval was not obtained until 6 October 1994, too late for the research to be conducted in Mexican waters.
- 94-086 R/V KNORR 09/22/1994 09/26/1994
 - Cruise cancelled
 - Equipment test only - no research. Notification sent to Amembassy Rome.
- 94-023 R/V ATLANTIS II 09/30/1994 10/10/1994
 - Owing to an 11th hour change in chief scientists, Mexican approval was not received until 6 October 1994, however, the ALVIN dives were conducted as proposed.
- 93-068 R/V THOMAS G. THOMPSON 10/01/1994 03/31/1996
 - JGOFS research cruises in Indian Ocean.
- 94-035 R/V WESTWARD 10/12/1994 11/22/1994
 - SEA changed chief scientists, itinerary, and added Trinidad and Tobago shortly after original request, and then again three months later, cancelling Trinidad and Tobago.
- 93-111 R/V ALPHA HELIX 10/14/1994 10/30/1994
 - Cruise cancelled
- 94-024 R/V ALPHA HELIX 10/14/1994 11/02/1994
 - Cruise cancelled
- 94-076 R/V ATLANTIS II 11/01/1994 11/05/1994
 - Port call only in Mexico.
- 94-075 R/V MELVILLE 11/17/1994 12/06/1994
 - Clearance to collect SeaBeam 200 bathymetry data on transits into and out of ports. Primary research in international waters.
- 94-105 R/V KNORR 11/19/1994 11/23/1994
 - Equipment testing only - no research.
- 94-104 R/V MAURICE EWING 11/28/1994 12/08/1994
 - Haiti request added after change in Hatian govt. However, no response was received.
- 94-050 R/V WESTWARD 11/29/1994 01/09/1995
 - Dates, itinerary and staffing changed by SEA shortly after requests made.
- 94-051 R/V CORWITH CRAMER 11/30/1994 01/10/1995
 - Dates, itinerary and staffing changed by SEA shortly after requests made, and then changed again two months later.
- 93-086 R/V KNORR 12/01/1994 01/19/1996
 - R/V KNORR replaced R/V MELVILLE several months into the clearance procedure after several

approvals had been received. This was accompanied by a revised schedule.

94-085 NOAA SURVEYOR 12/08/1994 05/15/1995

- NOAA cancelled request to Peru when Embassy advised approval would not be given without Peruvian scientific participation. Requests to Costa Rica and Ecuador were cancelled for similar reasons. Owing to onerous conditions, request made to Chile was also cancelled. This resulted in all transit research in foreign waters being cancelled for the AMLR Cruise. However, research was proposed, during Leg 3 of AMLR, in the South Georgia and South Sandwich Islands.

94-056 R/V MOANA WAVE 12/28/1994 01/31/1995

- Research cruise was moved up two weeks in order for ship to remove temporary seismic stations from the islands of Niua Fo'ou, Tonga, and Ono-I-Lau, Fiji.

