UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

RESEARCH VESSEL OPERATORS COUNCIL

Summary Report
of the
1987 Annual Meeting

Sessions held at
New England Center
University of New Hampshire
Durham, NH
12 - 14 October 1987

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V Copy of Gene Allmindinger's draft of an updated Chapter 4-Stability he is recommending for inclusion in the revised UNOLS Safety Standards

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Summary Report of the 1987 Annual RVOC Meeting

New England Center

University of New Hampshire

Durham, NH

12 - 14 October 1987

WELCOMING REMARKS

Dr. Gene Allmindinger; Dr. Jay Grimes, Director, Institute Marine Science - Ocean Engineering; and Dr. James Morrison, Associate Director of Research, University of New Hampshire welcomed the RVOC to the New England Center and the University.

The meeting was called to order by Chairperson Jack Bash, Marine Superintendent University of Rhode Island. The meeting followed the agenda outlined in Appendix I. The registered attendees are listed in Appendix II.

OLD BUSINESS

A motion was made, seconded and passed to accept the minutes of the 1986 meeting. The following items of old business were discussed.

Marine Safety Reporting System. The RVOC members were again surveyed as to the extent of their use of the Marine Safety Reporting System.

RVOC Safety Standards Committee. Jack Bash announced that due to other commitments, Tex Treadwell was not able to attend the meeting, and that, in view of Tex's retirement a new chairman will be needed. Bill Coste volunteered to take the position; with the committee reconstituted as indicated in Appendix VII.

Marine Fire Fighting Video Tapes. Bill Barbee announced that he expects the tapes to be delivered in early December 1987.

Winch Manual Update. Wes Lovaas announced that the updated winch manual will be ready next spring. He believes that 500 copies will be printed. Bill Barbee and Chip Kennedy asked for a copy of the current issue from anyone who has a spare.

RVOC Newsletter. Jim Williams indicated that he is planning to publish two issues per year. Input needed.

Accident Reporting. Different methods of reporting were discussed, with the intent to alert members to potential accident problems. Bill Barbee recommended using Telemail. Dave Monaghan indicated that MAS will soon have a mailbox.

Marine Technicians Committee. Dolly Dieter indicated that she and John Martin are working on a new survey form with Bill Hahn. She expects that the form will be in the mail after the first of the year, with the goal to:

1. Establish the reasons for the wide variety of charges.
2. Identify the hidden (unknown) charges
3. Identify a standard of what to expect from Marine Technicians

Ship Security Survey and Training. Bill Barbee described the program that uses the services of Prospective Inc. Four or five ships, deploying to troubled areas, are enrolled at this time, with any future expansion dependent on feedback from those currently participating. John McMillan asked for feedback from each participant as soon as they complete the training phase.

NEW BUSINESS

AGOR 23. Bob Dinsmore briefed the meeting on the status of both the AGOR 23 and AGOR 24 Navy research shipbuilding programs. See Appendices III and IV. Concerning the AGOR 24 it appears that the Navy wants to use a one design SWATH hull for three different applications, one of which would be a general purpose oceanographic research ship. It was noted by several members of the meeting that the

hull design depicted in Appendix IV would prove very difficult for general oceanographic work due to the configuration of the hull, and the location of the propellors.

Customs Material/Hazardous Material. No significant problems noted by members with the exception of an incident reported by John Dudley. John reported that Singapore authorities required that replacement life rafts sent to Conrad be delivered to the ship from the terminal under armed escort.

Stability Update. Gene Allmindinger discussed his draft update to the stability chapter in the Safety Standards. See Appendix V.

Winch and Wire Update. Gene Olson discussed ongoing problems experienced with Rochester .322 cable, resulting in a switch to Vector. Bill Jeffers and Jim Williams reported that they each have had one incident of conductivity problems with three conductor, .322 cable manufactured by Rochester since 1986.

KEVLAR Update. Jack Bash described the growing pains with the jacketing of the new KEVLAR cable. He indicated that they have finally achieved a jacket that meets specifications through the efforts of the Simplex Company. Jack reiterated the weight savings gained by using KEVLAR which weighs just one twentieth the weight of steel in water. Jack also said that data available to him indicates that working the cable at no more than 30% of breaking strength provides almost infinite working life. Termination still requires special treatment.

Communications Guide - Addresses. Ken Palfrey proposed that a UNOLS communications guide be published, to either be incorporated in other fleet publication or alone. Bill Barbee indicated that the Navy guide will no longer be published, and that he would be glad to promulgate a book containing this information through his UNOLS office. Bill Barbee will work with Ken Palfrey on design format for inclusion of this information in the UNOLS information book. All members were asked to fill in the blank form at Appendix VI and forward it to Ken Palfrey.

AGENCY REPRESENTATIVES REPORTS

National Science Foundation. John McMillan, NSF, reviewed the

anticipated funding status for 1988. John also indicated that four NSF subsidized studies are ongoing and asked that members provide prompt and accurate input when asked.

Office of Naval Research. Keith Kalaum was not able to attend the meeting due to other commitments.

Report from UNOLS. UNOLS Executive Secretary, Bill Barbee, advised that the Advisory Council is reviewing two issues - license for use and transport of radioactive material, and solid waste disposal on UNOLS ships. Another item mentioned by Bill of interest to Advisory Council members is an automated ship request scheduling data base.

U.S. State Department - Update on Foreign Clearances. Tom Cocke reminded the meeting that a foreign clearance for scientific work is the responsibility of the ship operator. He indicated that there is no such thing as a routine clearance and that meeting the lead time requirement is becoming ever more critical. In some cases the six months lead time requirement is growing to seven. Current problem countries for clearances are Mexico, Indonesia, Spain, Ecuador, Venezuela and France.

Tom also said that clearances should be requested to meet the lead time when funding is not yet firm. Bill Barbee suggested the possibility of provisional clearances. John McMillan emphasized the importance of using the UNOLS clearance Handbook and sees a need to give it more visibility to the scientific community.

SPECIAL REPORTS

Fleet Improvement Committee (FIC) Report. Bob Dinsmore in the absence of Tex Treadwell briefed the meeting on FIC matters. The makeup of the committee is as follows:

> Chairman - Dr. Worth Nowlin
> Exec. Dir. - Capt. Tex Treadwell
> Other Members include: Capt. Bob Dinsmore, Dr. Bruce Robison, Dr. Don Gorsline, Dr. Fred Spiess, Dr. Marc Langseth, Dr. Dick Barber and Dr. Jim Murray.

Bob indicated that one of the first orders of business for the FIC is to produce Science Mission requirements for the following categories of ships:

Small
Ice Capable
Swath

In addition the FIC intends to undertake concept design studies for the large ship, for the ice capable ship, an intermediate class Swath and a stable, Deep Ocean Platform.

Bob Dinsmore discussed the KNORR-MELVILLE re-propulsion and lengthening project, providing an update on the schedule for the two ships. He indicated that KNORR will proceed first in the fall of 1988 with MELVILLE following in 1989.

Crew Pay Structure. Bill Coste described the procedures he used in his survey of the pay structures utilized by UNOLS ship operators and the criteria he used to compile the data. See Appendix VIII. No specific conclusions were made. However, Bill noted that one item of interest is that pay structures were not necessarily consistent throughout each ship. For example, a ship having relatively high pay for licensed crewmembers was relatively low paying for unlicensed crewman.

Canadian Oceanography. John Parsons, Bedford Institute, described the Canadian Oceanographic effort. He indicated that funding is lump sum for an inventory of ships that includes: 60 considered minor; 6 in the 150' - 200' class; and 8 that are 200' or above. Of these, 11 have ice capability. He also indicated that the three major Canadian operators of oceanographic ships are: the military; the Canadian Coast Guard; and the Department of Fisheries and Oceans.

Medical Advisory Service Studies. Dave Monaghan reviewed the growth of the MAS Program and the goal of the ongoing survey program. Dave also discussed the concerns over the maintenance of good health, throughout the maritime industry and indicated the "Ship Committees" agenda for this year will include:

Medical Advice at Sea
Medical Chest
Training
Access to Shore Care
Physical Standards

Dr. Tom Hall briefed the attendees on the process of making a shipboard diagnosis of illness, by remote means (radio). He also provided his recommendation as to what should be included in an entry level

physical examination:

EKG (C1-40+)	Chest X-Ray
SMAC	Audiogram
Hematology	Tonometry (C1-40+)
Serology	Spirometry
HCG (Preg)	Dental
Urinalysis	Color Perception
Urinary Drug Screen	Visual Acuity (Gross)
Immunizations	

Tom also indicated that anyone taking injectable medications should not be at sea and that pregnancy should also be disqualifying.

Bill Coste suggested the adoption of a physical qualification standard for UNOLS ships.

MARPOL Report. Captain George Ireland briefed the attendees on the 1973 MARPOL convention and the 1978 Protocol, (Prevention of Pollution at Sea) which includes five annexes-oil-hazardous materials-chemicals-sewage and garbage. See Appendix IX. To emphasize what some companies are doing, he indicated that one ship operator has instructed their chandlers that they will not accept stores packaged in plastics. In addition, George Ireland discussed port security cards which is a requirement slowly being implemented by the USCG, for members of the maritime industry. See Appendix X.

INDUSTRY - NEW EQUIPMENT

Doppler Current Profiler. Mike Chapman described the additional use of Doppler Acoustic Profilers as navigational speed logs and the attempts by RD Instruments to make this equipment more useful to both the scientific party and the bridge.

Integrated Navigation Systems. Mike Higgins from Eastport International discussed his companies involvement with integrated navigation systems and the ever increasing importance of data management to oceanographic ships:

Improved correlation of ship and scientific data
Precision piloting/tracking
Position logging
Scientific date logging

Ship's system monitoring

Mike Higgins also described methods of networking shipboard processors and computers in the data management process.

Mike Chapman recommended that a standardized UNOLS approach be taken, with common equipment and all operators/users knowledgeable of capabilities for data management throughout the fleet.

Dynamic Positioning System. David Hackney described the dynamic positioning system, manufactured by the companies he represents and their modular approach that enables an operator to configure the number of components to just what is needed in a specific ship to accomplish a specific steering, tracking or positioning function. Appendix XI.

Electronic Mapping. Bill Hayes provided an update on what is happening in the maritime world with electronic mapping and described what he believes we can expect in the future.

RISK MANAGEMENT

Update on Maritime Law. Dennis Nixon provided a general update to his presentation of last year and alerted attendees to a recent case where unseaworthiness was found against a fishing boat for not having survival suits onboard even though not required for the boat, by law.

As indicated in Appendix XIII the Supreme Court has recently ruled that state governments are immune from Jones Act injury suits filed in Federal Court, when crewmen are state employees.

Although OSHA had no jurisdiction they have been included in litigation to establish sound/hearing standards.

Dennis provided his opinion on policies allowing alcohol onboard ship and the stand taken by a fishing fleet group on this issue to enhance their insurance posture. He also reminded his audience that risk management includes identification and evaluation of hazards and the identification of the most logical means of response. He also recommended we review the manual published by the Northwest Fisherman's Group.

Marine Insurance. Dennis Nixon explained the different methods used by fishing boat owners and ship operators to reduce insurance premiums. Since 1975 there has been a 20% increase in maritime insurance pools in the

United States. The 1975 UNOLS study on insurance within the fleet recommended a UNOLS pool and Dennis believes the need is even greater today.

Dolly Dieter will be updating the tables found in the 1975 report and will be asking RVOC members for the following information, by 1 December 1987:

Claims handled during the past 10 years
Worker's Comp
Hull
All others
How are diving and explosives covered in each policy

Dolly suggested that members check into their General Liability policy to make sure they do not contain aviation or marine risk exclusions.

Liability Release Forms. Bill Barbee reported that he is still compiling information on the Liability Release Forms. So far he has found that:

Most institutions have something.
Wide variety.

Ship lay up procedure letter workshop. Jack Bash presented the strawman letter, attached as Appendix XII, to the members and explained that it was composed during a meeting on the subject by Bash, Palfrey, Hutchinson, Jeffers and Williams. The input was requested by the UNOLS Chairman, George Keller. Jack went on to say that the small ships like Ridgely Warfield were exempted. Jack also indicated that the formula contained in the letter was applied at the ship scheduling meeting in July. After a relatively short discussion the letter was approved by unanimous vote of the RVOC members for presentation to the chairman of UNOLS.

Wrap up of business meeting - 1988 RVOC meeting topics. To include:

Physical standards workshop - Jim Williams
Safety Standards Workshop - Bill Coste
Maritime Communications
Pollution Control

1988 Meeting location. Seattle, Washington. First week in October 1988.

Election of Officers. Jim Williams was re-elected to the post of RVOC, Vice Chairman/Secretary, for a two year term.

Round table discussion for Marine Superintendents. The Marine Superintendents addressed the following items during the round table discussion:

a. Medical Examination and Screening
b. Inport Security and Manning
c. Smoking and Drinking on board
d. Procurement of VCR tapes
e. Insurance
f. Exercise Machines
g. Policy on when scientific party is allowed to move onboard ship, and when they are expected to debark.

The most consistent outcome of this discussion was that almost every institution handled these issues in a different manner--different ship, different short splice.

The meeting was adjourned upon completion of the round table discussion.

RESEARCH VESSEL OPERATORS' COUNCIL

1987 Annual Meeting
New England Center
University of New Hampshire
Durham, NH
12 - 14 October 1987

FINAL AGENDA

12 October 1987 - 0830

New England Center
Windsor/Charles Room
University of New Hampshire Campus

Registration/Coffee

Welcoming Remarks

- Introductions - Gene Allmindinger
- University of New Hampshire representatives - Dr. James Morrison
  Dr. Jay Grimes
- Remarks from the Chairman

Old Business

- Minutes of 1986 Annual RVOC Meeting
- Fire Fighting Tapes - Bill Barbee
- Winch manual update - Wes Lovaas
- RVOC Newsletter - Jim Williams
- Accident Reporting System - Jack Bash
- Marine Technician Committee - Dolly Dieter

New Business

- AGOR 23 Status
- Customs Problems/Hazardous Material
- Stability Update - Gene Allmindinger
- Winch & Wire Update - Gene Olson
- KEVLAR update - Jack Bash
- Communications Guide - Addresses - Ken Palfrey

Agency Representatives Reports

- National Science Foundation - Budget Outlook

- Office of Naval Research - Budget Outlook -
  Ship Use Policy

- University National Oceanographic Laboratory System -
  Report from UNOLS

- U S State Department - Update on foreign clearances

Special Reports

- Fleet Improvement Committee Report - Tex Treadwell

- Safety Standards - Tex Treadwell

- I M C O - Update - Jon Leiby

- Crew Pay Structure - Bill Coste

- Canadian Oceanography - John Parsons

- Medical Advisory Service Studies - Dave Monaghan

- MARPOL Report - George Ireland

13 October 1987 - 0830

New England Center Windsor/Charles Room

Industry - New Equipment

- Integrated Navigation Systems - (1 hr) Mike Chapman/Mike Higgins

- Doppler Current Profiler - Bridge Display - (1/2 hr) Mike Chapman

- Dynamic Positioning System - (1/2 hr) David Hackney

Risk Management (2 hrs) - Dennis Nixon/Dolly Dieter

- Risk Management

- Marine Insurance

- Liability Release Forms - Bill Barbee

Ship Lay Up Procedure Letter Workshop - Jack Bash/Ken Palfrey

14 October 1987 - 0830

New England Center
Windsor/Charles Room

Wrap Up of Business Meeting

- 1988 RVOC Meeting topics

- 1988 Workshop topics

- 1988 Meeting location suggestions

Round Table Discussion for Marine Superintendents

- Medical Exams and Medical Screening

- Inport Security Manning

✓- Smoking Aboard

✓- Drinking Aboard

✓- VCR Tapes

- Other

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UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

To: Distribution

1 August 1987

From: R. P. Dinsmore

SUBJECT: NEW NAVY SHIP CONSTRUCTION - AGOR 23, STATUS OF

CONSTRUCTION

The RFP for the construction of the new ONR research ship AGOR-23 has been issued. It is a "design & build" type RFP. This means that the bidder must submit a complete contract design package which conforms to the general requirements set by the Navy. In other words, the bidder actually designs the ship and submits the design, along with bid price for construction and outfitting. The cost for preparing a bid of this sort is about $750,000.

A summary copy of the requirements is appended (Appendix A). Previous "designs" of the AGOR-23 are in-house examples and do not necessarily resemble the final design. SWATH ships and conversions are permitted to enter but the program is aimed chiefly at a monohull type ship of about 250 feet in length.

The bid selection process is novel. Starting with a bid price having a $27.7M cap, there will be "deductions" from the actual bid price for meeting certain enhanced operating criteria. For example, the minimum acceptable cruising speed is 12 knots; but if the design makes 15 knots the bidder gets an $8.9M "credit", and so on. The lowest final adjusted price wins.

Deadline for proposal submission is 20 November 1987. Estimated delivery of the new ship is 1990. The acquisition schedule is attached as Appendix B.

OPERATION

ONR has issued the RFP for the operator of the new ship. It is intended that the operator be a UNOLS lab but a crucial issue is that a proposer must be in a position to trade in an AGOR-3 Class ship for layup. The present AGOR-3s in UNOLS are the T. WASHINGTON (Scripps), T. THOMPSON (University of Washington), and the CONRAD (Lamont). Thus, it would appear that only those labs are in a reasonable position to propose.

