UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

UNOLS COUNCIL MEETING

SUMMARY REPORT

February 8 - 9, 1996

Stennis Space Center
Building 1002, Room 162
Stennis, MS

Meeting Report
UNOLS COUNCIL

Naval Oceanographic Office
Stennis Space Center
Building 1002, Room 162
Stennis, Mississippi
8-9 February 1996

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February 7, 1996

NAVOCEANO FACILITY TOUR

Captain Dieter Rudolph began the day's activities by providing an overview of the NAVOCEANO facility, organization and Fleet.

He was followed by Bob Barrett, Code N-5. Bob provided an overview of the NAVOCEANO Fleet capabilities and assets. The TAGS 60 Class construction is coming to completion. These will serve as multi-purpose hydrographic survey ships. Approximately 95% of the data they collect (not classified) is released. Data can be accessed on their home page (http://www.navo.navy.mil). NAVOCEANO recently acquired USNS WATERS. In May, the ship will undergo a yard period to make it capable as a survey ship. The ship is scheduled to be operational by 30 September 1996. The ship is 456 feet in length, has a 69 foot beam and berthing for 91 personnel (30 to 33 berths of these berths are designated for crew). A

multibeam system will be installed. Lastly, Bob discussed the features of ORCA. ORCA is 26 feet long untethered vehicle, weighing 8600 pounds and running on diesel fuel. It can go 24 hours at ten knots. It is designed to be a cost-effective collection platform for hydrographic and oceanographic data. If the TAG 60 transformer problems are resolved, ORCA will be put on the ship in April.

A presentation on NAVOCEANO's Integrated Data Management System was presented by Bob Starek. It is a flexible system. The goal is to make it available on the World Wide Web.

Steve Lynch, NAVOCEANO, gave a presentation of their visualization lab. He showed an impressive video made from data collected during a January cruise on KANE. Side scan and dredge data was collected. The video is a "fly-through" of the New River area off the U.S. East Coast. It took approximately one week to process the data.

The NAVOCEANO presentations concluded with a tour of their super computer and WSC.

REVELLE/ATLANTIS TOURS

Meeting participants traveled to Halter Marine Inc. (HMI) in Moss Point, MS to tour REVELLE and ATLANTIS. Tours were provided by Ed Peterson, Scripps Shipyard Rep; John Thompson, WHOI Shipyard Rep; and Robert Camp, HMI.

FEBRUARY 8 & 9, 1996

CALL THE MEETING - The UNOLS Council met in Room 162, Building 1002 at the Naval Oceanographic Center in Stennis, Mississippi on February 8 and 9, 1996. The meeting was called to order at 8:30 a.m. by Ken Johnson, UNOLS Chair. The meeting agenda is included as ***Appendix I*** and the list of meeting participants is included as ***Appendix II***. These minutes reflect the order in which items were addressed.

WELCOME ABOARD - Captain Dieter Rudolph welcomed the Council to Mississippi and provided the opening remarks. He displayed a model of the USNS WATERS. NAVOCEANO has recently acquired the vessel from the Navy and will convert it for use as a survey platform. A major initiative for NAVOCEANO is to introduce "cross-learning" projects. They would like to share lessons learned with the academic community. This could include establishing NAVOCEANO/UNOLS exchange programs for scientists and technology. Additionally, NAVOCEANO has established a home page on the World Wide Web (WWW). The community can gain access to data and survey ship schedules through their home page.

ACCEPT MINUTES - The minutes of the 12-13 September, 1995 Council Meeting were accepted as written.

COMMITTEE REPORTS:

Research Vessel Operators' Committee - Mike Prince, RVOC Chair, reported on the Committee's 1995 meeting and plans for the upcoming year. RVOC's Annual meeting was hosted by Scripps in October. Along with the member operators, representatives from U.S. funding agencies, Sea Education Association, MBARI, ASA, STRI, IOS, Canada, NERC, Chile and Mexico attended. Speakers were also invited to discuss various topics. George Ireland provided a regulatory update. An AAUS report was given on diving issues. A Maritime Health Services representative answered questions relating to their services. Dennis Nixon reported on liability and insurance issues. The second day of the meeting was held at Scripp's Marine Facilities. Demonstrations of WWW home pages were provided by Scripps and U.Washington. The Safety Training Manual, Chapter 1, can now be found on both the U.Washington and UNOLS home pages. Workshops were held on the development of a UNOLS White Paper, Post Cruise Assessment Reports, physical standards and safety issues. A visit was made to SWATH Ocean to tour MBARI's new vessel, WESTERN FLYER. Since the meeting, the vessel has been delivered and is now at the dock as Moss Landing.

The 1996 RVOC meeting will be hosted by Florida Institute of Oceanography/University of South Florida on 22-24 October. Smithsonian Tropical Research Institute has been selected as the site for the 1997 meeting.

Mike finished by reporting that anyone wishing to review an oil spill response plan, can get copies from Scripps or Woods Hole. Also, the revised Research Vessel Safety Standards have been published and distributed by the UNOLS Office.

DEep Submergence Science Committee (DESSC) - Mike Perfit, DESSC Chair, began by reporting that ATLANTIS has been designated to be the new support ship for deep submergence operations. The vessel has great potential for meeting the research needs into the future. A DESSC meeting was held on 9 December for Committee members to be updated by the agencies on the status of ATLANTIS II's replacement. DESSC held their annual planning meeting on December 10th, preceding the fall AGU conference. The community was invited to this meeting. PIs who used ALVIN over the past year were invited to speak on their respective cruises. Additionally, a report was made by a PI who used the Navy's TURTLE and ATV. In 1995, ATLANTIS II had 282 operating days and ALVIN conducted 170 dives. Dives averaged 8.1 hours in duration. WHOI's Deep Submergence Operations Group (DSOG) now has a home page (http://dosgserv.whoi.edu). WHOI operators reported on projects which were either completed or underway for the various vehicles. Jason/Medea completed projects included control van rewiring, Medea replacement and debugging telemetry lockups. Underway projects for Jason/Medea include improving documentation, manipulator testing, revising the design of the lower payload skid and improving self rescue capability. ARGO II projects which were completed this year include improvement of obstacle avoidance forward looking sonar and implementation of single van operations. Projects underway involve determining camera focus problems, improving thrusters for heading control, resolving noise on LBL transducer and improving documentation.

Mike continued by reporting that a proposal for a sonar upgrade for ALVIN has been submitted to NSF. A proposal has also been submitted to ONR for navigation upgrades which will be applicable for ALVIN and ROVs. A proposal for imaging improvements was funded and is underway. A host of new equipment was tried on ALVIN this year including lasers, the rock drill and gravimeter. The community expressed a need for DESSC and the operator to continue with efforts to increase ALVIN bottom time. The operator has performed a study comparing the various types of batteries now being used by submersibles. Additionally, the operator will continue investigating ways to increase payload. DESSC is still developing a proposal for purchase of an electronic still camera. The Autonomous Benthic Explorer (ABE) was deployed this year from AII. It worked very well.

Mike presented a schedule of key events for ATLANTIS, ALVIN and AII along with a timeline, see ***Appendix III***. At the completion of science operations in 1996, AII will come out of service. ALVIN's overhaul will take place between September 1996 and April 1997. The actual overhaul should only take five to six months, however, some added time will be needed for the ALVIN group to become familiar with the new ship. Modifications to make ATLANTIS a submersible support ship are expected to be complete by April 1997. The ship will arrive at WHOI on 6 May 1997. DSOG demonstrations and trials will be conducted between 20 May 1997 and 3 June 1997. ATLANTIS will be available for science in traditional operating areas (MAR, NEPR, JDF, etc.) between June and December 1997. The ship will be available for unlimited science operations by February 1998. At this time a global expedition to the more non-traditional ALVIN operating areas can begin.

Dick Pittenger reported that WHOI still hopes to sell AII. Since the vessel will be taken out of service this year, they are looking for stories and past facts about experiences on ATLANTIS II. These stories will be shared at the vessels sending off ceremonies. Dick asked that a notice be included in the UNOLS newsletter requesting stories.

Mike continued his report with a review of ALVIN/ROV 1996 operations and plans for the out years, see ***Appendix III***. In 1996, 53 ALVIN dives are scheduled. Operations will end in June. It is unclear whether operations planned by the British will be funded. Three ROV cruises are planned for a total of 117 days. Work will be on the Mid-Atlantic Ridge, Juan de Fuca and Southern East Pacific Rise.

The number of letters received for ALVIN use in 1997 was relatively low compared to past years. This was most likely due to the uncertainty of when and where ALVIN would be operating during that time frame. ROV interest continues to increase. Interest areas are dispersed and include the Atlantic, Mediterranean, Juan de Fuca, Northern EPR, Southern EPR and the Indian Ocean.

The DESSC meeting included a report for operators of other deep submergence facilities. CDR John Green reported on the Navy's deep submergence operations. Debra Stakes reported on activities at MBARI which included an update on the construction of MBARI's new ROV support vessel, WESTERN FLYER along with a description of TIBURON, their ROV under development. Steve Scott of Canada provided a report on ROPOS.

Dan Orange and Cindy Van Dover were charged with surveying the community to see what they would like to have considered as upgrades for the deep submergence facilities. These upgrades, if funded, could be performed over the long term, five to ten years.

Mike reported that the DESSC meeting addressed long-range planning for deep submergence operations and funding. The biggest challenge will be to build new partnerships for increased support of deep submergence. NSF has expressed concern that costs continue to go up and support from other agencies is decreasing. The community needs to get involved. WHOI's challenge will be the integration of manned and unmanned operations.

Fleet Improvement Committee (FIC) - Chris Mooers, FIC Chair, reported on the FIC meeting which preceded the Council Meeting. There are three new members to the FIC: Larry Atkinson, ODU; Bess Ward, UCSC; and Tom Weingartner, U.Alaska. The FIC meeting had a very full agenda which addressed numerous topics. Chris reported that the Safety Orientation paper is close to completion, and just minor revision is required. Suzanne Strom had put the paper together and feels that this is a real issue which needs heightened awareness. Chief Scientists need to take some responsibility when it comes to safety measures. RVOC is planning to put together a video highlighting important safety tips. FIC made a number of recommendations which included requiring science parties to attend a safety brief prior to setting sail and establishing physical standards for the science party. The safety orientation paper will be published in the UNOLS Newsletter along with a cover letter by Ken Johnson.

A van study has been prepared by FIC and is also close to completion. After inclusion of references to USCG and ABS regulations regarding vans, the study will be provided to RVOC and RVTEC for their review.

As a new initiative, FIC will begin a study to address shipboard technology upgrades. Eric Firing was recommended to chair the committee.

Coastal Zone Research Vessel (CZRV) planning is still underway, however, a path of action will not be decided until FIC learns the funding status of MARCO's proposal to hold a workshop and develop a science mission plan. Duke has received information from a naval architect that it is possible to add a mid-section to CAPE HATTERAS without causing the ship to exceed 500 gross tons (allowing it to remain uninspected). It is the intention of Duke to proceed with a proposal to NSF for a Phase I, feasibility study (see ***Appendix IV***). Ken and Chris will draft a letter to Duke encouraging them to communicate with MARCO regarding their plans for CAPE HATTERAS. In other ship news, Skidaway is investigating the replacement of BLUE FIN. They have retained a naval architect and are looking at a mono-hull design of 87 feet for a replacement vessel, see ***Appendix IV***.

Chris reported that he had distributed to FIC a draft outline and for the Fleet Improvement Plan 1998. A few items were added and additional adjustments will most likely be made after preparation of the Interim FIP. Each committee member was asked to review the FIP outline and identify at least five items they could address. Assignments would be made at the summer 1996

meeting. At FIC's winter 1997 meeting a rough draft could be reviewed with a full draft by summer 1997. In the mean time, FIC will develop an Interim FIP. They will wait for a charge from the Council on what needs to be addressed by the Interim report. Hopefully, a clearer picture of NOAA's direction will be available for this report.

Chris reported that his draft White Paper on Regional Consortia has not been revised since the last meeting. Consortia work, but are not always active. He suggested that it would be a good idea to re-look at consortia to determine what are their good features.

Ship Scheduling Committee (SSC) - Don Moller, SSC Chair, reported on ship scheduling matters. The large ships ended 1995 spread out across the globe. In 1996 they will all make their way back to the U.S. Over the past year, both JGOFS and WOCE have logged 683 science days and over 100,000 nautical miles. All of the Southern Ocean operations were very successful with no lost science. Operations support will be faced with some uncertainties in 1996 since the NSF budget is still unresolved. Three ROV programs are scheduled in three different parts of the world. The timing for the programs is very tight. No science programs have been left on the beach. The number of ship time requests for 1997 operations seems very low. There are at least three operators who have received no requests. The future of GLOBEC is unclear.

Don presented viewgraphs comparing operating days over the past three years, see ***Appendix V***. ALPHA HELIX shows a question mark since most of the funding decisions have not yet been made. CLASS I/II days are down by roughly 400 in 1996 and Class III days are down approximately 200.

Research Vessel Technical Enhancement Committee (RVTEC) - Rich Findley, RVTEC Chair, reported on the 1995 RVTEC Meeting held on 16-18 October. The meeting was hosted by Moss Landing. A number of initiatives were discussed and are underway. RVTEC decided to begin developing a library of instrumentation videos. Additionally, an inventory of the instrumentation will be posted on the RVTEC home page. The RVTEC home page can be accessed through the UNOLS home page. Redesign of cruise assessment reports was addressed. Marc Willis of OSU provided a report on data standards. RVTEC recommended that OSU submit a proposal to NSF for additional funds to complete the data standards study. NOAA presented a description of their NODDS program. Andy Maffei, WHOI, provided a report on the status of SeaNet. The RVTEC meeting included a tour of the MBARI and Moss Landing facilities. A demonstration on dissolved oxygen measurements was performed. The Chirp sonar systems used on ENDEAVOR and SEWARD JOHNSON were compared. Marc Willis was nominated to serve as Vice Chair. The next meeting will be held at Harbor Branch on 11-13 November. A cable manufacturer will be invited to speak.

AGENCY REPORTS:

National Science Foundation (NSF) - Dolly Dieter provided the report for NSF. She began by explaining that NSF is operating under a continuing resolution until 15 March. It is very difficult to speculate what the continuing resolution will bring in terms of funding. At the present time, NSF is working from the 1995 funding level. Funding ship operations and

technician support will be a high priority. Little has been set aside for upgrades at this time with the exception of NEW HORIZON's mid-life which has been funded. Ship time requests for 1997 seem very low. Over the next five to seven years NSF is bracing themselves for a reduction in funding until the budget is balanced.

Office of Naval Research (ONR) - Sujata Millick provided the report for ONR. She began by citing that their budget has been passed. ONR is becoming more concerned with grant expenditure rates. This could affect science budgets. Although, ONR is getting their funding released to institutions, the funds sometimes gets expended by the institutions at a slower rate than anticipated. DoD is becoming concerned about these unexpended funds because they may be looking for additional support to pay off their debts, such as Bosnia bills. It is feared that unexpended funds may be swept up to pay off these debts.

The new formula for funding ship time by ONR (80% Research Facilities:20% Science Programs) is being well received by the science program managers. Some of the science program officers that are aware of the change have already requested additional ship time.

National Oceanographic and Atmospheric Administration (NOAA) - Captain Marty Mulhern provided the report for NOAA. He began by distributing new brochures describing NOAA's Fleet, see ***Appendix VI***.

The two NOAA Class I ships have had heavy schedules. BALDRIGE has returned from operations in the Indian Ocean via the Pacific, servicing the TAO array of moorings enroute. It's home port is now Charleston, South Carolina. DISCOVERER recently completed ACE/RITS work, and is presently on a WOCE/CO2 line in the southwestern Pacific.

In the Fleet Replacement and Modernization (FRAM) program, construction of RESEARCHER is proceeding smoothly, with delivery planned for August 1997. NOAA has benefited from the experience during construction of the THOMPSON, REVELLE, and ATLANTIS and cooperation with Scripps Institution of Oceanography, Woods Hole Oceanographic Institution, and University of Washington. Conversion of KA'IMIMOANA (formerly the T-AGOS vessel TITAN) is nearly complete and the ship is expected to be ready for service by mid-April. The ship will be dedicated to support of the TAO array in the equatorial Pacific. BALDRIGE and DISCOVERER will be out of service by next spring when the RESEARCHER and KA'IMIMOANA are on line.

NOAA's budget future for the fleet is filled with uncertainty, but the long term trends appear to be toward decreases. The appropriations bill for FY 1996 hasn't passed. Under the present continuing resolution the FRAM program budget is about $8 million, and the marine services operations budget is slightly decreased from last year. A complete review of the FRAM program requested by Congress has been completed and forwarded by NOAA to DOC and OMB. This report, often referred to as the "Carey study", has not been forwarded to Congress yet by the Administration.

The NOAA fleet is reducing overhead costs, and increasing the days at sea.

NOAA's Office of Oceanic and Atmospheric Research has specified long-term requirements for two and half "ship-years" annually. This equates to a full year of ship time on both KA'IMIMOANA and RESEARCHER, and a half year for UNOLS ship time. Marty reported that NOAA used PELICAN for fisheries research and the GLOBEC program used ship time on both UNOLS and NOAA ships in 1995. Additional time is now being scheduled for 1996 on PELICAN.

FOFCC had been reactivated and is gaining momentum. Issues to be addressed have been identified. Unfortunately, the government furloughs and record snowstorms have delayed meetings.

On January 24th, Dr. Baker signed a memorandum requesting that a plan be developed to replace NOAA Corps billets with positions within the General Schedule professional series, and to reduce and ultimately eliminate the NOAA Corps. Implementation would begin in October 1996 and be complete within six months. The agency is to have a plan drafted by the end of February on how to proceed. Until the plan is completed, reviewed, and adopted, it is unclear if NOAA ship operations will be affected. Marty quoted the following from Dr. Baker's memorandum, "I am concerned that the dedicated men and women of the NOAA Corps are treated fairly in this transition and given every opportunity to continue their careers with NOAA. They represent an outstanding human resource and I believe it is critical to NOAA that we retain their talent and corporate knowledge within our work force."

Marty was asked why NOAA decided to charter a Russian vessel for the NMFS Antarctic Marine Living Resources (AMLR) work near the Antarctic Peninsula. Marty explained that NOAA has repeatedly been directed to investigate availability of alternative sources of ships (and specifically the availability of fisheries research vessels from the private sector), that the AMLR program requires double-warp trawl winch capability, and the choice of vessel was determined by the competitive bidding procurement process. The AMLR charter was described in both a Request for Information "RFI" and Request for Proposals "RFP" in the Commerce Business Daily, and advertised elsewhere. NOAA did not go directly to UNOLS because it is a fisheries research program, UNOLS has not expressed interest in NOAA fisheries programs until recently, and UNOLS vessels are not set up for fisheries trawling. It is a one year charter with options for renewal for three additional years. Well along in the procurement process it became evident that because of funding and other limitations the trawling would have to be dropped during the first year, but it will be done in years two, three and four.

The AMLR charter cost was $1,704,186 for 63 days underway and seven days in port, starting and ending in Punta Arenas. Ken voiced concern that this work could have been done from a UNOLS vessel at a reduced cost, and that UNOLS should be considered first for any NOAA charter work which its vessels can accomplish. Ken will draft a letter to Jim Baker voicing the concern of UNOLS regarding the charter to Russia.

United States Coast Guard (USCG) - CMD Rooth gave the report for the USCG. The Coast Guard is in the process of streamlining. They hope to have personnel reduced by 1000 billets in the next four years. CDR Rooth reported that the Canadian Coast Guard is also streamlining. They have formed a Marine Advisory Board which is in the process of establishing a fee structure for vessels that come into and out of their ports and use such things as aids to Navigation. By April, this may be instrumented. U.S. vessels would be required to pay the fee.

The Coast Guard is pleased with the National Research Council report on Arctic research facility needs. The report makes recommendations to the Coast Guard on what should be done with HEALY to make it more science capable. The recommendations include reducing crew size and instituting a longer operating year of 270 days. CMD Rooth reported that the Coast Guard is anxious to establish an advisory board for Polar operations and science oversight of HEALY.

Naval Oceanographic Office - Pat Dennis gave the report for the Oceanographer of the Navy. BOWDITCH is expected to go off line soon and HENSON is scheduled for next year. The Oceanographer's modernization plan is expected to be complete in FY97 and result in a Fleet of eight survey ships. There is growing support for NAVOCEANO to work with UNOLS, however, potential conflicts with operations in EEZs will need to be investigated. If funding permits and schedules can be accommodated, NAVOCEANO would like to experiment with utilizing UNOLS vessels. Pat concluded by reporting that NAVOCEANO was very encouraged by the CEB study and will work to build strong partnerships between Navy, industry and academia. Admiral Tobin has been named as the new Oceanographer for the Navy. His background is in surface warfare.

Naval Oceanographic Center (NAVOCEANO) - CDR Darrell Smith provided a report on NAVOCEANO's Survey Fleet and assets, see ***Appendix VII***. He began by showing a map of the current locations of the survey vessels and aircraft. The assets are dispersed world wide. Darrell provided views of the profiles of each ship class. NAVOCEANO recently acquired the USNS WATERS. The vessel had been previously used by the Navy in SPAWARS operations. It is 457 feet in length and has four bow thrusters. The vessel will carry four HSLs and two ROVs for bathymetric survey work. A comparison table of the four classes of survey ships was provided. The TAG-60 Class is still experiencing transformer problems and as a result is presently speed limited. These problems are still being investigated. These ships are 329 feet in length and can carry 27 scientists. Other assets discussed by Darrell included "SHOALS" which is a laser airborne sonar system and the Oceanographic Remotely Controlled Automation (ORCA). Darrell provided a list of NAVOCEANO points of contacts for each of the UNOLS committees. The annual operating cost for a NAVO survey ship is approximately $8M.

UNOLS ISSUES:

Potential Changes on the Horizon for the UNOLS Fleet - Peter Betzer lead the discussion on the recently published report "PROJECTIONS FOR UNOLS' FUTURE - SUBSTANTIAL

FINANCIAL CHALLENGES". The report was written by a subcommittee which included Peter as Chair, Denny Hayes, Bob Knox, Chris Mooers, Dick Pittenger and Bob Wall. Peter first showed the view graph of the funding shortfall by year through 2000. Peter's view graphs are included in ***Appendix VIII***. This reflects a 13.2% shortfall in 1997 rising to 28% in the year 2000.

Denny Hayes noted that the Fleet has been living with an 8 to 10% shortfall for several years which may in fact be healthy for science. To operate at 100% or no shortfall would surely cause scheduling problems and would ultimately be detrimental to some science. A modest shortfall provides the flexibility necessary to ensure the correct platform is available for the science needs.

Peter followed with a bar graph, ***Appendix VIII***, which dramatically depicted the shortfall projections. These numbers do not include the addition of Arctic facilities such as the ARV or the USCG icebreaker.

The report includes five recommendations:

1. A review of the NSF funding projections confirm a significant shortfall in ship funding support in the near future and therefore, limited numbers of ship lay-ups should be considered.
2. New partnerships with other federal agencies such as NOAA, EPA, USGS, MMS, DOE and NASA should be pursued to seek additional support for the UNOLS Fleet.
3. New modes of ship support and operations should be investigated.
4. Alternative uses of the Class I ships should be sought.
5. Because of the very long lead time in new ship construction it is recommended that new facilities continue to be planned.

Considerable discussion followed. Regional consortia were discussed as a way to increase partnerships and better coordinate facilities. Cindy Lee suggested that we needed a national way to share equipment for more efficient use of dwindling funds.

Ken Johnson informed the Council that the Fleet Improvement Committee was tasked to write an Interim Fleet Improvement Plan that would address the funding shortfall issue. This effort was to start immediately and the Council was to provide the tasking language. FIC plans to review three funding scenarios and the effects each would have on the Fleet. The work is to be started now via e-mail. The intent is to have well developed scenarios by the summer FIC meeting so that a near completed report could be the product of that meeting. This would then be passed to the Council for action during its summer session. A completed interim report would be ready for the membership at their September meeting.

After considerable discussion Ken agreed to write several letters in support of the Interim FIC report. One letter is to go to Mike Purdy urging NSF to update its long range planning program. A second letter to be sent to the directors of all UNOLS institutions with a copy of the Betzer report alerting them of the difficult times we face and enlisting their support.

Barry Raleigh attended the Council meeting and gave a presentation on SOEST's plans for acquiring a ship to replace MOANA WAVE, ***see Appendix IX***. The institution feels strongly that they should continue to be a ship operating institution because of their strong oceanographic programs as well as their geographic position in the middle of the Pacific. The institution's plan would be one of the following in order of priority: (1) acquire a new class one SWATH vessel, (2) be the operating institution for the new NOAA AGOR or (3) operate a Class I ship presently at another UNOLS institution. Barry made the point that concentrating the UNOLS Fleet in two or three operating locations did not make sense. Statistics do not support the cost savings and the broad based institutional support both financial and political would be lost. Barry explained that the University of Hawaii is very anxious to keep the pier facilities at Sand Point and if MOANA WAVE were to leave without a replacement SOEST could lose the facility. This would be a loss to the entire oceanographic community which uses the facility on a regular basis.

Barry was asked whether an intermediate ship would serve the SOEST needs. His answer was no, that SOEST had a strong MG&G program that needed a world ranging ship. When asked if SOEST would agree to coordinate the design process through UNOLS, developing mission requirement statements and design scrutiny by the community, Barry said that they would. Because this process could take some time and the need to retain the Sand Point facility is of importance it was suggested that MOANA WAVE, K-O-K or possibly a NOAA ship could act as a place-holder for the facility until the new vessel could be built. This suggestion was not met with total enthusiasm.

Ken Johnson reiterated the Council's position that there is a need for SOEST to continue to be a UNOLS operating institution.