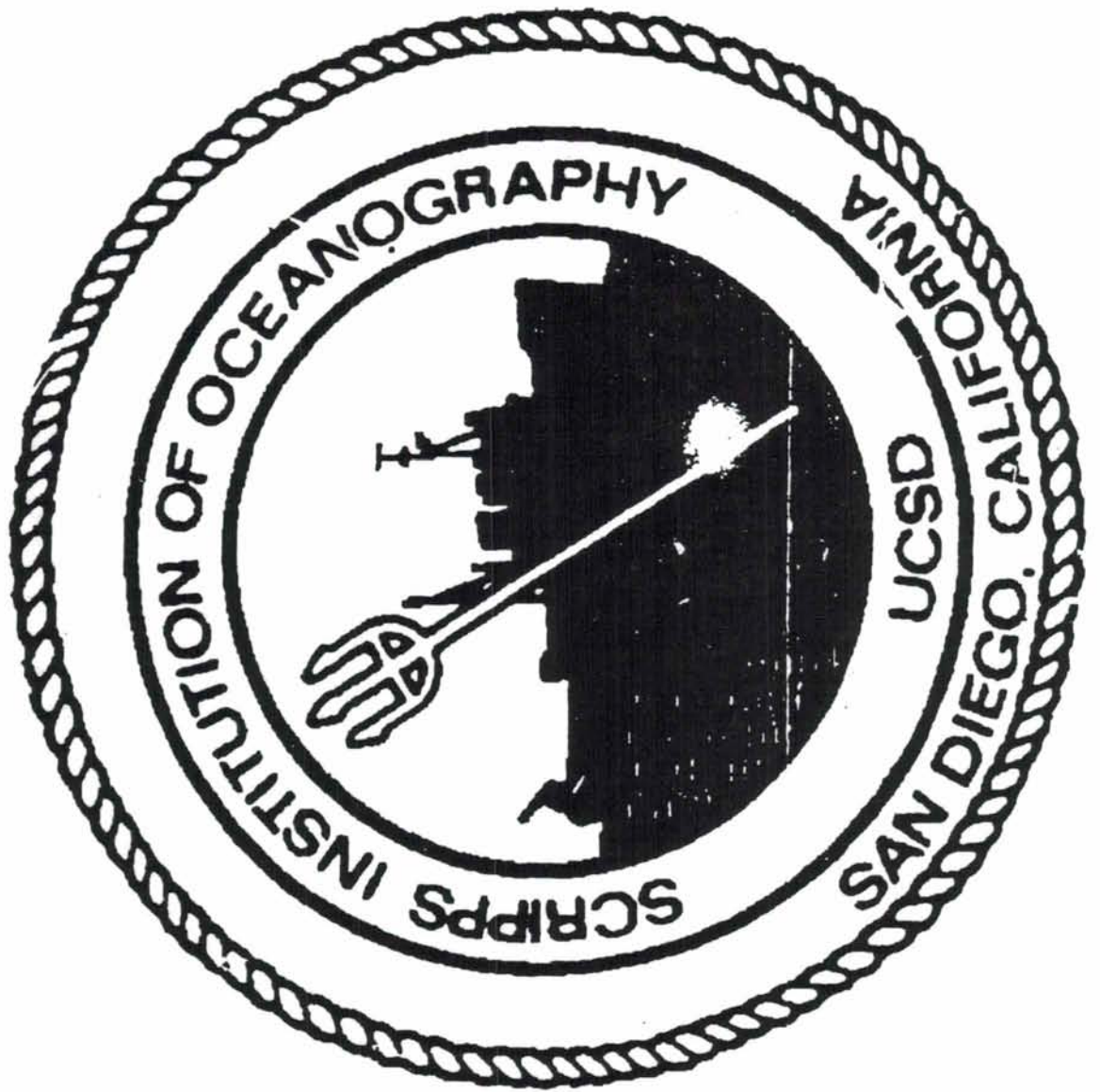
SUMMARY OF REQUESTS BY COASTAL STATE FOR
01/01/1994 TO 12/31/1994

COASTAL STATE	# OF REQUESTS
Antigua and Barbuda	7
Australia	6
Azores	1
Bahamas	16
Bangladesh	1
Barbados	5
Belize	4
Bonaire	2
Brazil	4
Burma	1
Canada	48
Canary Islands	2
Chile	5
Cook Islands	3
Costa Rica	3
Denmark	1
Djibouti	1
Dominica	8
Dominican Republic	4
Ecuador	2
Egypt	1
Fiji	4
Germany	1
Grenada	7
Haiti	1
Honduras	5
India	1
Indonesia	1
Italy	1
Jamaica	6
Japan	1
Kenya	1
Kiribati	5
Korea	2
Madagascar	1
Maldives	1
Malvinas/Arg.	1
Marshall Island	1
Mauritius	1
Mexico	9
Micronesia	2
Mozambique	1
Nauru	2
Netherlands	1
New Zealand	5
Niue	4
Norway	2
Oman	2
Pakistan	1
Panama	2
Papua New Guinea	1
Peru	3
Russia	10
Saba	5

Seychelles	1
Sint Maarten	1
Solomon Islands	1
South Africa	1
Sri Lanka	1
St. Kitts and Nevis	5
St. Lucia	8
St. Vincent	7
Thailand	1
Tokelau	4
Tonga	4
Trinidad and Tobago	3
Tunisia	1
Tuvalu	2
United Arab Emirates	1
Vanuatu	1
Venezuela	2
Western Samoa	1
Yemen	1
France	30
United Kingdom	38

The Department of State received a total of 128 clearance requests for research to be conducted during the period 01/01/1994 - 12/31/1994 . They represent 330 requests to 75 foreign governments for U.S. research. Of the 128 clearances requested, 6 were denied and 9 were cancelled.