Deadline for the proposal is 31 August 1987 and selection will be about 30 October. It is anticipated that the operator selected may have some role in the selection of the construction design and may be able to effect some design changes (probably minor). Extract of the operations RFP is attached as Appendix C.

APPENDIX A

SUMMARY OF SPECIFICATIONS

Maximum length and draft are 275 and 17 feet, respectively. The ship may be a new construction monohull or small waterplane a ea twin hull (SWATH), or conversion of a newly constructed existing hull.

The following specifications are those stated in the NAVSEA Request for Proposals:

		Minimum Requirement	Enhanced Requirement
1.	Sea Keeping (on Station)	o 0 kts/SWH 12'/B.H.	o 0 kts/SWH 20'/B.H.
2.	Sea Keeping (Slow Speed)	o 6 kts/SWH 12'/B.H.	o 6-10 kts/SS6(SWH 20')/B.H.
3.	Acoustic Characteristics and Systems	o No interference with operation of hull mounted systems at 3.5, 12 and 36, and 50-300 KHz up to 12 kts at SS4(SWH 8').	o Same
4.	Station Keeping	o 300 ft Radius/B.H./wind 27 kts/current 2 kts/SS5(SWH 12').	o Same
		o No trackline capability.	o Trackline within 300' at 2.5 kts/A.H./wind 27 kts/current 2 kts/SS5(SWH 12')/heading within 45°.
5.	Sea Keeping (Transit)	o 12 kts SWH/8'/A.H.	o 15 kts/SS4(SWH 8')/A.H.
6.	Sustained Speed (Calm Water)	o 12 kts	o 15 kts
7.	Laboratory Area	o 3,200 FT^2 total. o 2,000 FT^2 (3 labs) contiguous to work deck.	o 4,000 FT^2 total. o 3 Lab areas (2700 FT^2 total) contiguous to working decks.
8.	Accommodations	o 30 scientific o 20 crew (min) o 10 single and remainder o double staterooms o 10 additional in 2 deck vans o Library/Conference Room o Science Office o Mess/Lounge Area	o Same

	Minimum Requirement	Enhanced Requirement
9. Ship Control	o Good visibility of working deck areas from bridge control station.	o Same
	o Continuously variable 0- 6 knots (electric) 5-12 knots (diesel)	o Continuously variable speed 0-15 knots. (No system switch
10. Integrated Electric Drive	o Permitted	o Required
11. Scientific Storage	o 13,000 FT^3 total in 3 locations. 35 tons total.	o 15,000 FT^3 total in 2-4 locations. 135 tons total.
12. Endurance	o 8,000 nm at 12 kts plus 29 days at 3 kts on station with 10% Reserve.	o 12,000 nm at at cruise speed plus 29 days at 3 kts with 10% reserve.
13. Working Area Deck	o Total fantail working area of 3400 ft^2 including a minimum 12' x 100' contiguous area on one side.	o 3500 FT^2 total fantail working deck area including a minimum 12' x 100' contiguous area on one side.
	o 2 vans (see item 8 above)	o Deck area for 4 vans (8' x 20') on main upper deck with direct access to ship interior.
	o 100 tons disposable load.	o 100 tons disposable load.
	o No centerwell (SWATH)	o Centerwell 15' x 30' (SWATH only).
14. Towing Capability	o 10,000 lbs at 5 kts o 20,000 lbs at 2.5 kts	o Same
15. Marine Geology & Geophysical Mission	o None	o Electric power for 600 HP of compressors.
16. Electronic I.C. System	o None	o Serving all operating spaces labs, public spaces, working deck stations and van stations.

APPENDIX B

ACQUISITION SCHEDULE

Program Brifing to Industry	29 May 1986
NAVSEA Feasibility Designs Completed	30 May 1986
NAVSEA Acquisition Plan (AP) Approved	30 July 1986
Assistant Secretary for Shipbuilding & Logistics Endorsed AP	27 August 1986
Chief of Naval Operations Top Level Requirements (TLR) Signed and Forwarded to NAVSEA	29 September 1986
NAVSEA Circular of Requirements (COR) Approved	24 October 1986
Solicitation for AGOR 23 Released to Industry	27 May 1987
Solicitation for Operation of AGOR 23 Released to Academic Institutions by the Chief of Naval Research (OCNR)	1 June 1987
Institution Proposals Due to OCNR	31 August 1987
Industry Proposals Due to NAVSEA	20 November 1987
Operating Institution Selection	30 October 1987 (est)
Award for Ship Construction	15 April 1988 (est)
Start Construction or Conversion	October 1988 (est)
Delivery	30 September 1990 (est)

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL RESEARCH
ARLINGTON, VIRGINIA 22217-5000

IN REPLY REFER TO

5000
Ser 1121SP/34
5 June 1987

From: Environmental Sciences Directorate
To: Distribution

Subj: AGOR-23 PROGRAM - SOLICITATION OF PROPOSALS FOR CHARTER OPERATION OF A DEEP OCEAN RESEARCH SHIP

1. Enclosed is a copy of the subject solicitation for charter operation of the AGOR-23. Your institution is invited to submit a proposal. The Office of Naval Research will negotiate a Charter Party Agreement with the selected institution for operation of the ship within the U.S. academic research ship fleet. The AGOR-23 is being procured for ONR by the Naval Sea Systems Command to replace an existing AGOR-3 class ship and is expected to be delivered by September 1990.

2. Please observe all of the conditions indicated by the solicitation. If questions arise, the ONR point of contact is Mr. Keith Kaulum, Code 1121SP. The closing date for this solicitation is 31 August 1987.

Eric O. Hartwig

ERIC O. HARTWIG
Director
Environmental Sciences

Distribution:
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University of Washington
Oregon State University
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University of Southern California
University of California, San Diego
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The University of Texas
University of Miami, RSMAS
Skidaway Institute of Oceanography
Duke/UNC Oceanographic Consortium
The Johns Hopkins University
University of Delaware
Lamont-Doherty Geological Observatory
University of Rhode Island
Woods Hole Oceanographic Institution
University of Hawaii, Institute of Geophysics

APPENDIX C

INTRODUCTION

The Office of the Chief of Naval Research invites proposals for the operation of one deep-ocean research ship, AGOR 23. The ship will be constructed or converted as a general purpose oceanographic research ship. AGOR 23 will meet the specifications cited in Appendix A. The maximum length overall and draft are 275 and 17 feet, respectively. The ship acquisition will follow the schedule contained in Appendix B.

Title to the ship will be retained by the United States Navy. The ship will be assigned to an operator institution(s) under a renewable five (5) year charter party agreement with the Navy. This solicitation covers only the selection of the operating institution(s) for AGOR 23. It does not include consideration for funding of operations, equipment, or scientific project support.

Proposals will be evaluated by the Office of the Chief of Naval Research (OCNR) with the assistance of the National Science Foundation (NSF), the Office of the Oceanographer of the Navy (OON) and representatives from the University National Oceanographic Laboratory System (UNOLS). Major considerations for selection of the operating institution(s) will include excellence in the performance of Navy oriented oceanographic research; ability to complete final fitting out of the vessel; ability to maintain and operate such ships under sound maritime practices; and willingness to undertake a cooperative role in scheduling and operating the ship in support of the Navy research programs and the larger U. S. oceanographic research community.

Proposals must be received by 5 P.M. EST, 31 August 1987 to be considered under this solicitation.

BACKGROUND

Approximately 25 ships operated by some 17 U. S. academic research institutions constitute the UNOLS "academic research fleet". These ships are used primarily by scientists at these and other academic institutions to carry out research projects funded by the Navy, NSF and other federal, state and local agencies. Navy has currently provides six of the seven largest research ships in the academic research fleet. The continuing need for large, multiple discipline research ships stems from Navy's need to conduct research on an all-season, worldwide basis.

Access to the academic fleet is facilitated through UNOLS, which is an independent organization of ship operating research institutions. Under UNOLS guidelines qualified, funded scientists from all U.S. institutions are assured access to shiptime on UNOLS vessels which are appropriate to their research needs.

In July 1984, the Secretary of the Navy announced fifteen initiatives to meet Navy and national requirements in Oceanography. Two initiatives specifically address the need to replace existing Navy vessels in the UNOLS fleet. The first of these initiatives is met by the AGOR 23 program which

will deliver a UNOLS Class II deep ocean research ship by 1991. The ship is being procured by the Naval Sea Systems Command (PMS-383) under a fixed-price design and construction solicitation. The Circular of Requirements and Request for Proposal for the ship will be available to respondents to this RFP.

PROGRAM GOALS

The primary goal of the AGOR 23 program is to acquire a deep ocean, multiple discipline oceanographic research ship for use by U.S. academic institutions to meet Navy and national worldwide research and data collection requirements. This ship will replace at least one existing AGOR 3 class ship in the Navy portion of the UNOLS academic fleet.

This ship will have improved sea keeping and sea kindliness, greater endurance, and larger science facilities with more accommodations than the AGOR 3 class it is replacing. It will also be ice strengthened (Class C) to help support research in high latitudes.

SCOPE OF PROPOSALS

The objective of this competitive award is to select the most appropriate institution(s) to operate AGOR 23 on behalf of the U. S. oceanographic community. Since AGOR 23 will replace at least one existing AGOR 3 Class ship in the academic fleet, a practical plan for return to the Navy of at least one AGOR 3 Class ship now chartered from ONR must be included in the proposal. ONR plans call for one ship to go out of service during FY 1988 or at a date to be negotiated between ONR and the operator.

Ships are a costly component of oceanographic research, therefore, considerations of efficiency and economy; as well as being fully utilized, and properly maintained and operated will be very important considerations. Selection of the institution(s) to operate this ship will not imply that its staff has the exclusive or biased access to its use. The selection process for the operator will result in the award of an initial 5-year charter agreement with provisions for renewal.

The operating institution will also be invited to provide technical assistance during NAVSEA builder selection, participate in oversight during design, construction, trials and outfitting of the ship. In addition, after delivery of the ship by the builder, the operating institution will have management responsibility for conduct of the post-delivery activities as detailed in Appendix B-2. ONR and/or NAVSEA will provide required funding for these specific activities. Funding for periods of restricted operations during this period would normally be the responsibility of the operator via user charges.

A Navy's decision to assign operating responsibility for the ship does not carry with it an assurance of financial support, except as discussed above. Ship operating support is provided competitively through the normal science proposal and review process within Navy and the NSF, and through contracts,

grants and other arrangements between the operating institutions and other federal, state and private entities. Navy support is closely tied to the shiptime requirements of Navy-supported research programs. Accordingly, neither operational funds nor scientific research project funds are provided under this solicitation. Offerors must demonstrate the existence of, or potential for a strong scientific research program which supports the AGOR 23 program goals, fully utilizes the ship and sustains its operating costs.

The operation and maintenance of U. S. Navy-owned ships is carried out under a standardized charter party agreements which specify the terms of operations and use. (A copy of OCNR's standard charter party agreement will be provided on request.) Listed below are a few of the major conditions included in such agreements

1. Title to the ship and equipment purchased by Navy will be retained by the government.

2. The Charterer must maintain the ship in a good state of repair, readiness, efficient operating conditions, conform to all applicable regulatory requirements (including USCG and ABS certification, and Navy INSURV inspections); and assume full responsibility for the safety of the ship, its crew and scientific party personnel.

3. The initial agreement will be for five (5) years and can be extended beyond this period by the mutual consent of the institution(s) and the Navy.

4. Use of the ship is restricted to federally supported research programs, and non-federal programs of interest to the Navy under specific conditions with approval by ONR.

Offerors must be willing and able to enter into a contractual agreement of this type with the Navy, and to discharge the responsibilities and commitments prescribed.

Equipment which becomes integral to the structure or machinery of the ship, regardless of the source of funds for acquisition and installation, is considered to be part of the ship and therefore is government property. Title to privately-owned or financed portable or modular equipment or gear can be retained by the operating institution(s).

ELIGIBLE OFFERORS

Proposals will be accepted from any U. S. academic institution or consortium of U. S. institutions currently conducting graduate level research programs in oceanography and related marine geophysical sciences. Offerors must have experience in operating large world-ranging oceanographic research ships. The Institutions(s) must either be a member of UNOLS or meet the requirements for, and apply for full membership. Such offerors must be able to provide suitable docking, staging and storage facilities in addition to demonstrating their ability schedule and operate this ship.

UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

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

R.P.Dinsmore
5 October 1987

BACKGROUND ON THE AGOR-4 DESIGN

The Navy (NAVSEA) is doing a preliminary design study for the 2nd new oceanographic ship for UNOLS - planned to be a SWATH ship. Their intent is to adapt a common hull to meet the requirements for several new ships other than oceanographic research. This common hull is shown on Figures 1, 2, and 3. The obvious and foremost problem is that the lower hulls protrude 8½ feet outboard of the upper hull (working deck), and the lower hulls (and propellers) extend about 30 feet astern of the working deck. This means that nothing can be put over the side and anything over the stern is at great peril.

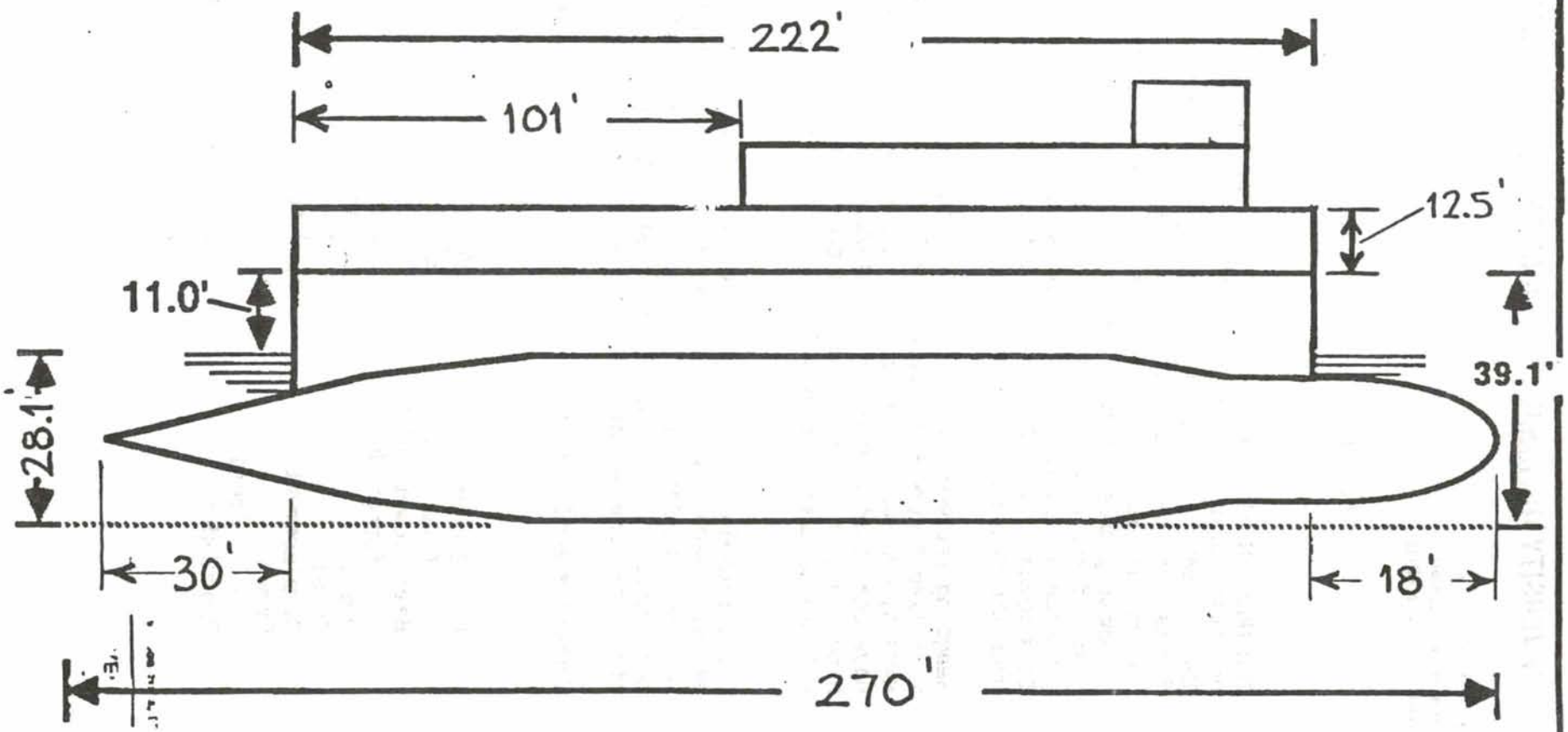
Seagoing reviewers have protested vigorously and recommend designs more like Figure 4 (attached - all existing SWATHS are of this type). NAVSEA, however, is determined to pursue their baseline design, and have suggested installing huge A-Frames and cranes to facilitate handling gear. The reaction is that while frames and cranes are a welcome necessity, they will not rectify a defective design.

Users intended for the other two variations of the Common Hull series - NAVOCEANO and MSC also are protesting against this arrangement but the Sponsor - OCEANAV so far has not paid much heed to the protests. It would appear that UNOLS must mount a more concerted effort or else we are going to have a real turkey on our hands.