Arctic Facilities Committee - Tom Royer started the discussion by briefly reviewing the conclusions of the National Research Council's Arctic Ocean Research and Support Facilities report. This report suggests three possible configurations of an icebreaker fleet: (1) Do not build HEALY and build the ARV; (2) Do not build the ARV, build HEALY and operate it in a dedicated research mode; and (3) Take one of the Polar-class icebreakers out of service and build both HEALY and the ARV. The report suggests that option two is most likely and recommends that the USCG and NSF increase their coordination and cooperation for operating icebreakers in a research mode. It also recommended that the vessel operate 270 days per year, crew size be minimized and continuity of crew for onboard science support be maintained. Tom presented a comparison of the ARV and HEALY. HEALY will be able to carry more scientists, is more ice capable and the cost to NSF is less ($20,000/day). The ARV is designed as a more capable science support vessel. Attributes include more/better science equipment, technical assistance and crew experience. The laboratories are significantly larger with better layout. HEALY has a stagging room but no Baltic room. As the result of the science committee input the Coast Guard has included the installation of a multi-beam sonar system, added the stagging room, rearranged science spaces, increased area of climate controlled work and added additional transducer wells. The USCG is also investigating changes to traditional crew manning.

The USCG and UNOLS have been discussing a DESSC-like committee to establish the necessary communication between academia and the Coast Guard. The USCG has agreed to fund such a

committee. A charge for the committee has been drafted and is included as ***Appendix X***. CDR Rooth stated that the USCG is very excited about the charge and is anxious to make a viable science platform. He emphasized that the committee is needed now. The Council endorsed the Charge, but recommended that perhaps OPP should be referenced. It was also recommended that coordination with AARCS could be beneficial. The Charge will be forwarded to Don Heinrichs. A list of potential committee members was compiled.

JOI/CORE - Ken reported that he and Jack Bash had met with Jim Watkins and Rick Spinrad of CORE. The purpose of the meeting was to look at those elements of UNOLS and CORE that are similar. It was concluded that an MOU should be developed for coordination with the two organization. Ken and Jack put together a draft MOU that CORE felt was too restrictive. The part that gave CORE a problem was that UNOLS should take the lead on issues relating to oceanographic ships. The Council suggested that we continue to pursue an MOU and that UNOLS should represent the oceanographic community on ship matters.

FIC Studies - Chris Mooers reported that FIC was completing two studies. The first is a Van Study that is being completed by Suzanne Strom and will be coordinated through RVOC and RVTEC. The second study on safety responsibilities aboard UNOLS ships is in its final stages of writing and should be published soon.

FOFCC - Ken Johnson reported that FOFCC was in a state of change and there has been very little activity at this time.

Building New Partnerships - Ken Johnson reported that now that the Betzer Report has been published, he will begin meeting with other agencies to build new partnerships. A meeting is planned in Washington next week to discuss the impact on UNOLS if NOAA operates fewer ships. The Council briefly discussed UNOLS capability in conducting fisheries oceanography. The academic community could benefit by the experience, but ship modifications would be need to be carefully scrutinized.

Diving Safety Meeting Update - Jack Bash reported that a small group met in San Diego to review the Diving Safety report that was written in 1990. The group concluded that the report was still valid but needed updating to it's conclusions and recommendations. These updates are presently in draft form and will be distributed and posted on the UNOLS home page when completed. A letter is being sent to ship operators expressing the need for diving safety awareness.

Internet Update - Jack Bash reported that UNOLS is increasingly using the Internet and the World Wide Web. The UNOLS home page includes copies of all meeting minutes and newsletters as well as various documents such as the UNOLS Charter, Safety Standards and Chapter one of the RVOC Safety Training Manual. The UNOLS Office is developing an on-line ship time request form and encourages all concerned to participate in its development. Comments are encouraged. The sample form is on the UNOLS home page at <http://www.gso.uri.edu/unols/unols.html>.

UNOLS Designation of Vessels Less Than 100-Feet - The Council discussed whether or not vessels of 100-feet or less should be given designations different from those of the larger UNOLS vessels. These smaller vessels operate more as regional vessels and as a result their schedules do not impact the operations of the larger vessels. However, it was pointed out that the more ships that operate to the UNOLS Safety Standards the better. The discussion was initiated by Smithsonian Tropical Research Institution's inquiry of whether or not they should submit a request to make their new vessel a UNOLS vessel. The Guidelines for Becoming a UNOLS Vessel were distributed to the Council, see ***Appendix XI***. An ad hoc committee was formed to reexamine the Guidelines for Becoming a UNOLS Vessel and also to evaluate the status of the UNOLS operator. The committee of three includes Bob Wall as Chair, Steve Rabalais and Tom Royer.

UNOLS Council Membership - The terms of Ken Johnson, UNOLS Chair; Peter Betzer, Vice Chair; David Karl and Tom Royer are expiring. Ken and Tom can run for second terms. A Nominating Committee of Peter Betzer, Bob Knox and Dave Karl was appointed. Peter will Chair the committee.

SeaNet Update - Rich Findley reported that a prototype of SeaNet, which is a method of bringing Internet to sea, was installed on THOMPSON in October 1995 and has been used successfully from the Indian Ocean, see ***Appendix XII***. Technical support for this program was provided by Andy Maffei, WHOI; Bill Martin, UW and Mike Relander, UW. The system uses Inmarsat B. One problem that did exist was the masking of the signal to the antenna causing a disruption in transmission. When the ship was positioned for a clear signal the system worked faster than shoreside Internet. Rich presented an analysis of the economics suggesting a significant cost reduction over slower data transmission rates using traditional Inmarsat A. Next steps in the SeaNet development include: (1) working closely with other UNOLS ships with further development of standard B interface to SCN, (2) Identifying a science cruise that requires high speed data requirements, and (3) Identifying other UNOLS institutions planning upgrades to Inmarsat B to assist in data considerations.

White Paper on the Benefits of the UNOLS Fleet - Jack Bash reported that a white paper is being drafted by Paul Ljunggren, Mike Prince, Jack and Ken. The paper should be ready soon. Dick Pittenger presented statistics of KNORR's Indian Ocean operations, see ***Appendix XIII***. The operations from all of the UNOLS large ships were a big success. Dick indicated that a paper will be prepared by Bob Knox, Denny Hayes, Robert Hinton and himself highlighting the successes of these global voyages. The paper will include the science objectives of the cruises.

Primer/Small Boat Inventory - Jack Bash reported that the UNOLS small vessel inventory is nearly completed on the web and can be accessed through OCEANIC at http://www.cms.udel.edu. The Primer on small boats is presently on hold. RVOC will be asked to work on this effort.

Post Cruise Assessment Report - Mike Prince reported that the RVOC has been working on changes to the Post Cruise Assessment Report. Change is needed to get a greater response by making the form mandatory and routed through the institution's marine superintendent for action

and comment. The form should be constructed to easily generate statistics which do not rely on subjective interpretation. Ken Johnson offered to write a cover letter to PI's explaining how the forms are used.

Methods for Assessing UNOLS Fleet Performance - Ken Johnson discussed with the Council the idea of having a peer review system for evaluating ship operations. Considerable discussion followed. One concern was that this would be another level of paperwork and that it would be difficult to follow through. No action followed.

DoC's Fishing Vessel Buy Out Program - Jack Bash reported that the Department of Commerce had a pilot buy out program in 1995 to remove fishing vessels and fishing permits to relieve some of the pressure on fishing in the northeast. The initial program had $1M and removed 13 vessels which were all destroyed. The 1996 program is planned for $25M. DoC is receptive to the idea of having appropriate fishing vessels, accepted for the buy out, be transferred to research institutions rather than being destroyed. The UNOLS Office surveyed UNOLS institutions and received 15 requests to be involved with the program. The contacts at these institutions along with the vessel needs have been relayed to DoC. When the program gets underway DoC will work with UNOLS and the fishermen to see if some of the vessels can be used for research.

Physical Exam Standards - Jack reported that the RVOC has a subcommittee that is working on physical standards for crew members. Bill Coste is chairing this subcommittee which includes several RVOC members, Dennis Nixon, Dr. Jarrris from MHS and an occupational health specialist from Duke. At this point the group is collecting information.

Nuclear Submarine for Oceanographic Research - Lloyd Keigwin has completed editing the report on A Nuclear Submarine for Oceanographic Research. It is presently at the publisher and should be distributed within six weeks.

ATLANTIS Modifications - On Wednesday 7 February the Council had an opportunity to travel to Halter Marine's shipyard and tour ROGER REVELLE and see ATLANTIS. During this visit the Council had an opportunity to discuss the changes to ATLANTIS and to see first hand the fine platform that will be the submersible handling ship. Dick Pittenger presented view graphs highlighting the vessel modifications, see ***Appendix XIV***. ATLANTIS will have four times the lab space of AII, more power and more berths. Even with the modifications for submersible/ROV handling, ATLANTIS will maintain its general purpose capabilities.

Radio Operator/ GPS - Dick Pittenger reported that the Telecommunications Bill has been made into law, see ***Appendix XV***. This will exempt the UNOLS large vessels from the requirement to carry a Radio Officer.

On a positive note, the Dithered GPS is planned to be shut off after May 1, 1996. It is part of an authorization bill, but it has not yet been signed, see ***Appendix XVI***. Dolly Dieter is still working to get P-Code access for URI, L-DEO and U. Hawaii.

Ship Refits/Construction -

NEW HORIZON - Bob Knox reported that NEW HORIZON's mid-life refit is underway and the ship has been moved to the yard. NSF is cost sharing the refit cost on an 80:20 percentage (NSF is paying 20%). The vessel is scheduled to resume operations in May with a full schedule.

POINT SUR - Mike Prince reported that POINT SUR has just left the ship yard after completing an overhaul period and is back at Moss Landing. Every tank was inspected with no major problems revealed except with the sewage tanks. Piping was replaced in the engine room. The salt water piping is being replaced with copper-nickel. Fresh water piping is being replaced with copper. A new crane will be installed. The vessel will resume operations on 2 April. There are no plans to stretch the ship and no major mid-life is planned in the next year or two.

CAPE HATTERAS - Duke sent a report on the status of plans to stretch CAPE HATTERAS, see ***Appendix IV***. Naval Architects have indicated that the stretch can be accomplished without exceeding 500 gross tons (allowing it to remain uninspected). Ken and Chris will write a letter to Duke recommending that they review their plans with MARCO. Additionally he will ask that they assess how the ship modifications will better serve science needs.

BLUE FIN - Skidaway is proceeding ahead to find a replacement for BLUE FIN, see ***Appendix IV***. They are investigating support from their state and other outside sources for construction costs. They envision an 87-foot monohull replacement.

University of Connecticut Ship Plans - U.Conn has been making plans for the construction of a new vessel. The vessel will be designed to serve New England including the Gulf of Maine. They have been talking with the UNOLS Office during this design phase.

CALANUS/ISELIN - Rich Findley reported that U.Miami has received five bids for the construction of a replacement vessel for CALANUS. The vessel will be an 85-foot catamaran design. ISELIN is presently for sale.

ATLANTIS/REVELLE Construction - The Council toured the vessels on 7 February at Halter Marine Inc. REVELLE is scheduled to undergo builder's trials in March with delivery planned for June 1996. After transit to Scripps, the ship will have a fitting out period. The ship's 1996 schedule is very minimal. ATLANTIS will be modified to handle ALVIN and ROVs. Delivery is anticipated for April 1997.

UNOLS Membership Dues Accounting - Jack Bash provided an accounting of the UNOLS membership dues. As of 1 August, 1995, $4,444.79 had been collected from member institutions. Expenditures total $1,090.28, leaving a balance of $3,354.51. Since expenditures have been low, a reduced dues amount will be assessed to each UNOLS Members this year.

UNOLS Committee Appointees - The Council approved the following committee nominations:

DESSC - Patty Fryer
RVTEC - Marc Willis, Vice Chair.

Council Meeting Calendar - Jack Bash will explore potential inexpensive locations to hold the summer Council Meeting. He will communicate options to the Council via e-mail.

The meeting was adjourned at 3:45 p.m.

APPENDIX I

Council Meeting Participants - February 8-9, 1996

Name	Organization	Telephone/Fax/E-mail
Jack Bash	UNOLS	(401) 874-6825/(401) 874-6486/unols@gso.uri.edu
Peter Betzer	U of So Florida	(813) 553-3940/(813) 553-3968/prb@marine.usf.edu
Patrick Dennis	CNO NO96/Staff	(202) 762-1019/(202) 653-1435/dennis@onrhq.onr.navy.mil
Annette DeSilva	UNOLS	(401) 874-6825/(401) 874-6486/desilva@gso.uri.edu
Dolly Dieter	NSF	(703) 306-1577/(703) 306-0390/edieter@nsf.gov
Rich Findley	RSMAS	(305) 361-4175/(305) 361-4174/rfindley@rsmas.miami.edu
Dennis Hayes	LDEO	(914) 365-8470/(914) 365-8156/deph@ldeo.columbia.edu
Larry Jendro	USCG	(202) 267-1457/(202) 267-4425/l.jendro/g-nio@cgsmtp.uscg.mil
Ken Johnson	MLML	(408) 755-8657/(408) 753-2826/johnson@mlml.calstate.edu
David Karl	U of Hawaii	(808) 956-8964/(808) 956-5059/dkarl@soest.hawaii.edu
Bob Knox	SIO/UCSD	(619) 534-4729/(619) 535-1817/rknox@ucsd.edu
Cindy Lee	SUNY, Stony Brook	(516) 632-8741/(516) 632-8820/cindylee@ccmail.sunysb.edu
Darrell Milburn	NAVOCEANO	(601) 688-4553
Sujata Millick	ONR	(703) 696-4530/(703) millics@onrhq.onr.navy.mil
Don Moller	WHOI	(508) 289-2277/(508) 457-2185/dmoller@whoi.edu
Chris Mooers	RSMAS	(305) 361-4825/(305) 361-4701/cmooers@rsmas.miami.edu
Marty Mulhern	NOAA	(301) 713-3435 X142/(301) 713-1541/mmulhern@banyan.doc.gov
Mike Perfit	U of Florida	(352) 392-2128/(352) 392-9294/perf@nervm.nerdc.ufl.edu
Dick Pittenger	WHOI	(508) 289-2597/(508) 457-2185/rpittenger@whoi.edu
Mike Prince	MLML	(408) 633-3534/(408) 633-4580/prince@mlml.calstate.edu
Steve Rabalais	LUMCON	(504) 851-2800/(504) 851-2874/srabalais@smtpgw.lumcon.edu
Richard Rooth	USCG	(202) 267-1456/(202) 267-4425
Tom Royer	U of Alaska	(907) 474-7835/(907) 474-7204/royer@ims.alaska.edu
Cdr. Darrell Smith	NAVOCEANO	(601) 688-4370/(601) 688-5514/CDR=D=SMITH%F%NAVO @navo1.NAVO.nav
Rob Wahl	NAVOCEANO	(601) 688-4220/(601) 688-5602
Bob Wall	U of Miami	(207) 581-1435/(207) 581-1426/robert_wall@voyager.umeres.maine.edu

APPENDIX II

UNOLS COUNCIL MEETING
8:30 a.m. - February 8-9, 1996
Naval Oceanographic Office, Room 162, Stennis Space Center, Mississippi

Wednesday, February 7th - Tours of the NAVOCEANO Facility and Halter Marine Shipyard is being planned.	
0830-0900	Command Brief - Room 162
0900-0945	Visualization Lab
0945-1015	Super Computer
1015-1100	WSC
1300-1530	Travel to HMI Shipyard - Moss Point, MS
1530	Tour of REVELLE/ATLANTIS

Call the Meeting: Ken Johnson, UNOLS Chair, will call the meeting to order at 8:30 a.m. February 8, 1996.

Opening Remarks and Welcome Aboard: CAPT Rudolph, NAVOCEANO, will address the Council.

Accept Minutes of September 1995 Council Meeting.

COMMITTEE REPORTS:

Research Vessel Operators' Committee - Mike Prince, Chair, will report on the outcome of the 1995 RVOC Annual Meeting and plans for the upcoming year.

DEep Submergence Science Committee - Mike Perfit, Chair, will provide a summary of the December DESSC Meeting. This will include a summary of deep submergence operation plans for 1996, ALVIN's overhaul and DESSC's recommendations for operations in 1997 and beyond.

Fleet Improvement Committee - Chris Mooers, Chair, will report on the recent Fleet Improvement Committee meeting and activities in progress. This will include a review of the Science Mission Requirements for a Coastal Vessel.

Ship Scheduling Committee - Don Moller, Chair, will review the 1995 ship schedules and the status of the Fleet's schedule for 1996.

Research Vessel Technical Enhancement Committee - Rich Findley will report on the results of the 1995 RVTEC meeting and review plans for the upcoming year.

AGENCY REPORTS: Reports from agency representatives on funding outlooks and special projects:

NSF (E. Dieter)
ONR (S. Millick)
NOAA (CAPT. M. Mulhern)
NURP (E. Smith)
USCG (CDR R. Rooth)
OON (P. Dennis)
DOS (T. Cocke) will provide an update on foreign clearance problems.
NAVOCEANO (CAPT. D. Rudolph) will report on their Fleet's activities and plans for the future, including potential use of UNOLS Vessels.

UNOLS ISSUES:

Potential Changes on the Horizon for the UNOLS Fleet - Peter Betzer will lead a discussion on the recently published report addressing the current and projected funding environment with recommended courses of action to

deal with the shortfalls. B. Raleigh's letter dated 17 Jan 96 regarding plans for MOANA WAVE's replacement will be discussed.

Building New Partnerships - Ken Johnson will provide an update of his efforts to build new partnerships with potential supporters/users of the UNOLS Fleet.

FOFCC - Ken Johnson will report on the outcome of the FOFCC meeting held on 3 October.

JOI/CORE - Ken Johnson will report on the UNOLS meeting with Admiral Watkins and future CORE/UNOLS relationships.

Arctic Facilities Committee - Ken Johnson will report on the status of efforts to establish a High Latitude Coordinating Committee. He will review the draft charge for such a committee.

Diving Safety Meeting Update - Jack Bash will provide an update on the diving safety meeting held in October.

Internet Update - Jack Bash will update the Council on the latest developments regarding UNOLS' use of the Internet including development of an electronic ship time form.

SeaNet Update - Rich Findley will report on the SeaNet field trial conducted this fall in the Indian Ocean.

White Paper on the Benefits of the UNOLS Fleet - Jack Bash will provide an update on the status of the White Paper.

FIC Studies - Chris Mooers will report on the Van Study and study on safety responsibilities aboard UNOLS ships.

Primer/Small Boat Inventory - Jack Bash will give an update on the status of the Primer and Small Boat Inventory.

Post Cruise Assessment Report - Mike Prince will report on the development efforts for new Post Cruise Assessment reporting.

Methods for Assessing UNOLS Fleet Performance - Ken Johnson will lead a discussion of alternative methods to quantitatively assess performance of the UNOLS Fleet.

DoC's Fishing Vessel Buy Out Program - Jack Bash will report on UNOLS involvement in this program.

Physical Exam Standards - Jack Bash will report on the RVOC subcommittee's efforts to develop standards for vessel crew members.

Nuclear Submarine for Oceanographic Research - Jack Bash will report on the status of the SOONS update.

ATLANTIS Modifications - Dick Pittenger will provide an update on the construction status and schedule for the ATLANTIS modifications to support submersible and ROV operations.

Ship Refits/Construction - NEW HORIZON mid-life refit update - Bob Knox
- POINT SUR's overhaul status - Mike Prince
- CAPE HATTERAS "stretch" proposal status
- BLUE FIN replacement plans
- U.Conn's ship construction plans
- ATLANTIS and REVELLE construction status - B. Knox and R. Pittenger

Radio Operator/GPS - Dick Pittenger will update the Council on the status of the Radio Operator Situation and introducing GPS to the rest of the UNOLS Fleet.

100 -Foot Vessels - Discussion on UNOLS position regarding the addition of 100-foot vessels into the Fleet.

UNOLS Membership Dues Accounting - Jack Bash will provide an accounting of UNOLS membership dues.

UNOLS Committee Appointments - Mike Perfit and Rich Findley will announce appointments for DESSC and RVTEC Vice Chair.

UNOLS Council Membership: Form a Nominating Committee to replace those Council members completing terms. The terms of Ken Johnson, Chair; Peter Betzer, Vice Chair; Dave Karl and Tom Royer are expiring. Johnson and Royer can be nominated for second terms. See Attachment 1.

Calendar for UNOLS Meetings - The Council will discuss the summer meeting site.

Meeting Schedule:

MEETING	DATES (1996)	LOCATION
FIC	5-6 February	Stennis Space Ctr, MS
UNOLS Council	8-9 February	Stennis Space Ctr, MS
Ship Scheduling Review	June	Arlington, VA
DESSC	late June/July	Woods Hole, MA
FIC	Spring/Summer	TBD
UNOLS Council	Summer	TBD
Ship Scheduling Meeting & Review	September	Arlington, VA
UNOLS Council	September	Arlington, VA
UNOLS Annual	September	Arlington, VA
RVOC	22-24 October	St. Petersburg, FL
RVTEC	11-13 Nov	Fort Pierce, FL
DESSC	December	San Francisco, CA

Adjournment

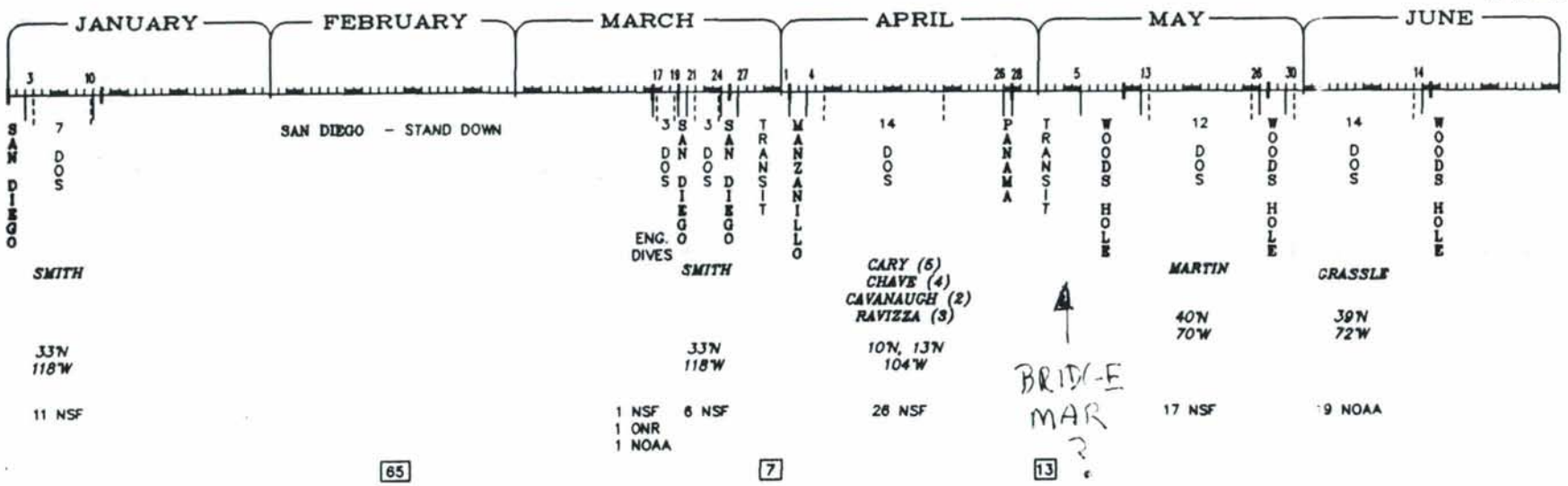
APPENDIX III

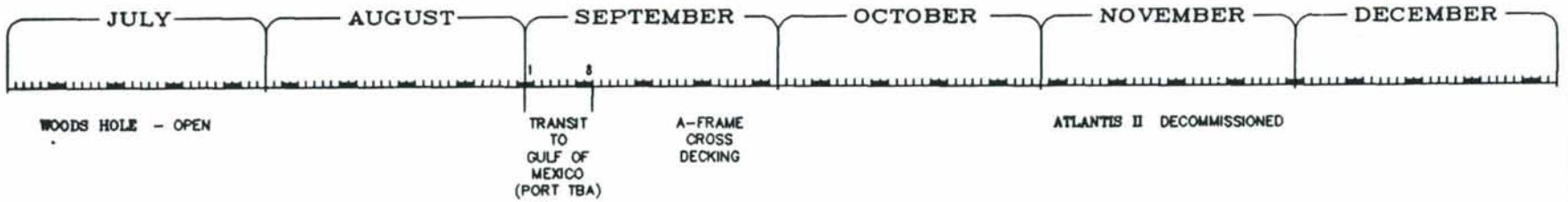
R/V ATLANTIS II & ALVIN OPERATIONS

1996

OPERATIONAL SCIENTIFIC SERVICES
WOODS HOLE OCEANOGRAPHIC INSTITUTION

05 FEB 96
~~07 DEC 95~~
~~29 SEP 95~~





ALVIN OVERHAUL

Recommended ALVIN Day Assignments	
NSF	61
NOAA	20
ONR	1
Total	82

Unassigned Operational Days
85

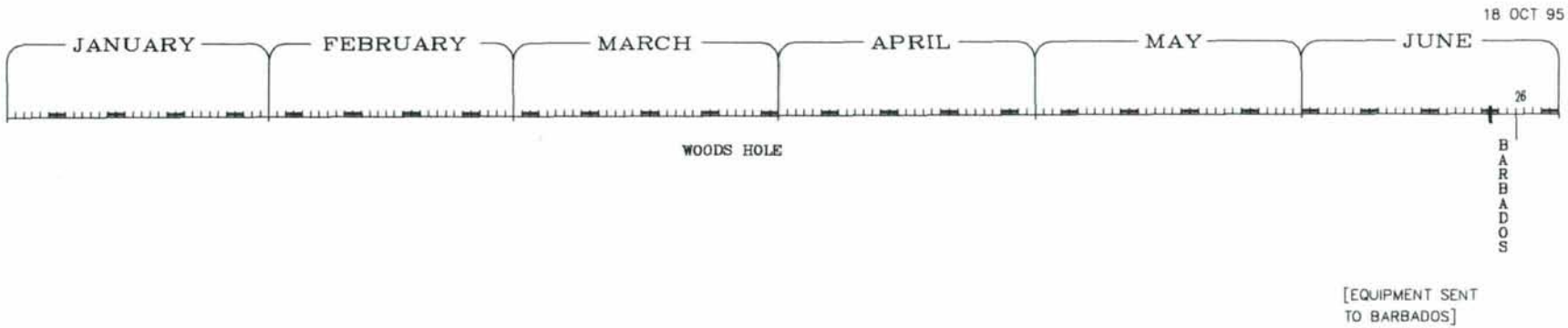
ALVIN Dives	
Science	50
Cert./Eng.	3
Total	53

