UNIVERSITY - NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

Research Vessel Operator's Committee

Summary Report

of the

1991 Annual Meeting

Hosted by
Institute of Ocean Sciences

Sessions held at the
Empress Hotel Convention Center
Victoria, British Columbia, Canada

Contents:

Minutes of the 1991 Annual Meeting

Appendices

MINUTES OF THE 1991 ANNUAL RVOC MEETING
INSTITUTE OF OCEAN SCIENCES
VICTORIA, BRITISH COLUMBIA, CANADA
10-12 SEPTEMBER, 1991

WELCOMING REMARKS

The meeting was called to order by Chairman Jim Williams, Marine Superintendent, Scripps Institution of Oceanography.

Dale Gibb, Chief, Marine Division, Institute of Ocean Science (IOS), welcomed the RVOC to Victoria and reviewed the meeting location changes necessitated by the Public Service Alliance of Canada strike against the Canadian government.

Dale introduced Dr. John Davis, Regional Director of Science, IOS, who addressed the membership on the challenges facing scientists and vessel operators in helping to solve global issues.

AGENDA

The meeting followed the Agenda outlined in Appendix I. Registered attendees are listed in Appendix II.

OLD BUSINESS

1990 MEETING MINUTES

A motion was made, seconded and passed to accept the minutes of the 1990 meeting.

RVOC NEWSLETTER

A discussion was held regarding the RVOC Newsletter. Comments were favorable concerning both content and frequency of publication. It was agreed that it should be continued.

FEDERAL REGISTER MONITOR

Jack Bash, UNOLS Executive Secretary, commented on the contract with George Ireland to monitor the Federal Register. A general discussion followed which indicated that perhaps Ireland was providing too much information. It was generally agreed that too much is better than nothing and that the service should continue as is.

SHIPBOARD DIVING SAFETY

Jim Williams reviewed the status of small boat operations as they relate to diving safety, in particular the need for standard boat operator qualifications for the UNOLS fleet. After some discussion, it was agreed that each institution should be responsible for setting their own qualification standards, rather than establish them fleet-wide. In establishing the standards, institutions could draw upon the information contained in the Final Report of the Workshop on Shipboard Scientific Diving Safety and strawman guidelines prepared by Tim Askew, HBOI, Small Boat Operations From Research Vessels. (See Appendix III)

The procedures used by institutions operating marina-type small boat facilities was also briefly discussed. Tim Askew, HBOI, prepared strawman guidelines which address the boats and equipment, operator requirements and operating procedures for shore based small boat operations. It was felt that these guidelines would be helpful to those operators who need to establish guidelines of their own. (See Appendix IV).

ALCOHOL/DRUG TESTING

Discussions were held regarding the use of alcohol on board research vessels. Four UNOLS operators still allow limited usage, such as beer/wine with the evening meal or during a cookout.

Dale Gibb, IOS, described the alcohol use policy on Marine Division, Pacific ships. Large ships are "wet" with the onus for control placed on the Master. Small ships are "dry" because they are generally in port every 1-2 days.

Jim Williams began a discussion on drug testing by noting the 1 October 1991 random drug testing requirement date for all operators.

Some problems were reported with maintaining chain of custody when transporting samples to the testing facility, especially from foreign ports. It was recommended that the RVOC pursue an acceptable transportation method (e.g., FEDEX, DHL) that would ensure that the chain of custody is maintained.

Several operators aired their concerns on the position exemptions allowed by the Coast Guard from the random testing requirements.

NEW BUSINESS

MANNING LEVELS

Bill Jeffers cited some problems associated with the manning levels for Thomas G. Thompson. During the ensuing discussion, several operators expressed concern that the manning levels of the UNOLS fleet had reached the bottom of what is acceptable for safe operations. It was generally agreed that we may need to look at manning levels from the viewpoint of safety and reverse the trend toward decreased crew size.

SALARY SURVEY

Bill Coste reviewed the results of his 1991 Salary Survey of the UNOLS fleet. The survey served as a springboard for discussions on compensatory time accrual and pay-off methods. (See Appendix V).

SAFETY COMMITTEE REPORT

Mike Prince briefly reviewed Safety Committee activities for the year. He reported that the long-awaited RVOC Safety Training Manual was still being printed and cited problems with the printer as reason for the delay. The manuals will be distributed among the operating institutions as soon as they are received from the printer.

LEGAL AND INSURANCE UPDATE

Dennis Nixon described his duties and responsibilities as Risk Manager/Legal Advisor for UNOLS.

Plans are underway to update the information contained in the insurance study, An Analysis of the Academic Fleet Insurance Program, done in 1988 by Dolly Dieter. Among other things, Dennis will use the updated information to do a cost comparison of the UNOLS fleet. He requested that all operators send a copy of their most recent policy to him.

Dennis reported that cost savings are possible with P&I clubs if an operator is free to seek alternate means of insurance. He expects insurance costs to increase over the next few years as a result of several large losses incurred by the underwriters during the past year (e.g., Exxon Valdez, Hurricane Hugo, aviation losses). Operators with a clean record can expect premium increases of approximately 15%-20%; those who have filed claims, more. Some operators report that their premiums have already doubled.

NSF Grants and Contracts is taking a closer look at insurance costs. There will be a push by the agency for operators to seek out more economical means of insurance. After some discussion on this issue, a motion was made, seconded and passed for the UNOLS Office to solicit interest from the operating institutions to participate in a P&I Club type insurance arrangement.

Discussions were held on the effect that The Americans with Disability Act of 1990 may have on the fleet. Among other things, this act states that an employer cannot discriminate against a person with a disability unless it would place "undue hardship" on the employer.

PIER SAFETY AND CONDITION INSPECTIONS

Jim Williams reported on concerns raised by Dr. Grant Gross, NSF, during the July UNOLS Council Meeting that the piers and other docking facilities currently in use throughout the UNOLS community may not be adequate for existing and future vessels. Dr. Gross wanted to know if these facilities should be included under some

sort of inspection process to insure their adequacy and safety. A discussion was held on this issue with the RVOC taking the following position:

1. The condition and adequacy of piers and other docking facilities is the responsibility of the individual operator.

2. ABSTECH should continue the practice of providing a cursory inspection of these facilities during the biennial ship material review inspection. Obvious problems would be flagged for future action by the operator.

RESEARCH VESSEL CRUISE ASSESSMENT

As requested by the UNOLS Council, Jim Williams presented drafts of both a revised Research Vessel Cruise Assessment form and a Captain's Post Cruise Report form for discussion by the RVOC membership. Some changes were noted and made to the forms. A motion was made, seconded and passed to present a draft of both forms, as revised, to the UNOLS Council for approval. (See Appendix VI and VII).

COMSAT REDUCED BILLING

Jack Bash reported that his study of INMARSAT usage by the UNOLS fleet indicates that, if the usage charges were lumped together as a group, the fleet could realize some savings. He cited several problems associated with implementing such a plan, the foremost being that COMSTAT would require a single check to be issued for the entire fleet's bill. Various methodologies were discussed to handle the billings, but no mechanism was identified to efficiently manage them. Jack agreed to continue discussions with COMSAT on this issue.

AGENCY REPORTS

NATIONAL SCIENCE FOUNDATION

Dolly Dieter discussed the new proposal format required this year for Ship Operations proposals to NSF. She also mentioned that operators should read their charter party agreements and award letters for information regarding ethics in proposals.

NOAA

Capt. David Yeager reviewed the FY 1992 NOAA schedule outlook, which currently projects a shortfall of about 2,086 days at sea. He indicated that he has spoken to some UNOLS operators about helping to alleviate this shortfall. Capt. Yeager also discussed the fleet modernization plan, which includes service life extensions, repairs to extend vessel life, and charters to the UNOLS community (during the first year of the plan).

The details of the USC/NOAA manning/operation scheme for the VICKERS were briefly discussed.

OCEANOGRAPHER OF THE NAVY

Pat Dennis briefed the meeting on the budget status of AGOR 24 and TAGS, which will be an ice strengthened hull.

OFFICE OF NAVAL RESEARCH

ONR representative June Keller provided the membership with copies of the recently completed Navy Fuel Project. She reminded operators that given the current "audit-happy" climate, they must be fully able to substantiate costs and use of ONR funds at all times.

UNOLS

Jack Bash reported on UNOLS Office activities and some of the issues currently before UNOLS.

1. The UNOLS Council has appointed a panel to review the ABSTECH ship inspection program to evaluate if it is achieving its intended purpose.

2. A UNOLS Safety Panel Subcommittee has been formed to oversee safety issues of concern to the UNOLS fleet. It's members will include the Chairman of the RVOC Safety Committee.

3. The current direction of coastal oceanography is expected to have an impact on the design of research platforms needed to support future operations. It is envisioned that one design might be a vessel capable of carrying large scientific parties for short periods of time to support coastal interdisciplinary projects. The newly formed Mid-Atlantic Research Consortium (MARCO) is expected to serve as the blueprint for coordinating the design and operation of such a new generation coastal oceanography vessel in that region, working in concert with the UNOLS Fleet Improvement Committee (FIC). Don Wright, Virginia Institute of Marine Science (VIMS), and FIC member, is currently looking at the science mission requirements for such a vessel.

4. The Submersible Science Committee of UNOLS has been formed to look at submersible science problems on a broader scale than the Alvin Review Committee (ARC).

U.S. STATE DEPARTMENT

Tom Cocke, U. S. State Department, briefed the meeting on clearances and post cruise obligations. His records indicate that up to 60% of the obligations are late. The State Department may begin to hold up clearances for those scientists who continue to neglect their obligations.

An additional position has been added to Tom's office to assist in the clearance process.

SPECIAL REPORTS

INSTITUTE OF OCEAN SCIENCES SHIP OPERATIONS

Dale Gibb, Chief, Marine Division, Institute of Ocean Sciences (IOS) briefed the meeting on IOS ship operations, including future disposition of the fleet.

KNORR/MELVILLE

June Keller reported on the expected delivery date of Knorr and Melville from McDermott. Knorr had 280 discrepancies after the first sea trial.

OCEANUS CLASS MID-LIFE REFIT

Bill Hahn, URI, provided an update on the status of the planned mid-life refit of the Endeavor, Oceanus and Wecoma. He anticipated that a $500K contract for the engineering design phase for the three ships would be let through URI about 1 October 1991.

THOMAS G. THOMPSON

A report on the recently delivered AGOR 23, R/V Thomas G. Thompson to the University of Washington was given by Bill Jeffers. Bill noted that there were few deficiencies noted under the contract after the shakedown and that there were few engineering problems. A fall maintenance period is plannnd to correct the deficiencies.

AGOR 24/25

June Keller provided a brief look at the status of AGOR's 24 and 25. The solicitation to shipyards is on the street and is due 1 November 1991. She reported that Scripps Oceanographic Institution has been selected as operator of AGOR 24, Woods Hole Oceanographic Institution as operator of AGOR 25.

WIRE LUBRICATION SYSTEM

Ken Palfrey reported on the CORE-LUBE wire lubrication system that OSU has been using. It is a lightweight system, recirculating type, that works well, with good penetration. The basic unit costs about $3,200, will handle all UNOLS standard size wires and is touted to work with a variety of lubricants.

INVITED SPEAKERS

TELECOMMUNICATIONS SYSTEMS AND RELATED EQUIPMENT FOR THE 90's; GMDSS

Joe Hersey, U. S. Coast Guard Headquarters, presented a very informative overview of the Global Maritime Distress System (GMDSS). Some of the highlights of his presentation included:

- a look at GMDSS as a system and requirements under SOLAS
- GMDSS implementation dates, voluntary vs mandatory compliance
- an explanation of digital selective calling (DSC)
- the current operational status of NAVTEX and predicted coverage areas
- EPIRB classifications, phase-in, and coverage
- SAR Radar Transponder characteristics and limitations
- VHF-FM and 2 Mhz DSC implementation (See Appendix VIII)

REPORT ON RESULTS OF NSF/MARAD MATERIAL CONDITION REVIEWS OF RESEARCH VESSELS, 1982-91

Sam Applegarth, ABS Technical Services, addressed the meeting on the purpose, history and development of the NSF ship inspection program as it exists today. In addition to outlining what is looked at during the inspection, Sam provided a synopsis of the problem areas that have been identified since he became involved with the inspection program in 1981. The results of the inspections indicate that the NSF inspected UNOLS fleet is in good condition and that the purpose of the program is being met. (See Appendix IX).

SCIENCE INFORMATION SYSTEMS, DATA GATHERING, SAIL

Rich Findley, University of Miami, began his presentation on data systems with a brief history of the Serial ASCII Integrated Loop (SAIL), followed by a detailed description of the Centralized Integrated Data System (CIDS) on Columbus Iselin. Rich provided a look at the hardware used in the CIDS network, sampling rates, data logging display capability, and cost. A shore based system is available that is similar to the ship's, with the capability to handle telemail and send/receive messages to/from ship.