APPENDIX XVIII



R/V NEW HORIZON

MID-LIFE REFIT

DEC 1995 - APR 1996

OBJECTIVES

Resolution of long term stability restrictions,

Replacement and overhaul of obsolete or deteriorated equipment, machinery and systems necessary to ensure reliable operations,

Upgrades of science equipment and support systems to allow conduct of increasingly complex missions,

Habitability enhancements.

NEW HORIZON MID-LIFE REFIT PROJECTS TO ENSURE CONTINUED RELIABLE OPERATIONS

<u>ITEM</u>	<u>DESCRIPTION</u>
Stability Improvement	Hull Tankage Modifications Fuel and Ballast Tanks Potable Water Piping Systems Replace Concrete Ballast
Correct Admeasurement	Deckhouse Modifications Add Deep Frames Fr 23-52
Piping Systems Modifications	Replace Saltwater Suction Header Isolate Bilge and Ballast System
Replace Machinery and Equipment	Bow Thruster Nr. 2 Ship's Service Generator Autopilot Winch Readouts ✓ Deck Equipment Hydraulic System Main Reefer Units Science Reefer Units Fathometer VHF Transceivers PDR ✓ (1 → MV) Lab Ventillated Workstations ✓ 1/2 Portable Fire Pump
Install New Mach. and Equipment	Marine Sanitation Device UPS clean power ✓ HAZMAT Locker ✓ NAVTEX ✓
Machinery Overhauls	Nautilus Crane ✓ Anchor Windlass Forward Hydraulic W/T Door NR. 1 & 2 A/C Units
Pitch Controls	Replace Improperly Routed Piping and Oversized Actuators