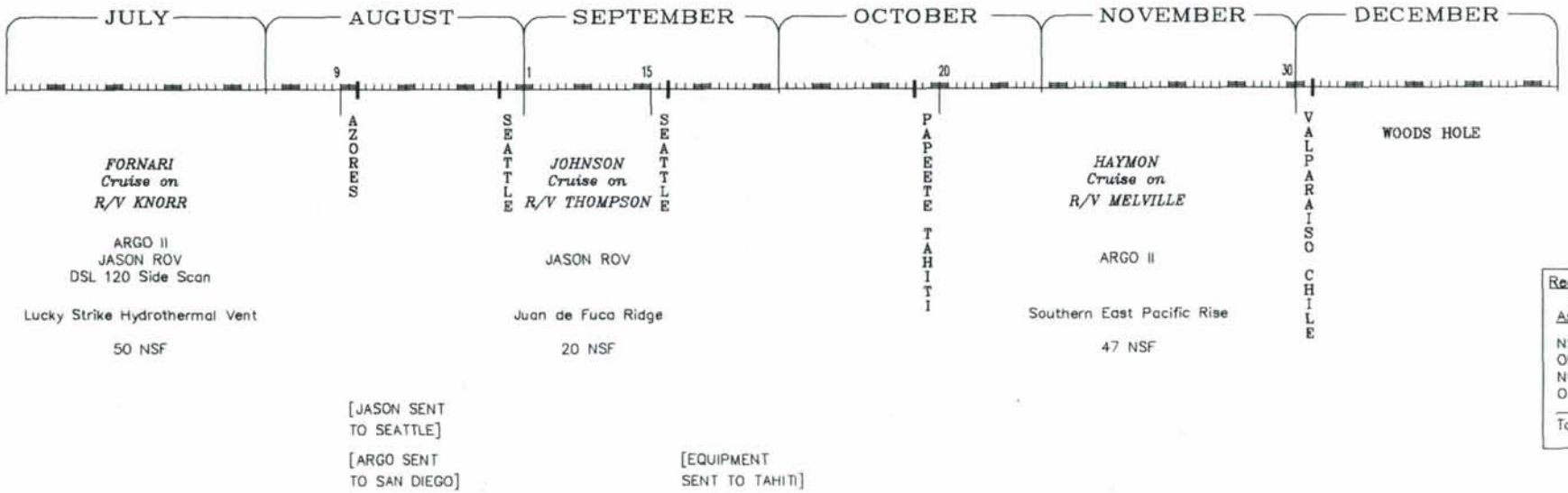
DOS = Dive Days On Station

ROV OPERATIONS

1996

OPERATIONAL SCIENTIFIC SERVICES
WOODS HOLE OCEANOGRAPHIC INSTITUTION





Recommended ROV Day Assignments	
NSF	117
ONR	–
NOAA	–
OTHER	–
Total	117

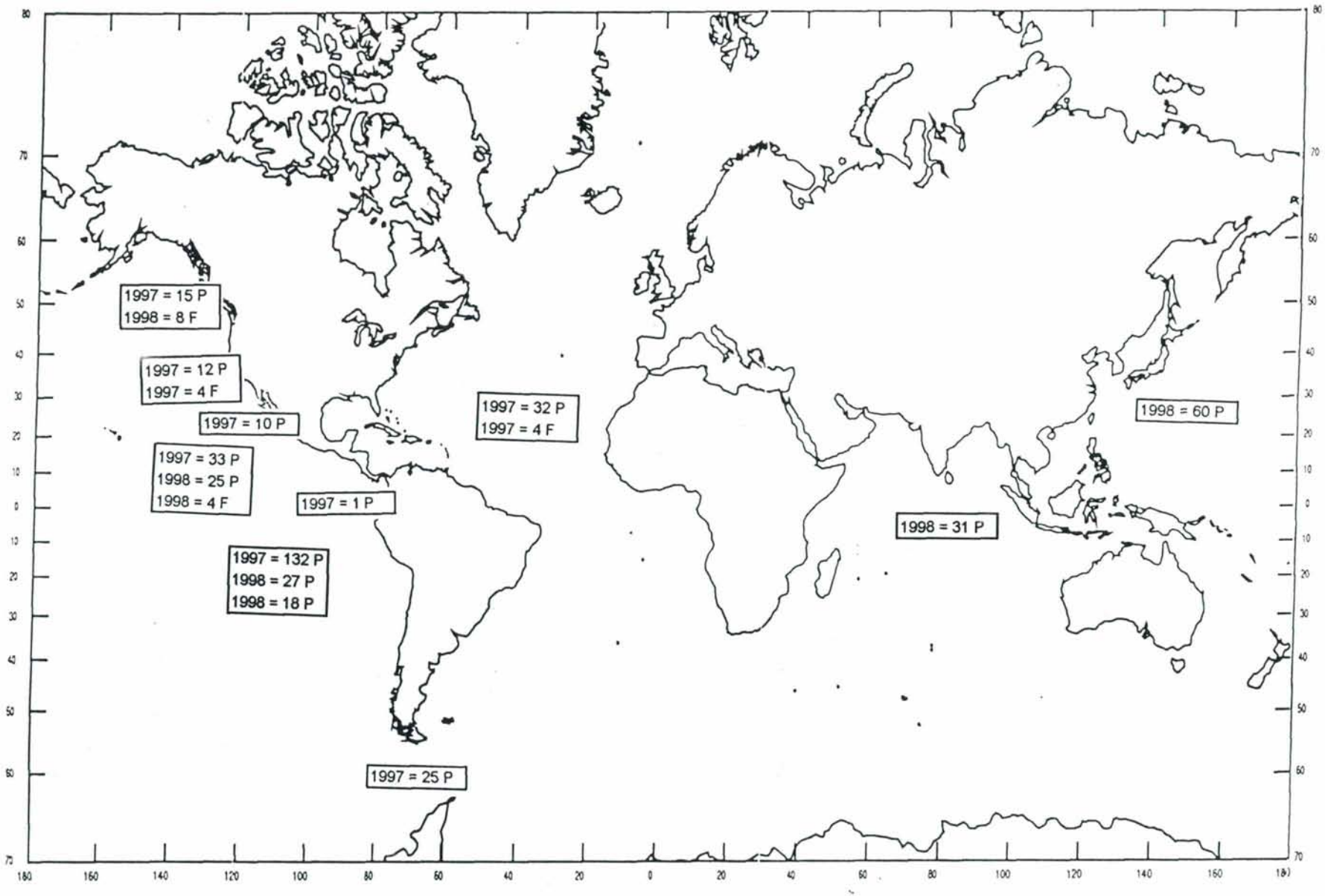
ALVIN Letters of Interest - Summary 1997 and Beyond

		1997 Prop.	1997 Funded	1998 + Prop.	1998 + Funded
ATLANTIC					
2	Chave/Van Dover/Tyson		4		
48	Casey/Dick/Rona	22			
49	Rona/Kleinrock/Tivey	10			
	Total	**32**	**4**	**0**	**0**
JUAN DE FUCA					
10	Becker				6
15	Karsten	10			
17	Tivey	5			
	Total	**15**	**0**	**0**	**6**
S. CAL/SAN DIEGO TROUGH					
18	Eckman/Thistle	12		0	
19	Smith/DeMaster		4		
	Total	**12**	**4**	**0**	**0**
GUAYMAS BASIN					
20	Jannasch	10			
	Total	**10**	**0**	**0**	**0**
NORTH EAST PACIFIC RISE					
21	Chave/VanDover/Tyson				4
22	France	1			
25	Mullineaux/Peterson/Fisher	8			
26	Mullineaux/Manahan/Young	10		20	
27	VanDover/Jannasch/Cann	14		5	
	Total	**33**	**0**	**25**	**4**
EQUATORIAL PACIFIC					
22	France	1			
	Total	**1**	**0**	**0**	**0**

		1997 Prop.	1997 Funded	1998 + Prop.	1998 + Funded
SOUTH EAST PACIFIC RISE					
30	Edmond	30			
22	France	1			
32	Kent	20			
34	Lilley/VonDamm		27		
35	Trefry	10			
36	Lupton	25			
37	Lutz/Vrijenhoek	14			
25	Mullineaux/Peterson/Fisher			10	
38	Mullineaux/France			8	
39	Naar	28			
40	Perfit	4			
	Total	**132**	**27**	**18**	**0**
WESTERN PACIFIC					
44	Perfit et al.			20	
45	Stern			20	
46	Stern, Cleft			20	
	Total	**0**	**0**	**60**	**0**
SOUTHERN HIGH LATITUDE					
47	Lawver/Dalziel/VonHerzon	25			
	Total	**25**	**0**	**0**	**0**
INDIAN OCEAN					
31	Fornari			31	
	Total	**0**	**0**	**31**	**0**

SUMMARY	1997 Prop.	1997 Funded	1998 + Prop.	1998 + Funded
	260	**35**	**134**	**10**

ALVIN AREAS OF INTEREST - 1997 AND BEYOND

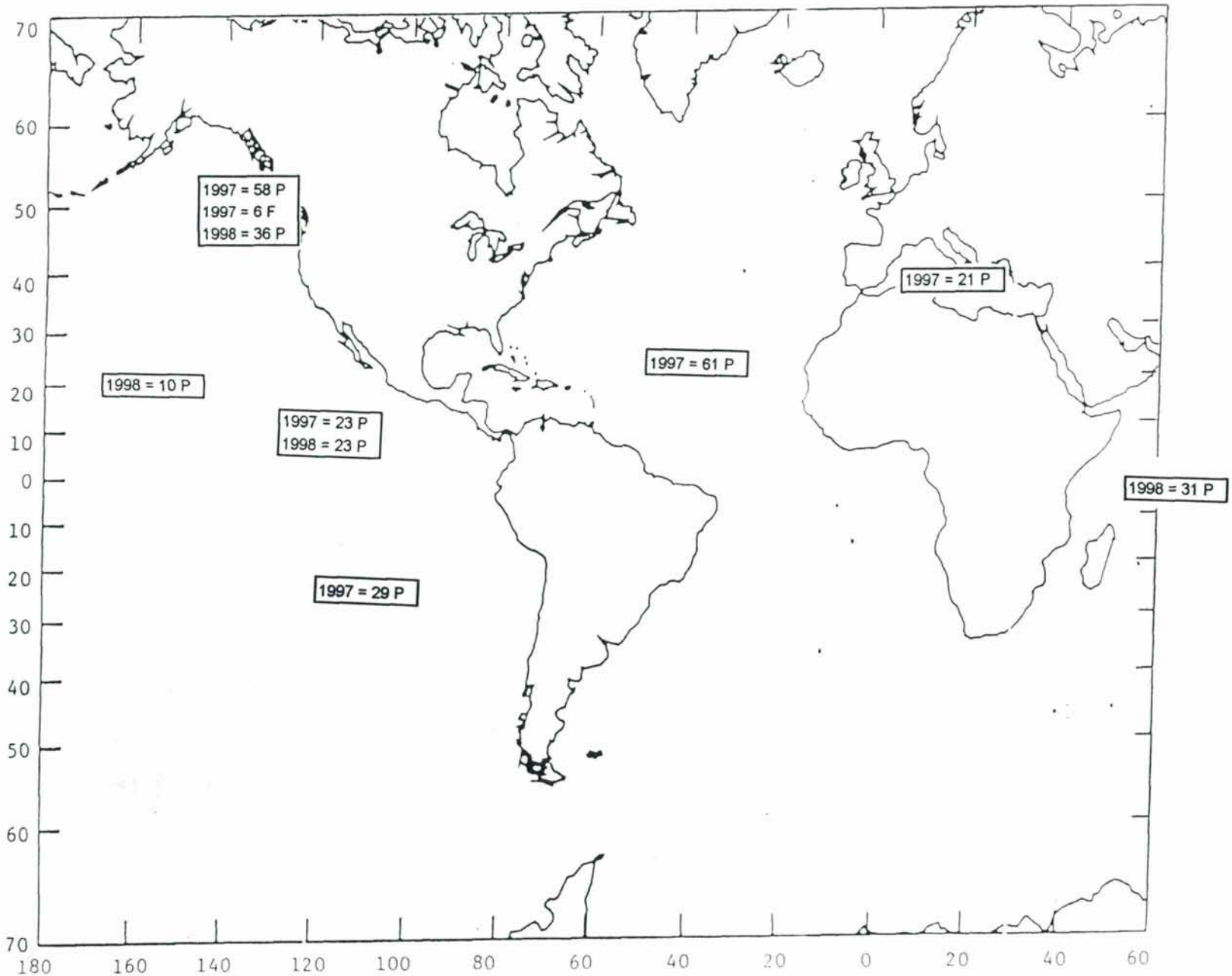


ROV Letters of Interest - Summary 1997 and Beyond

		1997 Prop.	1997 Funded	1998 + Prop.	1998 + Funded
ATLANTIC					
6	Sempere	37	0		
7	Smith	24			
	Total	**61**	**0**	**0**	**0**
MEDITERRANEAN					
9	Ballard/Yoerger/Mindell	21	0		
	Total	**21**	**0**	**0**	**0**
JUAN DE FUCA					
10	Becker		6		
11	Chadwick	4		9	
12	Delaney	33		27	
13	Lilley/Mottl	21			
	Total	**58**	**6**	**36**	**0**
NORTH EAST PACIFIC RISE					
24	Lutz	23		23	
	Total	**23**	**0**	**23**	**0**
SOUTH EAST PACIFIC RISE					
33	Hey/Baker/Lupton	29			
	Total	**29**	**0**	**0**	**0**
Hawaii					
42	Chave/Butler			10	
	Total	**0**	**0**	**10**	**0**
INDIAN OCEAN					
31	Fornari			31	
	Total	**0**	**0**	**31**	**0**

SUMMARY	1997 Prop.	1997 Funded	1998 + Prop.	1998 + Funded
	192	**6**	**100**	**0**

ROV AREAS OF INTEREST - 1997 AND BEYOND



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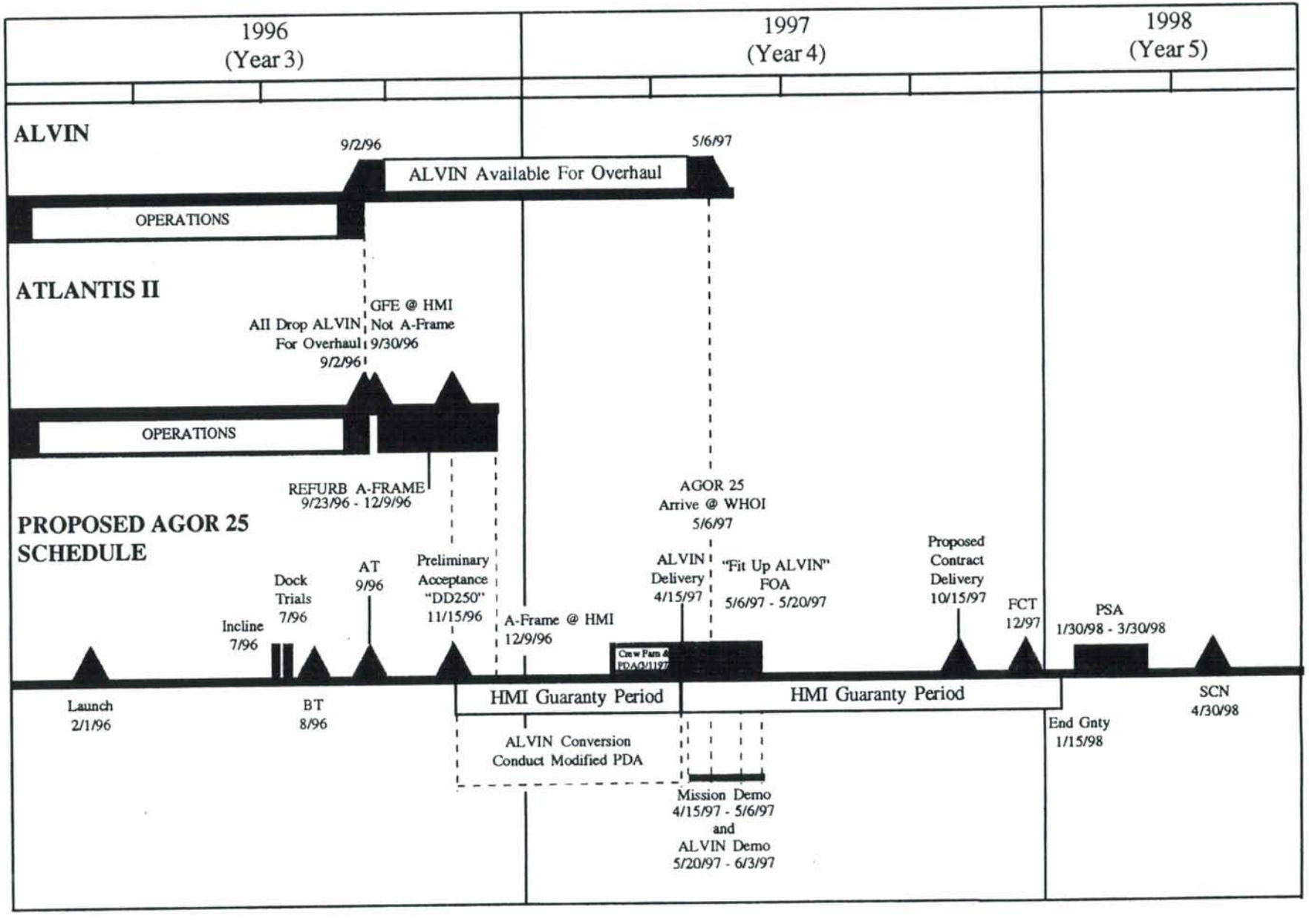
AGOR 25/ATLANTIS II/ALVIN Schedule



▲ - MILESTONES ▲ - TESTS & TRIALS/OPERATIONS ▬ - YARD PERIODS

APPENDIX IV

R/V CAPE HATTERAS

DUKE / UNIVERSITY OF NORTH CAROLINA OCEANOGRAPHIC CONSORTIUM

Duke University Marine Laboratory
135 Duke Marine Lab Road
Beaufort, North Carolina 28516
Phone (919) 504-7583 / Fax (919) 504-7651

Memo to: Unols Fleet Improvement Committee February 2, 1996

From: Quentin Lewis, Marine Superintendent

Subject: R/V CAPE HATTERAS midlife refit

At the present time, conditions look favorable for a stretch of the HATTERAS in 1998, assuming both NSF approval and funding. Tidewater Naval Architects of Norfolk, Virginia, was hired in late 1995 to perform an initial feasibility study of the HATTERAS concerning a midbody extension. Two items were addressed:

1) What is the largest midbody that can be added keeping the vessel under 500 Gross tons (the cutoff point for Uninspected Vessels)?
2) Could <u>any</u> midbody be added and still allow the vessel to retain its current uninspected status?

The answer to #1 is that, based on preliminary tonnage calculations, a 23 foot midbody could be added.
The answer to #2 has not been officially received yet, but all indications from ABS and USCG are that a midbody <u>could</u> be added without a vessel status change.

We are planning to officially propose Phase I (Feasibility study) to NSF this spring. If this is approved and completed in 1996, then Phase II (Contract Design) and Phase III (Detail Design) would be proposed in January, 1997. During 1997, Phase II and III would be completed, and Shipyard Bid Packages sent out by November, 1997. Phase IV (Construction) would be proposed late in 1997. If funded, the actual midlife would be completed during the first half of 1998.

Items to be included in the midlife refit (with stretch) are:
Addition of 16 - 20 scientific berths
Renovation of ship's HVAC system (switch from central units to compartment units)
Addition of bow thruster
Renovation and reorganization of Main Lab and Wet Lab spaces
Renovation and addition of space in Cold, Frozen, and Dry Galley Stores
Addition of Scientific Storage space

Ship's propulsion and electrical systems have been previously determined to be adequate for up to a 24 foot midbody.

Date: 2 February 1996

To: UNOLS

From: Rick Jahnke, Skidaway

SUBJECT: BLUE FIN REPLACEMENT

The Skidaway Institute of Oceanography has initiated the process to procure a new research vessel. This vessel will be used for a variety of research and educational activities primarily within the South Atlantic Bight region. It is anticipated that no single type of activity will dominate the vessel use and that the design and outfitting of the vessel will need to be flexible to accommodate a variety of instrumentation and personnel needs.

After reviewing a variety of ship types, it has been decided that a monohull offers the flexibility in payload and operations that best meets our needs. While SWATH vessels clearly offer certain advantages for underway survey work, on station stability and payload appeared unsatisfactory for our purposes (especially in the size of vessel we considered).

We are presently reviewing a conceptual design that has been submitted to SkIO by Intermarine, a local shipyard. This design describes a 87' monohull constructed of fiberglass reinforced plastic. Propulsion is still under discussion but their present recommendation is twin water jets driven by Detroit Diesel engines. Without propellers and rudders, the draft would be slightly less than 6', facilitating work in the shallow estuaries and sounds of the SAB. The boat could be operated by a crew of 2 on short trips and up to 4 on longer trips. Accommodations are currently 18, 4 reserved for crew, 14 for science. Deck outfitting would include a stern A frame, starboard J frame, three winches (trawl, hydro, conducting) with 1000 m of wire each, and a crane with approx. 25' reach mounted on the main deck. Roll would be slowed by a 10 cubic meter stabilizer tank. Cruising speed is 12 knots. The present estimated cost is $2.2M and we are presently negotiating with the state to get as much of this up front as possible.

APPENDIX V

Charge/Operating Days
Class II & Class III
(1994-1995-1996)

	1994 Total	1995 Total	1996 Total	
Atlantis II	306	319	92	
Ewing	310	310	319	
Knorr	253	350	253	
Melville	303	297	298	
Revelle			71	
Thompson	255	333	248	
Total	1,427	1,609	1,281	
Edwin Link	215	175 *	135	
Endeavor	130 *	228	184	
Gyre	148	122	(?)	
Iselin	192	0	0	(not in service)
Moana Wave	215	195	170	
New Horizon	241	240	179 *	
Oceanus	0 *	187	197	
Seward Johnson	70	271	302	
Wecoma	84 *	145	193	
Total	1,295	1,563	1,360	

* Overhaul (partial service)

D.A.M.- 2/1/96

Charge/Operating Days
Class IV
(1994-1995-1996)

	1994 Total	1995 Total	1996 Total
Alpha Helix	163	144	174 (?)
Cape Hatteras	173	175	0 (lay-up)
Cape Henlopen	170	198	193
Longhorn	53	72	120
Pelican	134	182	76
Pt. Sur	185	164	136 *
Sea Diver	124	180	110
Sproul	111	183	206
Weatherbird	144	161	171
Total	1,257	1,459	1,186
Barnes	72	77	102
Bluefin	59	75	101
Calanus	54	48	129
Laurentian	83	92	52
Total	268	292	384

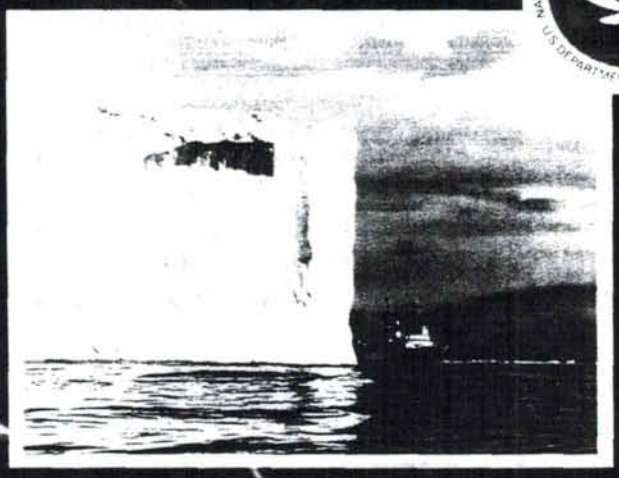
* Overhaul (partial service)

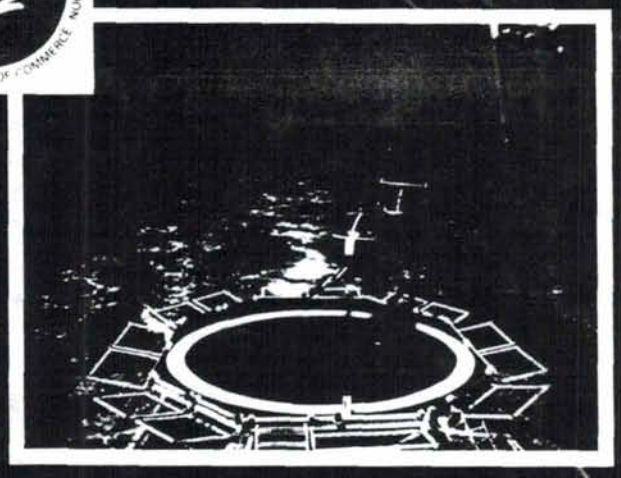
D.A.M.- 2/1/96

APPENDIX VI

In Service of Our Nation

THE NOAA FLEET





The Research and Survey Fleet of the National Oceanic and Atmospheric Administration

U.S. Department of Commerce

The Ships
of the NOAA Fleet

The National Oceanic and Atmospheric Administration (NOAA) is a science-based agency established in 1970 as part of the U.S. Department of Commerce. NOAA's mission is to describe and predict changes in the Earth's environment, and promote global environmental stewardship.