SAFETY SEMINAR

Mike Prince began the safety seminar by outlining goals for the workshop which would include review, discussion and decisions on safety standards, hazardous materials, waste and pollution control and other issues. (See Appendix X). The workshop generally followed the Agenda for Wednesday Afternoon which is outlined in Appendix XI

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UNOLS RESEARCH VESSEL SAFETY STANDARDS

Mike Prince outlined the review process and proposed revisions to the UNOLS Research Vessel Safety Standards (RVSS). Most of the discussion which followed centered on the revisions that will be necessary to Chapter 8, Lifesaving Equipment and Chapter 12, Communications once final rules are published in the Federal Register. It was suggested that the Safety Committee stick to the proposed timetable for publishing changes to the RVSS, rather than delay it awaiting the changes to Chapters 8 and 12.

Discussion and decision concerning the need to separate explosives into a stand alone chapter, proposed changes to Chapter 9, Explosives and Hazardous Materials and adding a chapter on shipboard hazardous waste and pollution control was deferred until the workshop. (See Appendix XII)

WORKSHOPS

HAZARDOUS MATERIALS, PREVENTION OF SHIPBOARD POLLUTION

The workshop began with a report by Jim Williams on concerns which Grant Gross and the UNOLS Council had regarding research vessel compliance with state, national and international regulations pertaining to the transportation, storage, handling and disposal of hazardous materials. At the request of the UNOLS Council, the RVOC was asked to address the safety issues, inventory control, labeling, response guidelines, transportation and training, among other hazmat issues. An RVOC ad hoc committee on hazardous materials was formed during April, 1991 to address these issues. Committee members included Bruce Cornwall, CBI (Chairman); Linda Goad, U. Michigan and Bill Hahn, URI.

Bruce Cornwall reported on the June 12, 1991 hazardous materials committee meeting held in Atlanta, GA. After presenting some background information, he outlined the objectives of the committee:

1. Review the hazardous material issues with regard to UNOLS research vessels, in particular, compliance with state, federal and international regulations concerning transportation, storage, handling and disposal.
2. Address the safety issues of hazardous materials, including inventory control, labeling, response guidelines, training, etc.
3. Develop a set of guidelines or a manual that covers the administrative, logistic, operational and environmental aspects of dealing with hazardous materials.
4. Make recommendations for changes to Chapter 9 of the UNOLS Research Vessel Safety Standards.

The committee discussed the broad range of hazardous materials found on research vessels and divided them into two categories: those inherent to the daily operation of the ship and those used in the lab for scientific purposes. It was felt that the hazardous materials inherent to daily ship operations were the least onerous from both a safety and environmental viewpoint since they are well regulated and dealt

with by the operator on a daily basis. For most of the ensuing discussions the committee focused on the safety and environmental issues concerning the hazardous materials used for scientific purposes. Several problem areas were identified:

1. Scientists boarding ships with unknown quantities of hazardous materials.
2. Quite often, the neutralizing agents, buffers or other method of addressing a spill is unknown both to the scientific party and operator.
3. Material Data Safety Sheets (MSDS) for hazardous materials are not available.
4. Scientists are leaving hazardous materials in the lab after they complete a cruise, putting the onus on the operator to arrange and pay for its disposal.
5. Storage containers are not properly marked.
6. Containers used for working quantities in the lab are not being labelled.

The committee concluded that the problem areas which were identified could create unsafe conditions in the laboratory. To ensure a higher degree of safety in the lab, the committee recommended that several changes be made to Chapter 9 of the UNOLS RVSS.

In concluding his report, Bruce outlined the recommendations which the committee felt would help to address the hazardous material issue:

1. Identify specific problem areas and issues for future discussion.
2. Based on input from discussions at the RVOC meeting, expand the ad hoc committee or convene a workshop to begin developing guidelines to address hazardous materials issues.
3. Change the name of Chapter 9 of the UNOLS RVSS to "Hazardous Scientific Materials." Incorporate recommended changes and additions. Separate explosives from hazardous scientific materials in a stand along chapter, similar to the way radioactive materials has been treated in Chapter 11.
4. Create a chapter in the UNOLS RVSS to address the prevention of pollution from ships and shipboard hazardous materials (those inherent to the daily operation of the ship).
5. Urge UNOLS operators to include a section in their cruise planning manuals on hazardous materials, if they don't already have one. This section should be detailed and include the scientist's responsibilities as well as the operator's procedures and special requirements, such as institutional practices or compliance with local regulations.
6. While recognizing that the RVOC Safety Training Manual has not been distributed yet, the committee thought that Chapter 13, "Hazardous Materials," and the Research Party Supplement, "Hazardous Materials," contain some excellent information on this issue. Operators should strongly urge the ship's crew and scientific party to read them when they become available.

Following the hazardous materials committee report, Bruce Cornwall reviewed the committee's proposed changes to Chapter 9 of the RVSS. A discussion followed, with a recommendation made to add a paragraph which would state that hazardous scientific materials should be shipped according to proper Department of Transportation (DOT) regulations. (See Appendix XIII).

Mike Prince presented some background information on the definitions and regulations concerning hazardous materials and waste. Several copies of the NOAA Hazardous Waste Manual were distributed to the membership for review while Mike gave a brief overview of its contents.

A discussion was held on whether to add a separate chapter concerned with shipboard hazardous waste and pollution control. The consensus was that the contents of the proposed chapter was more regulatory in nature and not really related to safety. It was agreed that another chapter was not necessary to address this issue and that enough information, in the form of manuals (e.g., NOAA Hazardous Waste Manual), etc., already exists to address it. (See Appendix XIV)

A recommendation was made for the as hoc committee on hazardous materials to make a statement to address shipboard hazardous waste and pollution, which would include a compendium of the information already available on the subject, including, but not limited to:

1. NOAA Hazardous Waste Manual
2. NOAA Corps Instruction 6280B, "Hazardous Materials and Hazardous Waste Policy, Guidance, and Training"
3. Chapter 13, "Hazardous Materials," RVOC Safety Training Manual

Some discussion was held on making Explosives a stand alone chapter in the UNOLS RVSS. It was agreed that the Safety Committee would consider this recommendation during their next meeting.

Linda Goad reported on some excellent lab safety training videos and hazardous materials safety training seminars available from J.T. Baker. (See Appendix XV).

ROUND TABLE DISCUSSION

The following topics were addressed by Marine Superintendents during the round table discussion:

Garbage Disposal
Custom Clearances
Pirates and Illegal Boardings
Amenities to Scientists in Port
Medical Advisory System
Substance Abuse Counciling and Training Programs
Manning
Shipyard Availability and Crew Subsistence
Safety Shoes and Glasses
Alcohol

BUSINESS MEETING

A recommendation was made to hold the business meeting first on the last day of the meeting, to be followed by a short break, then the round table discussion.

1992 RVOC MEETING AGENDA TOPICS

The following topics were suggested for the 1992 meeting agenda:

Winches
MARCO - Coastal Research Vessel
Integrated Navigation Systems
Customs, Dept. of Agriculture, INS
Rescue Boats

1992 RVOC MEETING LOCATION

The membership voted to hold the 1992 meeting in Lewes, Delaware, to be hosted by The College of Marine Science, University of Delaware. Dates to be determined.

ELECTION OF CHAIRMAN AND VICE-CHAIRMAN

Mike Prince, Moss Landing Marine Laboratory, was elected Vice-Chairman for a two-year term.
Jim Williams, Scripps Institution of Oceanography, has one year remaining as Chairman.

The meeting was adjourned at 1400 on Thursday, 12 September 1991.

APPENDICES

RESEARCH VESSEL OPERATOR'S COMMITTEE
1991 ANNUAL MEETING

INSTITUTE OF OCEAN SCIENCES
SIDNEY, BRITISH COLUMBIA, CANADA

AGENDA

0830 TUESDAY, 10 SEPTEMBER 1991

REGISTRATION AND COFFEE

WELCOMING REMARKS

INTRODUCTION

- Dale Gibb, Chief, marine Division, IOS
- Dr. John Davis, Regional Director of Science, IOS
- Jim Williams, Chairman, RVOC

OLD BUSINESS

- Minutes of the 1990 Meeting — Jim Williams
- RVOC Newsletter — Bruce Cornwall
- Federal Register Monitor — Jack Bash
- Shipboard Diving Safety — Jim Williams
- Alcohol/Drug Testing — Jim Williams

NEW BUSINESS

- Manning Levels — Bill Jeffers
- Salary Survey — Bill Coste
- Safety Committee Report — Mike Prince
- Legal and Insurance Update — Dennis Dixon
- Pier Safety and Condition Inspections — Jim Williams
- Research Vessel Cruise Assessment — Jim Williams
- COMSAT Reduced Billing — Jack Bash

AGENCY REPORTS

- National Science Foundation — Dolly Dieter
- NOAA — Captain David Yeager
- Oceanographer of the Navy — Patrick Dennis
- Office of Naval Research — June Keller
- UNOLS — Jack Bash
- U.S. State Department — Tom Cocke

SPECIAL REPORTS

- IOS Ship Operations — Dale Gibb
- KNORR/MELVILLE — June Keller
- OCEANUS Class Mid-Life Refit
- RIDGELY WARFIELD — Bruce Cornwall
- THOMAS G. THOMPSON — Bill Jeffers
- AGOR 24/25 — June Keller

0830 WEDNESDAY, 11 SEPTEMBER 1991

INVITED SPEAKERS

- Telecommunications Systems and Related Equipment for the 90's; GMDSS — Joe Hersey, USCG Headquarters

- Report on Results of NSF/MARAD Material Condition Reviews of Research Vessel, 1982-91 — Sam Applegarth, ABSTECH

- Science Information Systems Data Gathering, SAIL — Rich Findley, U. Miami

SAFETY SEMINAR

- UNOLS Research Vessel Safety Standards — Mike Prince

WORKSHOPS

- Hazardous Materials, Prevention of Shipboard Pollution — Mike Prince & Bruce Cornwall

0830 THURSDAY, 12 SEPTEMBER 1991

ROUND TABLE DISCUSSION

- Marine Superintendents Will Select and Discuss Topics of Mutual Interest

BUSINESS MEETING

- Election of Vice Chairman
- Suggestions for the 1992 Annual Meeting Agenda
- Selection of the 1992 Annual Meeting Location

Visit Joides Resolution (about 1500)

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RESEARCH VESSEL OPERATORS COUNCIL
(STRAWMAN)
SMALL BOAT OPERATIONS FROM RESEARCH VESSELS
Prepared by: Tim Askew

Boat Operators

In order to become a qualified boat operator, a person must meet the following requirements:

1. Certification (i.e., U.S.C.G. Auxiliary course in Basic Seamanship, institutional, or other approved courses).
2. Successful completion of an examination administered by Marine Ops staff.
3. At sea check-out for operator consisting of launch and recovery, radio operation, emergency procedures, tending divers, approaching another vessel, etc.
4. Show proficiency in establishing relative position of the boat by using available navigational aids (e.g., use of charts, compass, LORAN, etc.)
5. Demonstrate proficiency with all pertinent operational and safety equipment.
6. Demonstrate ability to use and negotiate expected environmental features (e.g., negotiate kelp beds and coral reefs, read water colors and depths).
7. Demonstrate landing and launching small boats through the surf.
8. Demonstrate expertise in following divers (e.g., following diver bubbles, float lines, etc.).
9. Boat operator should be certified in basic first aid/CPR.

Boat Equipment

All USCG required equipment must be in the boat when in operation. The following equipment is required:

1. One life jacket per person (including divers) (Institution may substitute buoyancy compensators, wet suits and dry suits as substitutes for life jackets. Not recognized as PFD by USCG)
2. At least one throwable flotation device (seat cushion)
3. Oars
4. Anchor and line
5. Bailer
6. Distress signals (flares/rockets)
7. Horn
8. Fire extinguisher (must be readily accessible)
9. Copy of Registration Certificate
10. Running lights when operating at night

11. VHF radio (not USCG required for small boats but should be institutional requirement)

The following equipment is recommended, but not required:

1. Fathometer
2. Portable radar reflector
3. VHF radio with RDF (radio direction finder)
4. Strobe lights
5. Mylar Balloons
6. EPIRBs (emergency position indicating radio beacons)

Operational Procedures

Required:

1. The operator shall wear a PFD at all times.
2. Engine shall be secured when divers entering/exiting the water. (Unless propeller is protected by a guard.)
3. Divers will remove gear prior to exiting water.
4. Boat operator will report to bridge watch via VHF radio when divers submerge and resurface.
5. Boat operator will report to bridge watch via VHF radio when something looks amiss.
6. Boat operator will report status on a predetermined schedule.
7. Boat operator shall use check list to ensure boats operational status and presence of safety equipment.
8. Boat operator shall check weather report and/or status including sea conditions.