Current specifications on the design are as follows:

LOA: (Lower Hulls)	270 ft.
(Upper Hull)	222 ft.
Beam: (Lower Hulls)	101 ft.
(Upper Hull)	84 ft.
Draft:	29 ft.
Speed:	12 knots
Displacement:	5332 tons
Crew:	22
Science Compl:	30
Propulsion:	Integrated Electric: 4x1500 kw gens; 2x1750 hp motors

SWATH COMMON HULL BASELINE (REDUCED) PROFILE

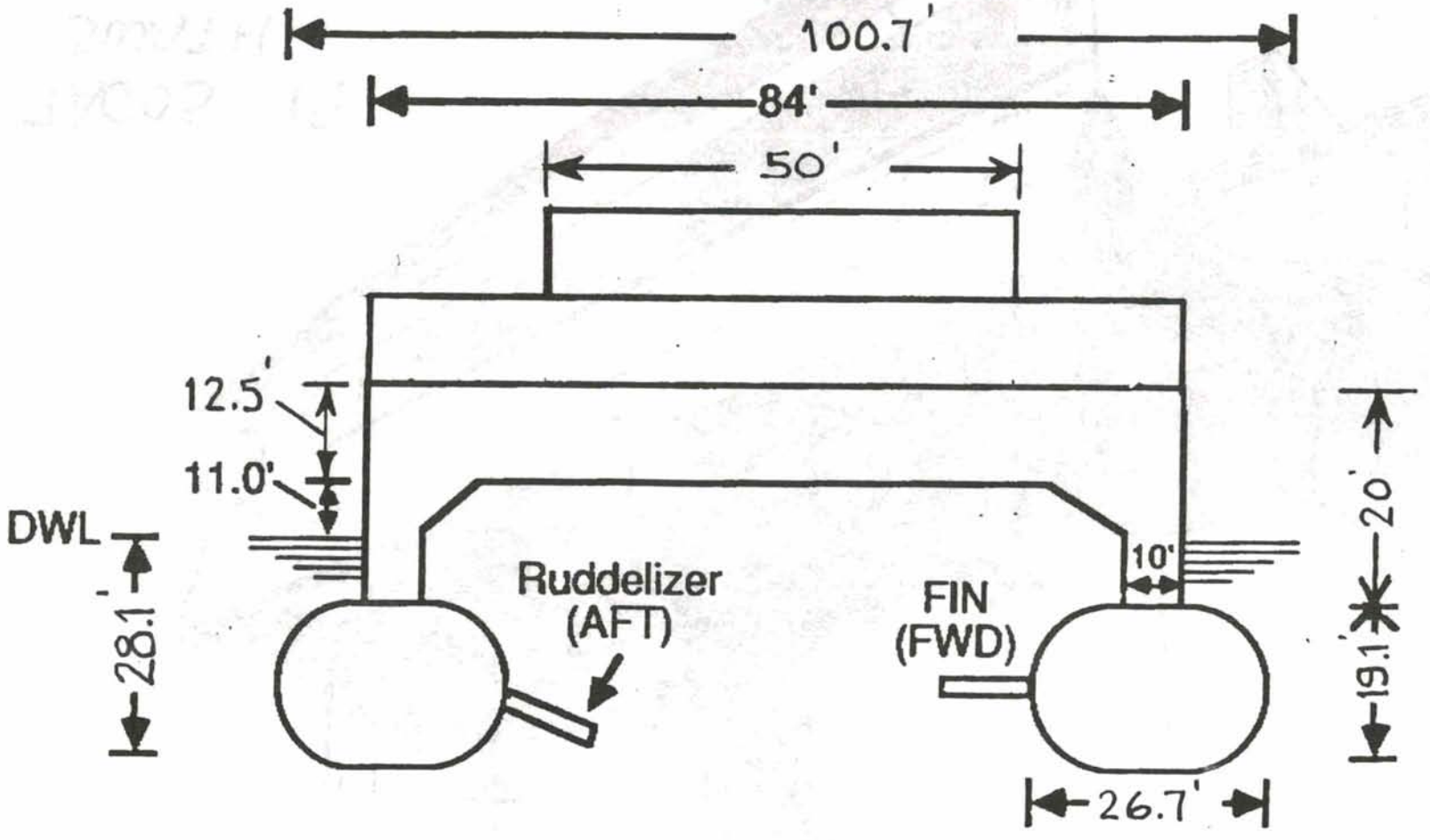


(NOT TO SCALE)

8/87

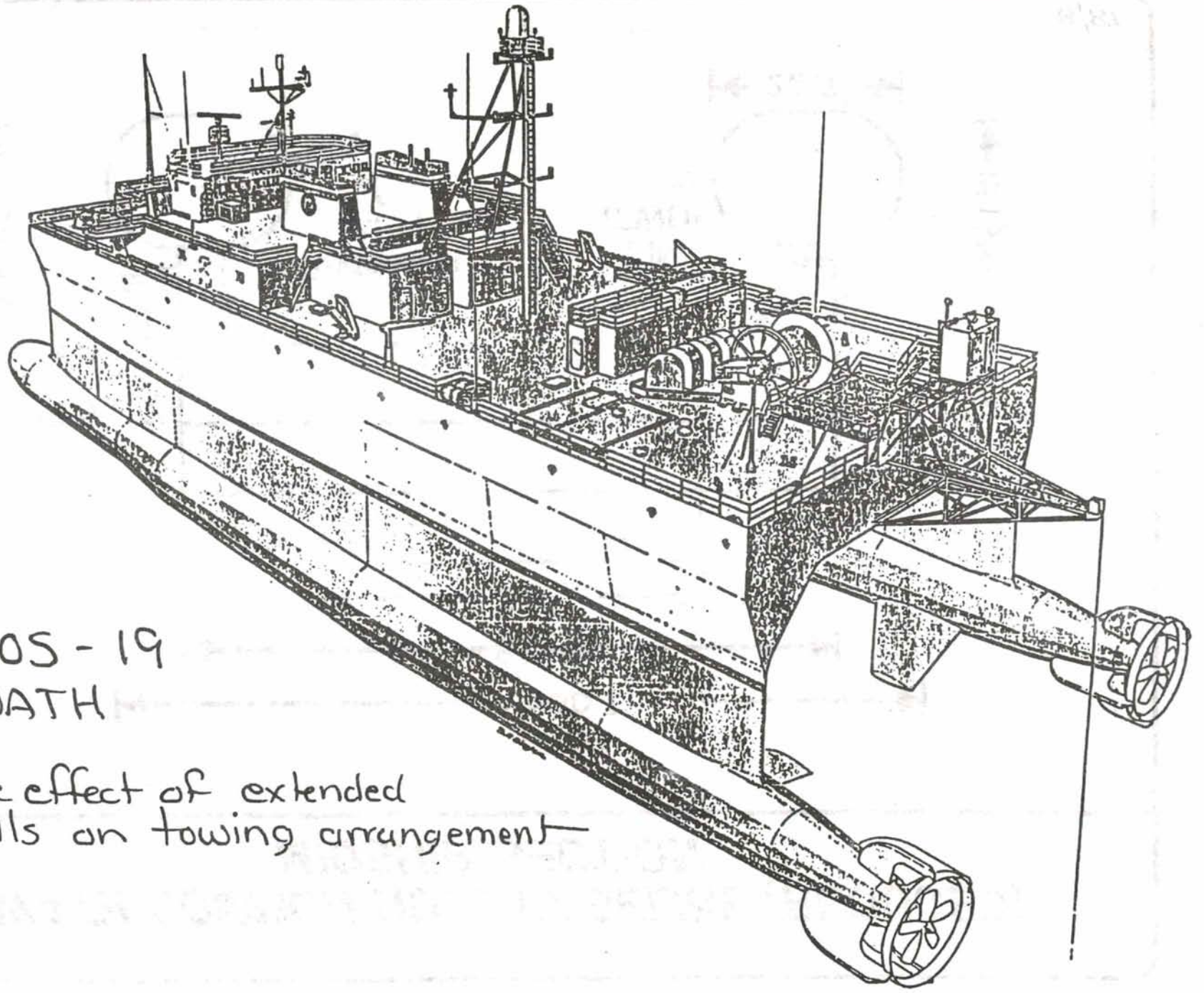
FIG-1

SWATH COMMON HULL BASELINE (REDUCED) MIDSHIP SECTION



8/87

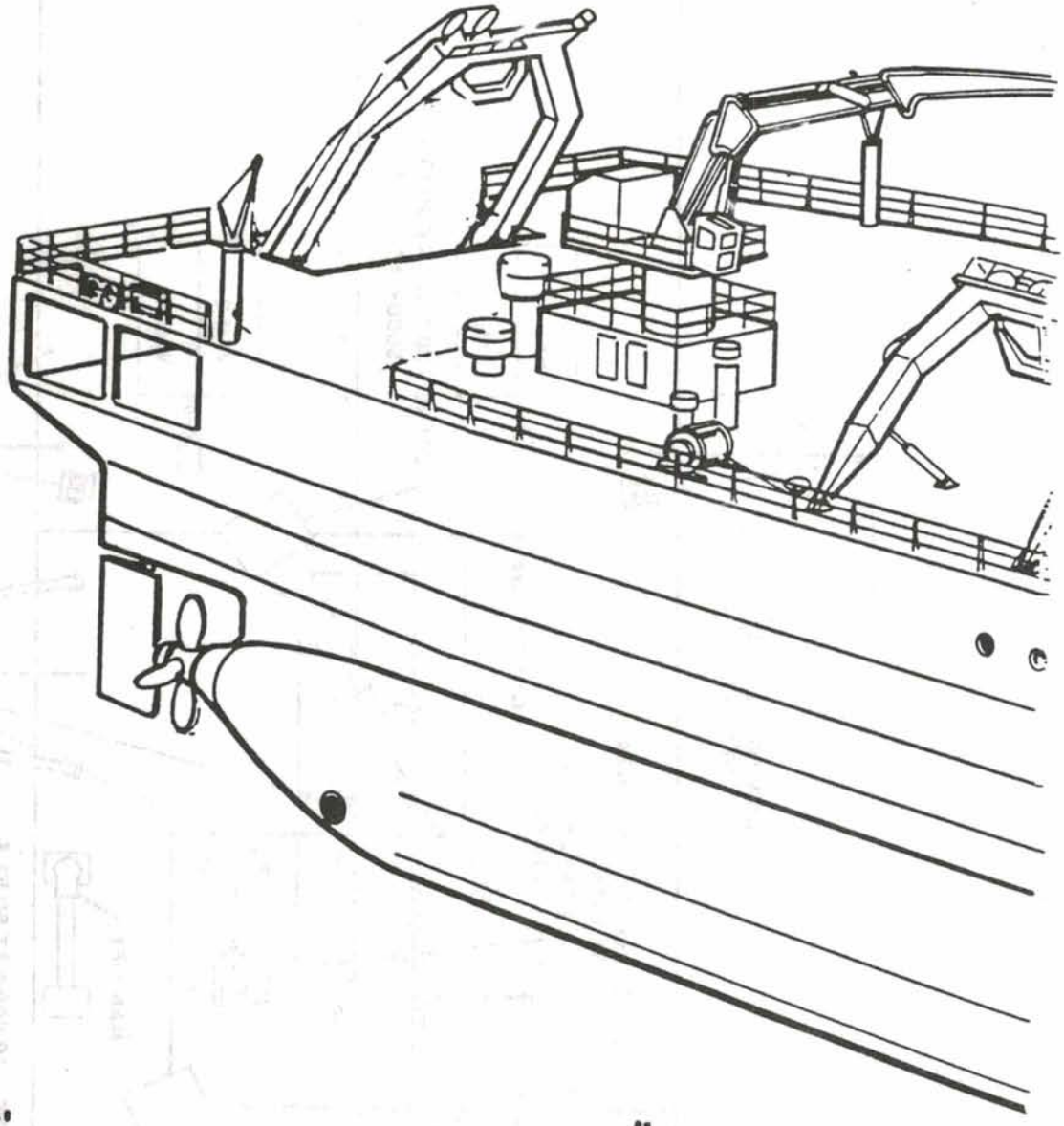
FIG. 2



TAGOS - 19
SWATH

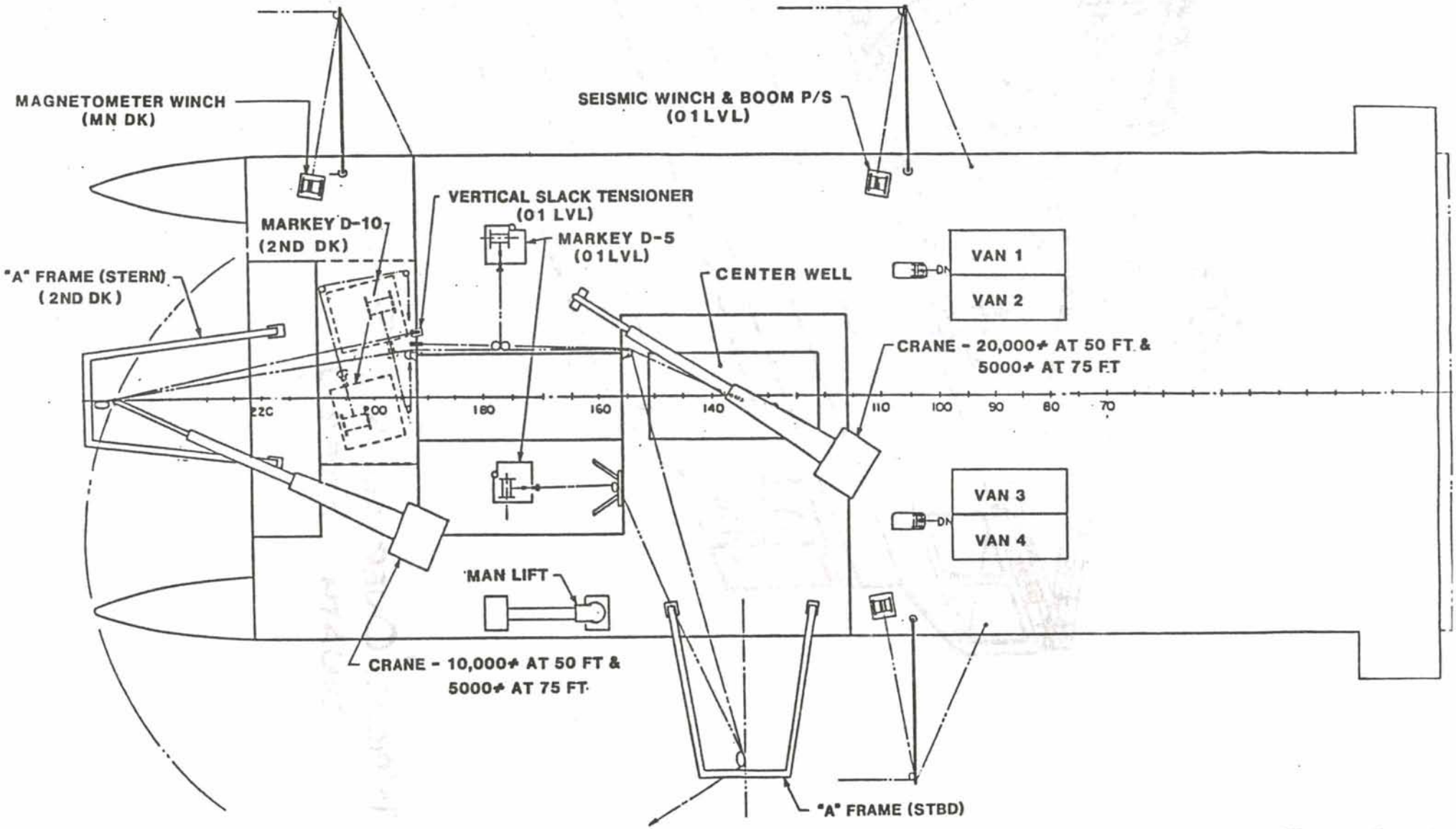
Note effect of extended hulls on towing arrangement

FIG. 3



TYPICAL "OVERHANGING STRUT"
SWATH STERN

FIG-4



PROPOSED T-AGS(O) OCEANOGRAPHIC HANDLING SYSTEMS

FIG 5

DRAFT

4. STABILITY

4.0 FOREWORD

Stability standards, tests and information are considered in this section. The presentation, in each instance, is divided into a brief background of the subject at hand and its applicability to inspected and/or uninspected ocanographic research vessels on either a required or recommended basis. Principal references include Title 46 CFR - Subchapter S, the International Maritime Organization (IMO) Resolution A.168 (ES.IV) which is often called the "Torremolinos Convention Criteria", the IMO Severe Wind and Rolling Criteria, The USCG Navigation and Vessel Inspection Circular (NVIC) No. 5-86 and the Vessel Safety Manual of the North Pacific Fishing Vessel Owners' Association (NPFVOA). The latter two references concern commercial fishing vessels but contain much information of value for uninspected oceanographic research vessels. Salient points raised in the Stability Workshop, conducted at the 1985 RVOC meeting, are also included.

4.1 STABILITY STANDARDS

Background Stability standards for the design, contruction and operation of oceanographic research vessels may be placed into one of two categories - 1) standards required for inspected and certain uninspected vessels and 2)those recommended for the remaining uninspected vessels. Required standards are contained in Title 46 CFR, Subchapter S, Parts 170 and 173 with the latter referring to Part 171 pertaining to vessels carrying 400 or fewer passengers. Recommended standards may be based on criteria in the above references and/or as set forth in publications such as the IMO Resolution A.168(ES.IV) and (NVIC) No. 5 - 86.