To carry out its mission, NOAA maintains a fleet of ships with various scientific capabilities from which to conduct research and data gathering relating to the oceans and atmosphere. Vessels range from small coastal craft used for research in estuaries and near-shore areas to deep water oceanographic ships able to provide scientists access to the waters of the world.

The NOAA fleet conducts many missions such as hydrographic surveys to support nautical charting requirements, oceanic and atmospheric research to determine both short and long-term global climatic changes, fisheries stock assessments, monitoring of coastal pollution trends, etc. These efforts directly support the work of every component of NOAA.

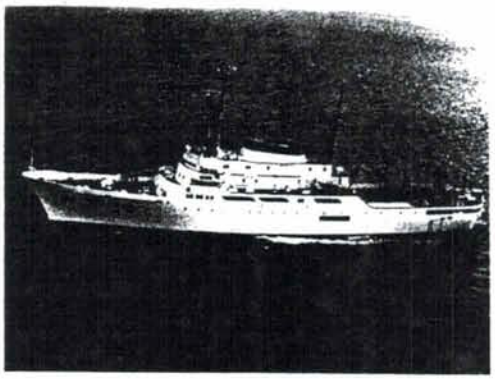
To accommodate NOAA's varied tasks and program missions, the vessels are equipped with specialized scientific laboratories, deck machinery, small boats and launches, sensors, computers for data collection and analysis, and electronic communications and navigation equipment. The vessels of the NOAA fleet are also flexible; highly specific equipment unique to the project at hand is often brought aboard by scientific parties.

The ships are staffed by civilian crews and officers of the NOAA Corps, one of the nation's seven uniformed services. All officers have degrees in science, engineering, or mathematics; many also possess advanced degrees, and maritime or other professional licenses. NOAA Corps officers and crews are well accustomed to successfully coping with the special problems and difficulties of conducting scientific research at sea, and have a proven record of safe and efficient operation of the fleet in all the world's oceans.

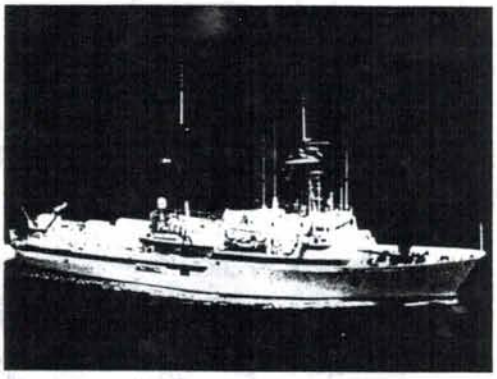
Providing NOAA with safe and reliable research platforms while operating in any ocean environment has been the task of the NOAA fleet and its NOAA Corps officers and crews ... a service to our nation that has been consistently and reliably met.

Additional information can be obtained from:

Office of NOAA Corps Operations
National Oceanic and Atmospheric Administration
1315 East-West Highway
Silver Spring, MD 20910

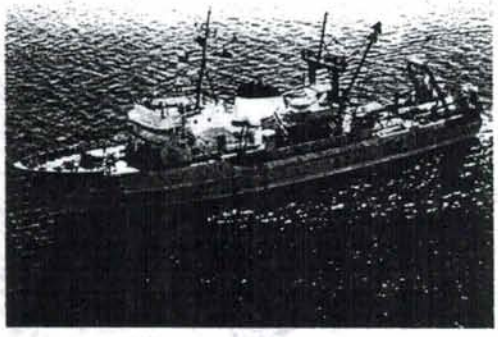


DISCOVERER (R102) is a 303-foot oceanographic research vessel whose home port is Seattle, Wash. The DISCOVERER normally operates in the Pacific Ocean but is capable of conducting oceanographic and atmospheric chemistry research even in the harsh environment of very high latitudes. The vessel can carry a party of 30 scientists for 35 continuous days at sea. DISCOVERER recently provided support for the Global Ocean Atmosphere Land System program which is designed to improve our understanding of the role of the tropical ocean in modifying the world's climate.



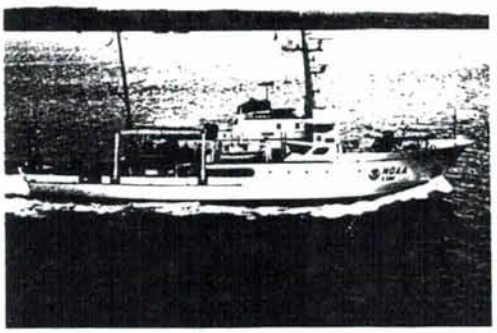
MALCOLM BALDRIGE (R103) is a 278-foot research vessel that conducts oceanographic research, primarily in physical and chemical oceanography, air-sea interaction, and marine geology. MALCOLM BALDRIGE can carry a scientific party of 28 for periods exceeding 30 days. The vessel typically operates in the Atlantic Ocean but is currently involved in a year-long around-the-world cruise. The MALCOLM BALDRIGE's home port is Charleston, S.C.

RAINIER (S221) is a 231-foot vessel designed to conduct hydrographic surveys in support of the nation's nautical charting efforts.. RAINIER operates primarily off the U.S. Pacific coast and in Alaskan waters. In addition to the ship itself, RAINIER can have as many as seven small craft collecting data at one time. RAINIER is equipped with Intermediate Depth Swath Survey system, Differential Global Positioning System, and towed side-scan sonars that are used to assist in surveying the ocean bottom. Its home port is Seattle, Wash.



MILLER FREEMAN (R223) is a 215-foot stern trawler with space for 13 scientists. The vessel has all the features of a modern research vessel with the added capability of a heavy-duty stern trawler. One unique feature is its retractable centerboard which extends beneath the ship and is below ship generated acoustic interference layers. Remote sensing and oceanographic devices have been placed on the centerboard and have markedly improved the ship's capabilities. MILLER FREEMAN's home port is in Seattle, Wash.

McARTHUR (S330) is a 175-foot vessel that conducts oceanographic research, marine mammal population studies, and environmental assessments along the West Coast of the United States and throughout the southwestern Pacific Ocean. McARTHUR's home port is Seattle, Wash. It can carry a scientific party of 12 for up to 30 continuous days.

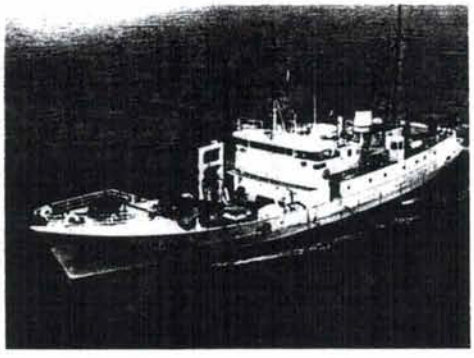


WHITING (S329) is a 163-foot hydrographic survey vessel. The WHITING carries two 28-foot Jensen survey launches and is equipped with the Intermediate Depth Swath Survey system and towed side-scan sonars. All are used to accomplish hydrographic surveys in support of the nation's nautical charting program. This vessel normally operates along the Atlantic and Gulf coasts, and in the U.S. Caribbean territorial waters. The ship's home port is Norfolk, Va.

OREGON II (R332) is a 170-foot research vessel capable of carrying a scientific complement of 11 for periods of up to 30 days. The vessel conducts fishery and living marine resources research in support of the National Marine Fisheries Service's Mississippi laboratories. This vessel normally operates along the Atlantic and Gulf coasts and in the Caribbean Sea. Its home port is Pascagoula, Miss.

ALBATROSS IV (R342) is a 187-foot research vessel. The ALBATROSS IV can carry a scientific complement of 14 for periods of more than two weeks. The vessel conducts fishery and living marine resources research off the Northeast Atlantic Coast. The ALBATROSS IV's home port is Woods Hole, Mass.

TOWNSEND CROMWELL (R443) is a 163-foot research vessel that conducts fishery and living marine resource projects from its home port of Honolulu, Hawaii. The vessel can carry nine scientists for periods of up to 30 days. TOWNSEND CROMWELL has just completed a major overhaul that included the installation of a bowthruster for improved stationkeeping while conducting scientific operations. The vessel operates in areas from the Hawaiian Islands throughout the Central Pacific Ocean.



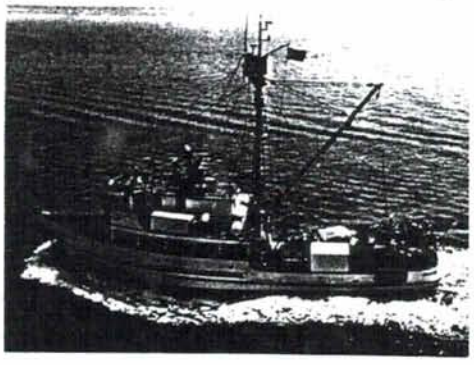
DAVID STARR JORDAN (R444) is a 171-foot research vessel that conducts fishery and living marine resource projects. The vessel operates off the Pacific coasts of the United States and Central and South America. The DAVID STARR JORDAN can accommodate 15 scientists for periods of up to 30 days at sea. The vessel's home port is San Diego, Calif.

DELAWARE II (R445) is a 155-foot research vessel. The DELAWARE II can carry up to 10 scientists for periods of up to 24 days. The vessel conducts fishery and living marine resources research and normally operates off the Northeast Atlantic coast. The DELAWARE II is currently undergoing repairs that will significantly upgrade the vessel's mission capability. The vessel's home port is Woods Hole, Mass.

CHAPMAN (R446) is a 127-foot research vessel. The CHAPMAN can accommodate six scientists and conducts fishery and living resources research along the Atlantic and Gulf coasts and in the Caribbean Sea. The CHAPMAN's home port is Pascagoula, Miss.

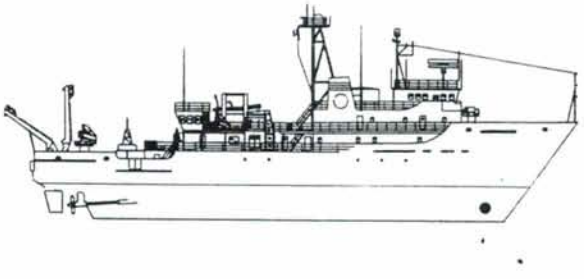
FERREL (R492) is a 133-foot coastal research vessel. The FERREL can accommodate seven scientists and conducts coastal and estuarine oceanographic surveys. This vessel normally operates along the Atlantic and Gulf coasts. Its home port is Charleston, S.C.

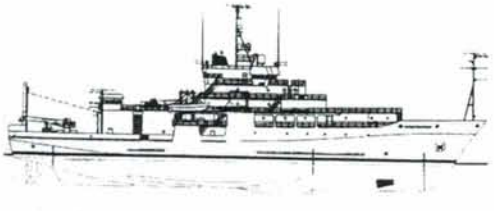
JOHN N. COBB (R552) is a 93-foot fisheries research vessel that conducts fishery, marine mammal, and marine resource population studies in southeast Alaska. The vessel has space for four to five scientists and is also used to transport supplies to remote scientific stations in southeast Alaska. Its home port is Seattle, Wash.



RUDE (S590) is a 90-foot survey vessel outfitted for hydrographic surveys. The vessel specializes in wreck and obstruction investigations in support of the nation's nautical charting program. The RUDE is outfitted with a shallow water multi-beam sonar system enabling it to survey large bottom areas in a single pass. This vessel normally operates along the Atlantic and Gulf coasts. Its home port is Norfolk, Va.

KA'IMIMOANA The KA'IMIMOANA was originally designed and built for the U.S. Navy but is now undergoing conversion in Bellingham, Wash. The vessel will carry a scientific party of ten and will directly support the Global Ocean Atmosphere Land System program which is an ongoing research effort designed to improve our understanding of the role of the tropical ocean in modifying the world's climate. KA'IMIMOANA's home port will be Honolulu, Hawaii.





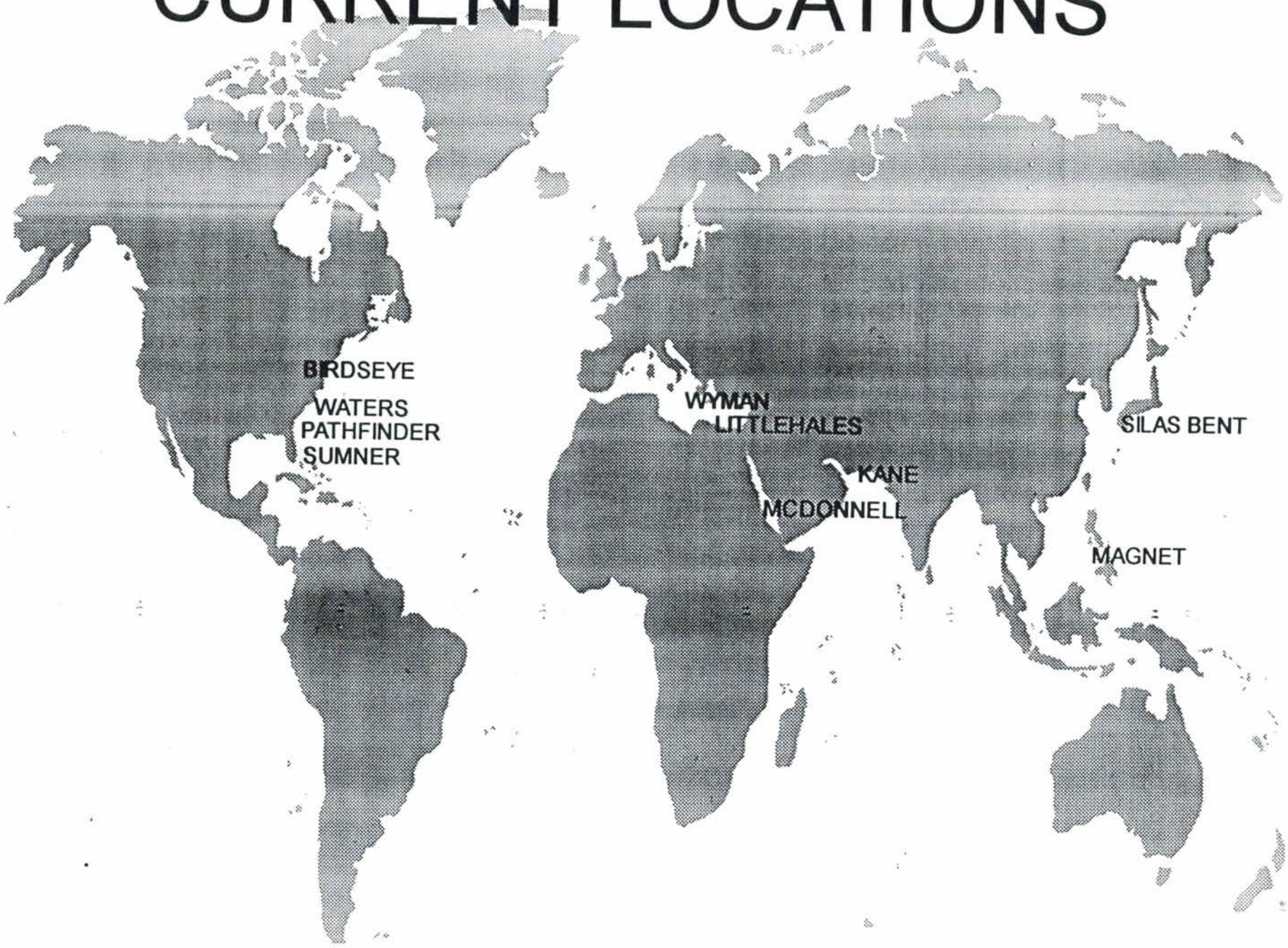
RESEARCHER is the first new vessel constructed for NOAA since 1980. Beginning in early 1997, it will provide primary support to NOAA's programs that collect oceanographic and atmospheric data for scientists in their search to understand and predict global climate changes over time. The vessel will be 274 feet long, equipped with the latest oceanographic and scientific equipment and instruments, and able to accommodate 59 people aboard, including officers and crew. The RESEARCHER will provide nearly 4,000 square feet of laboratory space and have an endurance of over 11,000 nautical miles at 12 knots plus 30 days on station. Thus, the RESEARCHER has the speed, endurance, and seakeeping capabilities necessary to meet NOAA's worldwide research and data collection needs.

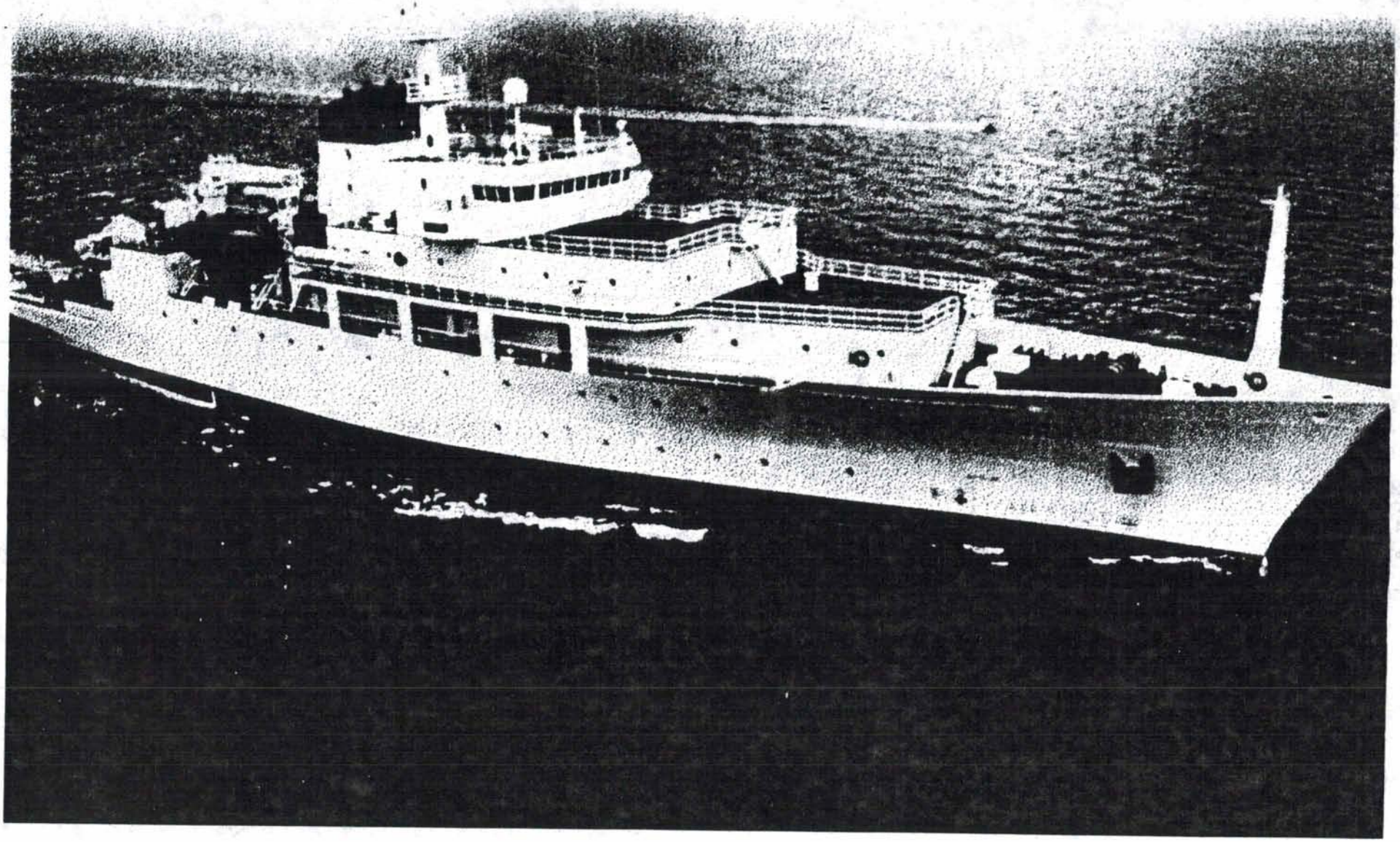
APPENDIX VII

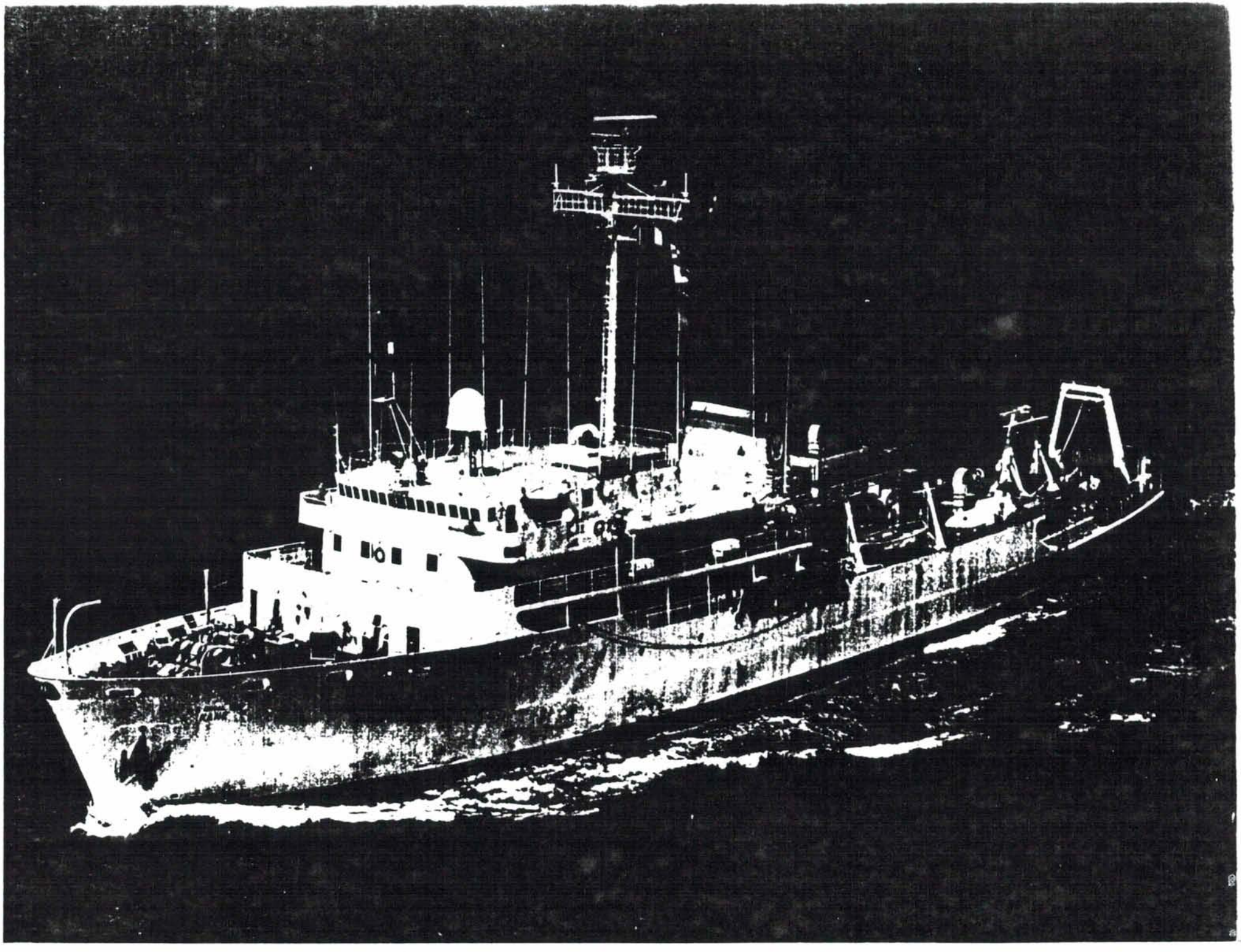
NAVOCEANO POC'S

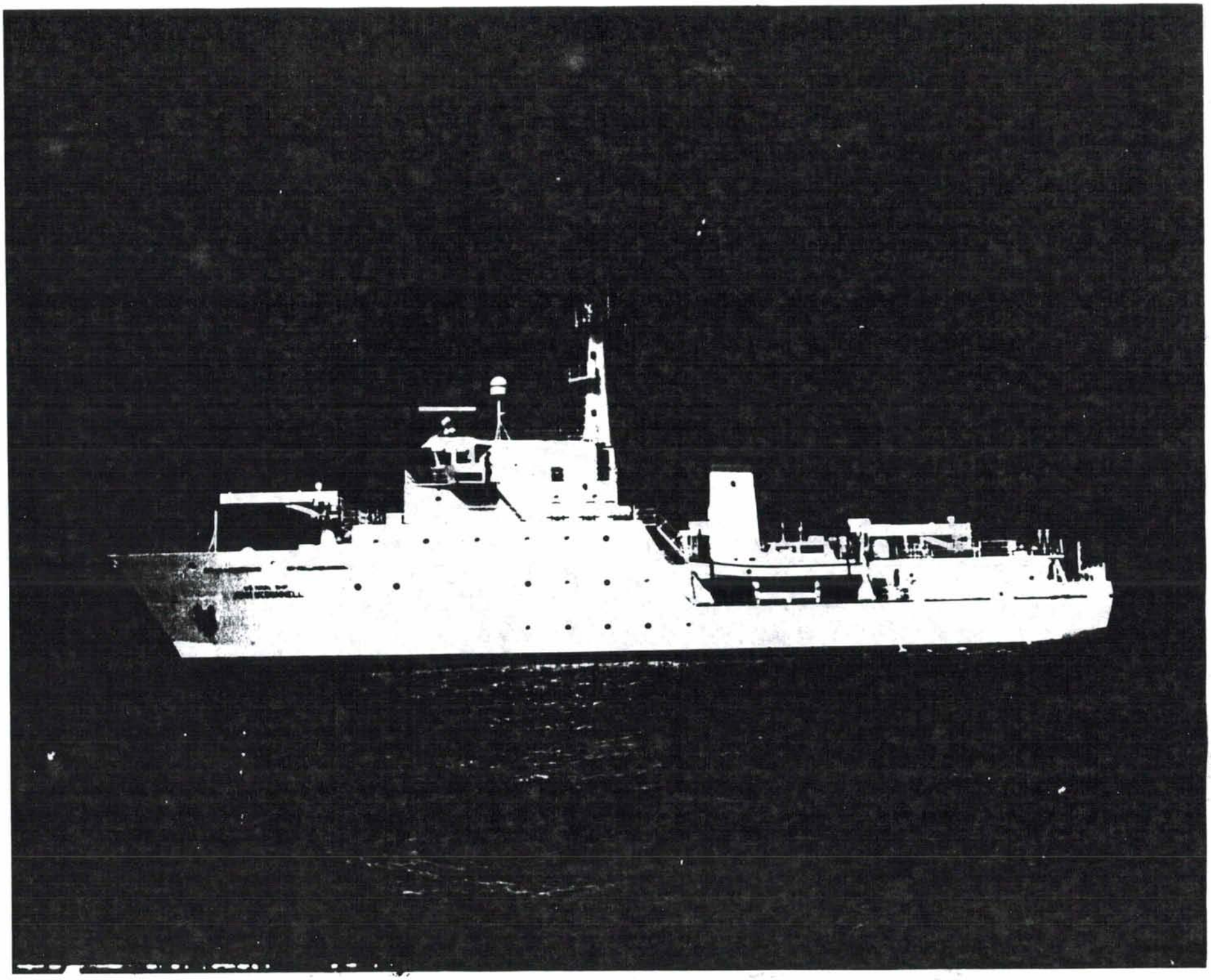
- Deep Submergence Science Committee
  - Mr. Carey Ingram (601) 688-4145
- Fleet Improvement Committee
  - CDR D. Smith (601) 688-4370
  - Mr. George Madden (601) 688-5293
- Ship Scheduling Committee
  - Mr. Charlie O'Neill (601) 688-4307
- Research Vessel Technical Enhancement Committee
  - Dr. Darrell Milburn (601) 688-4553
  - Mr. Marshall Paige (601) 688-4129
- NAVOCEANO Single POC
  - CDR D. Smith (601) 688-4370