Optional:

1. Passengers shall wear PFDs at all times. (If passengers are divers, they must wear wet/dry suits or BCs during transit.)
2. Diving equipment in boat during launch and recovery.
3. Operator in boat during launch and recovery. (If so, tackle must be man rated).
4. Boat operator fills out and has approved by Master a float plan prior to leaving the mother ship.
5. Diver in charge fills out and has approved the Diving Supervisor and Master a dive plan which replaces a float plan when boat is used for diving.

Special:

1. Boat operator shall be familiar with blue water diving procedures.
2. Boat operator shall be familiar with cold water diving procedures.

3. If boat is being operated out of site of the mother ship, operator shall report status via VHF radio more frequently. (Frequency determined by Master.)
4. If boat is being operated in low visibility conditions, such as fog, haze, night operations, or any other condition that may reduce or hinder line of sight visibility, operator shall report status via VHF radio more frequently. (Frequency determined by Master.)

Emergency:

1. Boat operator should have a means of recalling divers to surface in an emergency. (Portable Underwater Recall System, Lubell Underwater Loud Speaker or mechanical means of sending a predetermined signal.)
2. Boat operator may be required to administer first aid/CPR to a passenger or injured diver.
3. Boat operator should be familiar with disabled boat procedures. (Deploy sea anchor, deploy proper signal flare, radio communications with mother ship.)
4. Boat operator should be familiar with loss of communications procedures. (Recall divers, signal mother ship.)

RESEARCH VESSEL OPERATORS COUNCIL
(STRAWMAN)

SHORE BASED SMALL BOAT OPERATIONS

Prepared by: Tim Askew

I. Boats and Equipment

A. All small boats shall be in full compliance with applicable U.S. Coast Guard requirements, with respect to equipment and safety procedures. Copies of USCG requirements are available from the Small Boat Facility Staff.

B. All small boats will be designated for the allowable areas of operation. Three classifications will be used and are designated as follows:

1) Lagoons/harbors (protected waters)
2) Nearshore (within sight of land)
3) Offshore (beyond sight of land)

Type of service for each boat will be clearly identified. All boats shall be used only for their intended areas or in a more protected area.

C. Boats designated for offshore use shall carry the following as a list of minimum equipment:

1) Required navigational equipment shall consist of, but not limited to, the following: VHF radio (installed in boat), backup radio (handheld), LORAN receiver, compass, and navigational charts for area of operation. The small boat operator shall be familiar with the operation of the equipment and shall check all equipment prior to departure.

2) Required safety equipment shall consist of, but not limited to, the following: Personal Floatation Devices (PFDs) with strobe lights attached to each PFD, manually-activated Emergency Position Indicating Radio Beacon (EPIRB), a flare gun with aerial and parachute flares, smoke flares, potable water and emergency food rations, first aid kit, radar reflector and set of tools appropriate for the boat. Emergency equipment may be provided as a self-contained package which can be added to boats in offshore service. The small boat operator shall inspect the emergency equipment prior to departure and shall notify the Small Boat Facility Staff of any safety equipment used during an operation.

D. The Small Boat Facility Staff shall keep a file of usage of all small boats plus a log of scheduled and unscheduled maintenance for each boat.

II. Boat Operators

A. Two levels of small boat operators shall be designated: general and offshore. Operators qualifying under the designation of general shall be allowed to operate boats in lagoons/harbors and nearshore areas. Operators designated as offshore qualified may operate vessels in all areas.

To become qualified as a general boat operator, an operator must show proficiency in safe boat operation, knowledge of rules of the road, familiarity with operational and safety equipment, and demonstrated ability to operate the general type of boat. For the offshore qualification, an operator must have a general boat operator designation plus have the ability to navigate using navigational aids, charts and compass and LORAN plus show proficiency in the actual boat to be used offshore.

B. General Boat Operator Requirements:

1) To satisfy the requirement for knowledge of safe boating and rules of the road, all operators shall complete an approved safe boating course. U.S. Coast Guard Auxiliary and U. S. Power Squadron courses shall be considered acceptable for this purpose. A certificate of course completion shall be required for all boat operators.

2) The boat operator shall be given a briefing by the Small Boat Facility Staff on proper operation and care of equipment, institutional operation and safety procedures plus any specific requirements for the boat to be used. After the briefing, the operator shall sign the operators certification that he has received the information and that he/she will operate the equipment according to institution procedures.

3) An in-water boat operation checkout shall be administered by the Small Boat Facility Staff as the final step prior to granting a general boat operators certificate. This checkout will require the operator to show proper use of equipment, knowledge of safe boating practice and safe operation of the boat.

4) Upon completion of the above requirements, the operator shall be qualified to operate small boats in lagoons/harbors and nearshore areas. A record of certification shall be kept by the Small Boat Facility Staff.

C. Offshore Boat Operator Requirements:

After completing the requirements for general boat operator, an operator must be able to show proficiency in establishing position by use of available navigational aids, ability to use navigational charts and compass to navigate a

boat, show the ability to use LORAN to establish position of the boat, and be familiar with operating requirements specific to offshore operation. The proficiency shall be demonstrated to the satisfaction of the Small Boat Facility Staff. Specific requirements are as follows:

1) The operator shall receive a briefing on the specific boat to be used. This briefing shall include care and use of all pertinent operational and safety equipment. The operator shall be required to demonstrate proper use of equipment.

2) The operator shall be required to be familiar with at-sea operations and shall have been on an actual or training operation, at least once, prior to being certified as boat operator for offshore operations.

3) The operator shall demonstrate proper operation of the boat and equipment and the ability to use navigational equipment to the satisfaction of the Small Boat Facility Staff during a checkout cruise.

4) After completion of these requirements, the operator will be certified to operate a specific boat for offshore operations. A record of certification shall be kept by the Small Boat Facility Staff.

D. The certification of a boat operator shall be continuous but contingent on safe operation of boats. The small boat operator may be requested to demonstrate proficiency at any time, as requested by the Small Boat Facility Staff.

III. Operating Procedures

A. The reservation, sign-out and operation of all small boats shall be in accordance with the following sets of procedures.

B. Principal investigator or boat operator shall be responsible for arranging for boat usage.

1) The boat operator or principal investigator shall reserve the required small boat prior to any operation.

2) The reservation will be on a first-come, first-served basis and will be maintained by the Small Boat Facility Staff.

3) The Small Boat Facility Staff will be able to advise the availability of the boats and equipment which may be required.

C. The principal investigator shall develop and file a Float Plan for each schedule operation. All Float Plans must be filed and approved, by the Small Boat Facility Staff, prior to use of any small boat.

The following steps shall be taken in the filing of the Float Plan:

1) Prepare Float Plan by providing all information requested on the form.

2) If the cruise involves SCUBA-diving, file a Dive Plan with the Dive Supervisor. A copy of the approved Dive Plan shall be attached to the Float Plan.

3) Submit the Float Plan for approval by the Small Boat Facility Staff. Approval must be obtained, by signature, prior to any operation. Float Plans may be filed in person to speed the approval process.

4) A check of NOAA weather will be performed before any departure. Departure is contingent upon suitable weather.

5) Present an approved copy of the Small Boat Float Plan to the Small Boat Facility Staff at the time of departure.

6) Check out all equipment on the boat, prior to departure, and indicate on boat checklist.

7) Upon departure, contact Small Boat Facility, by radio, for communications check. Actual time of departure will be logged.

8) Maintain regularly scheduled communications, as noted on the approved Float Plan. Any changes to schedule, operating area or dive plan must be made and approved by radio. Any changes to the Float Plan will be noted and approved by the Small Boat Facility Staff. If unable to establish radio contact to request change in Float Plan, the filed plan must be followed.

   Failure to maintain scheduled radio contact can cause initiation of Search and Rescue procedures. If a scheduled radio contact is missed, Small Boat Facility will attempt to make contact via VHF channels 16 and/or other predetermined working frequency. If contact is not established within one-half hour of scheduled contact time, Search and Rescue procedures will be initiated.

9) Upon return, boat operator shall check-in by logging the return time on the Small Boat Status Board and contact the Small Boat Facility Staff. Any problems with the boat or equipment shall be noted on the Small Boat checklist and on the Small Boat Status Board.

D. Failure of a boat operator to follow procedure will be cause for suspension or revocation of operator certificate.

E. Any emergency situation arising during an at-sea operation shall be investigated and a report of findings and recommendations filed with the Small Boat Facility Staff.

IV. At-sea Procedures

A. The designated boat operator shall be responsible for all aspects of small boat operations regardless of the seniority of other personnel present. The boat operator shall have control of all matters pertaining to boat operations including, but not limited to, selection of route to the operating site, determining the feasibility of anchoring and/or conducting operations, and for terminating operations and returning to port. Additionally, the boat operator shall be responsible for the proper stowage of gear, with particular attention paid to maintaining proper weight and balance and the seating of people, before departure and during transit and from the operating site.

B. On mission involving SCUBA diving, the diver-in-charge will supervise the actual diving once the boat is anchored or situated at the dive station. The boat operator will not permit divers to enter the water until the engine(s) are secured, and conversely, he/she will not start the engine(s) until the last diver is in the water and clear from the boat. The boat operator must remain with the boat at all times and may not be included in the actual diving.

SAMPLE

FLOAT PLAN

Small Boat Operations

Operations Plan:

Principal Investigator: _____
Boat Operator: _____
Participants: _____
_____
_____

Type of Operation:

- ☐ Single Operation
- ☐ Repetitive to Same Site
- ☐ Night/Weekend

If Repetitive:

Start Date: _____

End Date: _____

(Note: Duration not to exceed two weeks)

Operation Site/Station: _____
Date of Operation: _____
Estimated Time of Departure: _____ Estimated Time of Return: _____
Planned Route: _____
Special Equipment Required: _____
_____

Is SCUBA planned?: ☐ If yes, submit a dive plan to Dive Supervisor and attach copy to float plan.

Equipment Details:

Boat Used: _____ Call Sign: _____

Note: Operational equipment must be checked prior to departure and any problems noted on equipment checklist and reported to Small Boat Mechanic.

Communications Requirements:

Communications Schedule: _____

(Minimum Contact - every 2 hours, Schedule - 1000, 1200, 1400, 1600 hours, others as required)

Shore Communications Contact Point: _____

Note: Communications schedule must be strictly followed. If communications are more than one hour late, SAR procedures will be initiated.

Approvals:

Submitted: _____ _____
Principal Investigator Boat Operator

Approved: _____
Facilities Director

An approved copy of this plan must be presented to check out boat. For night or weekend operations, present plan to Security Guard.

Actual Time of Departure: _____ Actual Time of Return: _____

SALARY SURVEY NOTES

LOW - HIGH -	Range of pay for the position.
ACTUAL -	Pay of incumbent or average if more than one (AB's for example).
AT SEA -	Sea Pay Bonus. Note that all at sea figures are the annual pay as if the vessel was underway for 365 days. The fact that it isn't is compensated for in the column "U/W Total".
AT SEA - (W/ATO)	ATO is the extra time off or vacation earned while underway, converted to dollars, and added to the above figure.
AT SEA - (W/ATO & OT)	The average overtime earned while underway added to the above figure. Therefore, this figure is the total a person would earn, including overtime, if the vessel were underway for 365 days and earned extra time off could be cashed out.
MIN BENES -	Medical, dental, insurance, and retirement benefits converted to a dollar value. Any voluntary benefits or benefits not useable or available to all are discounted. For the purpose of this study, it's assumed that all persons would take advantage of retirement benefits, even if contributory. For those having retirement plans that specify a certain percentage of the highest pay earned to be paid out on retirement, an assumption was made that all persons would retire at a 65 with 20 years of service and that their highest paid would be what they are presently receiving. Also, it was assumed that this typical individual would live until age 82. Basically, this figure was arrived at by asking the question of how much money would have to be put into a savings account for 20 years in order to pay out the requisite percentage for 17 years (82 minus 65). An interest rate of 8% and a COLA rate of 4% was assumed. Where the minimum benefits could not be determined with the information received (ISELIN, PELICAN, & WARFIELD) the average of other ships in that class was used.

VACATION - Assumes that 10 days vacation per year is standard for all. This represents vacation differential for more than 10 days per year converted to dollars.

U/W TOTAL - For large and intermediate ships, the assumption is that an employee spends six months U/W and the remaining time ashore; for small ships, four months; for ships under 100 feet, two months.