Intact stability standards of Subchapter S are based on criteria relating to 1) weather, 2) dynamic stability or righting energy, 3) Tow line pull and 4) lifting, while damaged stability standards are based on 5) subdivision and residual stability criteria.

o Weather criteria require a minimum transverse metacentric height, GM_T, for a given wind pressure and vessel lateral profile, the purpose being to assure adequate GM_T to resist prescribed heeling moments.

o Dynamic or righting energy criteria are concerned with requirements regarding the characteristics of the stability curve, the intent being to provide sufficient area under the curve, or righting energy, to limit angles of heel to safe values when the vessel is subjected to wind/wave heeling moments.

o Tow line pull criteria pertain to vessels engaged in stern and/or over-the-side towing of objects. Criteria are based on a minimum GM_T and prescribed heeling arm curves generated by towing operations, the purpose being to limit angles of heel to safe values and to provide for adequate residual righting energy.

o Lifting criteria pertain to vessels engaged in lifting/lowering heavy objects which cause heeling moments equal to or in excess of the specified heeling moment. Criteria are based on prescribed righting arm curve characteristics with particular reference to requirements for minimum righting energy developed at critical angles of heel, the purpose being to limit angles of list to safe values when the vessel is lifting/lowering heavy objects.

o Subdivision and residual stability criteria, on which damage stability standards are based, are the same as those for vessels carrying 400 or less passengers. In essence, the subdivision of a vessel must be such that after specified damage is sustained, sufficient residual stability will remain in all service conditions for survivability.

Both required and recommended stability standards, should, in general, be viewed as being minimal. In applying them to the design and operation of individual vessels, they should be upgraded as appropriate considering any unique aspects of the vessel's mission requirements and/or design features pertinent to stability.

Applicability Inspected oceanographic vessels, including motor-driven vessels of 300 and over gross registered tons and steam ships over 65 feet long, must comply with stability criteria set forth in Title 46 CFR, Subchapter S, Parts 170 and 173 as follow:

- o Weather criteria (Section 170.170)
- o Dynamic or righting energy criteria (Section 170.173)
- o Tow line pull criteria -- for vessels engaged in stern and/or over-the-side towing (Section 173.095)
- o Lift Criteria -- for vessels engaged in lifting/lowering heavy objects (Sections 173.005, 173.020)
- o Subdivision and damage stability criteria (Sections 173.075,173.080, 173.085)

Uninspected vessels, under 300 gross registered tons, engaged in international voyages and 1) constructed before 21 July 1968 of 150 or above gross registered tons or 2) constructed after 21 July 1968 of 79' or longer in length require load line assignments and must comply with stability criteria as follow:

- o Weather criteria (Section 170.170)
- o Dynamic or righting energy criteria (Section 170.173) or the 15 foot-degree criteria (formerly called the Rahola criteria) with the former criteria being preferred.
- o Tow line pull criteria -- for vessels engaged in stern or over-the-side towing (Section 173.095)
- o Lift criteria -- for vessels engaged in lifting/lowering heavy objects (Sections 173.005, 173.020)

These uninspected vessels have no subdivision or damage stability requirements.

Other uninspected vessels have no required stability standards. These vessels may be divided into two groups -- 1) vessels from 79 feet to 328 feet in length and 2) vessels shorter than 79 feet.

Recommended intact stability standards for group (1) vessels are contained in IMO Resolution A.168 (ES.IV) and the IMO Severe Wind and Rolling Criteria. NVIC 5-86, although for fishing vessels, contains useful damage stability/subdivision guide lines.

No firm criteria exists for recommended stability standards applicable to group (2) vessels. Again, criteria set forth in MVIC 5-86 provide useful guidelines but this source cautious against their direct use in attempting to establish stability standards for these small vessels and advises that it may be necessary to increase IMO Resolution A.168 (ES.IV) criteria. While bases for this increase has not been established, the practice of some European countries is to increase all criteria by twenty percent.

4.2 STABILITY TESTS

Background Stability tests include inclining experiments and rolling period tests. Inclining experiments are conducted to obtain "as inclined" data from which "light ship" displacement and centers of gravity can be derived to define the "light ship condition". Various loadings can then be added to this basic condition to obtain prescribed "service conditions" and associated stability information.

Rolling period tests have the purpose of approximating GM_T in any condition by use of the expression

$$GM_T = \left(\frac{fB}{T_R}\right)^2$$

In this expression, "f" is a factor having an average value of about 0.44 for various mono hull forms, "B" is the vessel's maximum beam and "T_R" is the full period of roll of the vessel in calm waters in seconds. This test is useful for vessels whose sizes are such that rolling can easily be induced by a procedure known as a "sallying ship".

Applicability New inspected oceanographic vessels are required to be inclined in accordance with inclining experiment details set forth in Subchapter S, Part 170, Subpart F. These vessels should also be reinclined any time a significant change in magnitude and/or location of "light ship" weights occurs or there is a major change in hull shape such as the addition of sponsons.

Uninspected oceanographic vessels engaged in international voyages and subject to load line assignment, as previously identified, are treated as inspected vessels in this regard.

Other uninspected oceanographic vessels, while not required to undergo inclining experiments, should never the less be inclined as stated above for inspected vessels.

A rolling period test should be conducted on a vessel, size permitting, anytime the master has reason to question the adequacy of the vessel's stability. It must be emphasized that this test is not to be considered as a substitute for an inclining experiment.

4.3 STABILITY INFORMATION

Background Stability information includes 1) specific information pertinent to the safe operation of a particular vessel and 2) general information the understanding of which promotes safe operation of vessels in a more general sense. Specific information is contained in "Stability Booklets" and "Stability Letters" and their equivalents. These documents, which are carried on board, include instructions and data regarding the safe operation of the particular vessel from the viewpoint of maintaining adequate stability to meet all intact and damage stability criteria. "Instructions", in general, relate to the master's responsibilities in this regard and to guidance in the use of stability data. "Data" include all information necessary for the evaluation of stability in all prescribed service and damaged conditions.

A perspective on weight/center data is provided by the following expressions:

(1) Total weight (or displacement) = lightship weight + $\text{deadweight}_{(sc)}$

(2) $\text{deadweight}_{(sc)}$ = $\text{operating deadweight}_{(sc)}$ + science deadweight

The terms of expression (1) have been defined in Section 3.4 and the subscript (sc) identifies the deadweight of a particular service condition. In expressions (1), lightship weight/center data remain constant for all service and damage conditions considered for a particular cruise. Lightship data can change between cruises by the addition/removal/alteration of lightship items -- either by reason of major changes or the incedious accumulations of small changes both of which effect stability. Any change in lightship weight/center, large or small, must be recorded and the Stability Booklet, or its equivalent, corrected. Further corrections to this booklet are required if these changes effect any deadweight items -- say, for example, changes that increase/decrease the capacity of certain tanks. It is essential that lightship be precisely defined as to the items included as some items might logically be placed in either lightship or deadweight groups. Expression (2) involves an arbitrary division of deadweight to facilitate discussion. "Operating deadweight" contains items such as fuel, potable water, ballast water, supplies/stores and the like whose weights/centers change for various service

conditions. "Science deadweight" includes items brought on board for a particular cruise for the specific purpose of accomplishing the cruise's mission(s). Weight/centers of these items vary, if at all, independently of changing service conditions. Prior to departure on cruise, the master should know accurately the weight/center details of the science deadweight and whether or not there will be significant changes in this data during the cruise. It is, of course, the varying weights/centers of both deadweight groups which are of concern in analyzing stability for various service and damage conditions. Accuracy of data is a key factor in arriving at valid conclusions.

Instructions and data contained in Stability Booklets and Stability Letters, or their equivalents, should be set forth in a clear and concise manner to facilitate stability analysis either by hand or by use of a personal computer. In this regard, the development of "user friendly" stability software for intact and damaged conditions and the use of on-board personal computers is strongly recommended.

Oceanographic research vessels engaged in lifting and/or towing operations must/should carry additional specific information on board. This information is necessary to permit the master to evaluate the effects of these operations on stability in the various service conditions.

General information on stability should be made available to all personnel on board having duties which may really or potentially effect the stability of the vessel. It should be presented in as non-technical a manner as possible so as to be readily understandable. The Vessel Safety Manual of the NPFVOA is an excellent example of such a publication and is a companion piece of NVIC No5-86 -- its stability chapter discussing stability fundamentals and operating factors effecting stability while NVIC No5-86 is concerned with the more technical aspects of this subject as applicable to vessel design and construction. Operating factors, which become increasingly critical as the size of the vessel decreases, include effects such as lifting weights, following seas, water on deck, free surface, icing, down flooding and excessive trim. The object of the Manual is to aid in establishing safety practices which will minimize or eliminate the adverse effects of these factors in reducing stability. Although the

Vessel Safety Manual is for commercial fishing vessels, it is recommended as an excellent source of general information on stability for medium and small size oceanographic vessels.

Applicability Inspected oceanographic vessels are required to carry the following stability information on board as set forth in Title 46 CFR, Subchapter S, Part 170, Subpart D:

- o Stability Booklet (Section 170.110)
- o Stability Letter (Section 170.120)
- o Lifting information for vessels engaged in lifting operations (Section 170.125)

The above reference does not specify that vessels engaged in towing are required to carry towing information pertinent to stability. Nevertheless, it is recommended that these vessels carry this information.

Uninspected oceanographic vessels engaged in international voyages and subject to loadline assignment, as previously identified, are treated as inspected vessels in this regard.

Other uninspected oceanographic vessels which are not subject to these requirements should, however, carry operators' directives containing specific stability information equivalent to that required for inspected vessels.

It is recommended that all uninspected oceanographic vessels carry general stability information on board such as the Vessel Safety Manual of NPFVOA or its equivalent. This recommendation is particularly applicable to oceanographic research vessels less than 70 ft. in length.

SHIP COMMUNICATIONS DATA
FOR
R/V _____

CALL SIGN _____

VHF ___
2182 khz MONITOR ___
500 khz MONITOR ___
SITOR ___
SELCALL ___
TYPE:_____ #_____

FREQUENCIES NORMALLY MONITORED

VHF CH. __
_____ khz

_____ khz
_____ khz
_____ khz
_____ khz
_____ khz
_____ khz

INMARSAT ___

TELEPHONE _____
TELEX _____
TELEFAX ___
16 LEVEL GREYSCALE _____
DATA ____ BAUD

NOTE:

TELEMAIL _____

ATS ___

VOICE ___
OPS ON CH _
DATA ___
FACSIMILE ___

CONTACT FOR COMMUNICATIONS ASSISTANCE

_____ (___) _____
_____ (___) _____

SPECIAL NOTES:

COMMUNICATIONS DATA
FOR

_____

CALL SIGN _____

VHF	___
2182 khz MONITOR	___
500 khz MONITOR	___
SITOR	___
SELCALL	___
TYPE:_____	#_____

FREQUENCIES NORMALLY MONITORED

VHF CH. __ SHIFT TO CH._____

_____ khz

_____ khz
_____ khz
_____ khz
_____ khz
_____ khz
_____ khz

TELEPHONE, TELEX, TELEFAX

TELEPHONE	(___)_____
TELEX	(___)_____
TELEFAX	(___)_____
16 LEVEL GREYSCALE	_____
DATA	____, ___ BAUD

NOTE:

TELEMAIL _____

ATS ___

VOICE	___
OPS ON	CH _
DATA	___
FACSIMILE	___

CONTACT FOR COMMUNICATIONS ASSISTANCE

_____ (___)_____
_____ (___)_____

SPECIAL NOTES:

SHIP COMMUNICATIONS DATA
FOR
R/V WECOMA

CALL SIGN	WSD 7079
VHF	YES
2182 khz MONITOR	YES
500 khz MONITOR	NO
SITOR	NO
SELCALL	YES
TYPE: NECODE	#7576

FREQUENCIES NORMALLY MONITORED

VHF CH. 16
2182.0 khz

4143.6 khz
8291.1 khz
12435.4 khz
16587.1 khz
22124.0 khz
_____ khz

INMARSAT	YES
TELEPHONE	1503606
TELEX	1503606 AAB WECO-X
TELEFAX	YES
16 LEVEL GREYSCALE	UPON REQUEST
DATA	1200 BAUD

NOTE: TELEFAX IS NOT AUTO-ANSWER. NORMALLY, FIRST 15 MINUTES OF EACH SHIP'S WATCH IS RESERVED FOR TELEFAX. 0000-0015,0400-0415,0800-0815, ETC. TIMES ARE SHIP LOCAL TIME.

TELEMAIL	OSU.SHIPS
ATS	YES
VOICE	YES
OPS ON	CH 2
DATA	YES
FACSIMILE	NO

CONTACT FOR COMMUNICATIONS ASSISTANCE

DAVE McWILLIAMS	(503) 867-3011 EXT 215
MIKE HILL	(503) 867-3011 EXT 208

SPECIAL NOTES:

COMMUNICATIONS DATA
FOR
OSU SHIP OPERATIONS

CALL SIGN	KFB
VHF	YES
2182 khz MONITOR	NO
500 khz MONITOR	NO
SITOR	NO
SELCALL	YES
TYPE: NECODE	#7577

FREQUENCIES NORMALLY MONITORED

VHF CH. 16 SHIFT TO CH. 68
_____ khz

4143.6 khz
8291.1 khz
12435.4 khz
16587.1 khz
22124.0 khz
_____ khz

ONE OF THESE FREQUENCIES IS NORMALLY USED FOR DAILY COMMUNICATIONS WITH R/V WECOMA. COMMS COMMENCE AT 0845LZT(NEWPORT). MONITORING CEASES AT 1630LZT.

TELEPHONE, TELEX, TELEFAX

TELEPHONE	(503) 867-3011
TELEX	(23) 7400831 AAB WECO UC
TELEFAX	(503) 867-3766
16 LEVEL GREYSCALE	NOT AVAILABLE
DATA	1200, 300 BAUD

NOTE: TELEFAX IS ON A COMMON LINE WITH THE R/V WECOMA WHEN SHE IS IN PORT. PLEASE PHONE FIRST TO SET-UP TELEFAX SCHEDULE.

TELEMAIL	OSU.SHIPS
ATS	YES
VOICE	YES
OPS ON	CH 2
DATA	YES
FACSIMILE	NO

CONTACT FOR COMMUNICATIONS ASSISTANCE

DAVE McWILLIAMS	(503) 867-3011 EXT 215
MIKE HILL	(503) 867-3011 EXT 208

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WB-10
Seattle, WA 98195
Phone: (216) 543-5062 (O)

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Lamont-Doherty Geological Observ.
Columbia University
Palisades, NY 10964
Phone: (914) 359-2900 (x245)

SALARY SURVEY

NOTES:

LOW-HIGH - Range of pay for the position.

ACTUAL - Pay of incumbant or average if more than one (AB's for example).

AT SEA - Sea Pay differential or Sea Premium figured on an annual basis.

AT SEA - (W/ATO) Extra time off or vacation earned while U/W, converted to dollars, assuming 365 days U/W.

AT SEA - (W/ATO & OT) Preceding, with average Overtime earned while U/W (365 days).

MIN BENES - Medical, dental, insurance, and retirement benefits converted to a dollar value. Any voluntary, employee shared cost benefits are discounted. Any benefits not useable or available to all are discounted. For retirement benefits, all are expected to receive full amount. Following figures were used:

Medical - $60/mo. - full coverage
Dental - $10/mo. - full coverage
Insurance - $6/$10K coverage

VACATION - Assumes that 2 wks vacation is standard for all. This figure represents vacation differential for more than 10 days/yr.

U/W TOTAL - For large and intermediate ships, assumption is that employee spend 6 mos U/W; for small ships, 4 mos.; for ships under 100 feet, 2 mos.

NOTE: For pay and benefits, all are considered to have 8 yrs. service with the institution.