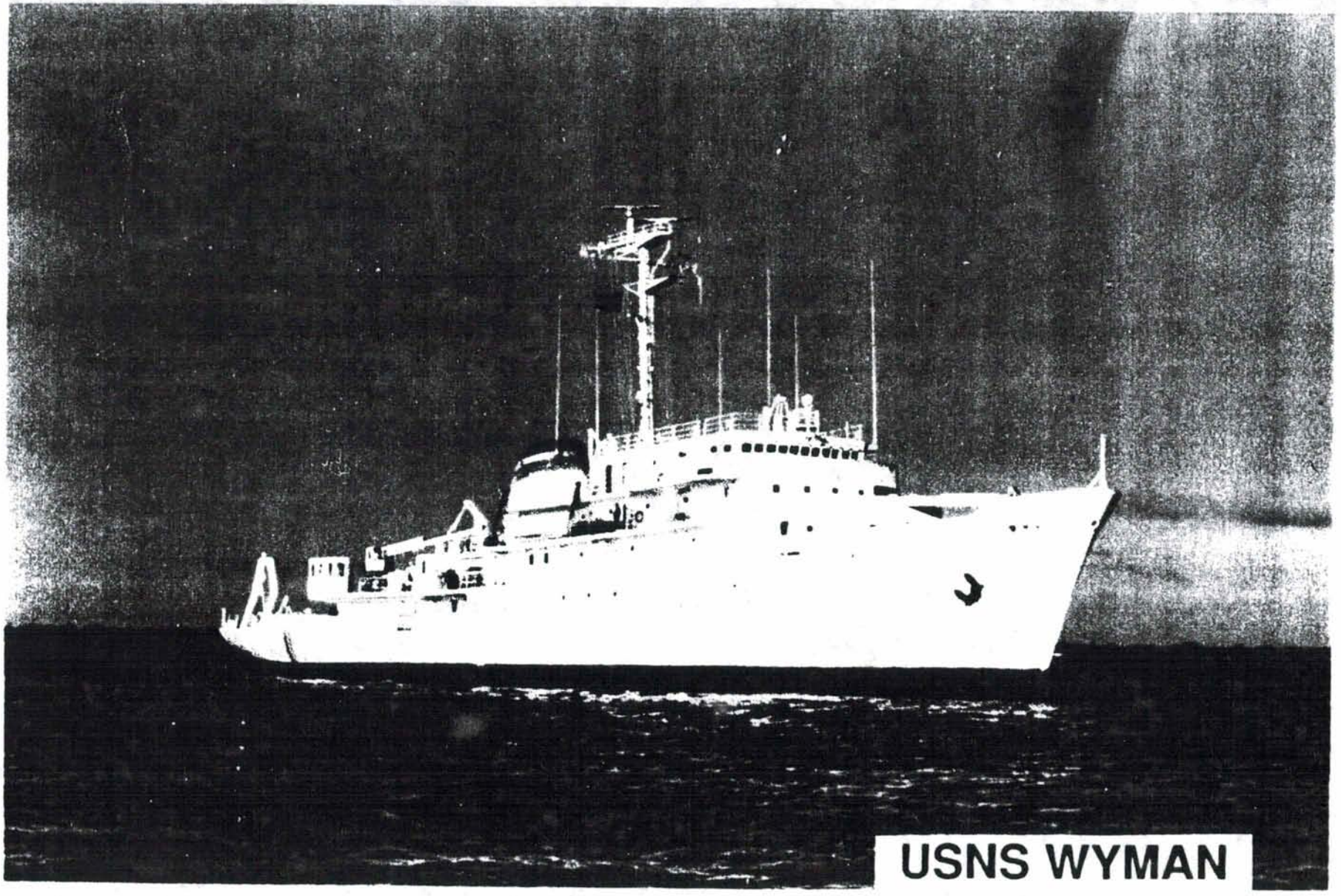
CURRENT LOCATIONS



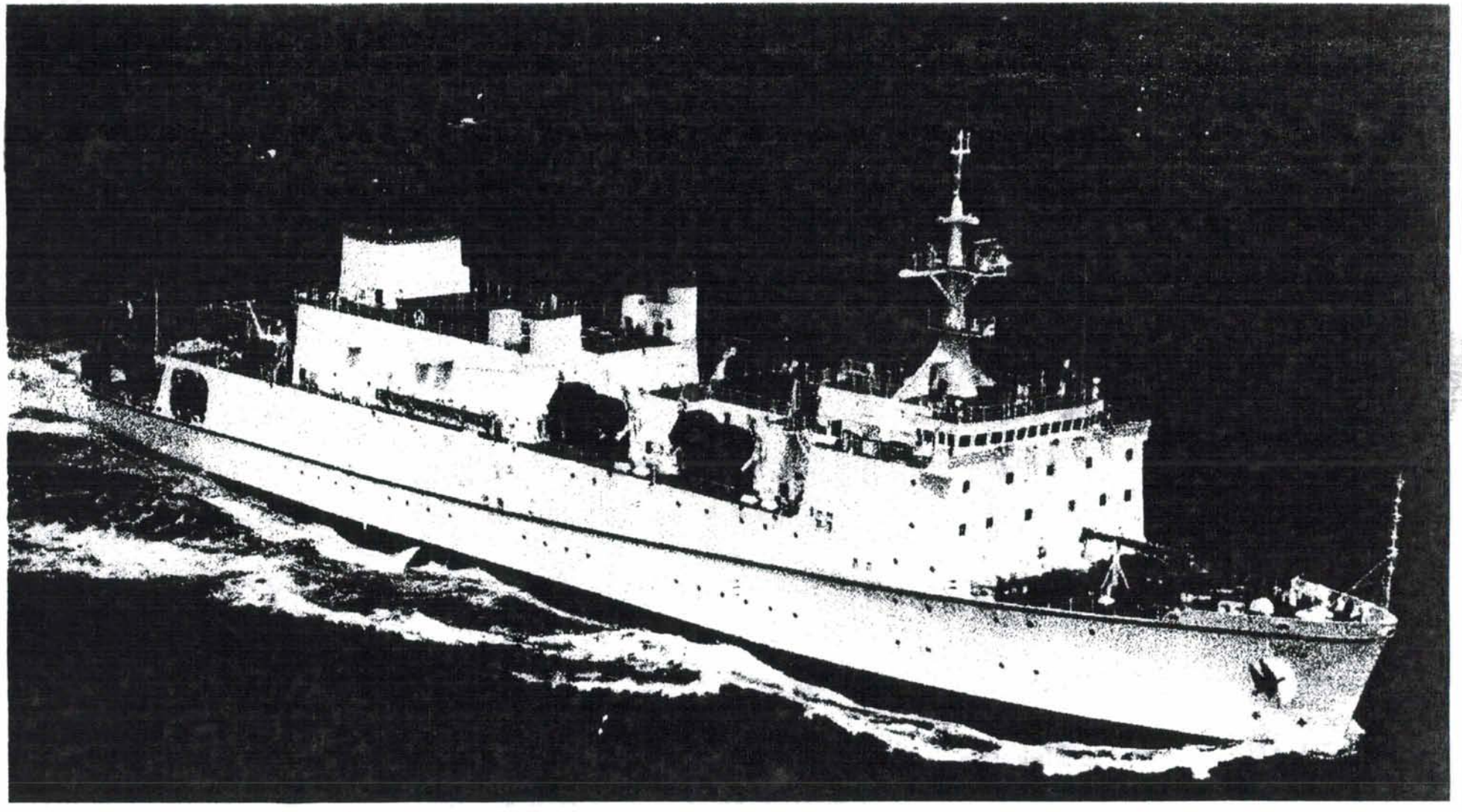








USNS WYMAN



SHIP CHARACTERISTICS	WYMAN SILAS BENT KANE	MCDONNELL LITTLEHALES	PATHFINDER SUMNER	WATERS
Length (ft)	285	208	329	457
Displacement (tons)	2600	2054	5000	12,050
Cruising Speed (kts)	12	12	16	12
Cruising Range (nm)	12,000	12,000	12,000	14,000
Thrusters	Bent/Kane (bow)	No	bow	2 bow, 2 strn
Crew / Scientists	30 / 26	22 / 11	25 / 27	30 / 28
"A" Frame	Bent / Kane	No	Yes	2 tow booms
"U" Frame	Yes	No	Yes	Two
ADCP	Yes	No	Yes	Yes
Multibeam Swath (deg)	2 1/2 x 40	1 x 120	1 x 120	1 x 120
CTD	Yes	No	Yes	Yes
Core	Bent / Kane	No	Yes	Yes
Seismic	Bent / Kane	No	Yes	Yes
HSL's	No	Two	Two	Yes (4)
ORCA	No	No	Yes	Yes

SURVEY SHIP CAPABILITIES

SHIP \ CAPABILITY	SWATH BATHY FULL OCEAN	SWATH BATHY SHALLOW WTR	SWATH BACKSCATTER	NARROW BEAM BATHY	SIDE SCAN	SEISMIC	DIFFERENTIAL GPS	SUBBOTTOM PROFILER	ISS-60	UNDERWAY BIOLUM. CAP.	CTD SALINITY	ADCP	EXPENDABLES	STATION KEEPING	HEAVY/DEEP TOWING H'WARE	HSL	ROV	METEOROLOGICAL
T-AGS 60	●	●	●	●	◐	●	●	●	●	●	●	●	●	●	●	◑	●	◐
T-AGS 51	●	●	●	●	●	●	●	●	●	◐	◑	●	●	●	●	●	●	●
WYMAN	●	◑	●	●	◐	●		●	●	◐	◑	●	●	●	●	●	●	●
BENT	◑	●		●	◐	●	●	●		●	●	●	●	●	●	●	●	●
KANE	◑	●		●	◐	●	●	●		●	●	●	●	●	●	●	●	●
WATERS	●	●	◐	●	◐	●	●	●	◑	●	●	●	●	●	◐	◐	●	

● FULL CAPABILITY

● FULL CAPABILITY PLANNED

◑ LIMITED CAPABILITY

◐ SHIP IS CAPABLE UPGRADE CONSIDERED

UNDER CONSIDERATION

● NO CAPABILITY/ NO UPGRADE PLANNED

APPENDIX VIII

FUNDAMENTAL QUESTIONS

(a) WILL THERE BE SUFFICIENT SCIENCE AND OPERATIONAL FUNDING IN THE FUTURE FOR OCEAN SCIENCE TO CONTINUE TO SUPPORT THE UNOLS FLEET AS CURRENTLY CONFIGURED?

AND , <u>IF</u> <u>NOT</u>

(B) WHAT ACTIONS MIGHT BE TAKEN TO MAXIMIZE THE EFFEFIVENESS OF THE U.S. OCEAN SCIENCE ENTERPRISE?

SPECIFIC COMMITTEE CHARGE

1. THE BUDGET PROJECTIONS OF DON HEINRICHS FOR UNOLS SHIP OPERATIONS, GIVING SPECIAL REGARD TO THE POSSIBLE EXPANDED PARTICIPATION OF SUPPORTERS/USERS, OTHER THAN NSF (I.E. ONR, NRL, NOAA, USGS, MMS, DOE, EPA AND NASA);

2. WITHIN REASONABLE BUDGETARY ASSUMPTIONS, ASSESS A GENERAL MODEL FOR THE UNOLS FLEET REQUIREMENTS FOR SUPPORTING SCIENCE. THIS ASSESSMENT SHOULD BE BASED ON THE MODEL THE UNOLS FLEET IMPROVEMENT COMMITTEE PROJECTED FOR THE YEAR 2000 BUT MODIFIED TO MORE ACCURATELY REFLECT CURRENT STATUS AND UPDATED PROJECTIONS;

3. IF ANY IMBALANCE EXISTS BETWEEN REQUIREMENTS AND RESOURCES, OFFER SUGGESTIONS AS TO HOW WE MIGHT BEST RECONCILE THE MISMATCH? (I.E. INCREASE THE USER BASE, REDUCE THE FLEET, AND/OR GO TO DIFFERENT MODES OF OPERATION);

4. WHAT UNOLS OPERATIONAL/FISCAL CHANGES WOULD WORK BEST FOR THE U.S. OCEANOGRAPHIC COMMUNITY?;

5. COULD FLEET REALIGNMENT LEAD TO A MORE EFFECTIVE USE OF OUR SHIPS? IF SO, WHAT ARE THE PARTICULAR CRITERIA THAT SHOULD BE USED TO EVALUATE THE MERITS OF SHIFTING SEA-GOING ASSETS.

FIGURE 1

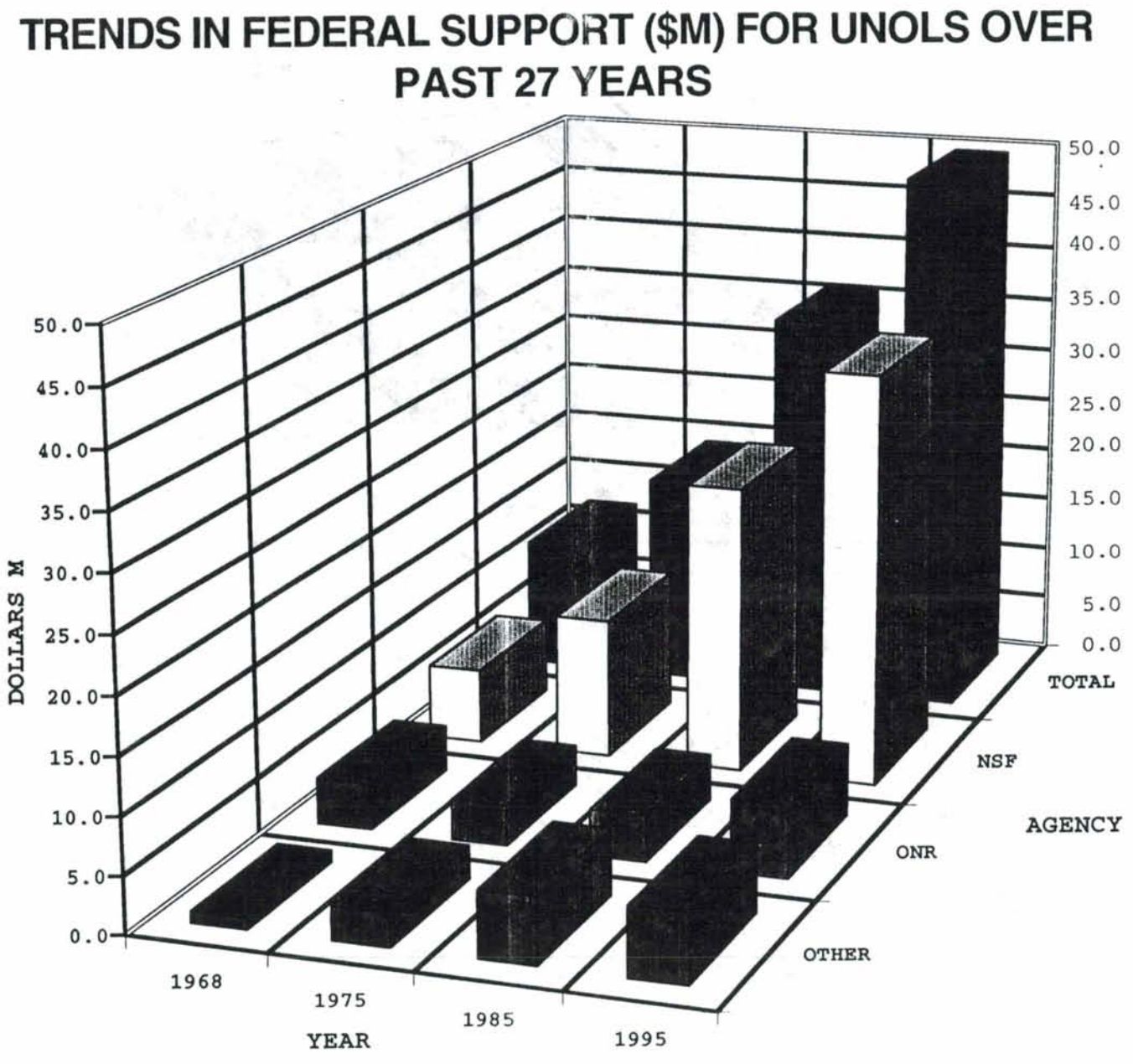

TRENDS IN FEDERAL SUPPORT ($M) FOR UNOLS OVER PAST 27 YEARS
DOLLARS M
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1968
1975
1985
1995
YEAR
OTHER
ONR
NSF
TOTAL
AGENCY

FIGURE 3

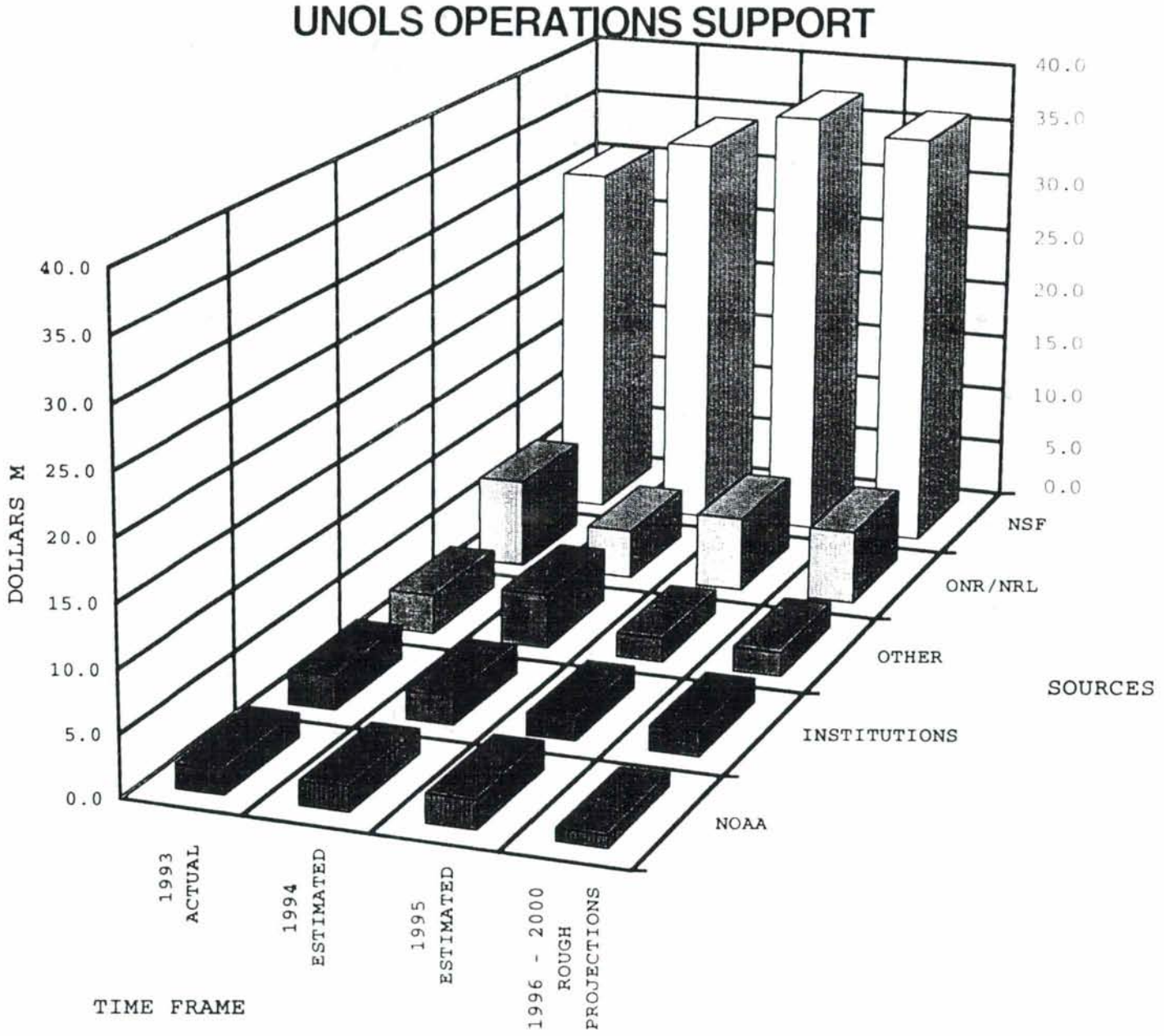
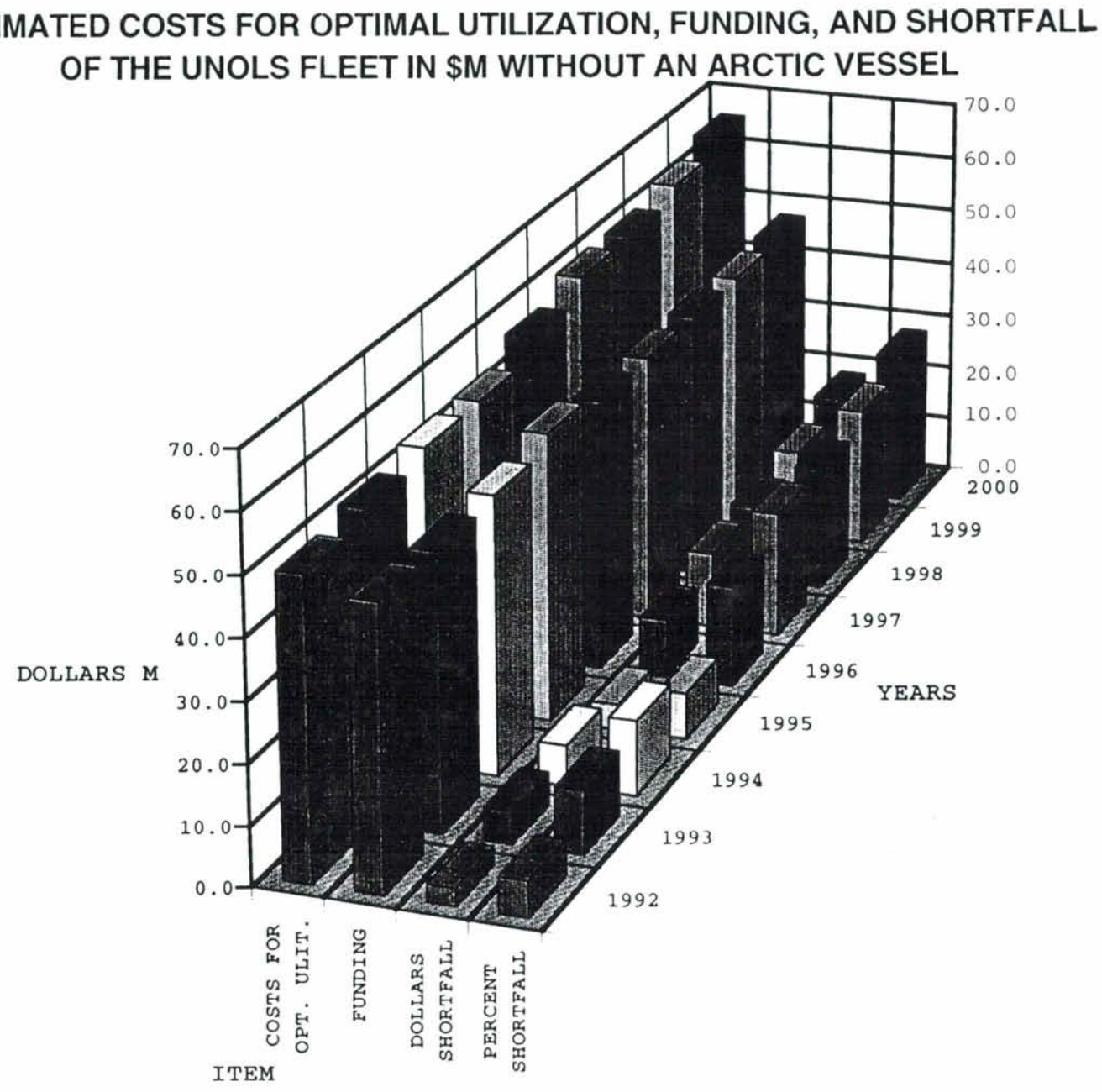

UNOLS OPERATIONS SUPPORT
DOLLARS M
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
TIME FRAME
1993 ACTUAL
1994 ESTIMATED
1995 ESTIMATED
1996 - 2000 ROUGH PROJECTIONS
SOURCES
NOAA
INSTITUTIONS
OTHER
ONR/NRL
NSF

TABLE 4. Estimated Costs, Funding and Shortfall for the UNOLS fleet in ($M)

Year	Costs (4% Inc) for Optimal Utilization	Funding	($M)	Shortfall (%)
1992	49.7	46.8	2.9	6 %
1993	51.7	46.2	5.5	11 %
1994	53.8	47.1	6.7	12 %
1995	53.8	49.6	4.2	8 %
1996	57.1*	47.3	9.8	17 %
1997	60.5**	47.3	13.2	22 %
1998	60.5	47.3	13.2	22 %
1999	63.0	47.3	15.7	25 %
2000	65.5	47.3	18.2	28 %

Notes: Assumptions as in Table 3 of this report and in the FIC 1995 Plan (i.e *no resources for an Arctic Research Vessel*).