MISC - For paying benefits, all are considered to have eight years service with the institution.

Electricians who were reported separately (not as a first, second, or third engineer) were ignored. Boatswains, when reported, were lumped with AB's.

MISCELLANEOUS BENEFITS REPORTED

1. Free safety prescription glasses.
2. Free safety shoes.
3. Leave for death of family/friend, jury duty, professional training, license exams, birthdays.
4. Payments for professional education.
5. Payment for personal computer purchase.
6. Low rate home mortgage.
7. Free tuition at own institution.
8. Tuition assistance either at own institution or institution of choice.
9. Leave for employee assistance counseling.
10. Tickets to sporting events at reduced rates.

RESPONSES TO SPECIFIC QUESTIONS

1. Can shore leave be cashed out?
   Responses - 11
   YES - 8
   NO - 3

2. Whose option?

   Individual - 4
   Institution - 4
   Both - 2

3. Compensation for Saturday, Sunday, & Holiday @ Sea?

   Responses - 13

Masters	Same as underway - 7 Eight hours straight pay - 2 Overtime for hours worked - 1 None - 3
Ch Engineer	Same as underway - 6 Eight hours straight pay - 2 Overtime for hours worked - 2 None - 3
Others	Same as underway - 5 Eight hours straight pay - 2 Overtime for hours worked - 6

4. Accrue vacation on vacation?

   Responses - 13

   YES - 11
   NO - 2

5. On shore leave?

   Responses - 13

   YES - 5
   NO - 8

R/V UNOLS

POSITION	HIGH	VSL	LOW	VSL	AVERAGE	MEDIAN	% AVG CHANGE
			LARGE				
MASTER	123874	EWING	92941	THOMPSON	104299	107427	21
CH MATE	92524	EWING	65495	THOMPSON	74281	72954	29
2ND MATE	85108	EWING	50960	THOMPSON	63216	61862	26
3RD MATE	76312	EWING	47440	THOMPSON	55888	52000	22
ABLE SN	46182	ATLANTIS	37240	EWING	41157	41540	24
ORDINARY	38145	VICKERS	27363	EWING	32230	24760	21
CH ENG	131998	EWING	73378	THOMPSON	99312	96398	24
1ST ENG	93571	EWING	61909	VICKERS	73327	73368	31
2ND ENG	90464	EWING	50960	THOMPSON	62104	53013	21
3RD ENG	77284	EWING	47440	THOMPSON	55789	51805	18
OILER	44182	M WAVE	38368	EWING	40932	40928	19
WIPER	38675	M WAVE	29934	THOMPSON	33308	32159	19
CH STEW	59156	MELV/WASH	49376	M WAVE	55206	55619	31
2ND COOK	48373	ATLANTIS	39878	THOMPSON	43499	43315	20
MESSMAN	41572	VICKERS	31942	ATLANTIS	35356	33049	33
						AVERAGE	24
			INTERMEDIATE				
MASTER	99238	OCEANUS	60359	E LINK	74891	71230	7
CH MATE	66394	OCEANUS	41029	WECOMA	51276	49066	7
2ND MATE	60062	OCEANUS	32728	ISELIN	40783	37268	-6
3RD MATE	48749	HORIZON	32790	ENDEAVOR	40770	40770	3
ABLE SN	44559	OCEANUS	26837	WECOMA	34264	32646	16
ORDINARY	29399	OCEANUS	22101	ISELIN	25611	25472	N/A
CH ENG	101318	OCEANUS	52646	WECOMA	69519	65984	17
1ST ENG	45030	JOHNSON	34737	E LINK	40470	41644	-9
2ND ENG	36258	WECOMA	34272	ISELIN	35265	35265	-4
3RD ENG	56725	HORIZON	30390	ISELIN	43564	33704	9
OILER	39582	HORIZON	39582	HORIZON	39582	39582	21
WIPER	30276	HORIZON	30276	HORIZON	30276	30276	28
CH STEW	58645	OCEANUS	33010	WECOMA	41993	37847	15
2ND COOK	47951	HORIZON	31600	ISELIN	39776	39776	17
MESSMAN	31942	OCEANUS	22588	WECOMA	26226	24147	12
						AVERAGE	9
			SMALL				
MASTER	74399	PT SUR	45837	WARFIELD	57044	52799	17
CH MATE	64828	HELIX	37399	WARFIELD	49766	48418	16
2ND MATE	41056	PT SUR	41056	PT SUR	41056	41056	18
DECKHAND	46522	SPROUL	26618	WARFIELD	35700	38039	23
ENG	77356	PT SUR	35163	KILA	50891	49174	17
ASS'T ENG	54876	PT SUR	35928	WARFIELD	45314	45226	21
COOK	46645	HELIX	29744	WARFIELD	38090	33755	11
						AVERAGE	17

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY	1987 STUDY	% CHANGE
				LARGE SHIPS (>200 FT)							
MASTER											
MELVILLE	60804	91200	75204	75204	108839	108839	12775	3309	108105	91164	19
KNORR				NOT REPORTED --		LAYED UP					
ATLANTIS	75700	82000	82000	82000	106600	106600	11156	1971	107427	87284	23
WASHINGTON	60804	91200	75204	75204	108839	108839	12775	3309	108105	90296	20
THOMPSON	52332	68460	60756	69869	69869	116340	3926	467	92941	68225	36
EWING	77520	93024	85272	85272	151272	151272	5274	328	123874	119612	4
MOANA WAVE	60348	66528	66528	73181	103447	103447	7695	2815	95497	71282	34
VICKERS	52000	60000	55000	55000	80737	118270	6452	1058	94145	72309	30
CH MATE											
MELVILLE	34860	41964	41964	47839	62230	85251	7500	1846	72954	56087	30
KNORR											
ATLANTIS	35200	40200	38300	38300	49790	92878	5658	921	72168	52390	38
WASHINGTON	34860	41964	41964	47839	62230	85251	7500	1846	72954	57600	27
THOMPSON	34716	38304	38304	44050	44050	86490	2803	295	65495	55237	19
EWING	51960	63156	57288	57288	97500	119974	3673	220	92524	85155	9
MOANA WAVE	41784	46080	41784	41784	58544	77688	5181	1768	66685	49162	36
VICKERS	45000	52000	45000	45000	66058	96766	5437	865	77186	53693	44
2ND MATE											
MELVILLE	30360	36528	34860	39740	51695	75634	6372	1534	63153	45653	38
KNORR											
ATLANTIS	31800	36200	36200	36200	47060	87785	5394	870	68257	47378	44
WASHINGTON	30360	36528	34044	38810	50485	74199	6243	1498	61862	41879	48
THOMPSON	27780	30684	29184	33562	40292	67593	2347	224	50960	51360	-1
EWING	48528	58992	53508	53508	91067	109383	3457	206	85108	80436	6
MOANA WAVE	36096	39792	36096	36096	50574	67789	4585	1527	58055	43055	35
VICKERS	30000	38000	32000	32000	46974	68812	4098	615	55119	45434	21

3RD MATE											
MELVILLE	27720	33252	32520	37073	48225	68632	6001	1431	58008	39011	49
KNORR											
ATLANTIS	28400	32400	28400	28400	36920	68870	4413	683	53730	42441	27
WASHINGTON	27720	33252	27720	31601	41107	58502	5239	1220	49570	38312	29
THOMPSON	25872	28488	27132	31202	37459	62841	2245	209	47440	47757	-1
EWING	45672	55512	47952	47952	81611	98025	3139	184	76312	73779	3
MOANA WAVE	31188	34380	31188	31188	43697	58572	4071	1319	50270	36311	38
VICKERS											
AB											
MELVILLE	21600	25416	24396	27811	36178	48599	4712	1073	42282	32350	31
KNORR											
ATLANTIS	20000	28200	23180	23180	30134	60558	3756	557	46182	31045	49
WASHINGTON	21600	25416	23328	26594	34594	46471	4542	1026	40468	32632	24
THOMPSON	20040	21972	21972	25268	30335	50890	1987	169	38586	40316	-4
EWING	20472	24876	22560	22560	38395	48374	1686	87	37240	33060	13
MOANA WAVE	25680	28308	26316	26316	36871	47942	3560	1113	41802	36179	16
VICKERS	20000	25000	24000	24000	35231	51609	3274	462	41540	28918	44
OS											
MELVILLE	17328	20040	17976	20493	26657	35455	3693	791	31199	23652	32
KNORR											
ATLANTIS	14600	16800	15250	15250	19825	39841	2758	367	30670	23818	29
WASHINGTON	17328	20040	17328	19754	25696	34177	3590	762	30105	25556	18
THOMPSON	17856	19584	18696	21500	25812	43302	1823	144	32966	36694	-10
EWING	16512	20076	16512	16512	28102	35406	1340	64	27363	26763	2
MOANA WAVE	22188	24456	22188	22188	31088	40005	3127	939	35163	28864	22
VICKERS	17000	23000	22000	22000	32295	47308	3068	423	38145	23963	59

CH ENG											
MELVILLE	55296	83004	73296	73296	106078	106078	12472	3225	105384	86921	21
KNORR											
ATLANTIS	71300	77300	77300	77300	100490	100490	10564	1858	101318	82460	23
WASHINGTON	55296	83004	66996	66996	96960	96960	11472	2948	96398	80311	20
THOMPSON	43320	47844	47844	55021	55021	91615	3280	368	73378	48932	50
EWING	84564	102780	88788	88788	163575	163575	5475	341	131998	121336	9
MOANA WAVE	58464	64464	64464	70910	100238	100238	7488	2727	92567	69079	34
VICKERS	50000	58000	55000	55000	80737	118270	6452	1058	94145	68906	37
1ST ENG											
MELVILLE	34860	41964	41964	47839	62230	86079	7500	1846	73368	56087	31
KNORR											
ATLANTIS	35200	40200	38300	38300	49790	100059	5658	921	75758	52390	45
WASHINGTON	34860	41964	41964	47839	62230	86079	7500	1846	73368	50214	46
THOMPSON	34716	38304	38304	44050	44050	86490	2803	295	65495	47757	37
EWING	51204	62232	53760	53760	91495	126026	3471	207	93571	87333	7
MOANA WAVE	41784	46080	41784	41784	58544	83955	5181	1768	69819	49162	42
VICKERS	30000	38000	36000	36000	52846	77413	4510	692	61909	53693	15
2ND ENG											
MELVILLE	30360	36528	30360	34610	45022	61677	5658	1336	53013	48898	8
KNORR											
ATLANTIS	31800	36200	34500	34500	44850	83663	5180	829	65091	47378	37
WASHINGTON	30360	36528	30360	34610	45022	61677	5658	1336	53013	50214	6
THOMPSON	27780	30684	29184	33562	40292	67593	2347	224	50960	47757	7
EWING	47832	58140	52728	52728	89739	120970	3412	203	90464	79491	14
MOANA WAVE	36096	39792	36096	36096	50574	71850	4585	1527	60085	45587	32
VICKERS											

3RD ENG											
MELVILLE	27720	33252	27720	31601	41107	55767	5239	1220	48202	42671	13
KNORR											
ATLANTIS	28400	32400	30800	30800	40040	74690	4715	740	58200	42441	37
WASHINGTON	27720	33252	29016	33078	43029	58374	5445	1277	50417	44786	13
THOMPSON	25872	28488	27132	31202	37459	62841	2245	209	47440	42294	12
EWING	45012	54720	45012	45012	76607	103268	2971	173	77284	76418	1
MOANA WAVE	31188	34380	31188	31188	43697	64419	4071	1319	53194	40337	32
VICKERS											
OILER											
MELVILLE	21600	25416	24396	27811	36178	49561	4712	1073	42764	33803	27
KNORR											
ATLANTIS	20000	22900	21450	21450	27885	56038	3538	516	42798	30504	40
WASHINGTON	21600	25416	23328	26594	34594	47392	4542	1026	40928	34357	19
THOMPSON	20040	21972	21972	25268	30335	48995	1987	169	37639	40316	-7
EWING	20460	24876	22560	22560	38395	50630	1686	87	38368	34297	12
MOANA WAVE	25680	28308	25680	25680	35980	53524	3493	1086	44182	36179	22
VICKERS	17000	23000	23000	23000	33763	49458	3171	442	39843	NOT REPORTED	
WIPER											
MELVILLE	17328	20040	17976	20493	26657	35100	3693	791	31022	24105	29
KNORR											
ATLANTIS	NONE EMPLOYED										
WASHINGTON	17328	20040	17328	19754	25696	33835	3590	762	29934	24277	23
THOMPSON	17856	19584	18696	21500	25812	41690	1823	144	32159	35010	-8
EWING	NONE EMPLOYED										
MOANA WAVE	22188	24456	24456	24456	34265	44095	3365	1035	38675	31143	24
VICKERS	16000	22000	20000	20000	29359	43007	2862	385	34750	NOT REPORTED	