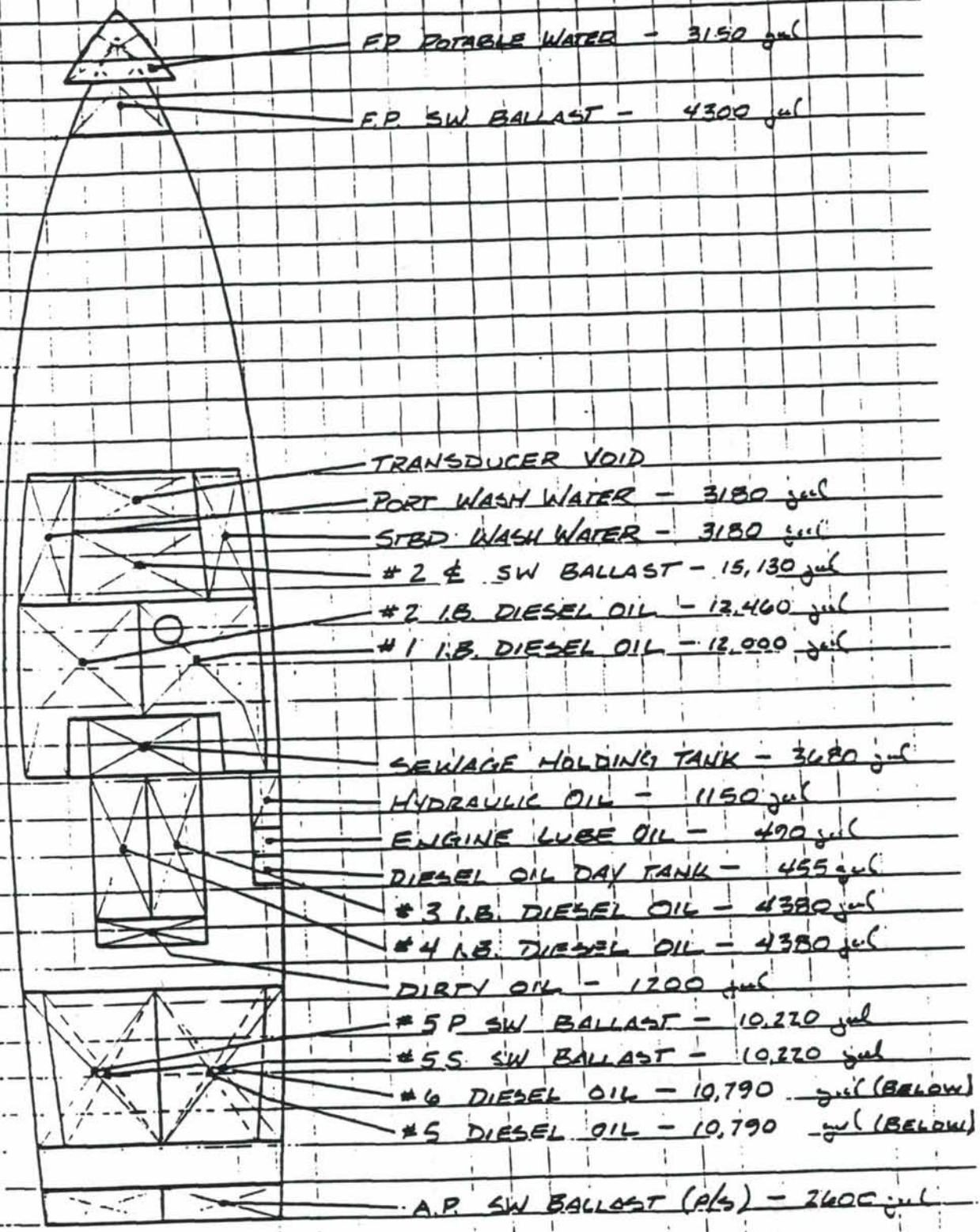


Figure 2-3
Existing Tank Arrangement

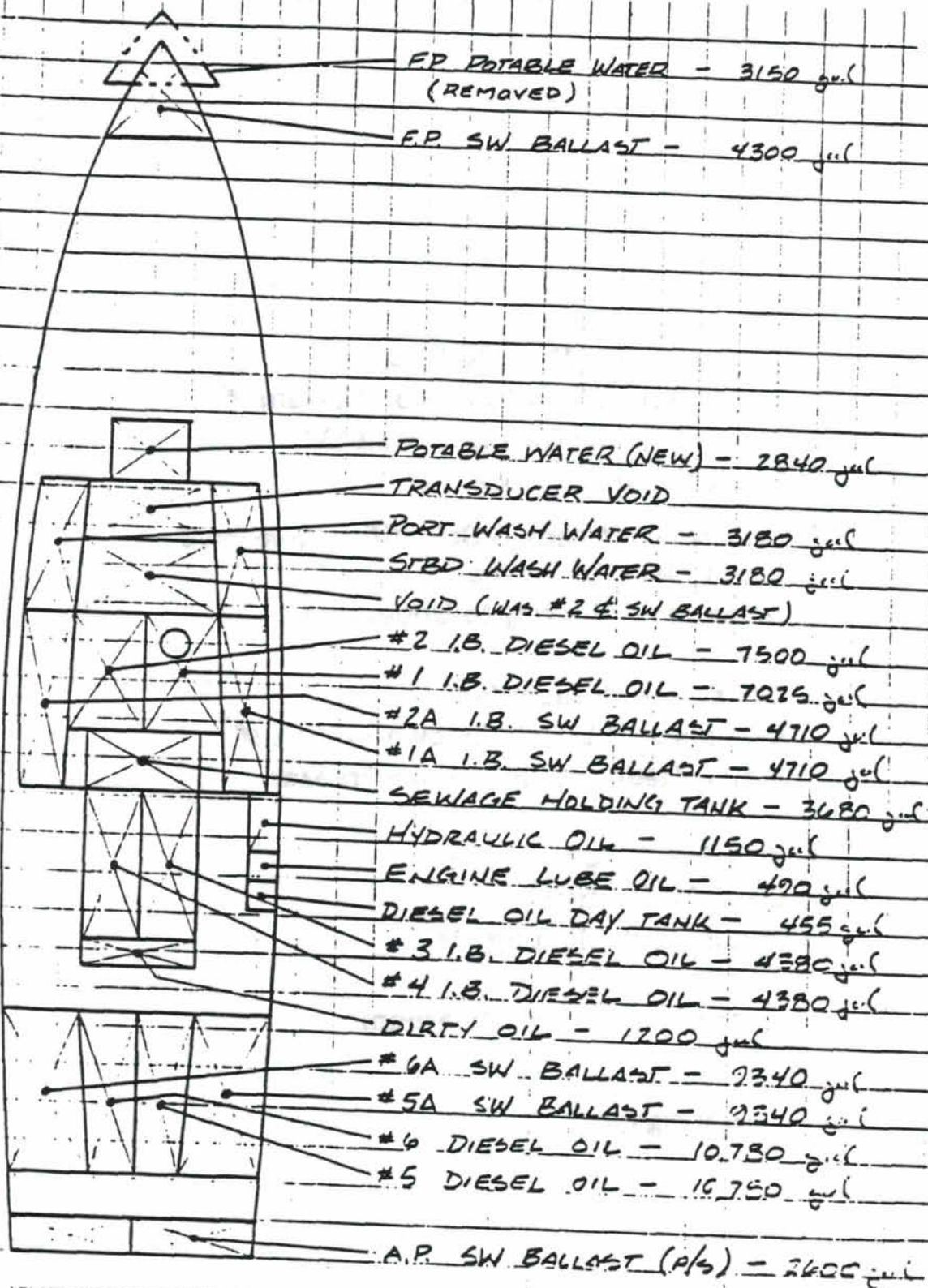


Figure 2-2
Revised Tank Arrangement

**NEW HORIZON MID-LIFE REFIT PROJECTS TO PROVIDE SCIENCE
CAPABILITY UPGRADE**

DESCRIPTION

Install Scientific Information System ✓

Install Science Closed Circuit TV

Replace Lab Benches ✓

Modify Overheads & Scientific Cableways

Install Deck Tiedowns

Scientific Cableway to Upper Lab

Construct Storage Van

Complete 01 Level Tiedown Pattern ✓

Install Tiedowns In Science Freezer

Traction Winch

Deck Air System

Install Deck Lighting ✓

Install Convertible Stateroom

Install GMDSS

**NEW HORIZON MID-LIFE REFIT PROJECTS TO MEET FUTURE SCIENCE
NEEDS / DESIREABLE SHIP UPGRADES**

<u>ITEM</u>	<u>DESCRIPTION</u>
Habitability	Upgrade Two Person Science Rooms Replace & Relocate SR Chillers Replace PVC Chiller Piping with Cu Improve SR Furnishings Upgrade SR Entertainment Systems Replace SR & Lounge Carpeting Replace Deteriorated Paneling
Galley	Clean and Overhaul Exhaust System
HVAC	Modify A Deck, Port Side Vent System Provide Hot Water to Main Ship's Supply Heat Exchanger
Water System	Install Hot Water Recirculation System
Windows	Remove and Restore 02 Level Windows

NEW HORIZON OVERHAUL ITEMS

DESCRIPTION

General Shipyard Services
Sandblast and paint hull and sides
Sandblast and paint ballast tanks
Inspect/service sea valves
Pull, inspect and repair tail shafts
Pull rudders, replace bearings
Replace zincs as required
Conduct audio gauging of hull
ABS Surveys
Service tank vents and check valves
Service bilge, tank and void foot valves
Gas free bilges for hot work
Empty and gas free fuel tanks
Clean main switchboard
Overhaul main engine gearboxes
Clean and hydro ships' svc air flasks
Repair stringers in sewage holding tank
Overhaul engineroom supply fans
Calibrate switchboard meters
Replace hydraulic hoses and fittings
Repair control panels in Aft Control station
Provide guards