FIGURE 4


ESTIMATED COSTS FOR OPTIMAL UTILIZATION, FUNDING, AND SHORTFALL
OF THE UNOLS FLEET IN $M WITHOUT AN ARCTIC VESSEL
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
DOLLARS M
2000
1999
1998
1997
1996
1995
1994
1993
1992
YEARS
COSTS FOR OPT. ULIT.
FUNDING
DOLLARS SHORTFALL
PERCENT SHORTFALL
ITEM

APPENDIX IX

School of Ocean & Earth Science & Technology
1000 Pope Road, Marine Science Bldg 205
Honolulu, HI 96822
TEL 808 956-6182 FAX 808 956-9152
Office of the Dean

soest
University of Hawai'i

January 17, 1996

Dr. Kenneth Johnson, Chair
UNOLS Council

Dear Dr. Johnson:

The UNOLS Council nearly 2 years ago formally expressed its concern over the impending retirement of the MOANA WAVE and the lack of any viable replacement vessel. The situation has, unfortunately not changed nor have the negative consequences diminished. The loss of SOEST's excellence port facility at Snug Harbor after 3 decades of efficient operation will curtail service to UNOLS and NOAA research and fishery vessels. It will not be replaceable in Honolulu in the future. The needs for a research ship ported in Honolulu arise from cost-savings from reduced transit costs to the Western Pacific and from the University's dependence on a long-endurance, dynamically positioned, swath mapping capable vessel for the future of its research programs. SOEST is the 4th largest ocean/earth science research and educational institution in the U.S. at $48 million annually in federal and state funds. Its record of ships operations is excellent. The State has offered to support ship's operations financially provided a replacement vessel comes to Hawaii.

Now, however, UNOLS is preparing to issue the draft document, "Potential changes on the horizon for the UNOLS Fleet," which assumes that the MOANA WAVE will not be replaced. Indeed, the report's principal concern is with finding the means to support the academic fleet even with the MOANA WAVE gone.

Presently , there are three options for replacement of the MOANA WAVE, each having a different impact on funding for ship's operations.

1) Replace MOANA WAVE with a new, high-endurance SWATH ship.

2) Replace MOANA WAVE with an existing class I UNOLS vessel.

3) Port the new AGOR 26, the NOAA Researcher, in Hawaii to be operated by the University on behalf of NOAA and UNOLS.

All options have the advantages that a central Pacific port facility is retained, a major commitment of State funds is added to the resources for oceanography, Hawaii's marine programs are preserved and overall transit costs are reduced, all without sacrificing cost effectiveness and quality of operations. All the evidence supports this assertion: SOEST's ship operations are as cost-effective and of as high a quality as other operators.

Option 1, while in most respects the most attractive option, impacts UNOLS funding compared to option 2

Option 2 reduces the intermediate-to-large ship fleet by one ship, helping to alleviate the excess ship time available. The consequences for SIO or WHOI would be that they would operate one fewer large research vessel, presuming that the replacement vessel would come from one or the other of two multiple, larger ship operators.

Option 3 is still under discussion in NOAA but their inclination, at the moment, is to port the RESEARCHER on the east coast to maintain an east coast-west coast balance of large ships. If NOAA's requirements for research vessel time are to be met through utilization of the UNOLS fleet, then the pressure to reduce the size of the fleet should be largely relieved. In that event, replacing the MOANA WAVE with a new SWATH ship, option 1, should be a more agreeable alternative.

It would be helpful, at the least, to amend the report so that the MOANA WAVE is replaced by one or more of the options listed above. The report appears to be solving some of the fleet's funding problems at the expense of the University of Hawaii rather than at the expense of the institutions represented by the authors of the report. UNOLS probably should not issue a report that damages one of their institutions without the representation of that institution in the authorship.

In addition, the UNOLS council might wish to issue a statement that clearly and unequivocally states their interest in seeing the MOANA WAVE replaced.

Sincerely,

C. Barry Raleigh
Dean

cc: UNOLS Council

APPENDIX X

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

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

Charge to the High Latitude Facility Coordinating Committee

The U.S. Coast Guard, NSF and UNOLS have agreed to establish a UNOLS Committee that would facilitate the optimal utilization of U.S. polar science platforms and address academic science concerns aboard the USCG icebreakers POLAR SEA, POLAR STAR and HEALY. This committee would be sponsored by the Coast Guard and it would be made up of members of the scientific community with recent icebreaker experience and scientific programs in the high latitudes. The committee would provide polar science project planning and scheduling assistance, facilitate communication between scientists, science funders and facility providers and provide oversight and advice to the Coast Guard for the purpose of enhancing and facilitating science aboard their icebreaker fleet. The committee is envisioned to include polar scientists and will solicit and welcome the participation of representatives from the Coast Guard, NSF, ONR, NOAA, USGS and the Arctic Commission. The committee would meet as required, but no less than twice annually, to discuss issues within their charge. The UNOLS DEep Submergence Science Committee (DESSC) could act as a model.

The charge of this committee is to optimize the utilization of U.S. polar science platforms being responsive to the needs of the academic science community as related to scientific programs aboard USCG icebreakers in both Arctic and Antarctic operations. Specific charges of the committee are:

- Develop a Charter for approval by UNOLS, the Coast Guard and appropriate funding agencies. This Charter, upon approval, would be adopted as an Annex to the UNOLS Charter;
- Participate in initiating and planning polar science projects;
- Provide coordination for icebreaker scientific program scheduling;
- Facilitate liaison between polar scientists and science funding agencies to support icebreaker utilization;
- Respond to requirements relating to the scientific mission for HEALY;
- Provide construction oversight for HEALY's scientific spaces and outfitting;
- Critique science operation for all USCG icebreakers;
- Provide advice on science equipment needs;
- Provide advice on technician support;
- Provide liaison with the Antarctic Research Vessel Science Committee;
- Provide advice concerning International cooperation of scientific programs. and facilities as they relate to high latitude activities.

The committee chair will be an ex-officio member of the UNOLS Council and will keep the Council and the UNOLS membership informed of its activities. The committee will liaison with the UNOLS Fleet Improvement Committee (FIC) and Research Vessel Enhancement Committees (RVTEC) on issues appropriate to these committees.

P.O. Box 392
Saunderstown, RI 02874

Phone: (401) 874-6825
FAX: (401) 874-6486
E-mail: unols@gso.uri.edu

APPENDIX XI

UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

GUIDELINES FOR REQUESTING/BECOMING UNOLS VESSEL

1. INTRODUCTION

This instruction provides a guideline for requesting the designation of an institution's vessel as a University National Oceanographic Laboratory System (UNOLS) vessel. Included in this guideline is a description of the objective of UNOLS Operator Institutions, the relationship of UNOLS vessels to research and academia, the relationship of UNOLS operating institutions as UNOLS members, and the responsibilities of UNOLS operating institutions.

2. OBJECTIVES OF UNOLS OPERATOR INSTITUTIONS

The objective of a UNOLS Operator institution is to provide an oceanographic vessel to scientists from both within and outside of their institution, provided that funding is available from the sponsor of the research or from the user.

3. RELATIONSHIP TO RESEARCH AND ACADEMIA

UNOLS vessels are those United States research vessels generally operated in support of national oceanographic research programs by academic institutions and are significantly funded by the federal government.

4. RELATIONSHIP OF UNOLS OPERATING INSTITUTION AS UNOLS MEMBER

UNOLS institutions that operate UNOLS vessels are, in addition, designated as Operator Institutions.

UNOLS vessels are designated by the UNOLS Council. The list of designated UNOLS vessels will be reviewed regularly for additions or deletions by the UNOLS Council. If a vessel ceases to meet the UNOLS standards, the UNOLS Council will recommend termination of such designation.

5. RESPONSIBILITIES OF A UNOLS OPERATING INSTITUTION

The responsibilities of the UNOLS Operating Institution include, but are not limited to:

a. Assuring that ships are regularly available to all federally funded users.

b. Maintaining their vessels to accommodate the needs of the academic oceanographic programs.

c. Operating their UNOLS vessels in accordance with UNOLS Research Vessel Safety Standards, October 1989.

d. Subjecting to regular, recognized ship inspection procedures, such as ABSTECH or INSURV.

e. Participating fully in the UNOLS scheduling process. The operating institution will receive, acknowledge, and structure requests for ship-time use in consultation with the UNOLS Office.

f. Submitting cruise reports and cruise assessments according to UNOLS uniform practices.

g. Adhere to cost accounting and performance standards according to UNOLS uniform procedures.

h. Requesting funds for operation of their vessels. UNOLS membership does not guarantee federal funding.

6. REQUIREMENTS FOR BECOMING A UNOLS VESSEL

An institution requesting designation of their vessel as a UNOLS vessel must be a qualified UNOLS member institution. If they are not a member, they must submit an application for membership in accordance with the guidelines established in the UNOLS Charter. These applications can be submitted in tandem with their requests to designate a vessel as a UNOLS vessel. Application forms can be obtained from the UNOLS Office.

The requirements for designating a vessel as a UNOLS vessel include:

a. The institution must operate the vessel for research purposes.

b. There must be evidence of three or more years of continuous operation of shared research facilities.

c.. The operating institution must be able to provide a projection of the vessel's use for the next year, including user charges.

d.. The vessel must successfully complete an appropriate safety inspection (either ABSTECH or INSURV) at the institution's expense.

e. The vessel must be capable of operation under the UNOLS Research Vessel Safety Standards, October 1989.

f. The vessel must be regularly available to all federally funded users.

g. The vessel must be maintained to accommodate the needs of the academic oceanographic programs.

h. The operating institution must be willing to participate fully in the UNOLS scheduling process. The operator will receive, acknowledge, and structure requests for ship-time use in consultation with the UNOLS Office.

i. The operating institution must be willing to submit cruise reports and cruise assessments according to UNOLS uniform practices.

j. The operating institution must adhere to cost accounting and performance standards according to UNOLS uniform procedures.

k. The operator institution must be capable of requesting the necessary funds to support operation of their vessels. UNOLS membership does not guarantee federal funding.

l. The operator institution must submit a written application to the UNOLS Office addressing all of the requirements listed above.

ELECTIONS TO MEMBERSHIP

Requests for designation of a vessel as a UNOLS vessel will be considered by the UNOLS Council upon receipt for evaluation of a written application by the operation institution. The application should address all requirements outlined in the previous section. Elections to membership will be held at a regular UNOLS meeting and require a majority vote of the Member Institutions present or by proxy if absent.

APPENDIX XII

SeaNet Update

Richard Findley

SeaNet - What is it?

- Method of providing INTERNET connectivity between the shore side INTERNET and the ship board LAN (local area network)
- Designed to be used with different physical links.
  - INMARSAT, Iridium, Satellite Cellular, Cellular

Hardware

- Uses off the shelf hardware
  - ABB NERA INMARSAT Saturn-B
    - Two voice channels
    - FAX
    - High speed 64 kbit ISDN line
  - SeaNet Comunications Node (SCN)
    - SparkStation 5

Software

- Uses Standard Software Protocol
  - TCP/IP
  - PPP
- Specialized routines
  - Standard-B I/O module was designed by Steve Lerner at WHOI

Background

- Funds for system provided by NSF
- Test Cruise
  - JGOFS, Process 6 aboard RV THOMPSON
  - Barney Balch Chief Scientist
  - Gulf of Oman
- Technical Support
  - WHOI -- Andy Maffei
  - UW -- Bill Martin, Mike Relander

Installation

- Installed October 1995 in Oman
  - Had some initial problems interfacing Saturn-B to ship's gyro, due to incomplete or incorrect documentation.
  - RS232 NEMA interface to gyro would be more straight forward if available.
  - Unable to install with minimum obstructions specified by NERA

Operations

- Generally system worked as advertised.
- Voice quality was acceptable, but not as good as Standard "A"
- High Speed Data (HSD) is more sensitive to physical obstructions than voice.
- Problems with antenna pointing into obstructions on some headings.

PPP and TCP/IP Connections

- With no obstructions, it worked very well.
- FTP, WWW, e-mail, telnet etc. worked "better than at home"
- Setup times on ISDN/PPP connection was on the order of 5-10 seconds (Standard-A takes much longer)

Standard-B Rates

- Voice
  - Ship-Shore $5.50/min.
  - Ship-Ship $11.00/min.
- HSD (64 kbit/sec ISDN)
  - Ship-Shore (peak) $17.50/min.
  - Ship-Shore (off peak) $10.50/min.

Example Transfer Rates (preliminary)

- Standard-A BLAST/US Robotics Sportster modem @9600 baud
  - Transfer speed = 593 bytes/ sec
    - $.0002/byte @ $7.00/min
- Standard-B FTP file transfers with HSD
  - Transfer speed compressed = 8000 bytes/sec
    - $.00005/byte@ $17.50/min , $.000035/byte@$10.50/min
  - Transfer speed no-compression =5000 bytes/sec
    - $.0001/byte@$17.50/min, $.00006/byte@$10.50/min
- In all cases, file is an 81K GIF satellite image

Results

- System is capable of providing high speed interactive INTERNET access at sea.
- Potential to save money
- Automation is not possible on THOMPSON at this time due to problem with antenna obstructions.
- System is portable, it could be installed on other UNOLS ships

Next Steps

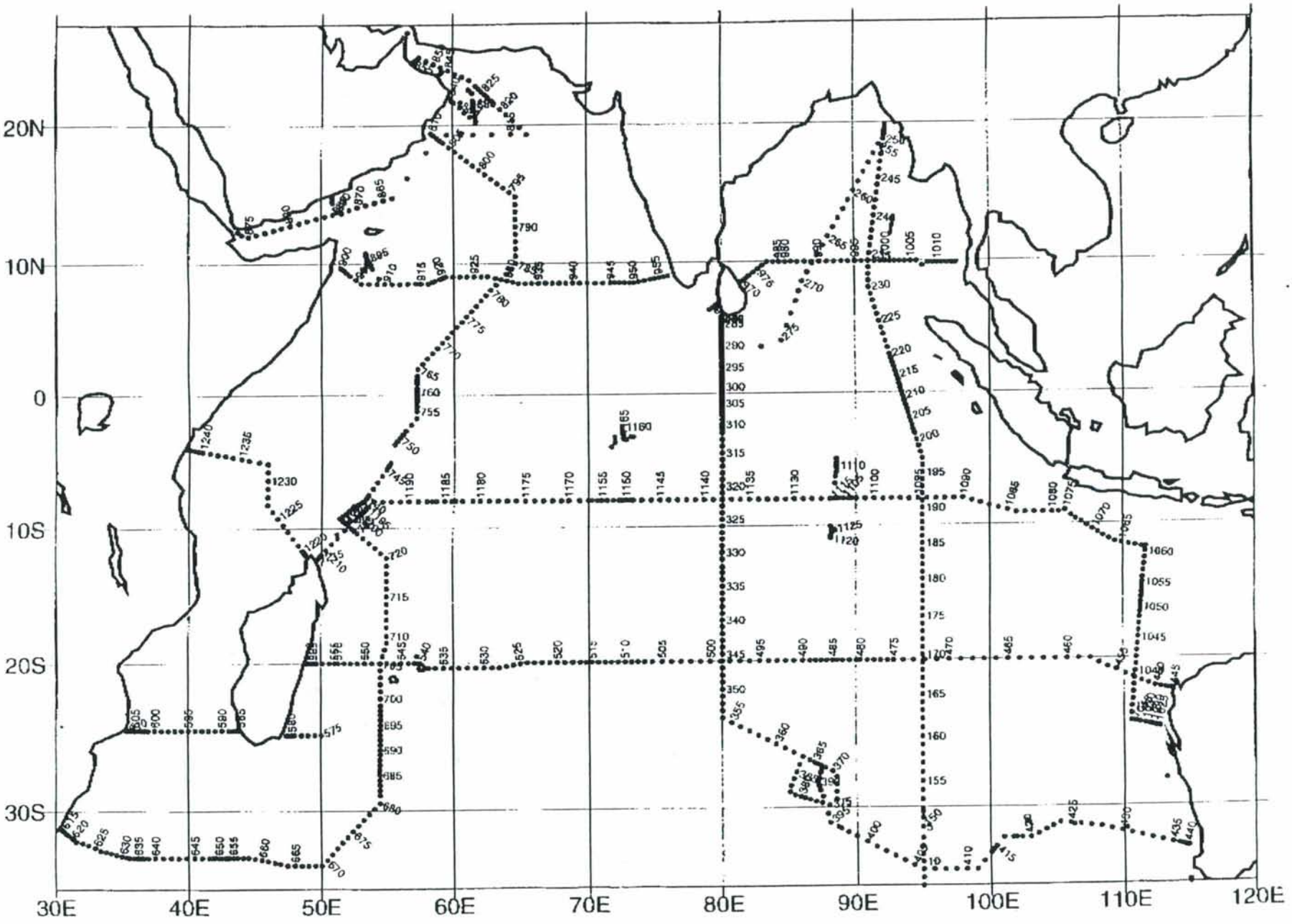
- Continue to work closely with other UNOLS ships, with further development of of standard-B interface to SCN.
- Identify a science cruise that requires high speed data requirements (Prefer THOMPSON).
- Identify other UNOLS institutions planning upgrades to INMARSAT-B, to assist in data considerations

APPENDIX XIII

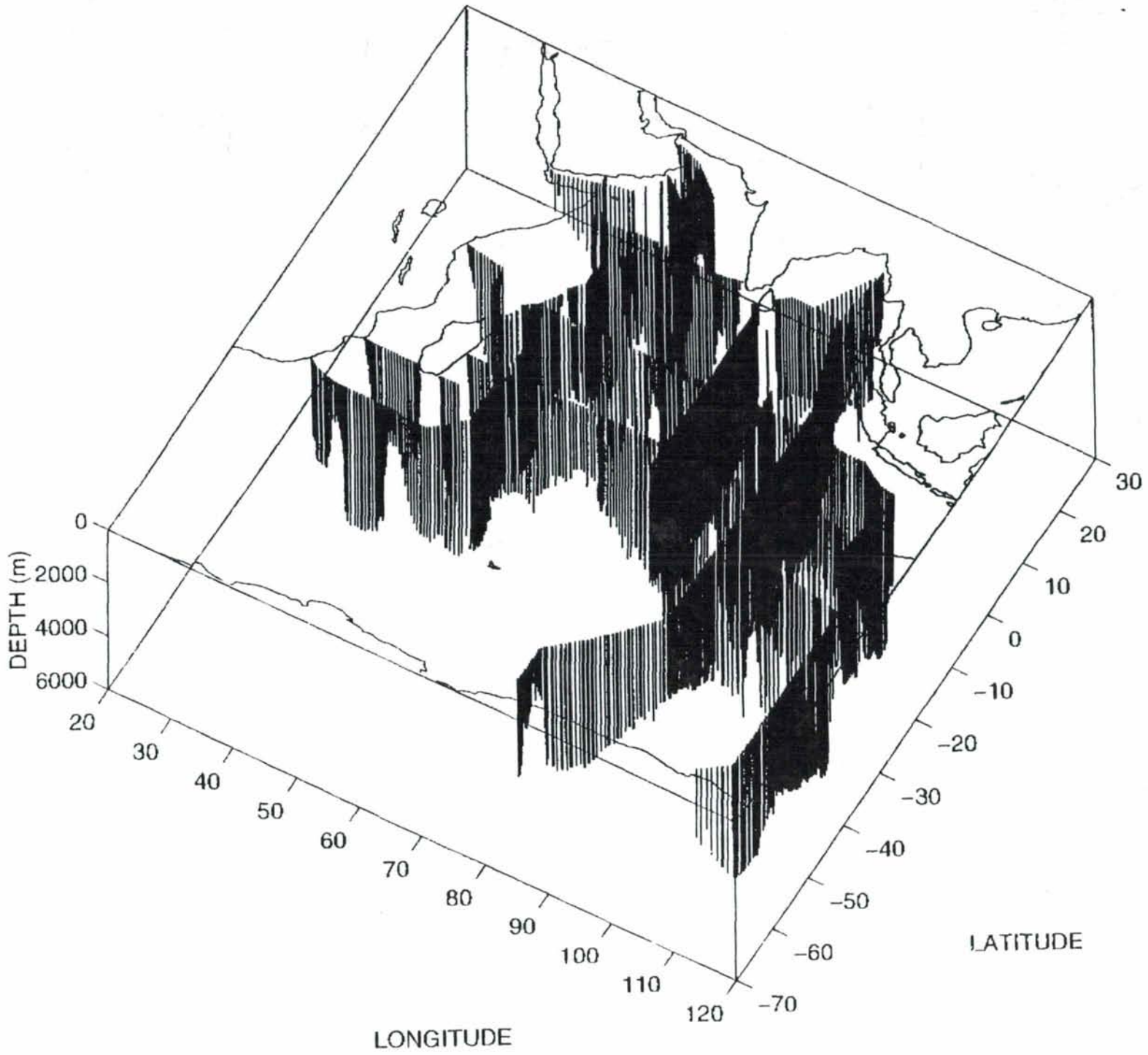
R/V Knorr

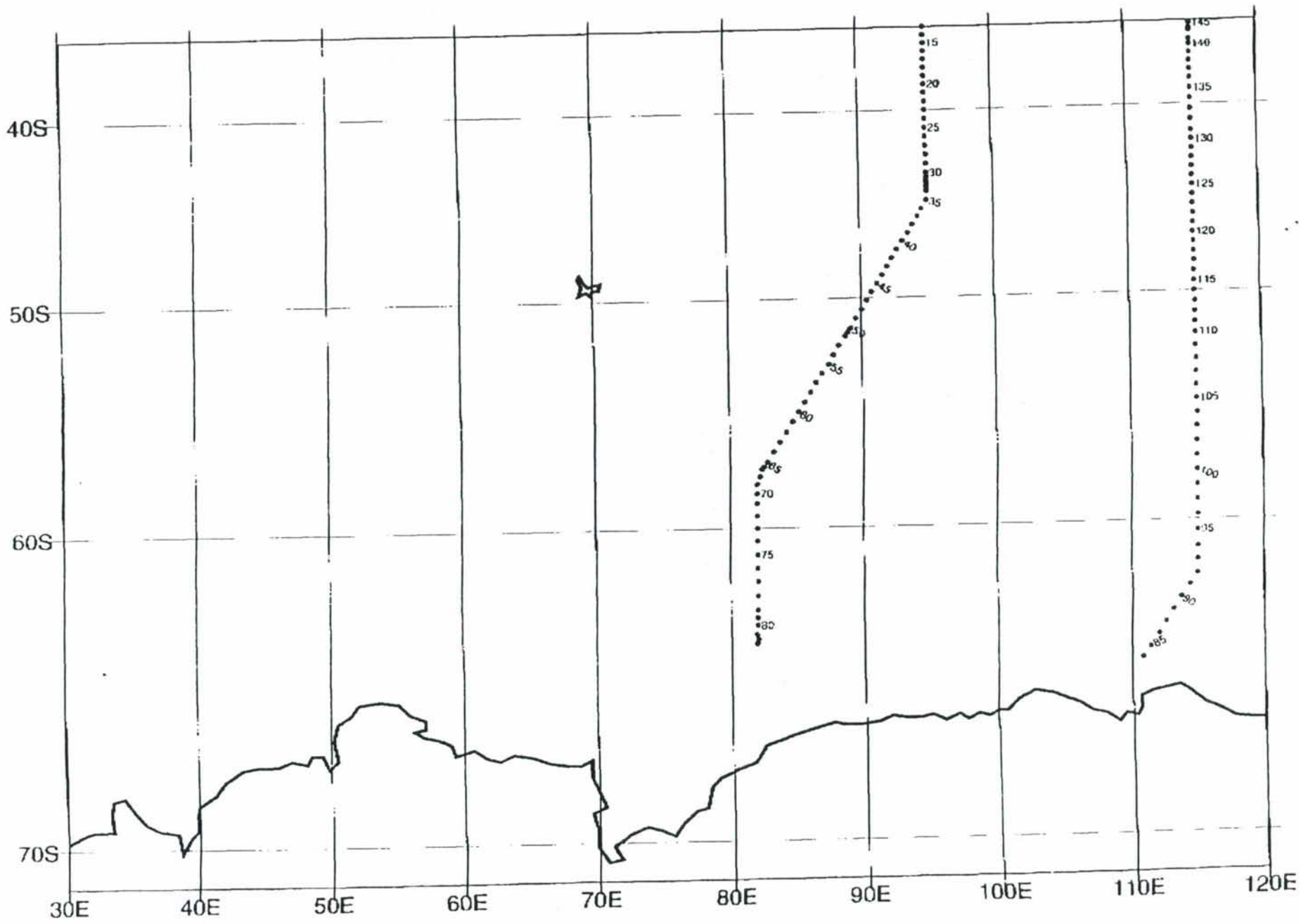
WOCE-WHP Indian Ocean Expedition
(December 1994 - January 1996)
Voyage Statistics