CH STEWARD

MELVILLE	24912	29676	29676	33831	44008	74926	5550	1306	59156	44712	32
KNORR											
ATLANTIS	24700	28200	26800	26800	34840	75040	4211	644	55776	37148	50
WASHINGTON	24912	29676	29676	33831	44008	74926	5550	1306	59156	46277	28
THOMPSON	25872	28488	27132	31202	31202	77644	2245	209	54842	45665	20
EWING	28644	34812	30072	30072	51180	70496	2116	116	52516	49297	7
MOANA WAVE	28284	31188	28284	28284	39629	60543	3766	1197	49376	42857	15
VICKERS	25000	32000	30000	30000	44038	72299	3892	577	55619	33873	64

STEWARD/2ND COOK

MELVILLE	21972	25956	22872	26074	33918	57747	4470	1006	45786	36276	26
KNORR											
ATLANTIS	22300	25500	24300	24300	31590	63484	3897	584	48373	33806	43
WASHINGTON	21972	25956	22872	26074	33918	57747	4470	1006	45786	39758	15
THOMPSON	19584	21468	20496	23570	23570	55118	1913	158	39878	41515	-4
EWING	22596	27468	23724	23724	40376	53242	1753	91	40327	39002	3
MOANA WAVE	23316	25704	23316	23316	32668	49908	3246	986	40844	NONE	N/A
VICKERS											

MESSMAN

MELVILLE											
KNORR											
ATLANTIS	14600	16800	15900	15900	20670	41539	2840	382	31942	21051	52
WASHINGTON											
THOMPSON	17448	19128	18276	21017	25232	53363	1802	141	37762	38699	-2
EWING	16512	20076	19116	19116	32534	43857	1489	74	33049	27163	22
MOANA WAVE	18432	20328	18432	18432	25825	39454	2734	780	32457	27537	18
VICKERS	17000	23000	22000	22000	32295	54162	3068	423	41572	23963	73

RADIO OFFICER									
MELVILLE	34860	41964	41964	47839	62230	81111	7500	1846	70884
KNORR									
ATLANTIS	32000	41500	41500	41500	53950	92856	6061	998	74236
WASHINGTON	33252	38268	38268	43626	56749	73967	6913	1684	64715
THOMPSON				118625	118625	118625		CONTRACTED AS NEEDED	
EWING				126000	126000	126000		CONTRACTED AS NEEDED	

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN BENES	VACATION ADJUST	6 Mos U/W TOTAL PAY	1987 STUDY	% CHANGE
INTERMEDIATE SHIPS (150-200 FT)											
MASTER											
OCEANUS	75700	82000	75700	75700	98410	98410	10363	1820	99238	87284	14
WECOMA	34872	46776	45648	45648	53658	73498	3579	913	64065	54766	17
ENDEAVOR	49296	81316	49296	49296	63137	63137	5572	2366	64155	75108	-15
SEWARD JOHNSON	32830	49245	46857	98671	101803	101803	3800	2062	80192		
EDWIN LINK	32830	49245	35242	74213	76568	76568	2903	1551	60359		
ISELIN	33241	49670	44350	79924	84075	84075	5243	1774	71230		
NEW HORIZON	55296	83004	59004	59004	85394	85394	10204	2596	84999	75492	13
CH MATE											
OCEANUS	35200	40200	35200	35200	45760	85360	5268	846	66394	52390	27
WECOMA	23304	30900	28128	28128	33064	47750	2528	563	41029	48578	-16
ENDEAVOR	20376	31541	26499	26499	33939	53610	3384	1272	44710		
SEWARD JOHNSON	24666	36999	30083	63347	65358	65358	2505	1324	51549		
EDWIN LINK	24666	36999	28628	60285	62199	62199	2393	1260	49066		
ISELIN	25098	37626	28772	43864	46557	47631	3215	1151	42568		
NEW HORIZON	34860	41964	36528	41642	54169	74208	6637	1607	63612	46728	36
2ND MATE											
OCEANUS	31800	36200	31800	31800	41340	77115	4840	764	60062	47378	27
WECOMA	20232	26832	26832	26832	31541	45550	2450	537	39178	40393	-3
ENDEAVOR											
SEWARD JOHNSON	18532	27798	21719	45736	47188	47188	1859	956	37268		
EDWIN LINK	18532	27798	20202	42541	43891	43891	1742	889	34678		
ISELIN	21339	31988	21339	34169	36166	36964	2723	854	32728		
NEW HORIZON											

3RD MATE											
OCEANUS											
WECOMA											
ENDEAVOR	20376	31541	20376	20376	26097	37656	2796	978	32790	38742	-15
SEWARD JOHNSON											
EDWIN LINK											
ISELIN											
NEW HORIZON	27720	33252	27720	31601	41107	56861	5239	1220	48749	37313	31
AB											
OCEANUS	20000	22900	22350	22350	29055	58389	3652	537	44559	31045	44
WECOMA	16980	21144	18195	18195	21388	30888	1932	364	26837	31069	-14
ENDEAVOR	16364	26944	19657	19657	25176	38293	2727	944	32646	25865	26
SEWARD JOHNSON											
EDWIN LINK											
ISELIN	15493	26434	17038	27641	29235	29872	2770	682	26907		
NEW HORIZON	21600	25416	22872	26074	33918	46917	4470	1006	40370	30954	30
OS											
OCEANUS	14600	16800	14600	14600	18980	38143	2677	351	29399	NONE REPORTED	
WECOMA											
ENDEAVOR											
SEWARD JOHNSON	13923	20884	15049	31689	32695	32695	1344	662	25878		
EDWIN LINK	13923	20884	14573	30688	31662	31662	1307	641	25066		
ISELIN	13906	20838	14606	22964	24331	24877	1776	584	22101		

CH ENG											
OCEANUS	71300	77300	77300	77300	100490	100490	10564	1858	101318	82460	23
WECOMA	32472	43272	37404	37404	43968	60224	3084	748	52646	46730	13
ENDEAVOR	45890	75102	50720	50720	64961	64961	5709	2435	65984	52315	26
SEWARD JOHNSON	27133	40699	33852	71285	73548	73548	2796	1489	57985		
EDWIN LINK	27133	40699	37813	79625	82153	82153	3102	1664	64748		
ISELIN	31320	46800	41718	75056	78960	80519	5051	1669	67838		
NEW HORIZON	50196	75300	52776	52776	76380	76380	9216	2322	76116	75492	1
1ST ENG											
OCEANUS											
WECOMA	23304	30900	29460	29460	34630	47433	2608	589	41644	46392	-10
ENDEAVOR											
SEWARD JOHNSON	18532	27798	26265	55308	57064	57064	2210	1156	45030		
EDWIN LINK	18532	27798	20237	42614	43967	43967	1745	890	34737		
ISELIN											
NEW HORIZON											
2ND ENG											
OCEANUS											
WECOMA	24432	26832	25572	25572	30059	41173	2374	511	36258	44253	-18
ENDEAVOR											
SEWARD JOHNSON											
EDWIN LINK											
ISELIN	21399	31988	23051	35881	38039	38900	2374	922	34272		
NEW HORIZON											

3RD ENG											
OCEANUS	*	24400	27700	26050	26050	33865	63171	4117	626	49354	NONE REPORTED
WECOMA											
ENDEAVOR		20376	31541	22188	22188	28418	43779	2970	1065	37018	35249 5
SEWARD JOHNSON											
EDWIN LINK											
ISELIN		19210	28814	19752	31309	33158	33896	3544	790	31158	
NEW HORIZON		27720	33252	32520	37073	48225	66065	6001	1431	56725	44596 27
	*	JR ENGINEER(2)									
OILER											
OCEANUS											
WECOMA											
ENDEAVOR											
SEWARD JOHNSON											
EDWIN LINK											
ISELIN											
NEW HORIZON		21600	25416	22416	25554	33242	45981	4397	986	39582	34294 15
WIPER											
OCEANUS											
WECOMA											
ENDEAVOR											
SEWARD JOHNSON											
EDWIN LINK											
ISELIN											
NEW HORIZON		17328	20040	17328	19754	25696	34519	3590	762	30276	23652 28

CH STEWARD											
OCEANUS	24700	28200	28200	28200	36660	78960	4388	678	58645	37148	58
WECOMA	22224	24432	22224	22224	26124	38561	2173	444	33010	38556	-14
ENDEAVOR	18945	29102	20840	20840	26691	41119	2841	1000	34820	31581	10
SEWARD JOHNSON	21008	30577	21848	46008	47468	47468	1869	961	37489		
EDWIN LINK	21008	30577	22058	46450	47925	47925	1885	971	37847		
ISELIN	20838	31236	28229	40758	43400	44454	2631	1129	40102		
NEW HORIZON	24912	29676	27072	30862	40146	64345	5136	1191	52036	40486	29

MESSMAN											
OCEANUS	14600	16800	15900	15900	20670	41539	2840	382	31942	21051	52
WECOMA	15024	16260	15024	15024	17660	26068	1741	300	22588	25256	-11
ENDEAVOR	14185	21259	14185	14185	18168	28343	2202	681	24147	23715	2
GYRE											
ISELIN *	18166	27288	21589	32534	34555	35361	2261	864	31600		
NEW HORIZON *	21972	25956	24912	28400	36943	59211	4794	1096	47951	34230	40
FRED MOORE											

* 2ND COOK

VESSEL	LOW	HIGH	ACTUAL	AT SEA	AT SEA WITH ATO	AT SEA ATO & OT	MIN VACATION BENES	ADJUST	4 Mos U/W TOTAL PAY	1987 STUDY	% CHANGE
			SMALL SHIPS (<150 FT)								
MASTER											
POINT SUR	43977	56916	54456	54456	59553	88142	6318	2396	74399	55638	34
WEATHERBIRD II	47300	47300	47300	47300	55600	55600	840	1892	52799		
ALPHA HELIX	38875	64771	50778	87278	93218	93218	4999	2336	72259	63269	14
KILA	41784	46080	41784	41784	60793	60793	5181	1768	58238	43828	33
R. WARFIELD	25566	38348	34616	34616	34616	52656	4515	692	45837	40984	12
R. G. SPROUL	27720	33252	27720	31601	41107	59049	5239	1220	49843	41880	19
PELICAN	25000	OPEN	26500	26500	26500	58198	3322	265	45936		
				< 100 FT					2 Mos U/W		
ACADIANA	25000	OPEN	25000	25000	25000	54904	3992	250	34226		
SEA DIVER	32830	49245	40625	85546	88262	88262	3319	1787	53670		
BLUE FIN	32000	42000	35927	35927	35927	35927	5163	1437	42527	38291	11
C A BARNES	33852	37356	37356	37356	37356	43821	2756	287	41477	39599	5
LAURENTIAN	30800	62900	41291	41291	41291	41291	4729	2312	48332	42743	13
CALANUS	25098	37626	27603	42695	45278	46309	3992	1104	42052		
CH MATE											
POINT SUR	31584	37656	37656	37656	41180	70834	4628	1657	55000	45975	20
WEATHERBIRD II	33280	33280	33280	33280	39120	52432	840	1331	41835		
ALPHA HELIX	27580	45843	36816	36816	41123	104206	3855	1694	64828	47867	35
KILA											
R. WARFIELD	22796	34194	29768	29768	29768	45282	1865	595	37399	34794	7
R. G. SPROUL											
PELICAN											

ENGINEER											
POINT SUR	45528	54300	54300	54300	59382	97392	6303	2389	77356	53098	46
WEATHERBIRD II	44000	44000	44000	44000	51721	51721	840	1760	49174		
ALPHA HELIX	31658	52749	31654	31654	35357	89595	3432	1456	55856	56929	-2
KILA	22188	34380	22188	22188	31088	40005	3127	939	35163	27636	27
R. WARFIELD	22566	38348	30870	30870	30870	46958	3917	617	40768	37419	9
R. G. SPROUL	26544	31788	31788	36238	47140	69282	5885	1399	57819	40075	44
PELICAN	22500	OPEN	22500	22500	22500	49413	3917	225	40099		
BLUE FIN											
C A BARNES	30684	33744	33744	33744	33744	61193	2575	260	50303	NOT	REPORTED
LAURENTIAN	19800	40400	31216	31216	31216	75068	3722	1748	43994	37001	19
ASS'T ENG											
POINT SUR	31584	37656	34844	34844	38105	77305	4345	1533	54876	40398	36
WEATHERBIRD II	28600	28600	28600	28600	33619	45059	840	1144	36070		
ALPHA HELIX	27518	45843	30805	30805	34409	87192	3363	1417	54381	36877	47
KILA											
R. WARFIELD	22796	34194	28665	28665	28665	43604	1710	573	35928	30631	17
R. G. SPROUL											
COOK											
POINT SUR	22896	27300	26124	26124	28569	56979	3468	1149	41026	34089	20
WEATHERBIRD II	23816	23816	23816	23816	27995	37522	840	953	30177		
ALPHA HELIX	21403	35693	26354	26354	29437	74594	2998	1212	46645	34943	33
KILA	23316	25704	23316	23316	32668	50346	3246	986	41063	46241	-11
R. WARFIELD	18124	27186	22400	22400	22400	34074	3004	448	29744	27060	10
R. G. SPROUL	21972	25956	22872	26074	33918	54363	4470	1006	44093	33421	32
PELICAN *	19200	OPEN	19200	19200	19200	42166	3004	192	33879		
BLUE FIN			17747	17747	17747	17747	3223	781	21750		
C A BARNES											
LAURENTIAN	17722	25772	21840	21840	21840	52521	2784	1223	30961	26819	15