MISCELLANEOUS BENEFITS
(NOT FACTORED INTO PAY)

1. Burial insurance.

2. Disability insurance.

3. Travel Accident insurance.

4. Sick leave and sick leave which can be converted into retirement benefits or vacation/cash.

5. Interest free education loan.

6. Any family benefits.

7. Deferred annuity plans (except for organization's contribution).

8. Time off to take courses or sit for exams.

9. Payment of job related courses.

10. Cost sharing of any optional coverage (auto insurance, added retirement, expanded medical coverage, etc.)

11. Free or partial tuition for member and/or dependent.

12. Meal money in port.

13. Personal or State holidays.

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY
			LARGE SHIPS						
MASTER									
AAA	55104	66672	66672	66672	93414	93414	8187	2934	91164
BBB	61700	66750	66750	66750	86830	86830	7824	2670	87284
CCC	61700	66750	66750	66750	86830	86830	7824	2670	87284
DDD	55104	66672	65040	65040	91127	91127	9351	2862	90296
EEE	29448	47436	43380	49887	82780	82780	3931	1215	68225
FFF	69924	83904	76920	83316	145148	145148	8578	0	119612
GGG	45048	54792	51643	51643	74343	74343	6016	2272	71282
HHH	42000	42000	42000	42000	61654	89346	5796	840	72309
CH MATE									
AAA	29184	35136	35136	40055	52105	64522	4712	1546	56087
BBB	28725	31175	31175	31175	40553	62136	4488	1247	52390
CCC	28725	31175	31175	31175	40553	62136	4488	1247	52390
DDD	29184	35136	35136	40055	52105	64522	6225	1546	57600
EEE	30204	33336	33336	38336	68597	68597	3337	933	55237
FFF	46440	55728	51084	51084	84976	107964	5631	0	85155
GGG	30804	37488	32652	32652	45749	54565	4117	1437	49162
HHH	32000	32000	32000	32000	46974	68073	3016	640	53693
2ND MATE									
AAA	25404	30564	28500	32490	42264	52336	3981	1254	45653
BBB	25900	28100	28100	28100	36553	56007	4200	1124	47378
CCC	25900	28100	28100	28100	36553	56007	4200	1124	47378
DDD	25404	30564	25404	28961	37673	46650	4734	1118	41879
EEE	28044	30960	30960	35604	63708	63708	3159	867	51360
FFF	43200	51840	47520	47520	79048	102808	5273	0	80436
GGG	26376	32088	28524	28524	39965	47666	3704	1255	43055
HHH	27000	27000	27000	27000	39635	57437	2676	540	45434
3RD MATE									
AAA	23196	27828	24276	27675	36000	44579	3515	1068	39011
BBB	23100	25075	25075	25075	32618	49978	3912	1003	42441
CCC	23100	25075	25075	25075	32618	49978	3912	1003	42441
DDD	23196	27828	23196	26443	34398	42596	4395	1021	38312
EEE	26040	28752	28752	33065	59164	59164	2994	805	47757
FFF	40200	48240	44220	44220	73558	93457	4941	0	73779
GGG	23520	28620	23976	23976	33593	40066	3235	1055	36311

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY
2ND ENG									
AAA	25404	30564	30564	34843	45325	56126	4208	1345	48898
BBB	25900	28100	28100	28100	36553	56007	4200	1124	47378
CCC	25900	28100	28100	28100	36553	56007	4200	1124	47378
DDD	25404	30564	30564	34843	45325	56126	5525	1345	50214
EEE	24792	27360	28752	33065	59164	59164	2994	805	47757
FFF	41160	49392	45276	45276	75315	103612	5047	0	79491
GGG	26376	32088	30235	30235	42363	50526	3876	1330	45587
HHH	27000	27000	27000	27000	39635	57437	2676	540	45434
3RD ENG									
AAA	23196	27828	26604	30329	39452	48854	3772	1171	42671
BBB	23100	25075	25075	25075	32618	49978	3912	1003	42441
CCC	23100	25075	25075	25075	32618	49978	3912	1003	42441
DDD	23196	27828	27204	31013	40342	49956	5010	1197	44786
EEE	23052	25404	25404	29215	52275	52275	2743	711	42294
FFF	39000	46800	42900	42900	71363	100320	4808	0	76418
GGG	23520	28620	26687	26687	37391	44597	3521	1174	40337
HHH									
OILER									
AAA	18084	21276	20964	23899	31088	38497	3150	922	33803
BBB	16300	17775	17775	17775	23122	35428	3228	711	30540
CCC	16300	17775	17775	17775	23122	35428	3228	711	30540
DDD	18084	21276	20748	23653	30768	38100	4020	913	34357
EEE	21972	24192	24192	27821	49781	49781	2652	677	40316
FFF	18000	21600	19800	19800	32937	43827	2484	0	34297
GGG	17820	22536	23888	23888	33469	39919	3225	1051	36179
HHH									
WIPER									
AAA	14508	16776	14796	16867	21942	27170	2471	651	24105
BBB	14225	15425	15425	15425	20065	30744	3012	617	26714
CCC	14225	15425	15425	15425	20065	30744	3012	617	26714
DDD	14508	16776	14508	16539	21514	26642	3064	638	24277
EEE	19968	21972	20940	24081	43089	43089	2409	586	35010
FFF	14520	17424	15972	15972	26569	35353	2099	0	27761
GGG	16224	20520	20517	20517	28746	34286	2839	903	31143

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY
AB									
AAA	18084	21276	20040	22846	29718	36800	3048	882	32350
BBB	16300	19875	18088	18088	23529	36051	3252	724	31045
CCC	16300	19875	18088	18088	23529	36051	3252	724	31045
DDD	18084	21276	19680	22435	29184	36139	3856	866	32632
EEE	21972	24192	24192	27821	49781	49781	2652	677	40316
FFF	18000	21600	19800	19800	32937	41352	2484	0	33060
GGG	17820	22536	23888	23888	33469	39919	3225	1051	36179
HHH	17000	17000	17000	17000	24955	36164	1996	340	28918
OS									
AAA	14508	16776	14508	16539	21514	26642	2439	638	23652
BBB	11875	15425	13650	13650	17756	27206	2844	546	23818
CCC	11875	15425	13650	13650	17756	27206	2844	546	23818
DDD	14508	16776	15300	17442	22689	28096	3185	673	25556
EEE	19968	21972	21972	25268	45213	45213	2486	615	36694
FFF	14520	17424	15972	15972	26569	33357	2099	0	26763
GGG	16224	20520	18991	18991	26608	31736	2665	836	28864
HHH	14000	14000	14000	14000	20551	29782	1792	280	23963
CH ENG									
AAA	52524	63540	63540	63540	89026	89026	7842	2796	86921
BBB	58075	63000	63000	63000	81952	81952	7464	2520	82460
CCC	58075	63000	63000	63000	81952	81952	7464	2520	82460
DDD	52524	63540	57780	57780	80955	80955	8401	2542	80311
EEE	30960	34176	30960	35604	59079	59079	3046	867	48932
FFF	72900	87480	80196	80196	144661	144661	8908	0	121336
GGG	43644	53088	50028	50028	72018	72018	5855	2201	69079
HHH	40000	40000	40000	40000	58718	85092	5560	800	68906
1ST ENG									
AAA	29184	35136	35136	40055	52105	64522	4712	1546	56087
BBB	28725	31175	31175	31175	40553	62136	4488	1247	52390
CCC	28725	31175	31175	31175	40553	62136	4488	1247	52390
DDD	29184	35136	30564	34843	45325	56126	5525	1345	50214
EEE	26700	29460	28752	33065	59164	59164	2994	805	47757
FFF	43980	52776	48384	48384	80485	115563	5359	0	87333
GGG	30804	37488	32652	32652	45749	54565	4117	1437	49162
HHH	32000	32000	32000	32000	46974	68073	3016	640	53693

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY
CH STEWARD									
AAA	20856	24840	24840	28318	36836	55243	3577	1093	44712
BBB	20125	21825	21825	21825	28390	43500	3612	873	37148
CCC	20125	21825	21825	21825	28390	43500	3612	873	37148
DDD	20856	24840	24840	28318	36836	55243	5143	1093	46277
EEE	23052	25404	25404	29215	58702	58702	2901	711	45665
FFF	24720	29664	27192	27192	45233	64947	3228	0	49297
GGG	23976	29160	23532	23532	32971	53742	3184	1035	42857
HHH	20000	20000	20000	20000	29359	42546	2200	400	33873
STEWARD/2ND COOK									
AAA	18396	21732	20064	22873	29754	44621	3051	883	36276
BBB	18150	19775	19775	19775	25724	39414	3420	791	33806
CCC	18150	19775	19775	19775	25724	39414	3420	791	33806
DDD	18396	21732	21276	24255	31551	47317	4526	936	39758
EEE	20940	23052	23052	26510	53267	53267	2710	645	41515
FFF	19500	23400	21456	21456	35691	51247	2650	0	39002
GGG									
HHH	17000	17000	17000	17000	24955	36164	1996	340	28918
MESSMAN									
AAA									
BBB	11024	12975	11958	11958	15556	23835	2676	478	21051
CCC	11024	12975	11958	11958	15556	23835	2676	478	21051
DDD									
EEE	19488	21456	21456	24674	49579	49579	2580	601	38699
FFF	14520	17424	15972	15972	26569	34156	2099	0	27163
GGG	14736	18636	15022	15022	21048	34308	2211	661	27537
HHH	14000	14000	14000	14000	20551	29782	1792	280	23963

INSTITUTION	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY
				INTERMEDIATE SHIPS					
MASTER									
AAA	61700	66750	66750	66750	86830	86830	7824	2670	87284
BBB	33312	38652	36720	36720	43164	65256	3043	734	54766
CCC	40820	66333	58095	58095	74406	74406	6069	2789	75108
DDD	47772	57780	52524	52524	73591	73591	6628	2311	71997
EEE	44172	44172	45000	45000	63000	63000	4365	1440	59805
CH MATE									
AAA	28725	31175	31175	31175	40553	62136	4488	1247	52390
BBB	22404	25800	24636	24636	28959	66899	2318	493	48578
CCC									
DDD	29184	35136	29184	33270	43278	53592	4056	1284	46728
EEE	29580	38652	32700	32700	52451	52451	3566	1046	47187
2ND MATE									
AAA	25900	28100	28100	28100	36553	56007	4200	1124	47378
BBB	19464	22404	20412	20412	23994	55428	2065	408	40393
CCC									
DDD									
EEE	24204	31644	29580	29580	47446	47446	3363	947	42822
3RD MATE									
AAA	23100	25075	25075	25075	32618	49978	3912	1003	42441
BBB									
CCC	16874	25729	21313	21313	27296	48609	2758	1023	38742
DDD	23196	27828	23196	26443	34398	42596	3396	1021	37313
EEE									
AB									
AAA	16300	19875	18088	18088	23529	36051	3252	724	31045
BBB	14232	16284	15600	15600	18338	42362	1776	312	31069
CCC	13549	20322	14072	14072	18023	32094	2106	675	25865
DDD	18084	21276	19152	21833	28401	35170	2951	843	30954
EEE	19800	25896	19800	19800	31759	31759	2727	634	29140

INSTITUTION	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY
CH ENG									
AAA	58075	63000	63000	63000	81952	81952	7464	2520	82460
BBB	31248	36084	31248	31248	36731	55532	2715	625	46730
CCC	38000	61265	40266	40266	51571	51571	4464	1933	52315
DDD	45564	55104	55104	55104	77206	77206	6912	2425	75492
EEE	29580	38652	29580	29580	41412	41412	3363	947	39805
1ST ENG									
AAA	28725	31175	31175	31175	40553	62136	4488	1247	52390
BBB	22404	25800	23508	23508	27633	63836	2250	470	46392
CCC									
DDD									
EEE	24204	31644	24204	24204	38823	38823	3013	775	35301
2ND ENG									
AAA									
BBB	20412	22404	22404	22404	26335	60838	2184	448	44253
CCC									
DDD									
EEE	19800	25896	19800	19800	31759	31759	2727	634	29140
3RD ENG									
AAA									
BBB									
CCC	16874	25729	19349	19349	24781	44129	2581	929	35249
DDD	23196	27828	27828	31724	41267	51102	3907	1224	44596
EEE									
OILER									
AAA									
BBB									
CCC	13549	20322	16936	16936	21690	38626	2364	813	30958
DDD	18084	21276	21276	24255	31551	39070	3185	936	34294
EEE									
WIPER									
AAA									
BBB									
CCC									
DDD	14508	16776	14508	16539	21514	26642	2439	638	23652
EEE									

INSTITUTION	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY
CH STEWARD									
AAA	20125	21825	21825	21825	28390	43500	3612	873	37148
BBB	16884	19464	19464	19464	22880	52854	2008	389	38556
CCC	15688	23740	17286	17286	22139	39425	2396	830	31581
DDD	20856	24840	23196	26443	34398	48942	3396	1021	40486
EEE	21156	25896	24024	24024	38534	38534	3002	769	35050
STEWARD/2ND COOK									
AAA	18150	19775	19775	19775	25724	39414	3420	791	33806
BBB									
CCC									
DDD	18396	21732	19536	22271	28971	41220	2993	860	34230
EEE									
MESSMAN									
AAA	11024	12975	11958	11958	15556	23835	2676	478	21051
BBB	11628	13152	12600	12600	14811	34215	1596	252	25256
CCC	11663	17343	12863	12863	16475	29338	1998	617	23715
DDD									
EEE									

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	4 Mos U/W TOTAL PAY
ENGINEER									
AAA	37812	45096	39516	59274	62972	62972	4815	948	53098
BBB	30000	34000	33000	33000	39618	58593	2660	660	44851
CCC	27226	46339	36242	36242	39634	83231	5024	0	56929
DDD	17820	22536	19640	19640	27518	32820	2739	864	27636
EEE	19616	29423	25000	30000	30000	47250	3802	1200	37419
FFF	22224	26604	26604	30329	39452	52190	3772	1171	40075
aaa									
bbb									
ccc	19000	33300	29120	29120	29120	43680	3824	1631	37001
ASS'T ENG									
AAA	26232	31272	27408	27408	29973	53613	3597	658	40398
BBB	30000	33000	31000	31000	37217	55042	2620	620	42254
CCC	22310	37171	23202	23202	25373	53284	3648	0	36877
DDD									
EEE	15752	23624	21312	25574	25574	40280	1973	1023	30631
FFF									
COOK									
AAA	19032	22692	21720	21720	23753	48188	3025	521	34089
BBB	18000	22000	21000	21000	25212	40962	2420	420	30494
CCC	19757	32947	21944	21944	23998	50395	3515	0	34943
DDD	23976	29160	25415	25415	35609	58043	3394	1118	46241
EEE	12738	18469	17820	21384	21384	33680	3098	855	27060
FFF	18396	21732	20856	23776	30928	46382	3138	918	33421
aaa	13000	18000	17747	17747	17747	17747	3223	781	21750
bbb									
ccc	16744	21882	20904	20904	20904	31356	3002	1171	26819
2ND COOK/MESSMAN									
AAA	16800	20040	20040	20040	21916	44461	2856	481	31517
BBB	16000	18600	18500	18500	22210	36085	2370	370	27102
CCC									
DDD									
EEE									
FFF									

R/V UNOLS

POSITION	HIGH	VSL	LOW	VSL	AVERAGE	MEDIAN
			LARGE			
MASTER	119612	FFF	68225	EEE	85932	87284
CH MATE	85155	FFF	49162	GGG	57714	53814
2ND MATE	80436	FFF	41879	DDD	50321	46516
3RD MATE	73779	FFF	36311	GGG	45722	42441
ABLE SN	40316	EEE	28918	HHH	33193	32491
ORDINARY	36694	EEE	23652	AAA	26641	24760
CH ENG	121336	FFF	48932	EEE	80051	81386
1ST ENG	87333	FFF	47757	EEE	56128	52390
2ND ENG	79491	FFF	45434	HHH	51517	47568
3RD ENG	76418	FFF	40337	GGG	47341	42441
OILER	40316	EEE	30540	CCC	34291	34297
WIPER	35010	EEE	24105	AAA	27960	26714
CH STEW	49297	FFF	33873	HHH	42122	43785
2ND COOK	41515	EEE	28918	HHH	36154	36276
MESSMAN	38699	EEE	21051	BBB	26577	25563
			INTERMEDIATE			
MASTER	87284	AAA	54766	BBB	69792	71997
CH MATE	52390	AAA	43852	EEE	47887	47653
2ND MATE	47378	AAA	40393	BBB	43531	42822
3RD MATE	42441	AAA	37313	DDD	39499	38742
ABLE SN	31069	BBB	25865	CCC	29614	30954
CH ENG	82460	AAA	39805	EEE	59360	52315
1ST ENG	52390	AAA	35301	EEE	44695	46392
2ND ENG	44253	BBB	29140	EEE	36697	36697
3RD ENG	44596	DDD	35249	CCC	39922	39922
OILER	34294	DDD	30958	CCC	32626	32626
WIPER	23652	DDD	23652	DDD	23652	23652
CH STEW	40486	DDD	31581	CCC	36564	37148
2ND COOK	34230	DDD	33806	AAA	34018	34018
MESSMAN	25256	BBB	21051	AAA	23341	23715
			SMALL			
MASTER	63269	CCC	40984	EEE	48733	45314
CH MATE	47867	CCC	34794	EEE	42722	44115
2ND MATE	41056	AAA	29135	DDD	34892	34689
DECKHAND	35712	CCC	23106	EEE	29005	27917
ENG	56929	CCC	27636	DDD	43335	42463
ASS'T ENG	42254	BBB	30631	EEE	37540	38638
COOK	46241	DDD	27060	BBB	34375	33755
ASS'T COOK	31517	AAA	27102	BBB	29309	29309

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	4 Mos U/W TOTAL PAY
			SMALL SHIPS						
MASTER									
AAA	39648	47280	41436	62154	66032	66032	5008	994	55638
BBB	32000	35000	34500	34500	41419	61256	2690	690	46799
CCC	35885	59789	46042	75242	79551	79551	6057	0	63269
DDD	30204	38232	33301	33301	47939	47939	4182	1465	43828
EEE	22092	33138	27230	32676	32676	51465	4369	1307	40984
FFF	23196	27828	27828	31724	41267	54591	3907	1224	41880
aaa	25000	35000	31717	31717	31717	31717	5178	1396	38291
bbb	28044	30960	30960	35604	59079	59079	3046	867	39559
ccc	29600	51800	36186	36186	36186	36186	4531	2026	42743
CH MATE									
AAA	26232	31272	31272	31272	34199	61171	3986	751	45975
BBB	30000	33000	31000	31000	37217	55042	2620	620	42254
CCC	25402	42317	30349	30349	33189	69698	4402	0	47867
DDD									
EEE_	19616	29423	24238	29086	29086	45810	2202	-163	34794
FFF									
aaa	18000	25000	23348	23348	23348	23348	4007	1027	28382
bbb	16744	21881	21881	25163	41754	41754	2399	613	28205
ccc									
2ND MATE									
AAA	23196	27660	27864	27864	30472	54504	3643	669	41056
BBB	23000	27000	26000	26000	31214	46164	2520	520	35761
CCC									
DDD	17820	22536	20724	20724	29036	34632	2863	912	29135
EEE									
FFF	18756	22224	22224	25335	32957	43598	3289	978	33616
BOS'N/AB/OS									
AAA	17880	21324	21324	21324	23320	41712	2985	512	31617
BBB	16600	21000	19000	19000	22810	33735	2380	380	26672
CCC	18757	32947	22444	22444	24545	51544	3568	0	35712
DDD	16224	20520	19843	19843	27802	33160	2762	873	27917
EEE	12738	18469	15444	18533	18533	29189	2339	741	23106
FFF									

MARPOL

INTRO

MARPOL Convention

"International Convention for the Prevention of Pollution from Ships, 1973."

"Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973"

Short Title is MARPOL 73/78

Origin is the 1973 Convention which never came into force. The Tanker Safety and Pollution Prevention Conference of 1978 generated the MARPOL Protocol which modified the 1973 Convention. Annexes 1 and 2 of the Convention are now in force.

STRUCTURE OF THE CONVENTION

Consists of Articles together with 5 Technical Annexes. Annexes contain the regulations which usually form the basis for U.S. regulations.

Articles provide rules of procedure, e.g. when comes in to force, control etc.

Annex 1 = Oil

Annex 2 = Noxious Liquid Substances in Bulk

Annex 3 = Harmful Substances carried in packaged forms

Annex 4 = Sewage

Annex 5 = Garbage

COMING INTO FORCE

The convention came into force on 2 October 1983. According to its Articles, this made Annex 1 effective on that date, with Annex 2 coming into force on 2 October 1986, i.e. three years later.

Annexes 3, 4, and 5 are termed "optional Annexes" because contracting governments may declare that they do not accept any one or all of these optional annexes when they become a party to the Convention.

Optional Annexes come into force 12 months after 15 states representing 50 percent of the gross tonnage of the world's merchant marine ratify/accept this annex to the convention.

In the U.S. Conventions, such as this, are considered as international treaties, that is, they must received advice and consent of 2/3 vote of the senate in order to achieve ratification. Further, there is enabling legislation required so that the proper agency (usually the Coast Guard) can issue implementing regulations. This provides much opportunity for public debate etc.

ANNEX V (Garbage), contains following technical standards

defines garbage; victual, domestic and operational waste, which excludes fresh fish parts.

has two standards for discharge of garbage; within special areas, and outside of special areas.

outside of special areas

no plastics

25 miles from land for dunnage, things that float

12 miles from land for food wastes, bottles etc (reduced to 3 miles if ground so can pass through 25mm mesh)

within special area

no plastics

no paper, rags, glass, dunnage etc

12 miles from land for food wastes

exceptions

safety of ship/life

loss of garbage due to damage

accidental loss of nets, etc

Reception Facilities

Governments are to ensure provision of reception facilities so as to prevent 'undue delay' to ships.

Governments are to report cases where facilities are inadequate.

STATUS OF THIS ANNEX

28 nations representing 48% of the gross tonnage of the world's merchant fleet have ratified this annex. USSR was most recent major maritime nation to ratify.

U.S. intends to ratify. President has sent message to Senate. Enabling legislation has also been sent to both houses of congress. In addition there is a great deal of legislation proposed to simply ban plastics from the oceans, thus there is a very favorable climate for acceptance of this treaty.

If U.S. ratifies, would be sufficient to bring annex into force, i.e. would add 4.91% representation of merchant fleet, bringing total to about 53%. Would become effective 12 months later.

Meanwhile, MEPC is developing an implementation guide which should be available soon. It will be considered at next meeting of MEPC during last week in November.

THOUGHTS FOR IMPLEMENTATION

Keep plastics off the ships

Grind garbage

Separate trash

Incinerate?

Use the implementation guide

ENFORCEMENT

200 mile l.m.t

GARBAGE RECORD BOOK

GARBAGE PLACARDS

USN vessels - 5 yrs to implement

"Special Area" - Gulf of Mexico - maybe

} enabling legislation may contain these enforcement provisions

INTERNATIONAL CONFERENCE

ON

MARINE POLLUTION, 1973

Final Act of the Conference, with attachments, including

the

INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973

IMO

1977 edition; reprinted 1986

ANNEX V

REGULATIONS FOR THE PREVENTION OF POLLUTION BY GARBAGE FROM SHIPS

Regulation 1

Definitions

For the purposes of this Annex:

(1) "Garbage" means all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other Annexes to the present Convention.

(2) "Nearest land". The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law except that, for the purposes of the present Convention "from the nearest land" off the north eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in

latitude 11°00′ South, longitude 142°08′ East to a point in
latitude 10°35′ South,
longitude 141°55′ East, thence to a point latitude 10°00′ South,
longitude 142°00′ East, thence to a point latitude 9°10′ South,
longitude 143°52′ East, thence to a point latitude 9°00′ South,
longitude 144°30′ East, thence to a point latitude 13°00′ South,
longitude 144°00′ East, thence to a point latitude 15°00′ South,
longitude 146°00′ East, thence to a point latitude 18°00′ South,
longitude 147°00′ East, thence to a point latitude 21°00′ South,
longitude 153°00′ East, thence to a point on the coast of Australia
in latitude 24°42′ South, longitude 153°15′ East.

(3) "Special area" means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by garbage is required. Special areas shall include those listed in Regulation 5 of this Annex.

Regulation 2

Application

The provisions of this Annex shall apply to all ships.

Regulation 3

Disposal of Garbage outside Special Areas

(1) Subject to the provisions of Regulations 4, 5 and 6 of this Annex:

(a) the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags is prohibited;

(b) the disposal into the sea of the following garbage shall be made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than:

(i) 25 nautical miles for dunnage, lining and packing materials which will float;

(ii) 12 nautical miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse;

(c) disposal into the sea of garbage specified in sub-paragraph (b)(ii) of this Regulation may be permitted when it has passed through a comminuter or grinder and made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than 3 nautical miles. Such comminuted or ground garbage shall be capable of passing through a screen with openings no greater than 25 millimetres.

(2) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

Regulation 4

Special Requirements for Disposal of Garbage

(1) Subject to the provisions of paragraph (2) of this Regulation, the disposal of any materials regulated by this Annex is prohibited from fixed or floating platforms engaged in the exploration, exploitation and associated offshore processing of seabed mineral resources, and from all other ships when alongside or within 500 metres of such platforms.

(2) The disposal into the sea of food wastes may be permitted when they have been passed through a comminuter or grinder from such fixed or floating platforms located more than 12 nautical miles from land and all other ships when alongside or within 500 metres of such platforms. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 millimetres.

Regulation 5

Disposal of Garbage within Special Areas

(1) For the purposes of this Annex the special areas are the Mediterranean Sea area, the Baltic Sea area, the Black Sea area, the Red Sea area and the "Gulfs area" which are defined as follows:

(a) The Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41°N parallel and bounded to the west by the Straits of Gibraltar at the meridian of 5°36′W.

(b) The Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia and the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.8′N.

(c) The Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41°N.

(d) The Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°8.5′N, 43°19.6′E) and Husn Murad (12°40.4′N, 43°30.2′E).

(e) The "Gulfs area" means the sea area located north west of the rhumb line between Ras al Hadd (22°30′N, 59°48′E) and Ras al Fasteh (25°04′N, 61°25′E).

(2) Subject to the provisions of Regulation 6 of this Annex:

(a) disposal into the sea of the following is prohibited:

(i) all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags; and

(ii) all other garbage, including paper products, rags, glass, metal, bottles, crockery, dunnage, lining and packing materials;

(b) disposal into the sea of food wastes shall be made as far as practicable from land, but in any case not less than 12 nautical miles from the nearest land.

(3) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

(4) Reception facilities within special areas:

(a) The Government of each Party to the Convention, the coastline of which borders a special area undertakes to ensure that as soon as possible in all ports within a special area, adequate reception facilities are provided in accordance with Regulation 7 of this Annex, taking into account the special needs of ships operating in these areas.

(b) The Government of each Party concerned shall notify the Organization of the measures taken pursuant to sub-paragraph (a) of this Regulation. Upon receipt of sufficient notifications the Organization shall establish a date from which the requirements of this Regulation in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date.

(c) After the date so established, ships calling also at ports in these special areas where such facilities are not yet available, shall fully comply with the requirements of this Regulation.

Regulation 6

Exceptions

Regulations 3, 4 and 5 of this Annex shall not apply to:

(a) the disposal of garbage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or

(b) the escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the escape; or

(c) the accidental loss of synthetic fishing nets or synthetic material incidental to the repair of such nets, provided that all reasonable precautions have been taken to prevent such loss.

Regulation 7

Reception Facilities

(1) The Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them.

(2) The Government of each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities provided under this Regulation are alleged to be inadequate.

PORT SECURITY CARDS

INTRO

This is revival of an old subject for a new reason; the institution of terrorism.

One way to deal with this is to control/monitor who is aboard vessels and waterfront facilities.

Is particularly important during times of national emergency.

Work is going on now to provide a workable system.

APPLICATIONS

USCG Captains of the Port have been directed to accept applications for Port Security Cards, emphasizing that priority should be given to persons employed by or associated with 'military essential' facilities and 'critical commercial' facilities.

Persons may make application at local USCG Marine Safety Office.

Will need 'sponsor',i.e. a letter showing need.

Complete application

PROCESS

USCG offices then send applications to Washington where they are turned over to the FBI for:

National Agency Check

National Crime Information Computer

State Agency check

FBI returns applications to CGHQ which then makes agency determinations and forwards them to field offices with instructions regarding issuance.

It is estimated that 200,000 of these will be processed. Are about 5,000 in process now.

Applicants will now get 'old style' cards.

FUTURE

Coast Guard is about 2 years away from implementing the desired system. Expects to have cards with magnetic strips, and card 'readers' in the field. Technical assessment is complete. In evaluation phase now.

USCG issued Merchant Mariners Document is still valid for port entry. May come a time when more may be needed. A MMD will let a person into a port but because won't contain the information that a Port Security Card will, person may need more identification to move freely within a port area.

Contingency Plans for vessel security. CG has just prepared a Vessel Security Guide for use by private sector, so appropriate measures may be taken to prevent problems, and to provide guidance when problems arise.

RECOMMENDATIONS

Get copy of the Vessel Security Guide

Contact local Captain of the Port regarding applications for Port Security Cards. Some offices may not take applications because of manpower limitations.

ref: 33 CFR 6, 125

ROBERTSON-SHIPMATE, INC.
HI-TECH
3000 Kingman Street, Suite 207
Metairie, LA 70006 USA
Tel. 504-455-9988 FAX 504-455-9795

A D.P. SYSTEM FOR EVERY BOAT... ALMOST

presented to:
RESEARCH VESSEL OPERATORS CONFERENCE
Durham, New Hampshire
October 13, 1987

by:
David C. Hackney
Vice President/General Manager
Robertson-Shipmate, Inc.
Hi-Tech

D.P. APPLICATION RESEARCH VESSELS

Marine life investigation, aquaculture, coring, surveys, seismic, ROV support, etc. work are activities that lend themselves to automatic station keeping.

A. D.P. vessel reduces the amount of time require to setup on station. D.P. vessels can work in deeper water than is practical with anchors. D.P. vessel are necessary for extended time over pristine or very rough seabottoms. D.P. vessels permit more work on station during limited, scheduled seatime or allows the work to be done in a shorter time. The seismic people say, D.P. vessels allow more bang for the buck.

THE SIMPLE AFFORDABLE APPROACH TO VESSEL STATION KEEPING.

Calculating position and proportional thrust can be neatly broken down into the language of the computer. Robertson Tritech of Egersund, Norway, has combined independent, microprocessor based systems, i.e. an autopilot , an integrated control system and a thruster display/selection panel into one command console. These modules work together at times and independently at others.

This modular concept allows the D.P. system to be built up with additional modules as needed yet eliminates single point catastrophic failure. Should the DP function fail, the system still has back up manual and semiautomatic joystick controls, and autopilot, functioning to give you the opportunity of completing your mission. All modules are easily replaced and lends it self to under sail repairs by the crew.

The module approach has one more very important benefit, and that of PRICE. The new generation of D.P. systems are manufactured as one of a family of products, all using common hardware. This family of vessel control systems, (Robertson has four maneuvering systems, maneuvering systems, three autotracking systems and two DP systems in its line) all use common hardware which lowers production costs, reduces support inventory, insures a more effective training support structure effort, and the end product has the dependability inherit in mature products.

THE AFFORDABLE PORTABLE D.P. SYSTEM

The smaller modulized D.P. Systems can be installed in a portable container and be used with a vessel of opportunity, including U.S. Navy tugs, as long as the vessels have similiar propulsion configurations. Of course, the vessels must have adequate athwartship thrust to be able to maintain station. The D.P. System can accept a navigation system's data output (to 0.01 meter accuracy), process it, and output command control signals to the engines, propeller and rudder controls within two seconds. Station keeping accuracy can then be calculated as a function of the nav system's accuracy and the propulsion capability of the vessel.

The D.P. command control signals to the engines is an electrical signal...a propotional +/- 10VDC signal is typical. Not all engine controls are electrical. Standard electric to pneumatic, hydraulic or electric are available, and too, can be fitted into the portable container.

The modern D.P. System can to be "all things to all people" or as a vanilla station keeping system. With the modular building block approach, the purchase of a D.P. System is easier to justify now, followed by the purchase of extra function, later.

D.P. FOR R.O.V. SUPPORT VESSELS.

An Important D.P. function is to allow the surface vessel to operate as a R.O.V. support platform.

R.O.V. Support vessels should have the ability to maneuver and maintain the proper position relative to the R.O.V. and the nearby land or man made structures. This can be done in two ways.

AUTOMATIC STATION KEEPING

The Dynamic Positioning System with SUB FOLLOW OPTION is designed specifically for this application.

The D.P. with SUB FOLLOW option accepts R.O.V. position information from a hydroacoustic beacon fitted on the R.O.V. This information is processed in the D.P. which sends command signals to the main engines, the thruster (s) and the rudders, to keep the surface vessel orientated to the R.O.V. The R.O.V. operator on the surface vessel "flys" the R.O.V. and the surface vessel follows along, automatically.

MANUALLY STATION KEEPING

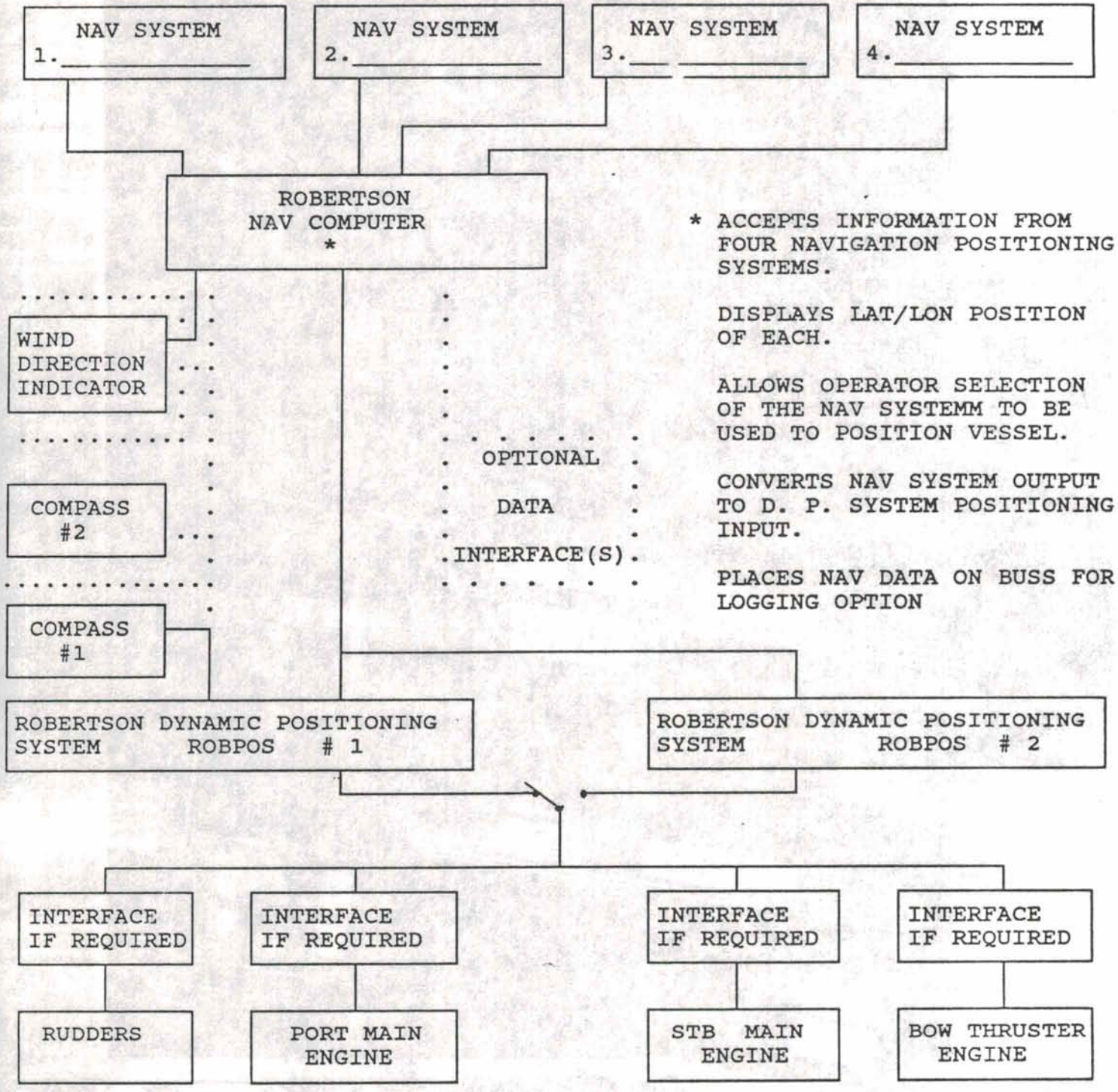
The manual maneuvering system integrates control of the main engines, thruster(s) and rudders into a s ngle joystick lever. The captain can maneuver the surface vessel, via the joystick, over the ROV if he has a video display of the proper information. Since the captain must maintain position, manual controls are used when the R.O.V. will be used for brief periods.