Miles Steamed	-	50,531
Total Days at Sea	-	367
Days on Station	-	148.5
Number of Stations	-	1,244
Number of Bottles Tripped	-	39,619
Water Samples Drawn	-	>400,000
Total Science Party	-	273
Universities/Organizations	-	26
Nations Participating	-	7
Foreign Clearances	-	21 Nations
Foreign Observers	-	21 from 9 Countries


20N
10N
0
10S
20S
30S
30E
40E
50E
60E
70E
80E
90E
100E
110E
120E

R/V KNORR WOCE INDIAN OCEAN EXPEDITION: 1244 STATIONS OCCUPIED AND 39619 NISKIN BOTTLES FIRED




40S
50S
60S
70S
30E
40E
50E
60E
70E
80E
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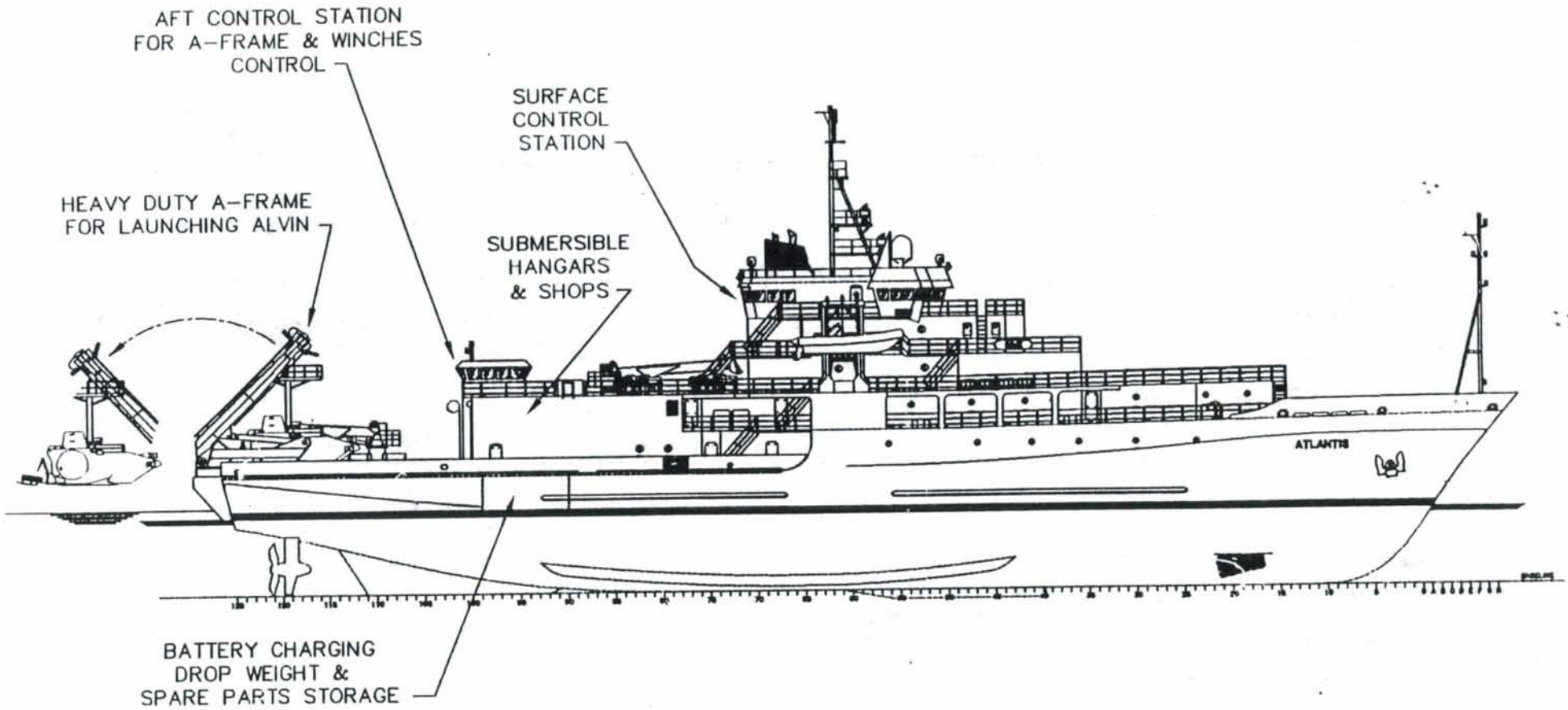
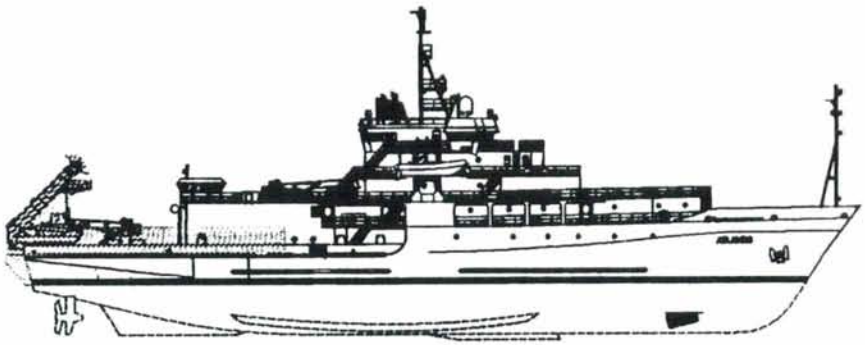
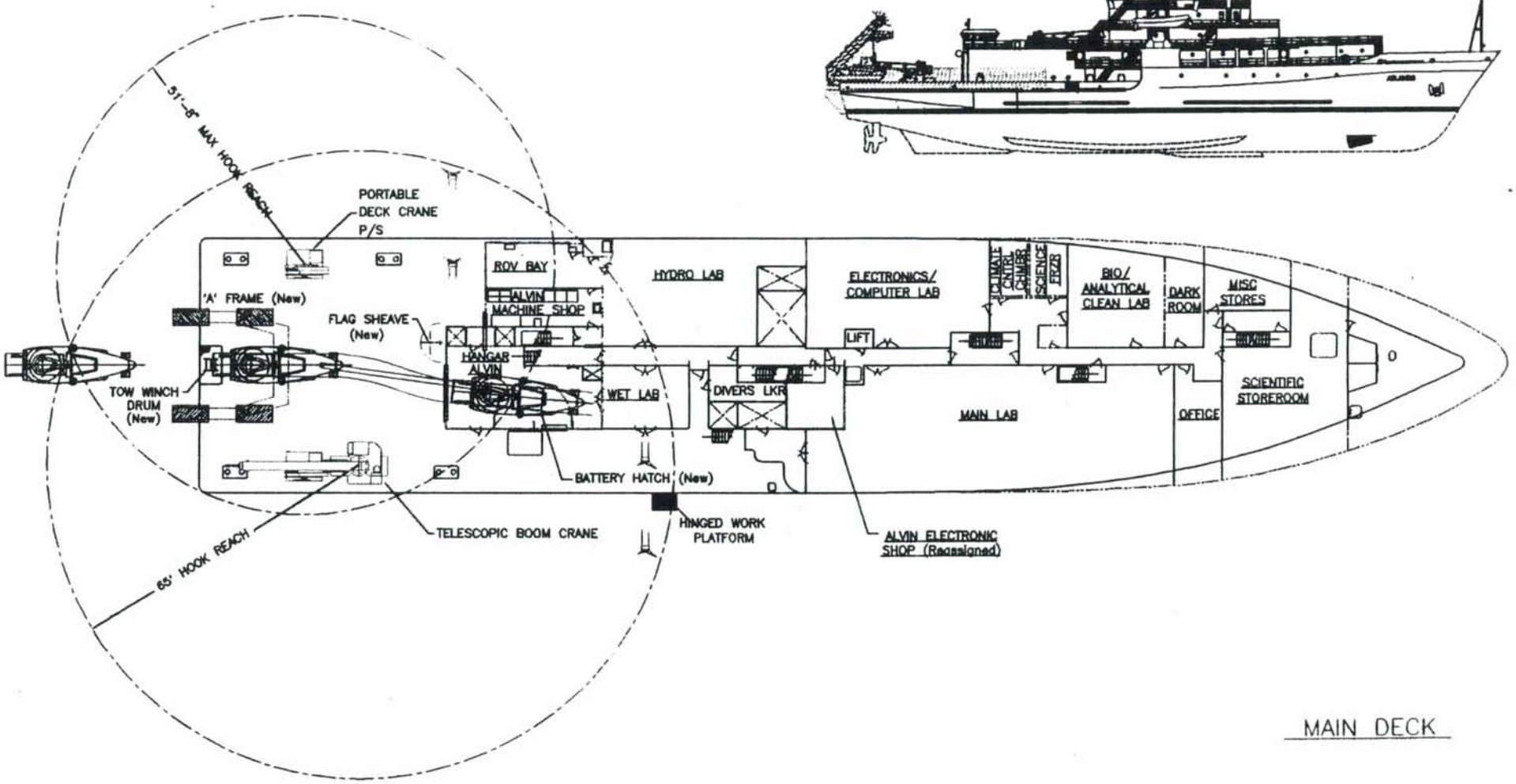
100E
110E
120E

APPENDIX XIV

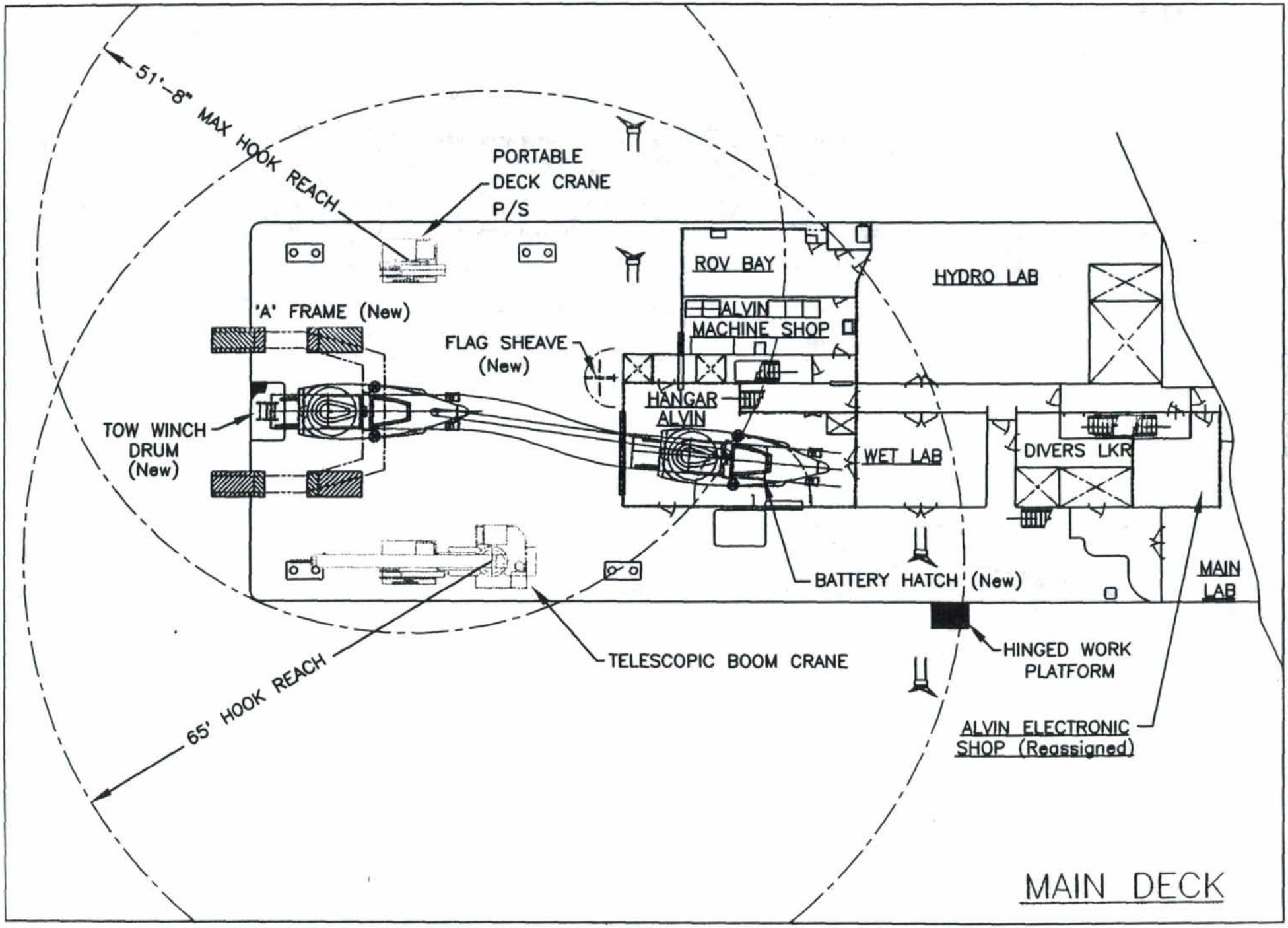


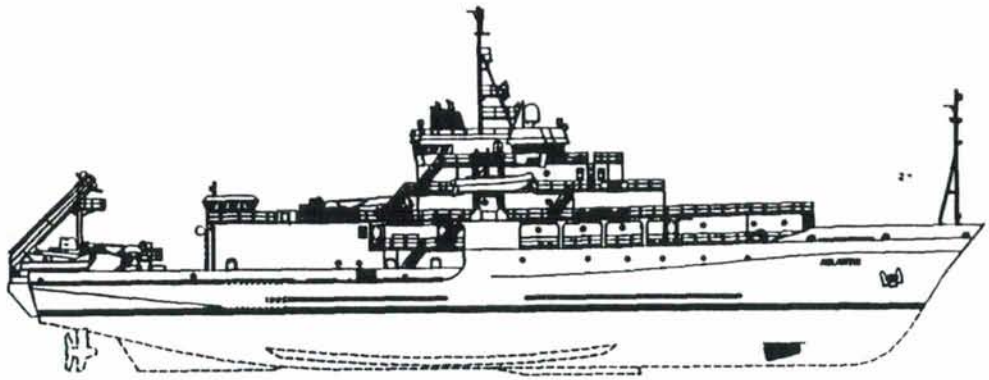
ATLANTIS OUTBOARD PROFILE STARBOARD

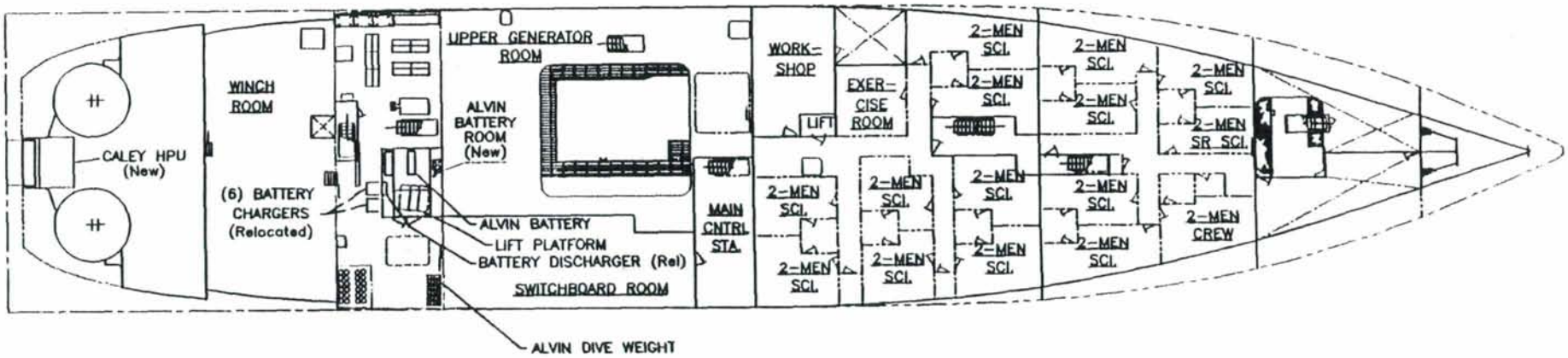



51'-6" MAX HOOK REACH
PORTABLE
DECK CRANE
P/S
'A' FRAME (New)
FLAG SHEAVE
(New)
TOW WINCH
DRUM
(New)
ROV BAY
ALVIN
MACHINE SHOP
HANGAR
ALVIN
WET LAB
HYDRO LAB
DIVERS LKR
ELECTRONICS/
COMPUTER LAB
LIFT
CLIMATE
CONTROL
CHAMBER
SCIENCE
FREEZER
BIO/
ANALYTICAL
CLEAN LAB
DARK
ROOM
MISC
STORES
SCIENTIFIC
STOREROOM
OFFICE
MAIN LAB
BATTERY HATCH (New)
HINGED WORK
PLATFORM
TELESCOPIC BOOM CRANE
65' HOOK REACH
ALVIN ELECTRONIC
SHOP (Reassigned)

MAIN DECK


51'-8" MAX HOOK REACH
PORTABLE
DECK CRANE
P/S
'A' FRAME (New)
FLAG SHEAVE
(New)
TOW WINCH
DRUM
(New)
ROV BAY
HYDRO LAB
ALVIN
MACHINE SHOP
HANGAR
ALVIN
WET LAB
DIVERS LKR
MAIN
LAB
BATTERY HATCH (New)
TELESCOPIC BOOM CRANE
HINGED WORK
PLATFORM
ALVIN ELECTRONIC
SHOP (Reassigned)
65' HOOK REACH
MAIN DECK





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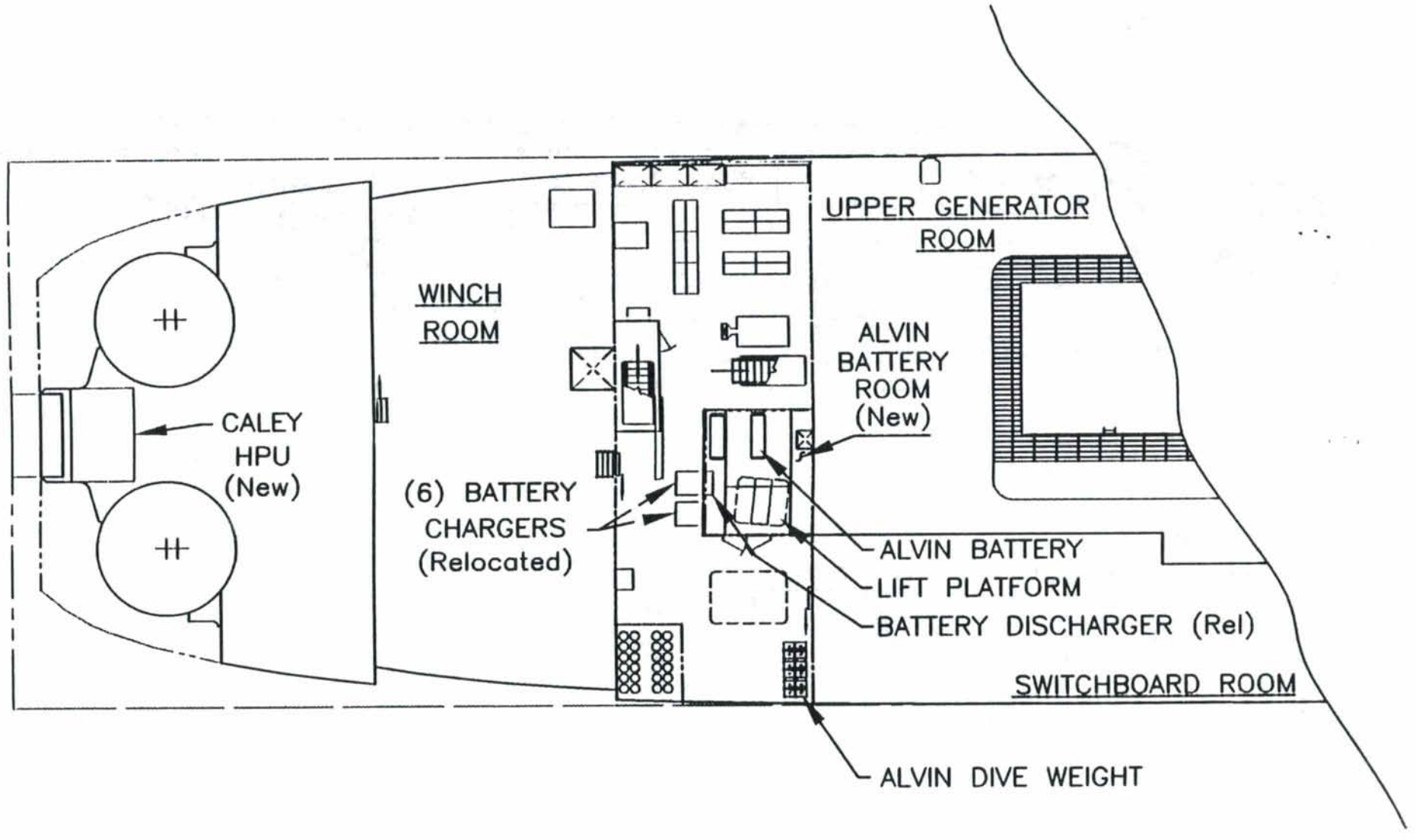

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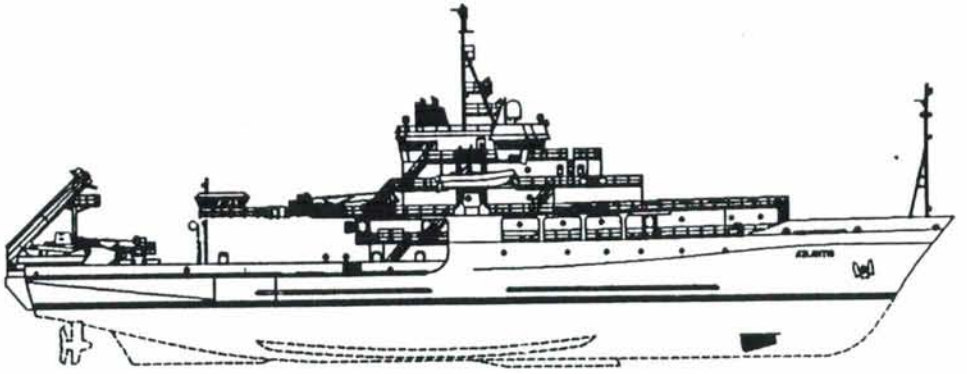

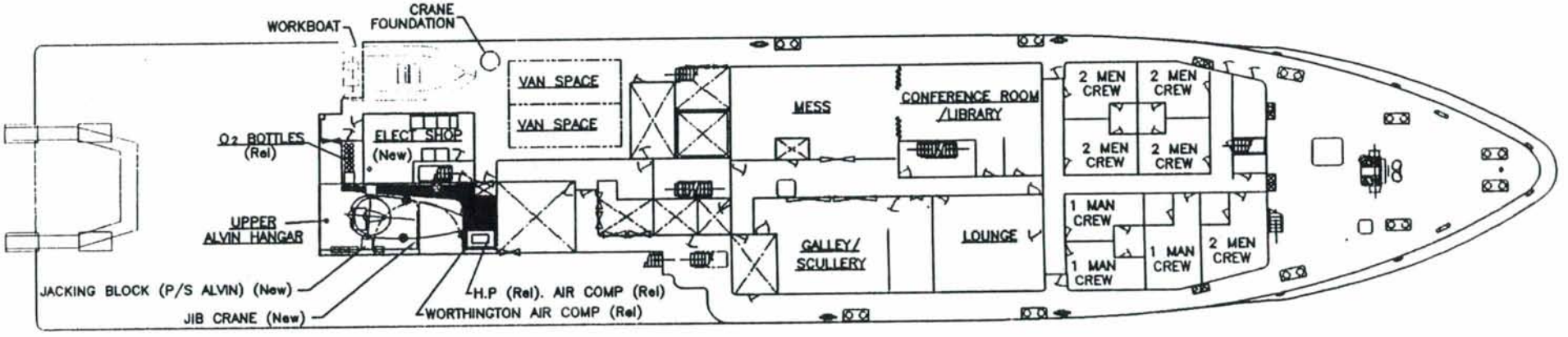

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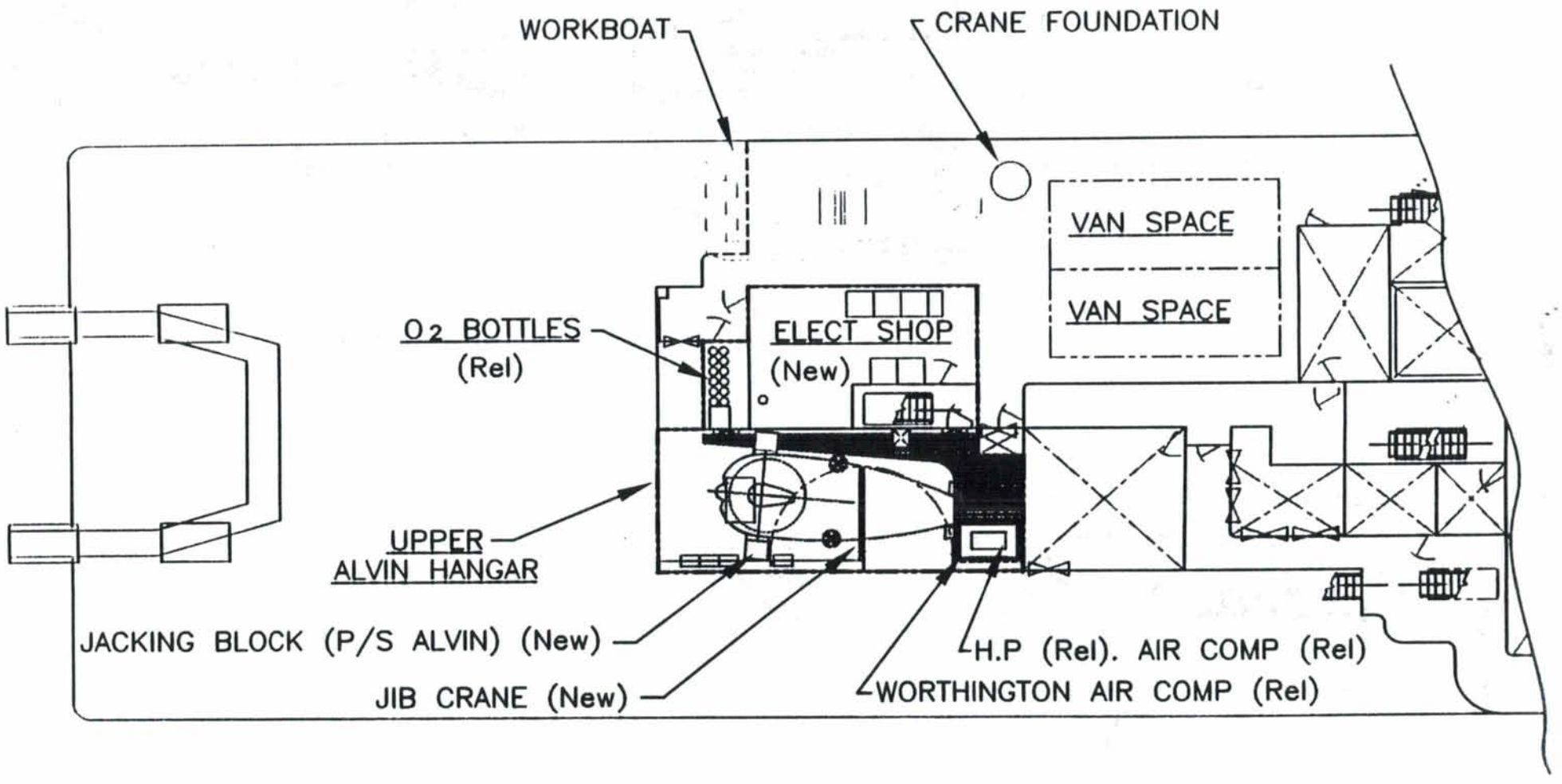