* PART TIME POSITION

- DRAFT -

APPENDIX VI

UNIVERSITY-NATIONAL OCEANOGRAHIC LABORATORY SYSTEM

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

UNOLS Office
P.O. Box 392
Saundertown, R.I. 02874

RESEARCH VESSEL CRUISE ASSESSMENT
By Chief Scientist

1. PI/SIC: _____ 2. Ship: _____
3. PI/SIC Institution: _____ 4. General Type of Work: _____
_____ Procedures Employed: _____
5. Cruise, Expedition, Leg No., and/or Project Name: _____
6. Area of Operations: _____ 7. Dates of Cruise: _____
_____
8. Days Total: _____ 9. Days Transit: _____
10. Days Stations: _____ 11. Days Underway Surveying: _____
12. Was Cruise Successful in Terms of Your Scientific Project? (Please circle best choice):

Fully Partially Marginally—Successful Unsuccessful

13. What ship did you request if not this one? _____
14. Were you given adequate advance information by the operating institution concerning equipment and technician services provided? ❑ Yes ❑ No
15. Work lost because of weather: Days: _____ Stations: _____
16. Work lost because of ship, ship's scientific equipment or ship's personnel: Days: _____ Stations: _____
17. Work lost because of user provided scientific equipment: Days: _____ Stations: _____
18. Factors adversely affecting cruise success (include percentage estimate if possible):

Main engine _____ Electric power _____ Officers & Crew _____ Other____
Ship's Technicians _____ Pre-cruise liaison _____ Scientific equipment _____

19. Please circle equipment used:

Crane or A-frame Winches ADCP Computers Other electronics Other (specify) _____

20. List safety related problems recommended for follow-up:

_____
_____

21. Comments, details of problems, suggestions, and praise, if appropriate, for both successful and unsuccessful cruises. (Use other side and additional pages as necessary).

_____
_____
_____
_____

Please forward this form to the UNOLS office via the operating institution's Marine Office. These evaluations will be used to assist operating institutions and funding agencies in their efforts to improve the quality of research vessel operations.

-DRAFT-
REV. 1

APPENDIX VI

UNIVERSITY-NATIONAL OCEANOGRAHIC LABORATORY SYSTEM

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UNOLS Office
P.O. Box 392
Saundertown, R.I. 02874

CAPTAIN'S POST CRUISE REPORT

1. Cruise, Expedition, Leg No., and/or Project Name: _____

2. Dates of Cruise: _____ Length: _____ days _____ miles

3. Captain's Name: _____
   Sr Tech's Name: _____

4. PI/SIC: _____

5. Ship: _____
   Operating Institution: _____

6. Areas of Operation: _____

7. General Type of Work: _____

8. In Captain's and Senior Technician's judgement, were published operational objectives of shipboard phase of project achieved? ❑ Yes ❑ No

   If not, what were the factors involved?

   Ship's propulsion _____
   Electric power _____
   Crew _____
   Techs _____
   Scientific party and equipment _____
   Ship's scientific equipment _____
   Other _____

9. Work days lost due to weather: _____
   Work days lost due to ship's crew: _____
   Work days lost due to Scientific equipment: _____

10. Organization of scientific party (planning, use of time, making needs known in advance, sufficient people, etc.)

    Excellent *Good* *Average* *Below Average* *Very Poor*

11. Did Chief Scientist have reasonable expectations for the ship? ❑ Yes ❑ No

12. Did Chief Scientist have reasonable expectations for the cruise? ❑ Yes ❑ No

13. Communications/liaison between scientific party and techs/crew:

    Excellent *Good* *Average* *Below Average* *Very poor*

14. Date that safety briefing was conducted for scientific party and crew: ____/____/____/

15. List safety related problems recommended for follow-up:

    _____
    _____

16. Comments by both Captain and Senior Technician are encouraged. (Details of problems, suggestions; and praise where applicable).

    _____
    _____
    _____
    _____

Please forward this form to the UNOLS office via the operating institution's Marine Office. These evaluations will be used to assist operating institutions and funding agencies in their efforts to improve the quality of research vessel operations.

GLOBAL MARITIME

DISTRESS AND SAFETY

SYSTEM

GMDSS IS A SYSTEM

- INMARSAT SATELLITE TERMINAL
- HF TELEX (AUTO SITOR)
- SATELLITE EPIRBS
- MARITIME SAFETY BROADCASTS
- RADIOTELEPHONE
- SAR RADAR TRANSPONDER
- DIGITAL SELECTIVE CALLING

GMDSS IS A TREATY

1974 SAFETY OF LIFE

AT SEA (SOLAS) CONVENTION

1988 AMENDMENTS

SOLAS CONVENTION

- ALL PASSENGER SHIPS:
- ALL CARGO SHIPS OVER 300 TONS:

ON INTERNATIONAL VOYAGES

5

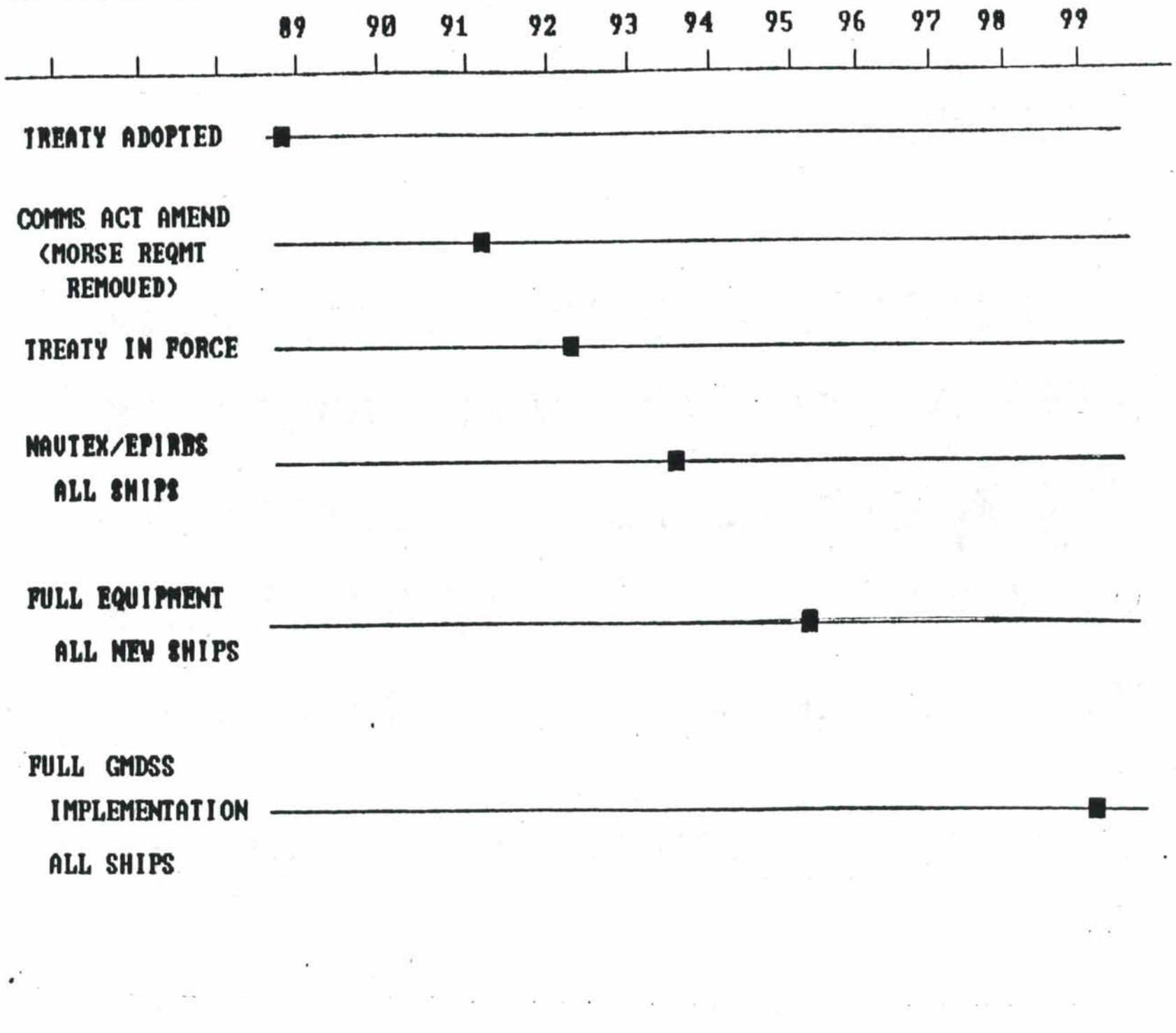
GMDSS IMPLEMENTATION

- ENTERS INTO FORCE – 1 FEB 1992
- NAVTEX/EPIRBS ALL SHIPS – 1 AUG 1993
- ALL ELEMENTS ON SHIPS BUILT AFTER 1 FEB 1995
- ALL ELEMENTS ALL SHIPS – 1 FEB 1999

GMDSS IS A SYSTEM

- FOR COMMUNICATIONS WITH MERCHANT VESSELS
- FOR RECEIVING SAFETY BROADCASTS
- FOR DISTRESS ALERTS

1988 SAFETY OF LIFE AT SEA CONVENTION - GLOBAL MARITIME DISTRESS & SAFETY SYSTEM



INMARSAT SATELLITE TERMINAL

- STANDARD A (VOICE/TELEX/DATA/FAX)*
- STANDARD B (VOICE/TELEX/DATA/FAX)
- STANDARD C (TELEX/DATA/~~X.25~~ PACKET ONLY)*
- STANDARD M (VOICE/DATA/FAX ONLY)
- ENHANCED GROUP CALL RECEIVER *

* GMDSS

HIGH FREQUENCY

- STILL AN ELEMENT OF GMDSS
  - SINGLE SIDEBAND
  - SITOR (REPLACES MORSE)
  - DIGITAL SELECTIVE CALLING (FOR ALERTING)
- CG COMMSTASs IMPROVING SITOR INSTALLATIONS WITH AUTOMATIC EQUIP
- CG TO INSTALL HF DSC AT COMMSTA BOSTON (1991), TWO PACIFIC COMMSTAs IN 1992