The manual station keeping function should be part of the automatic D.P. system as an independent back up.

SUMMARY

Dynamic positioning is now available for under $100,000. Dynamic positioning need not be fitted upon a dedicated vessel, almost any vessel with adequate athwartship propulsion is a candidate to be your marine platform. Dynamic positioning should be in your future.

DUAL ROBPOS DYNAMIC POSITIONING SYSTEM OVERVIEW
WITH NAV INTERFACE COMPUTER INFORMATION



* ACCEPTS INFORMATION FROM FOUR NAVIGATION POSITIONING SYSTEMS.

DISPLAYS LAT/LON POSITION OF EACH.

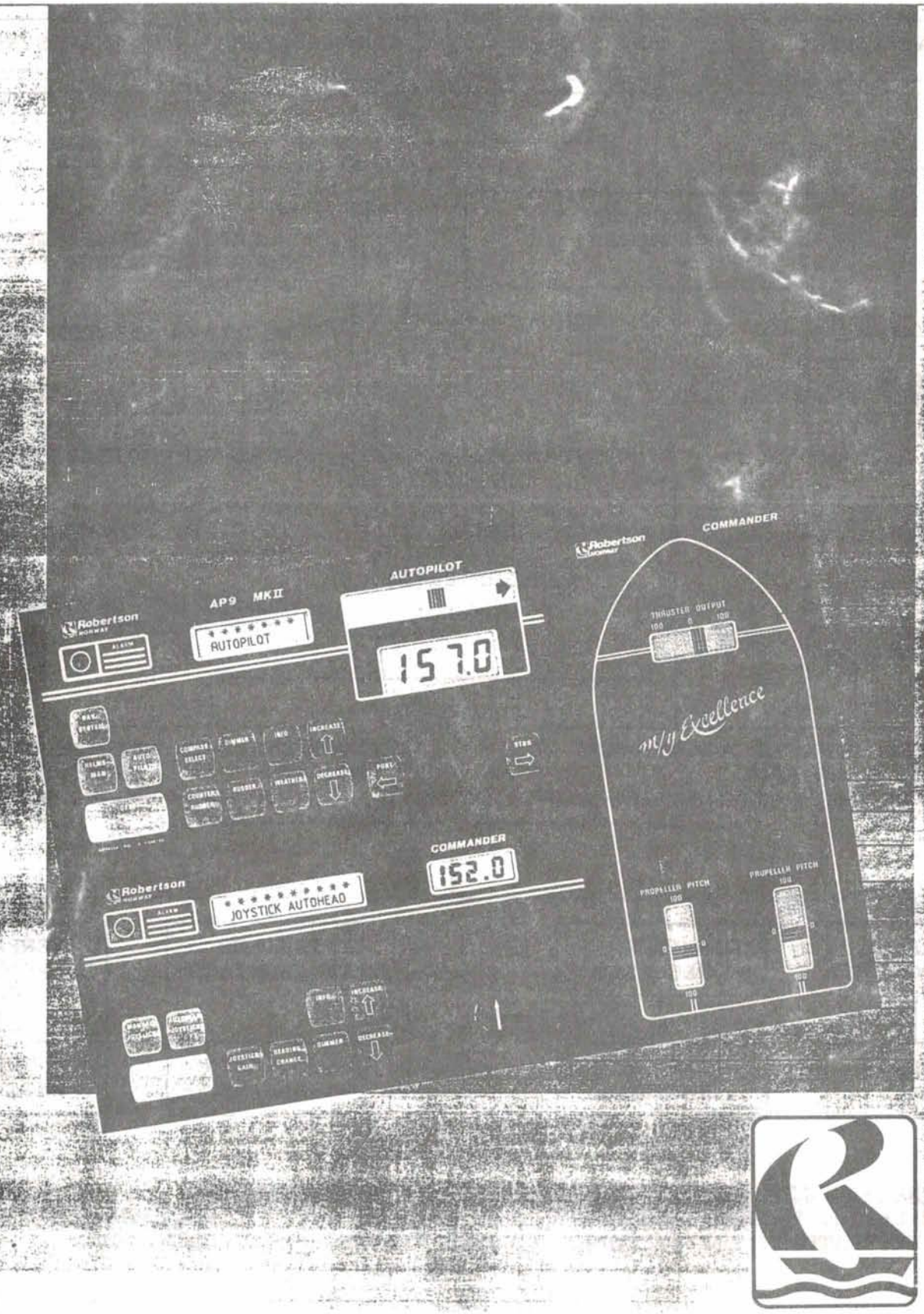
ALLOWS OPERATOR SELECTION OF THE NAV SYSTEMM TO BE USED TO POSITION VESSEL.

CONVERTS NAV SYSTEM OUTPUT TO D. P. SYSTEM POSITIONING INPUT.

PLACES NAV DATA ON BUSS FOR LOGGING OPTION

OPTIONAL LOGGING INTERFACES TO ROBERTSON NAV COMPUTER:
WATER DEPTH, WATER TEMPERATURE, NAV SYSTEMS, WIND DIRECTION, WAVE HEIGHT, AIR TEMPERATURE, AIR PRESSURE, VESSEL HEADING, TIME/DATE, ETC.

Robertson Commander



Robertson Commander

The Robertson Commander is the ultimate steering system for the ultimate yacht.

L.O.A. 50 m.

L.O.A. 62 m.

State of the art technology developed and proven onboard survey and offshore vessels has been adapted to suit the requirements of the super yacht.

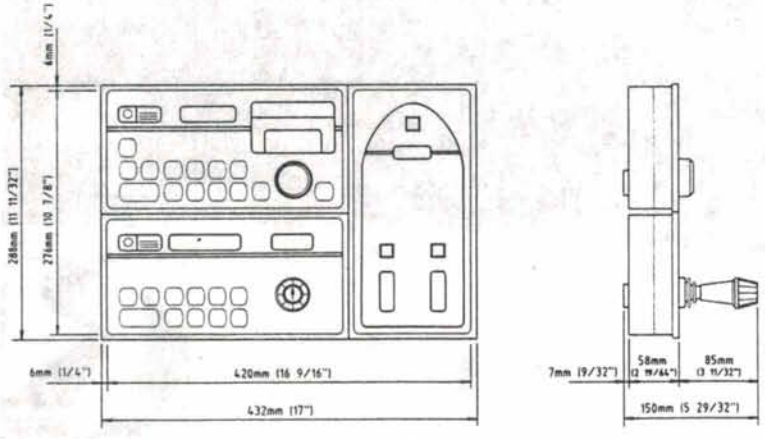
Simple and easy to operate, the Robertson Commander permits accurate finger-tip control of a vessel not only when in transit but also when manoeuvring in restricted waters.

In the Robertson Commander, one of the most advanced autopilots in the world the Robertson AP9MKII, is combined with integrated joystick control of thruster, main engines, propellers and rudders. The system, can be extended to include a number of «Sub-Commander» remote control units suitable for bridge wing and fly bridge installation.

The main control panel is personalised with the vessel's name, and can be colour-keyed if required.

Simple installation and easy service are features of the Robertson Commander. An international service network backs every installation.

The Robertson Commander is a professional steering system for the discerning few.



Technical specifications

Heading Reference: Magnetic Compass
Gyro Compass.

Alarms: Off Course Alarm
Power failure
Fault Alarm
External Alarm

Power Supply: Mains Voltage 24V DC ± 20%
110/220V AC + 10% - 15%
50-60 Hz
Alarm Voltage 24V DC ± 20%

Power Consumption: Panel 70 watt
Remote Control 30 watt

Environment: Operating 0° - + 55°C
Storage – 25° - + 70°C

Outputs:
- Analog
  6, fully isolated
  Signal level ± 2.2 - 10V DC with 2 K ohm load
- Relay
  2 sets, for 2 steering gear units
- Digital
  RS 232 current loop

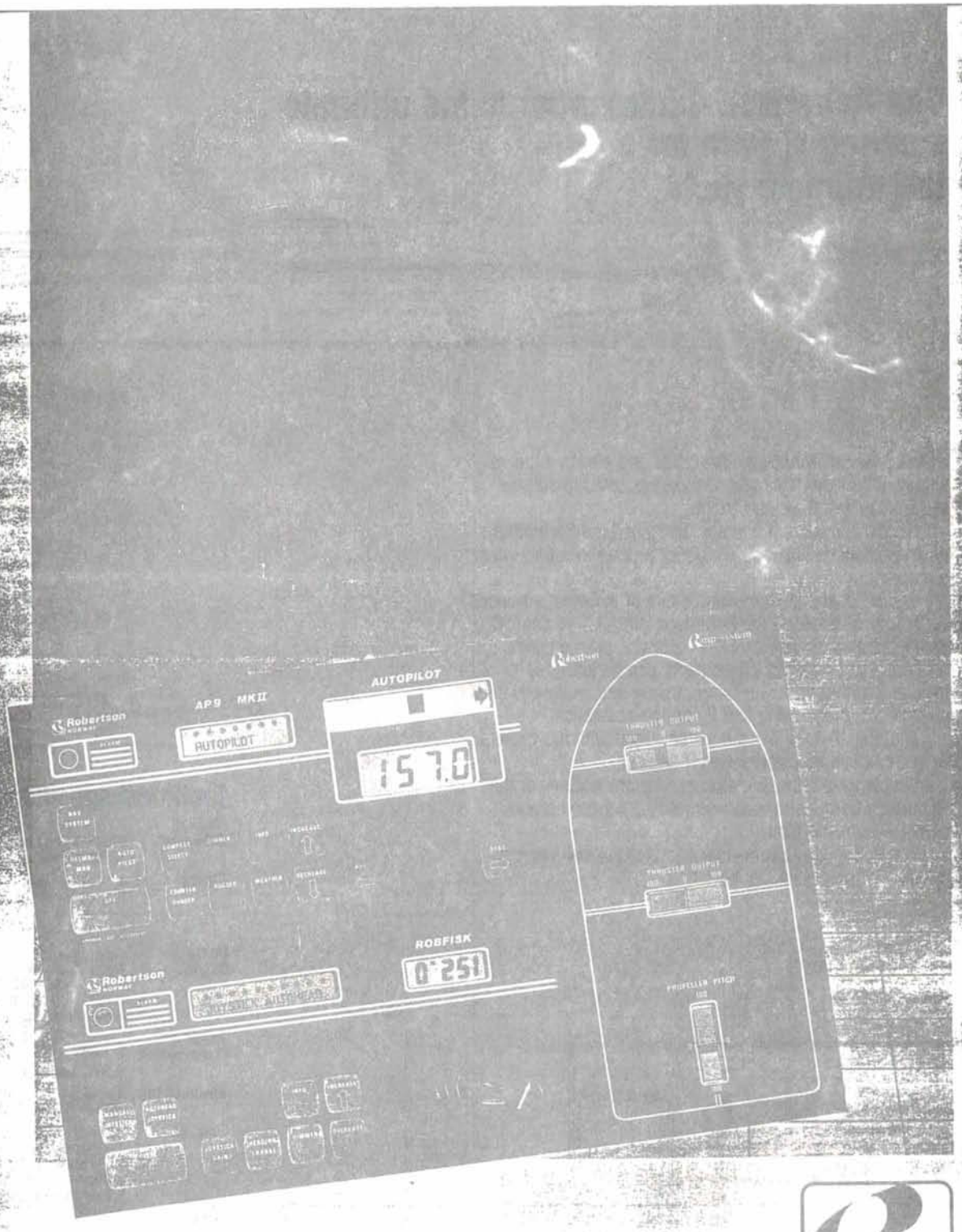
Navigation Receiver Interface:
Receivers with NMEA 0180 and 0183 format

Due to continuous development Robertson reserve the right to change specifications without prior notice.

Robertson TRITECH
member of the BIRD GROUP

Robertson Tritech, P.O. Box 55, 4371 EGERSUND, NORWAY
Tel. + 47 4 49 17 77, Telex 33 139, Telefax + 47 4 49 31 00

Robertson Robfisk Pilot



Total efficiency-where it counts

Autosteering is our business

ROBFISK represents the latest in a new generation of integrated maneouvering systems, its development being based upon the special needs of fishing vessels.

The system combines the control of thrusters, propellers and rudders in a single console, and offers a unique choice of steering possibilities:

- Automatic steering in transit
- Combined navigation and automatic steering
- Total maneouvering control using a single joystick
- Automatic heading control

The operating panel comprises of three units which can function independantly of each other:

- Joystick panel
- AP9 MKII autopilot
- Thruster panel

You steer the vessel using the autopilot or joystick dependant upon the actual situation:

- AP9 MKII autopilot, in transit, or combined with a navigation receiver for fully automatic steering to a predetermined waypoint.
- Joystick combining control of main engine, thrusters and rudder.
- AP9 MKII and Joystick when using «autoheading» function. The vessel is then maintained on a set heading while the Joystick is used to maneouver.

Easy to read displays show operating status. Push button controls are used for all settings.

Joystick panel

The Joystick panel allows for precision maneouvering (position,heading and speed) through the use of a 3 axis joystick.

The panel is equipped with two displays, a text display which confirms operative status and a numerical display which shows heading information.

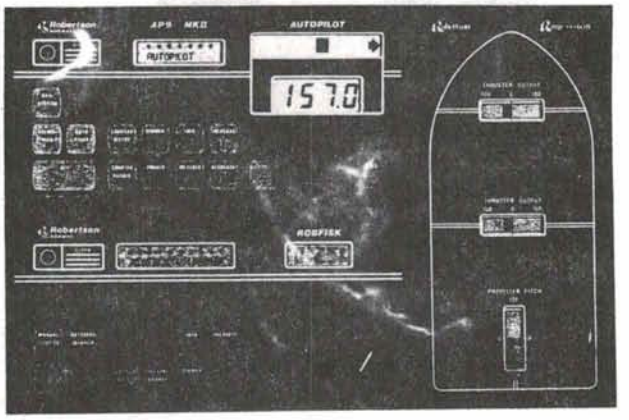
Using the push buttons on the Joystick panel,access is available to a number of special functions:

- Selection of vessel's turning point: bow – midships – stern
- Propulsion Control. The lateral movement of the joystick controls vessel propulsion.

During operation, the output of the main engine can be matched to requirements using the «Joystick Gain» function. This allows the available output to be limited, in steps of 10% down to 10% of maximum.

Limiting engine output in this way does not, however, restrict the lateral movement of the joystick, but allows precision maneouvering and fine control.

– **Autoheading** The set heading is automatically maintained by the system while position and speed are controlled manually. This combination simplifies maneouvering. For example, during net recovery when it is necessary to position the vessel relative to the trawl with optimal working conditions on the deck.



AP9 MKII Autopilot

AP9 MKII autopilot uses a completely new and extremely accurate rudder positioning system «predictive rudder control». This eliminates rudder overshoot and produces very accurate steering under autopilot control.

In addition two push buttons allow adjustments, by increments of 1 degree, to port or starboard.

Actual course is shown on a display together with a graphical presentation of course changes and course deviation.

The autopilot is adjusted to meet prevailing conditions and vessel characteristics by the use of push button controls. These cover all normal parameters such as rudder, counter rudder and rate of turn. A further unique feature of AP9 MKII is its ability to accept heading information from all known types of gyro-compass, as well as magnetic compass.

Thruster panel

Operation and output of the main engine and thrusters are controlled by the system's programme.

The Thruster Panel is used in conjunction with the Joystick to display the direction and magnitude of thrust and propulsion.