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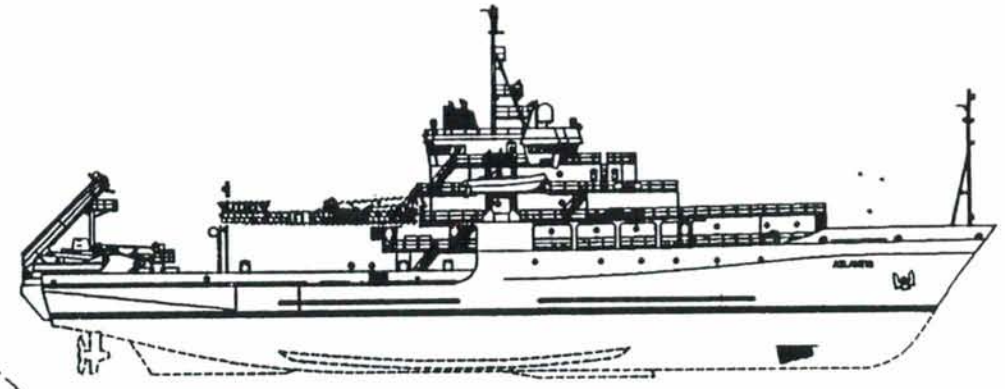
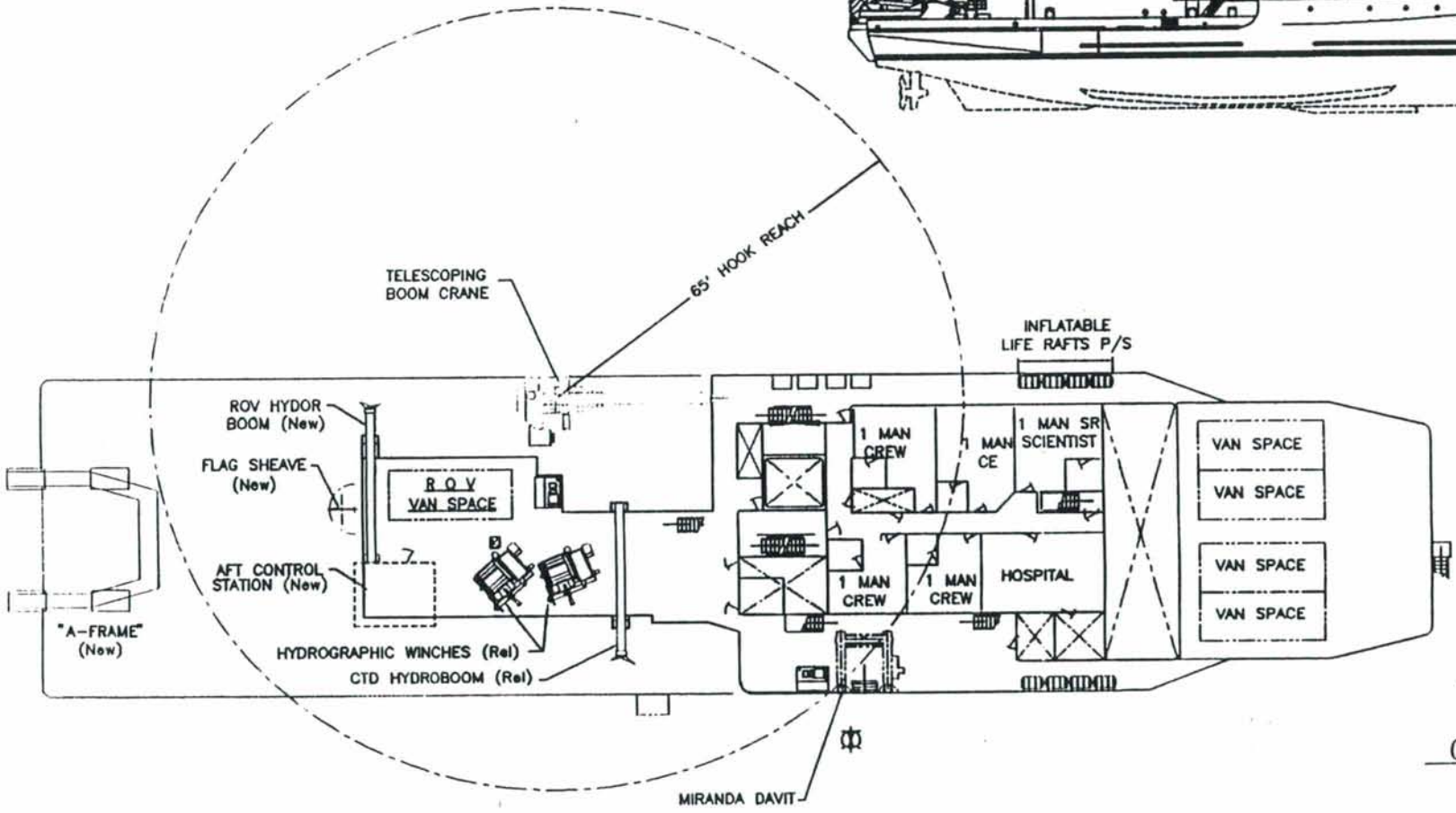
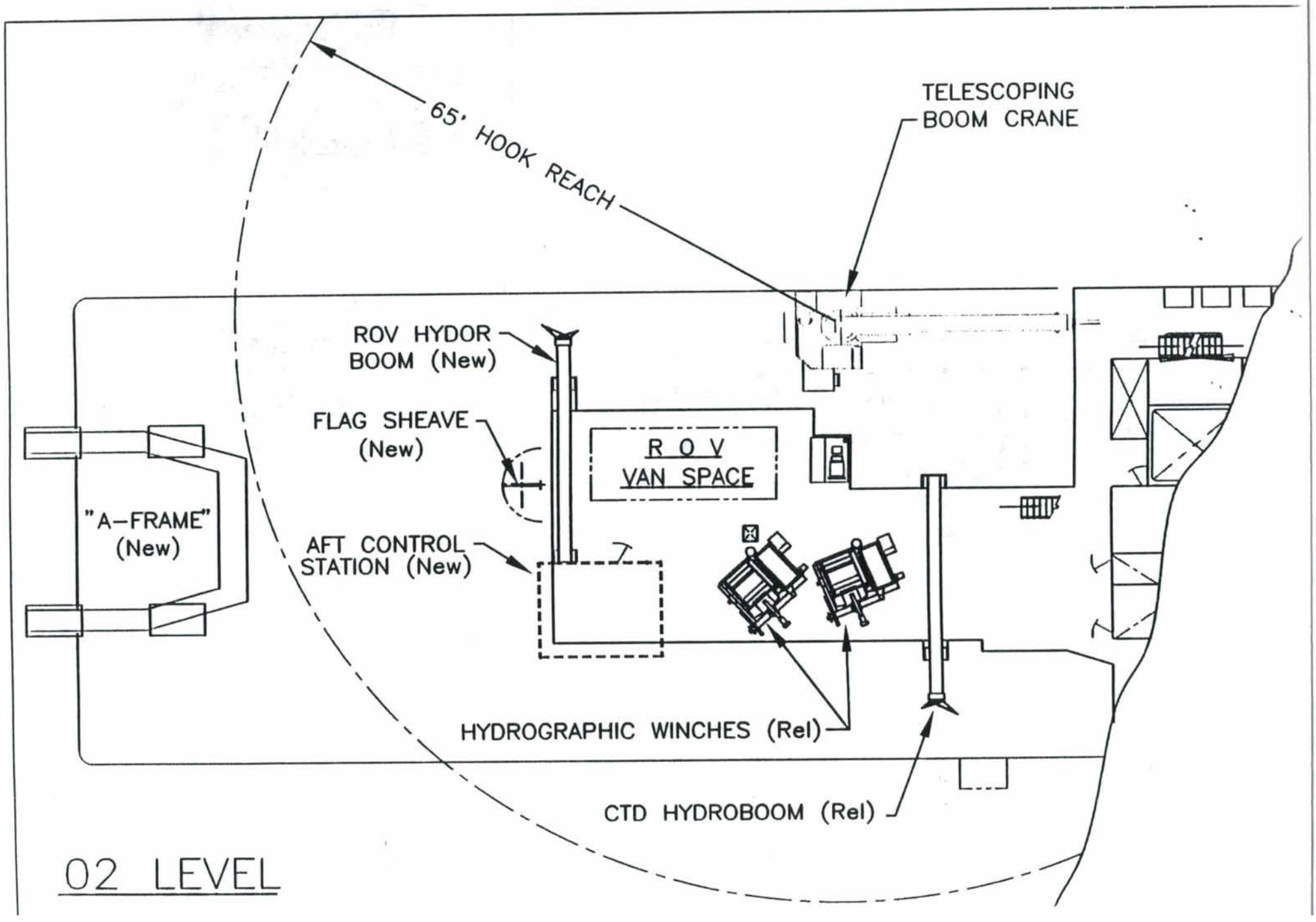
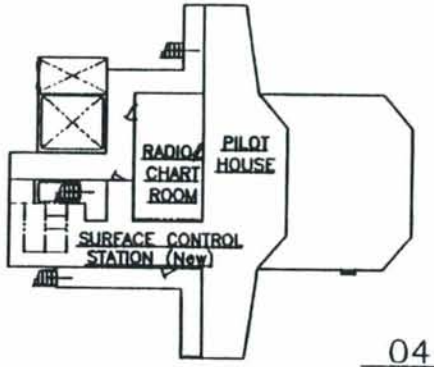



TELESCOPING BOOM CRANE
65' HOOK REACH
INFLATABLE LIFE RAFTS P/S
ROV HYDOR BOOM (New)
FLAG SHEAVE (New)
R O V VAN SPACE
AFT CONTROL STATION (New)
"A-FRAME" (New)
HYDROGRAPHIC WINCHES (Rel)
CTD HYDROBOOM (Rel)
1 MAN CREW
1 MAN CE
1 MAN SR SCIENTIST
1 MAN CREW
1 MAN CREW
HOSPITAL
VAN SPACE
VAN SPACE
VAN SPACE
VAN SPACE
MIRANDA DAVIT

02 LEVEL


65' HOOK REACH
TELESCOPING
BOOM CRANE
ROV HYDOR
BOOM (New)
FLAG SHEAVE
(New)
R O V
VAN SPACE
"A-FRAME"
(New)
AFT CONTROL
STATION (New)
HYDROGRAPHIC WINCHES (Rel)
CTD HYDROBOOM (Rel)

02 LEVEL



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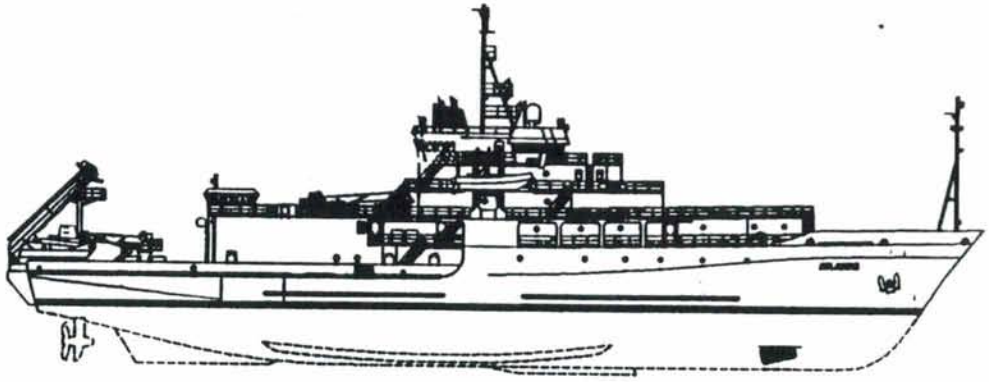

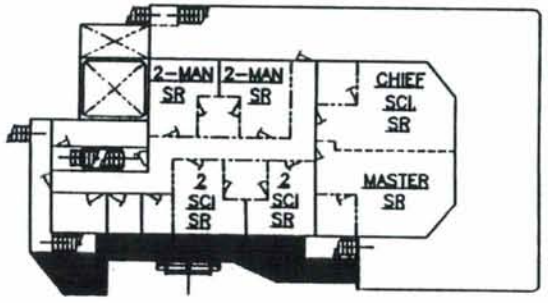

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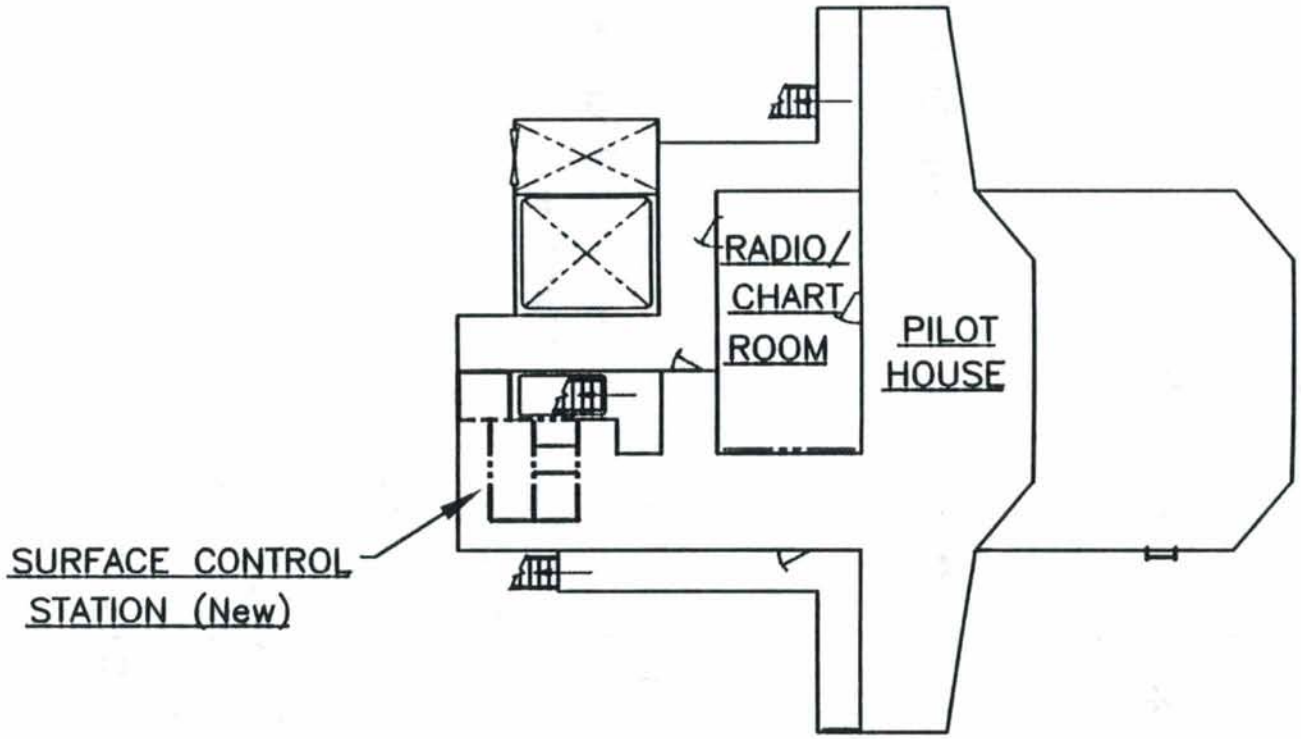


04 LEVEL

Other Equipment on *Atlantis*

Swath Bathymetry System / SeaBeam 2112

Bottom Profilers / 12 kHz, 3.5 kHz

Acoustic Positioning / Navetronix

ADCP / 150 kHz

2 Air Compressor / Price A-300

Dynamic Positioning System

IMET

Attitude Sensors (Roll, Pitch, Yaw) / ASHTEC + Hippy

P-Code GPS

Doppler Speed Log

Winches

- **Markey DESH-5**
  10,000 m .322EM or 1/4" Hydro-wire
- **Traction with Dual Storage Reels**
  - **Fiber Optic**
  - **EM**
  - **9/16" Trawl wire**

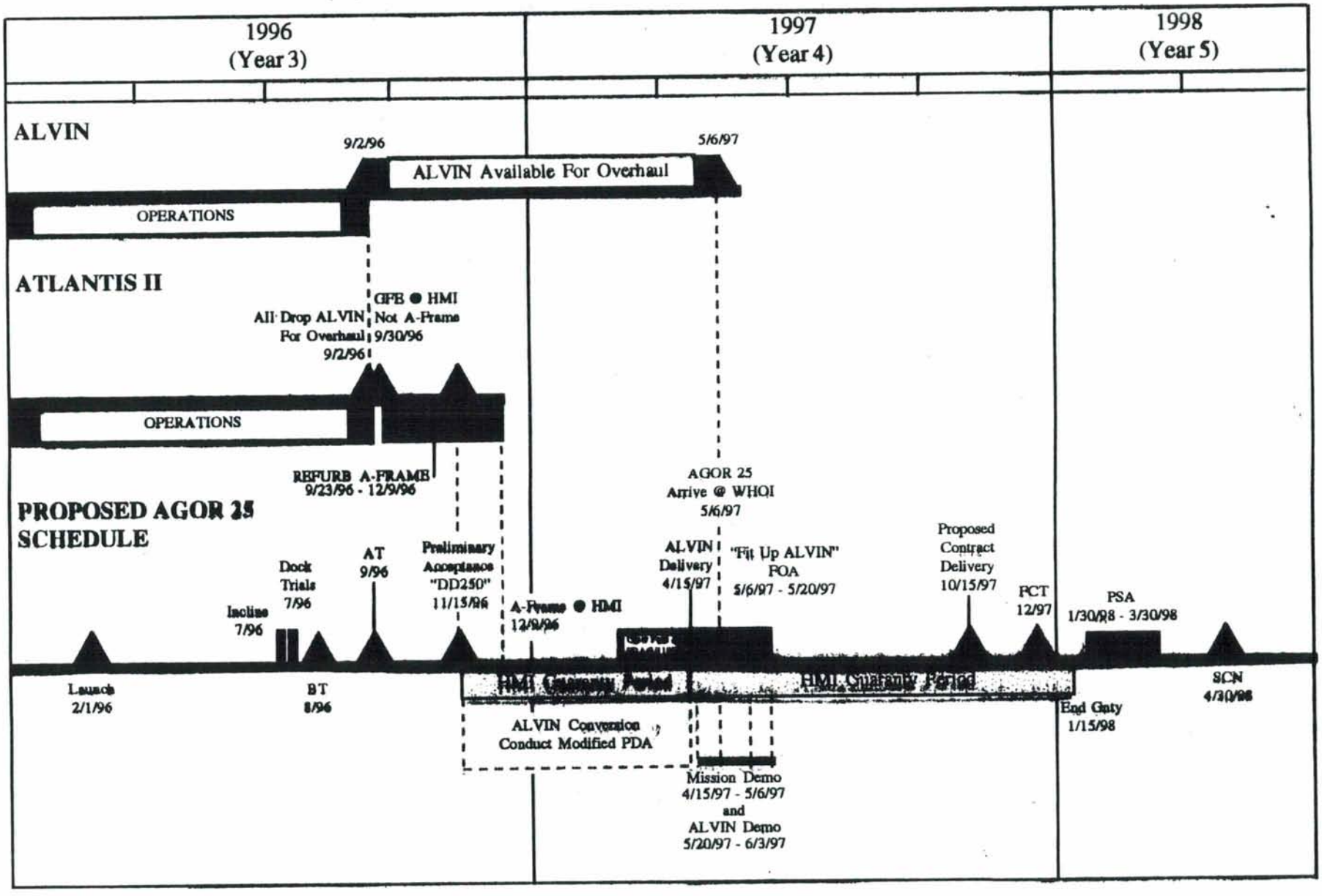
Cranes

- **2 Telescopic Cranes**
  42,000 lb. lift capacity
- **2 Portable "Hiabs"**
  2,200 lb. lift capacity

	Lulu	*Atlantis II*	*Knorr*	AGOR-25 *Atlantis*
LOA	**105 ft.**	**210 ft.**	**279 ft.**	**274 ft.**
Beam	**48 ft.**	**44 ft.**	**46 ft.**	**52.5 ft.**
Displacement	**480 Ltons**	**2,300 Ltons**	**2,685 Ltons**	**3,250 LTons**
Crew	**9**	**22**	**22**	**22**
Science:				
DSV/Tech	**9**	**9**	**13**	**13**
Party	**8**	**19**	**21**	**24**
Generators	**150 kw**	**600 kw**	**1,780 kw**	**2,145 kw**
Cruising Speed	**6.5 kts**	**10.5 kts**	**12 kts**	**12 kts**
Endurance	**20 days**	**30 days**	**60 days**	**60 days**
Range	**2,000 mi.**	**9,000 mi.**	**12,000 mi.**	**11,300 mi.**
Labs	**One Van**	**4 labs** **1,031 sq. ft.**	**6 labs** **1,981 sq. ft.**	**6 labs** **3,890 sq. ft.**

20 Nov 95

AGOR 25/ATLANTIS II/ALVIN Schedule



▲ - MILESTONES ▲ - TESTS & TRIALS/OPERATIONS ■ - YARD PERIODS

ATLANTIS

Schedule of Key Events

• ***Atlantis II*** **out of service**	**Sept. '96**
• ***Alvin*** **Overhaul**	**Sept.'96 - Apr.'97**
• ***Atlantis*** **(AGOR-25)**	
⇒Launch Date	**1 Feb. 1996**
⇒Conversion Complete	**April '97**
⇒Arrive WHOI	**5/6/97**
⇒DSOG Demo/Trials	**5/20/97 - 6/3/97**
⇒Available for Science (contiguous to USA)	**June - Dec. '97**
⇒Available for Science (unlimited)	**> Feb. '98**

APPENDIX XV

1995 Telecommunications Bill

"Automated Ship Distress and Safety Systems"

"Notwithstanding any provision of the Communication 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 Distress and Safety System provisions of the Safety of Life at Seas Convention shall not be required to be equipped with a radio telegraphy station operated by one or more radio officers or operators. This section shall take effect for each vessel upon a determination by the United States Coast Guard that such vessel has the equipment required to implement the Global Maritime Distress and Safety System installed and operating in good working condition."

APPENDIX XVI

Defense Authorization Conference Report

SEC. 279 GLOBAL POSITIONING SYSTEM.

a) CONDITIONAL PROHIBITION ON USE OF SELECTIVE AVAILABILITY. --- Except as provided in subsection (b), after May 1, 1996, the Secretary of Defense may not (through use of the feature known as "selective availability") deny access of non-Department of Defense users to the full capabilities of the Global Positioning System.

b) PLAN. --- Subsection (a) shall cease to apply upon submission by the Secretary of Defense to the Committee on Armed Services of the Senate and the Committee on National Security of the House of Representatives of a plan for enhancement of the Global Positioning System that provides for:

1) development and acquisition of effective capabilities to deny hostile military forces the ability to use the Global Positioning System without hindering the ability of United States military forces and civil users to have access to and use of the system, together with a specific date by which those capabilities could be operational; and

2) development and acquisition of receivers for the Global Positioning System and other techniques for weapons and weapon systems that provide substantially improved resistance to jamming and other forms of electronic interference or disruption, together with a specific date by which those receivers and other techniques could be operational with United States military forces.