VHF AND 2 MHZ DSC

- **EXPECT PUBLIC COAST STATIONS TO BE FIRST TO USE IN U. S.**

- **PLAN CG TRIALS IN SOME LOCATIONS ON/AFTER 1990**

- **CG IMPLEMENTATION LATER 1990'S**

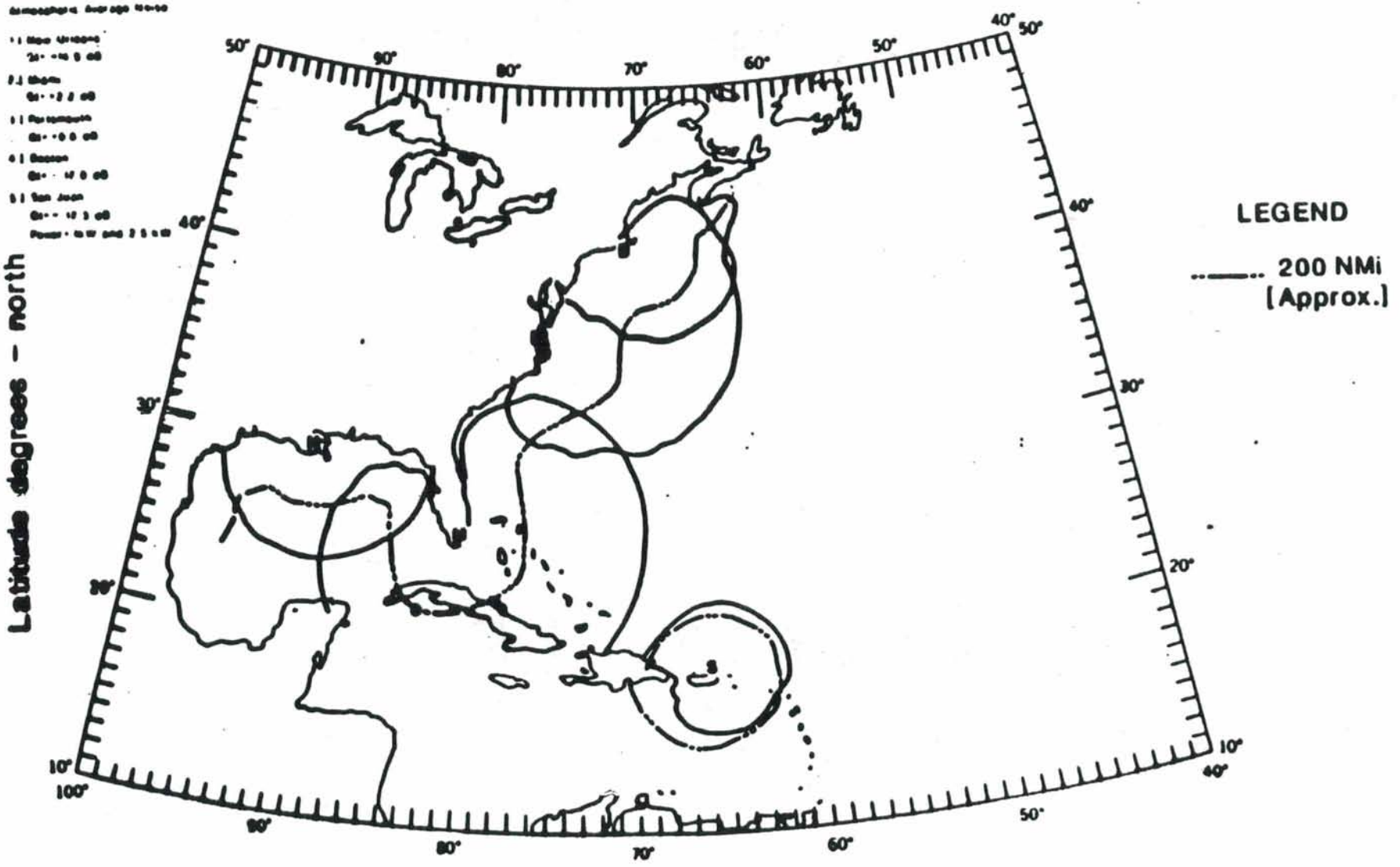
INTERNATIONAL MARITIME SAFETY BROADCASTS

- NAVTEX
  - BROADCAST NOTICES TO MARINERS
  - OFFSHORE WEATHER FORECASTS
  - 50 STATIONS OPERATING WORLDWIDE
- HF SITOR AND INMARSAT SAFETYNET
  - HIGH SEAS WEATHER FORECASTS
  - NAVAREA IV AND XII
  - HYDROLANT AND HYDROPAC (HF ONLY)

16

NAVTEX PREDICTED COVERAGE AREA

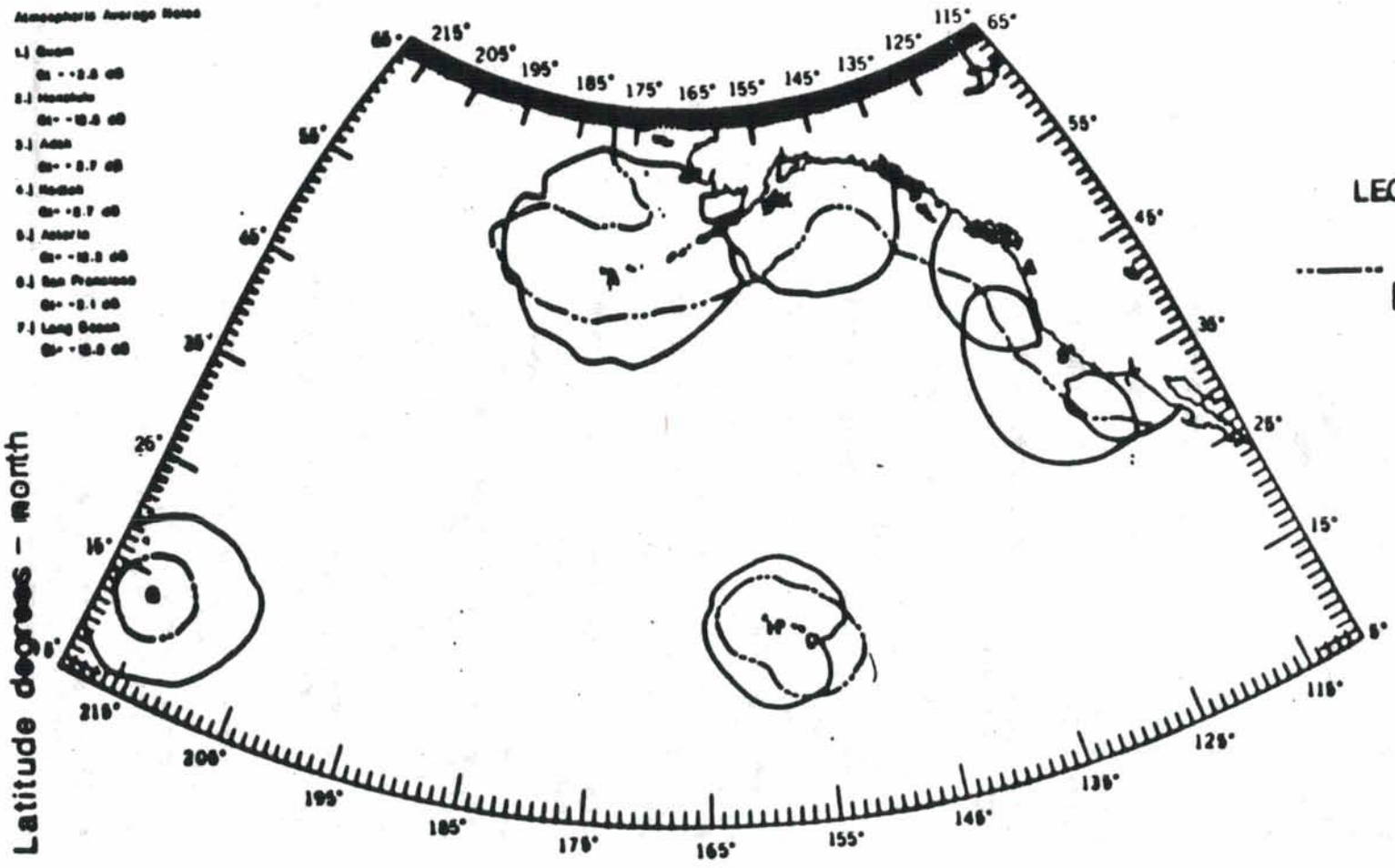
EAST COAST



April 87

NAVTEX PREDICTED COVERAGE AREA

WEST COAST



210240 GMT
OFFSHORE MARINE FORECAST
NATIONAL WEATHER SERVICE BOSTON MA
930 PM EST TUE MAR 20 1984

MARINE FORECST FOR THE NEW ENGLAND
CONTINENTAL SHELF AND SLOPE
WATERS WEST OF LONGITUDE 60 DEGREES,
OUT TO ONE THOUSAND FATHOMS.
A LARGE LOW ABOUT 200 MILES SOUTH OF
SABLE ISLAND TONIGHT WILL
MOVE EAST. ANOTHER LOW WILL BEGIN TO
MOVE UP THE MID ATLANTIC COAST
ON WEDNESDAY.

GULF OF OF MAINE
NORTHEAST WINDS 15 TO 20 KNOTS TONIGHT.
EAST WINDS 10 TO 20
KNOTS WEDNESDAY INCREASING TO 20 TO 30
KNOTS WEDNESDAY NIGHT.
VISIBILITY VARIABLE TO BELOW 1 MILE FOG
AND DRIZZLE THROUGH
WEDNESDAY NIGHT. AVERAGE SEAS 10 TO 15
FEET THROUGH WEDNESDAY.

GEORGES BANK, FROM NORTHEAST CHANNEL TO
GREAT SOUTH CHANNEL, OUT
TO ONE THOUSAND FATHOMS
NORTHEAST WINDS 20 TO 30 KNOTS TONIGHT.
EAST WINDS 10 TO 20
KNOTS WEDNESDAY. SOUTHEAST WINDS 25 TO
30 KNOTS WEDNESDAY NIGHT.
VISIBILITY VARIABLE TO BELOW 1 MILE IN
FOG AND DRIZZLE THROUGH
WEDNESDAY NIGHT. AVERAGE SEAS 10 TO 15
FEET THROUGH WEDNESDAY.

SOUTH OF NEW ENGLAND, FROM GREAT SOUTH
CHANNEL TO AND INCLUDING
HUDSON CANYON, OUT TO ONE THOUSAND
FATHOMS
VARIABLE WINDS NEAR 15 KNOTS TONIGHT.
EAST WINDS 15 TO 25 KNOTS
WEDNESDAY. SOUTHEAST WINDS 25 TO 35
KNOTS WEDNESDAY NIGHT.
VISIBILITY LOWERING TO BELOW 1 MILE IN
FOG AND DRIZZLE WEDNESDAY
AND WEDNESDAY NIGHT. AVERAGE SEAS 10 TO
15 FEET THROUGH WEDNESDAY.

SOUTH OF NOVA SCOTIA, FROM SABLE ISLAND
TO NORTHEAST CHANNEL, OUT
TO ONE THOUSAND FATHOMS
...DISCONTINUE GALE WARNING AT 11PM
EST...
NORTHEAST WINDS 25 TO 30 KNOTS TONIGHT.
EAST WINDS 15 TO 25 KNOTS

NOTES

NUMBER

EPIRBs

- 121.5/243 MHZ
  - CLASS A (AUTO ACTIVATED)
  - CLASS B (MANUAL ACTIVATED)
  - CLASS S (FLOATING B)
- 156 MHZ
  - CLASS C
- 406 MHZ
  - CAT I (AUTO ACTIVATED)
  - CAT II (MANUAL ACTIVATED)

19

EPIRBS

- GMDSS EPIRB: 406 MHz CAT 1
  - WORLD WIDE COVERAGE
  - EMISSION INCLUDES VESSEL IDENTITY
- COSPAS-SARSAT SATELLITE EPIRB SYSTEM
  - JOINT US/USSR/FRANCE/CANADA
- CG/FCC STEPPING UP EPIRB FALSE ALERTS
  - 121.5/243 MHz STUCK CARRIER DETECTED/LOCATED BY SATELLITE

20

406 MHZ EPIRBs

- DESIGNED FOR COSPAS SARSAT
- CERTIFICATION TESTING BY INDEPENDENT LAB
- COST ABOUT $2000
- AVAILABLE EARLY SUMMER 89
- CARRIAGE REQUIREMENTS
  - FISHING VESSELS EARLY 90
  - SOLAS VESSELS AUG 93
  - OTHER UNINSPECTED VESSELS

EPIRB ALERTS
CG/SARSAT DATA APR–SEP 88

NET ALERTS	15,426
FIRST COMPOSITE (2ND PASS)	1,207
KNOWN FALSE ALARM	208
SIGNAL CEASED	179
KNOWN INTERFERER	30
DISTRESS	28

SEARCH AND RESCUE RADAR TRANSPONDER

- LOW POWER BEACON, 9200 – 9500 MHz
- USED TO LOCATE DISTRESS VESSELS
- RANGE VERY LIMITED
  - SHIP ~12 NM
  - AIRCRAFT ~ 20 NM

1. What do you need from me?
2. What do you do with what I give you?
3. Are there any gaps between what I give and what you need?

PURPOSE

TO ASSURE THAT THE SEA WORTHINESS AND SAFETY OF RESEARCH VESSELS SUPPORTED BY NSF MEET OR EXCEED THE STANDARDS SET FORTH BY THE UNOLS SAFETY STANDARDS AND APPLICABLE REQUIREMENTS OF THE AMERICAN BUREAU OF SHIPPING, CODE OF FEDERAL REGULATIONS AND THE U.S. COAST GUARD.

TO ENSURE THAT NSF OWNED SHIPS AS CAPITAL ASSETS ARE BEING ADEQUATELY MAINTAINED.

TO ASSURE THAT SCIENCE CAPABILITIES ARE IN ACCORDANCE WITH ACCEPTED COMMUNITY STANDARDS AND EXPECTATIONS.