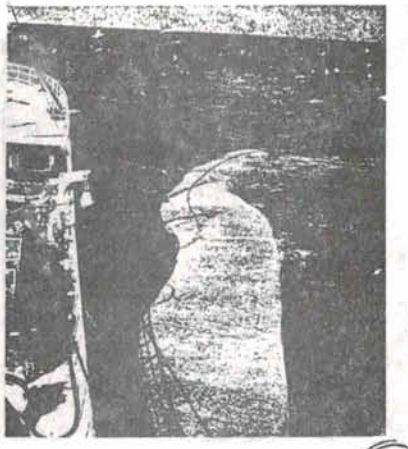
The thrusters and main engine each have their own on/off button.

Remote control

This unit is a duplicate of the ROBFISK panel and allows remote control of all functions. The unit can be mounted oriented for stern operation, i.e. the controls are «functionally» turned 180°. Other configurations are available.

From the Remote control you have the facility to undertake changes while in the autoheading mode.

System Configuration



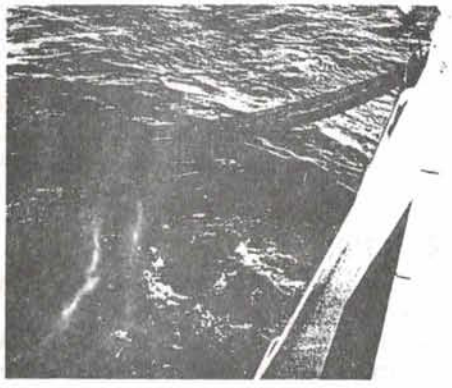
1

Main propulsion and rudder

The main propulsion system generates thrust alongships whilst the rudder, using a part of this, generates a turning moment.

Thrusters

With selection of joystick autoheading and stern turning point the wake from the stern thruster holds the trawl away from the main propellor (1)(2), while the bow thruster holds the vessel automatically on the desired heading (3).



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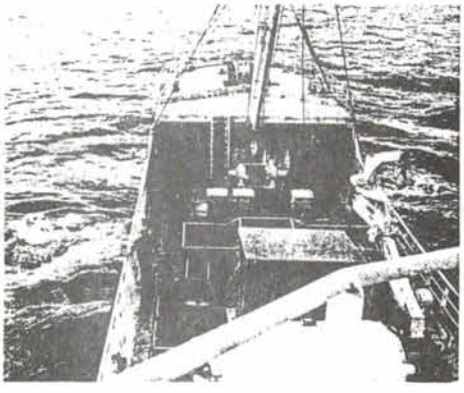

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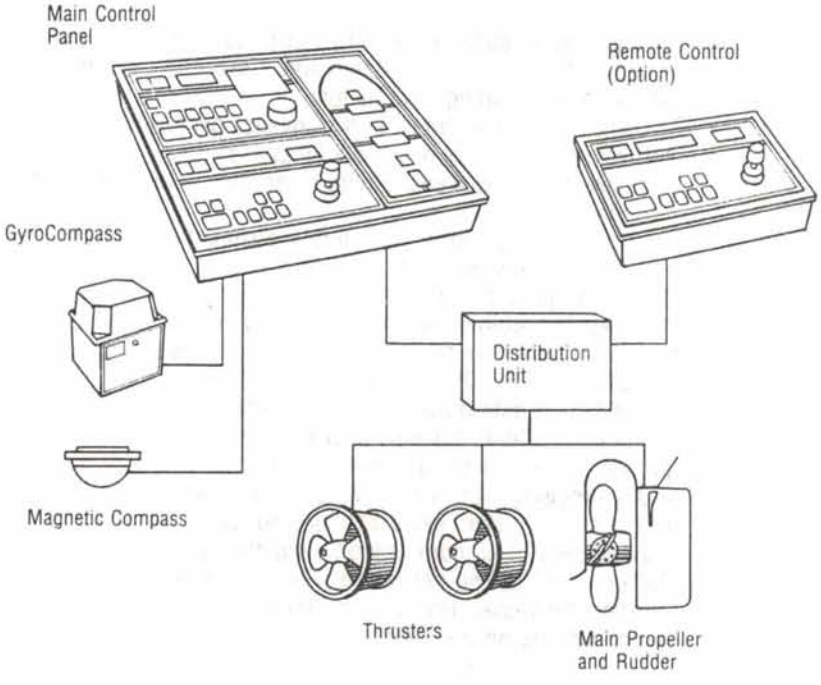

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50-60 Hz
Alarm Voltage 24V DC ± 20%

Power Consumption: Robfisk Panel 70 watt
Remote Control 30 watt

Environment: Operating 0° – + 55°C
Storage ÷ 25° – + 70°C

Outputs:
- Analog
  6, fully isolated
  Signal level ± 2.2 – 10V DC with 2 K ohm load
- Relay
  2 sets, for 2 steering gear units
- Digital
  RS 232 current loop

Navigation Receiver Interface:
Receivers with NMEA 0180 and 0183 format

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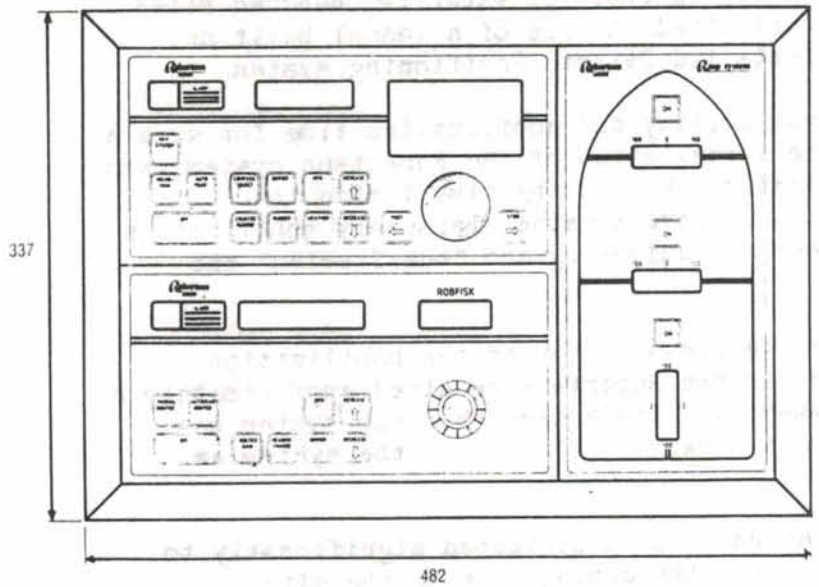
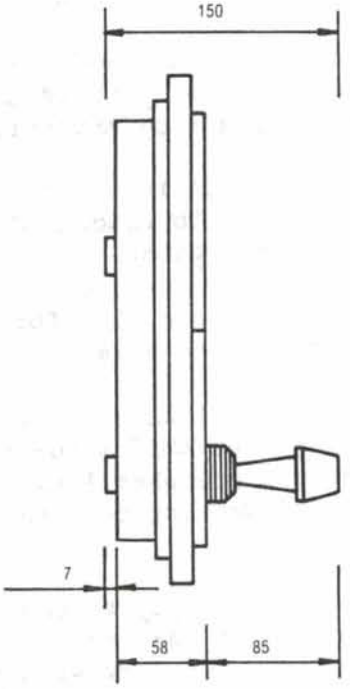
All dimensions in mm





ScanPartner/VestPartner RRA6 Gunnarshaug Stavanger

Robertson TRITECH
member of the BIRD GROUP
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Tel. + 47 4 49 17 77, Telex 33 139, Telefax 47 4 49 31 00

CRAFT MARINE ASSOCIATES, INC.

MARINE PROJECT MANAGEMENT
DEEP SEARCH AND RECOVERY
POST OFFICE BOX 125 • SATSUMA, FLORIDA 32089

DON CRAFT, PRESIDENT (904) 649-9503

10 October 1987

Mr. David Hackney
Robertson-Shipmate, Inc.
Metairie, Louisiana

Dear Dave,

This letter is to confirm our discussions of 8 October 87.

For several years I have provided Marine Special Project Management Services to a limited number of Companies dealing with unusual "at sea" requirements. Today, for me to accept a new client, that client must have a project that demands the unification of the leading edge of technology and superior seamanship skills.

The recent Columbus America Discovery Group project for the Summer of 87 was such a project. That project resulted in the recovery of artifacts, extensive photography with thousands of feet of TV records and was conducted from the deck of a vessel selected, mobilized, managed and operated under my direction.

To operate the ROV effectively in 8600' of water two hundred miles offshore, normally would have required the use of a vessel built or modified with a permanently installed Dynamic Positionning system.

My research into cost, availability and mobilization time for such a vessel led me to recommend the installation of the Robertson system into the Nicor Navigator. I must confess that at the time I made the recommendation I believed we would have a rather leisurely mobilization period with ample time for testing, adjusting and "bug freeing" the system after installation.

As you well know, competitive pressure turned the mobilization period into an ASAP situation and the Robertson received approximately a half a days use when I expressed my satisfaction that the system was capable of meeting our needs and accepted delivery of the system as installed.

I am very happy to say that decision contributed significantly to the success of the project. We beat the competition to the site, operated consistently within two meters of desired vessel position through state five sea conditions, through thirty knots of wind, in surface currents of one to one and a quarter knots.

To put the icing on the cake, the total cost of the system was approximately one tenth of the next unit priced for installation into a vessel selected by us. And, the system has been removed from the Nicor Navigator and is ready to be installed in another vessel when we desire.

I greatly appreciate the opportunity of working with you on the Central America project and sincerely hope the future brings us together on similar projects.

Best Regards,

Don Craft

UNIVERSITY OF RHODE ISLAND

OFFICE MEMORANDUM

To: - RVOC Member *Date:* July 21, 1987

From: RVOC Ship Lay-Up Committee

Subject: Strawman Point Paper on Ship Lay-Ups

Below is a strawman point paper on ship lay-ups. It was developed by the following committee: J. Bash, J. Williams, K. Palfrey, B. Jeffers and R. Hutchinson. It is sent out now for your purusal and comments. A portion of the October RVOC meeting will be set aside for open debate on this paper with the end objective to have adequate agreement to title it as an RVOC position paper. If there is a disagreement by a minority of members, a minority point paper may be in order.

The RVOC has been tasked by George Keller, UNOLS Chairman, to develop a position paper on the problems and merits of ship lay ups for cost savings purposes. This point paper is a consensus of the RVOC members.

We believe that lay-ups will be a way of life for ship operators for the forseeable future. This is partly the nature of the business because of the need to maintain a complete inventory of oceanographic vessels with different capabilities and the inherent mismatch of funding and hull availability. Recent history suggests that science has not been left ashore for want of a research vessel and that one to two ship years of ship time can not be funded annually. The types and sizes of ships which come up short of science seems to change to some extent from one year to the next. The focus of science to different geographic areas also changes. Ship mobility can often compensate for this but not always. Some years ships with special capabilities (such as Seabeam) are overworked while other years specialized ships and/or equipment go unused.

An optimum number of operating days for the various size vessels has been developed. This optimum number provides the best mix of operating days and maintenance days for the most cost effective ship operations. We believe that an effort should be made to maintain an optimum number of operating days on all "fully" utilized ships. Our operating experience suggests that this optimum number is as follows:

Class I & II	270 Days
Class III	250 Days
Class IV	220 Days

These numbers seem to balance dollar inflow with operating patterns and adequate maintenance time.

Ship's schedules which have significantly fewer days than the optimum are candidates for lay-up. What constitutes "significantly fewer days" is an arbritrary number, however, 80% of the optimum would seem to be a reasonable working figure.

Lay-ups are only effective if funds can be saved. It is believed that anything less than three months is not a lay-up but an extended inport period. Ship lay-ups in excess of 12-14 months (cold lay ups) create another problem and that is major start up costs. This paper will only address lay-ups of more than three months but less than fourteen. This we call a "warm" lay-up. Cost savings increase with months of lay-up to the point of becoming a cold lay-up.

The management of the lay-up must vary with the monies available. There are fixed costs of approximately one third the total annual operating cost which must remain. This includes insurance, security and shore staff. Approximately a third of the costs can be saved outright such as fuel, travel and food. The variable cost savings is in the middle third and is made up of crew costs, maintenance and supplies. Managers vary in their approach to this middle third. Some would prefer to keep as many of the crew in tact and perform maintenance in house. The other approach is laying off the crew and contracting out maintenance work. In any case all or a portion of this middle third is highly desirable for preserving the integrity of the ship.

During the life cycle of a research vessel periods of major overhaul or refit are necessary. If a vessel has an expected life of thirty years it could logically have a mid life refit at about the 15-18 year time frame. With the advances in science and science equipment a major science refitting might be expected every 10 years or at the 10 and 20 year time. This suggests at least three major down periods might be expected in a ship's life cycle. These down periods could be worked into the lay-up planning.

Besides the major refits above, ships can use a rest for general maintenance. This could be a welcome respite from extended operations or a down time needed to repair or replace equipment. If maintenance money was made available for lay-ups they would become less distasteful and even welcomed.

Lay-ups have been traumatic partly because of the short notice given. This causes turmoil with the crew and prevents orderly maintenance planning. Learning of a lay-up in October for the following calendar year is not adequate warning. This has been known to be a problem for some time. In 1986 it was agreed that the lay-up decision would be made in July. In fact the decision came in October as in the past. The uncertainty of funded cruises plays a major part in this delay. Operators hang on in hopes that the August panel will provide funding for a goodly number of their cruises. In most cases this does not happen. The signs are normally clear in mid-summer with maybe 10-20% of cruises unfunded. This would suggest that ships with schedules including 60% or less of funded cruises will not likely "get well" with the August panel results.

Coupled with the short notice given is the long lead time necessary to properly engineer major repair work and then go through the full proposal process with its peer review. If this process does not start until October it is reasonable to expect that funding can not be made available until July or August of the lay-up year. Then it becomes difficult to get the work completed in the remaining time. Some of this time line can be shortened by advance planning. If all ships were encouraged to do advance engineering studies on a long range work package significant time could be saved. These work packages could also be reviewed by the ABSTECH or INSURV inspections. This process would assist the funding agencies with their priorities and probably cull out some of the plans. It could also streamline the proposal review procedure. Another idea to streamline the review process is to establish a review team for on site review. It would seem that any speed up in receiving upgrade money would be beneficial.

We believe the lay-up decision should be made based on an open forum discussion using logical criteria. The principal candidates in lay-up should be given the first opportunity to resolve the issue. If there were some assurances that upgrade funding would be made available it is likely that prospective lay-up operators would be willing to volunteer for lay-up.

The following procedures towards lay-ups are recommended.

Yr-15 mos 1) All institutions should be encouraged to establish a prioritized upgrade plan that has completed at least preliminary engineering.

Yr-12 mos 2) ABSTECH and/or INSURV should review these upgrades and make recommendations as to the viability of each item, possibly prioritizing the upgrade list.

Yr-8mos 3) Funding agencies advise the community as early as possible (Apr-Jun) as to the number of ship days that will be funded. The short fall can then be calculated.

Yr-6mos 4) Funding agencies pledge maintenance or upgrade funds for lay-up ships prior to 1 July.

Yr-6mos 5) Ships with light schedules in July become designated candidates for lay-ups. The following formula would apply:

Total Funded cruises scheduled	=	F
Total proposed but unfunded cruises scheduled	=	P
Optimum Days	=	0

$F + .33P \geq .8 \times 0$

This presupposes that only 1/3 of the unfunded cruises, in July, will be funded by the August panel.

Optimum days are:

Class I & II	270
Class III	250
Class IV	220

Yr-6mos 6) Operators are now given an opportunity to volunteer for a lay-up.

Yr-6mos 7) Those operators in the lay-up candidate category now get together, without outside assistance, to attempt to resolve the ship day shortfall.

Yr-5mos 8) Chairperson of the East and West Coast scheduling groups plus the funding agencies resolve shortfall unanswered by 6 and 7 above.

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and Commercial

A Knight-Ridder Newspaper

Second Class Postage Paid at N.Y., N.Y. and additional Mailing offices Publication I.D. No ISSN 0361-6561.

FRIDAY, JUNE 26, 1987 160TH YEAR ONE DOLLAR

State Immunity Upheld In Seamen Injury Suits

Court Rules 11th Amendment Is a Shield

By TIM NEALE
Journal of Commerce Staff

WASHINGTON — The Supreme Court upheld a lower court ruling that the 11th Amendment shields states from injury suits filed in federal court under the 1920 Jones Act.

The Jones Act reserves U.S. coastal trades for U.S. ships and gives seafarers injured while working aboard such ships the right to sue for damages in a federal court as though they were federal employes.

Where the employer of the injured party is a state agency, however, such a suit is improper, the Supreme Court said in its decision.

It agreed with the ruling of the lower court that the 11th Amendment prohibits a state employee from suing his state in federal court unless the state expressly waives its immunity and consents to the suit.

It said that while the Jones Act gives injured seafarers the right to pursue claims in a federal court, such a general authorization "is not the kind of unequivocal statutory language that is sufficient to abrogate the 11th Amendment, which marks a constitutional distinction between the states and other employers of seamen."

The case reviewed by the court involved an employee of the Texas Highways Department, Jean Welch, who was injured while working as a marine technician on a ferry landing dock in Galveston. While on the dock, she was asked to help raise a work barge onto the dock using a mobile crane that overturned, crushing her against a guardrail.

Her suit was dismissed by the Federal District Court for the Southern District of Texas and the dismissal was later upheld by the U.S. Court of Appeals for the Fifth Circuit.

The Supreme Court split on the issues raised by the case, with five justices upholding the court of appeals and four dissenting from that opinion.