SHIP INSPECTION HISTORY

07-Jun-91 R.West

NSF SHIPS

	Ship	Operator	Built	LOA	Class	Disp	Crw	Sci
1	ALPHA HELIX	ALASKA	1966	133	IV	554	9	15
2	ATLANTIS II	W H O I	1963	210	II	2300	35	15
3	BARNES	WASH	1966	65	V	88	2	6
4	CALANUS	MIAMI	1970	68	IV	111	2	6
5	CAPE FLORIDA	MIAMI	1961	135	IV	539	9	12
6	CAPE HATTERAS	DUKE U	1961	135	IV	539	10	12
7	CAYUSE	M L M L	1966	80	V	173	7	8
8	ENDEAVOR	U R I	1976	177	III	972	12	16
9	ISELIN	MIAMI	1972	170	III	830	12	24
10	MAURICE EWING	L D G O	1963	239	II	2577	20	30
11	OCEANUS	W H O I	1975	177	III	960	12	12
12	POINT SUR	M L M L	1961	135	IV	539	9	12
13	WARFIELD	J H U	1967	108	IV	182	7	10
14	WECOMA	O S U	1975	177	III	1015	12	16

SOCC

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
1					FEB					
2						JUN				
3										
4	Built							JUN		
5										
6										
7						APR				JAN
8							Built		DEC	
9		Built	JUN					JUN		
10										
11						Built			SEP	
12										
13				JUN		MAR				MAY
14						Built				JAN

NSF SHIP INSPECTION PROGRAM

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	DEC			AUG			APR			JUN		sep
2		FEB			JAN			JAN			MAR	
3				Acq'd	NOV		DEC		JUL		AUG	
4		FEB		MAY		DEC		SEP		NOV		oct
5		Built		MAY		DEC	-x					
6		Built		MAR		NOV		DEC		DEC		aug
7		JAN		JUN		AUG		-x				
8		JUL		APR		JUN		DEC			MAR	
9		FEB		MAY			FEB	SEP		NOV		
10				Built						Acq'd	DEC	
11		JAN		JUN		JUN		DEC		SEP		dec
12		Built					Acq'd	AUG		DEC		dec
13		JAN		JUL		OCT		OCT		OCT		
14	DEC			JUN		AUG		OCT			APR	

INSTITUTION SHIPS

	Ship	Operator	Built	LOA	Class	Disp	Crw	Sci
1	BLUE FIN	SKIDAWAY	1972	72	V	86	4	8
2	CAPE HENLOPEN	DELAWARE	1975	120	IV	178	8	12
3	EASTWARD	DUKE U	1984	118	IV	610	15	15
4	EDWIN LINK	H B O I	1982	171	III	1327	16	14
5	FRED MOORE	TEXAS	1967	167	III	1202	10	23
6	KANA KEOKI	HAWAII	1967	158	III	900	12	16
7	LAURENTIAN	MICHIGAN	1974	80	V	180	7	7
8	LONGHORN	TEXAS	1971	103	IV	200	4	11
9	N HORIZON	SCRIPPS	1978	170	III	1080	12	13
10	PELICAN	LUMCON	1985	105	IV	253	5	15
11	POLAR DUKE	CARINO	1983	219	II	1800	14	28
12	SCRIPPS	SCRIPPS	1965	95	V	287	5	8
13	SEWARD JOHNSON	H B O I	1984	176	III	1174	9	20
14	SPROUL	SCRIPPS	1961	125	IV	500	5	12
15	SUNCOASTER	F I O	1982	110	IV	250	5	12
16	VELERO IV	SO CALIF	1948	110	IV	650	11	12
17	VICKERS	SO CALIF	1973	220				25
18	WEATHERBIRD	B B S	1970	65	V	100	2	4
19	WEATHERBIRD II	B B S	1982	115	IV	250	8	10

SOCC

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
1			Built			Acq'd		JUN		
2						Built				
3		JUN				APR			MAY	
4										
5										
6			JUN			JUN				DEC
7					Built					
8	Built						SEP			
9									Built	
10										
11										
12						AUG				
13										
14										
15										
16						SEP				JUL
17										
18	Built									
19										

NSF SHIP INSPECTION PROGRAM

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1					JUN		APR		MAY		NOV	
2					MAY		OCT		AUG			
3	-x											
4		Built						Acq'd			NOV	
5							FEB					
6						-x						
7					SEP		JUL		APR		MAY	
8					APR		NOV		NOV		SEP	
9					MAR		DEC		DEC			MAY
10						Built				FEB		jun
11				Built		Acq'd		APR				MAY
12					MAR	-x						
13					Built						MAY	
14		Built			Acq'd		APR		DEC		AUG	
15			Acq'd				NOV					
16					MAR	-x						
17												jul
18			Acq'd		JUL		JUL		SEP			
19			Built							Acq'd	APR	

NAVY SHIPS

	Ship	Operator	Built	LOA	Class	Disp	Crw	Sci
1	CONRAD	L-D G O	1982	209	II	1425	22	21
2	GYRE	T A M U	1973	182	III	980	10	20
3	HOH	WASH	1943	65	V	91	2	8
4	KNORR	W H O I	1968	245	II	1915	25	24
5	MELVILLE	SCRIPPS	1969	245	II	2075	23	29
6	MOANA WAVE	HAWAII	1973	213	II	1435	13	19
7	ONAR	WASH	1954	65	V	95	2	6
8	THOMPSON	WASH	1965	209	II	1302	22	22
9	WASHINGTON	SCRIPPS	1965	209	II	1362	23	22

SOCC

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
1						OCT			NOV	NOV *
2				Built			SEP			
3		MAY					FEB			
4					MAY					
5	Built							AUG		
6				Built			NOV			
7		MAY						FEB		
8					MAY			MAY		
9					APR			AUG		

INSURV

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1						OCT			DEC		-x	
2						APR			JAN			AUG
3					-x							
4	FEB											
5					SEP				OCT			
6				ALG								
7							JUN					
8							APR					
9				-x								
10					MAR					-x		
11					FEB							AUG

Acq'd: Acquired
* Special review in cooperation w/MarAd

SOCC = Ship Operators Coodinating Council

SOCC

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Per Year	0	3	2	1	4	8	4	7	5	4
Sum Total	0	3	5	6	10	18	22	29	34	38

NSF INSPECTION PROGRAM

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Per Year	2	7	0	10	10	8	12	10	8	8	12	9
Sum Total	2	9	9	19	29	37	49	59	67	75	87	96

INSURV

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Per Year	1	0	0	3	3	0	1	3	0	0	2	
Sum Total	1	1	1	4	7	7	8	11	11	11	13	

PROGRAM DEVELOPMENT

PHASE I — BASIC SAFETY, MATERIAL CONDITION, AND SCIENCE

PHASE II — IMPLEMENTATION OF UNOLS RESEARCH VESSEL SAFETY STANDARDS - GREATER EMPHASIS ON SAFETY, MATERIAL AND SCIENCE - SUBCHAPTER U CFR IN PART

PHASE III — FULL SAFETY STANDARD IMPLEMENTATION, FULL CFR SUBCHAPTER U AS APPROPRIATE - CREW TRAINING AND DRILLS - GREATER EMPHASIS ON SHARING INFORMATION

(IN ALL PHASES, INSPECTION DESIGNED TO HELP, NOT CRITICIZE)

WHAT IS LOOKED AT

STABILITY

HULL

TANKS

PIPING SYSTEMS

POLLUTION CONTROL

MACHINERY

ELECTRICAL

DECKS AND SUPERSTRUCTURE

SAFETY

HABITABILITY

PERSONNEL

ELECTRONICS

SHIP HANDLING

SCIENCE SYSTEMS

GENERAL

PLEASE FILL OUT NSF SHIP CONDITION FORM ACCURATELY AND COMPLETELY

STABILITY

1. SHIPS NOT DESIGNED WITH ADEQUATE RESERVE FOR WEIGHT GROWTH

2. KEEP TRIM AND STABILITY BOOK UP TO DATE

TANKS

1. GOOD WHEN ON A CLEANING AND COATING SCHEDULE

2. GET A SNIFFER

3. CLEAN BOTTOM OF TANKS

4. LABEL MAN HOLE COVERS

PIPING

1. CONSIDER UNOLS STANDARD MARKINGS

2. MORE LABELING FOR CRITICAL SYSTEMS - START UP SHUT DOWN MANUAL

3. REMOTE OPERATING FUEL VALVE - AT LEAST QUARTERLY

4. PERMANENT REPAIRS

5. ADDITIONAL PIPE HANGERS

6. DO NOT USE BLACK PIPE

POLLUTION CONTROL

1. OIL/WATER SEPARATORS

2. MSD'S FOR ALL SHIPS

3. CONSIDER ULTRAVIOLET PURIFIERS FOR POTABLE WATER

HULL

1. W. T. DOORS

2. REMOTE OPERATING DOORS

3. VENT CLOSURES

   A. FIRE SCREENS

   B. BALL CHECKS

4. NON SKID COVERINGS

5. VENTILATION

MACHINERY

1. OVERSPEED TRIPS - TEST QUARTERLY

2. REMOTE SHUTDOWNS - TEST QUARTERLY

3. LUB OIL ANALYSIS

4. REMOTE SHUTDOWNS BOILER, PURIFIER, FUEL OIL TRANSFER PUMPS

ELECTRICAL

1. MEGGER PROGRAM

2. INSPECT WINDINGS

3. CLEAN SWITCHBOARDS - TIGHTEN CONNECTIONS

4. EMERGENCY POWER

5. PLUG WIREWAY HOLES

6. HIGH VOLTAGE WARNINGS

7. ELECTRICAL GLOVES

8. WATCH YOUR SPRAY PAINT

SAFETY

1. SWITCH TO CATEGORY ONE EPIRBS

2. GENERAL HOUSEKEEPING

3. KEEP INFORMED LOGS OF TESTS AND CHECKS - SET UP SCHEDULES

4. GETTING UNDERWAY CHECK OFF LISTS

5. DANGER STRIPES FOR DANGER AREAS (YELLOW/BLACK)

6. REMOTE RELEASES FOR BULK GASOLINE

7. CLOSE WATERTIGHT HATCHES AND DOORS NOT IN USE WHEN AT SEA

8. STRETCHERS FOR INTERNAL USE

9. USE SAFETY CHAINS

10. USE HARD HATS AND WORK VESTS

11. EMERGENCY ESCAPE BREATHING DEVICES

!2. EMBARKATION AIDS

13. BOAT FLARES

14. MAS

15. LACK OF KNOWLEDGE OF SUBCHAPTER U, CFR AND UNOLS SAFETY STANDARDS.

PERSONNEL

1. CONTINUE TO ENCOURAGE OFFICERS TO UP-GRADE LICENSES

2. MORE LINE THROWING GUN TRAINING

3. FIRE DRILLS - BE REALISTIC NOW AND THEN

4. MAN-OVER-BOARD DRILLS QUARTERLY EACH DECK OFFICER - PRACTICE SHIP AND BOAT RECOVERY - AGAIN, BE REALISTIC

5. CPR - FIRST AID - FIREFIGHTING SCHOOL

6. SAFETY TAPES

7. CONSIDER INFLATING OLD LIFE RAFTS

8. CONSIDER EXPOSURE SUITS IN WATER

9. INTERPERSONAL RELATIONSHIPS/SEXUAL HARASSMENT

HABITABILITY

1. TENDENCY TO CROWD MORE SCIENTISTS ON SAME SIZE SHIP

2. GARBAGE/TRASH DISPOSAL PLAQUES AND PLANS - GALLEY GRINDERS - INCINERATORS EVENTUALLY FOR LARGER SHIPS?

3. SOFT DRINK DISPENSERS SAVE SPACE AND REDUCE TRASH FROM CANS

4. POTABLE WATER

ELECTRONICS

1. DEVELOP PLAN FOR CONTINUOUS UP-DATE

2. COLLISION ALARM RADARS

3. INMARSAT

4. AGAIN - CAT. ONE EPIRB

5. WHAT EFFECT GMDSS?

6. CLIMB THE MAST

7. BE LOGICAL IN ELECTRONICS LAYOUT

8. NEED NAVTEX

SHIP CONTROL

1. ONE THIRD OF FLEET HAS ANCHORING PROBLEMS

2. EMERGENCY STEERING

3. BOAT HANDLING

NSF/ABS MATERIAL CONDITION SURVEYS

Scope of Science Phase

1. Working Deck Arrangements
2. Overside Handling Gear
3. Oceanographic Winches
4. Wire and Cable
5. Science Laboratories
6. Science Storage
7. Scientific Outfitting
   - Installed Equipment
   - "Shared Use" Equipment
8. Technical Services
9. Shoreside Support
10. Science Accommodations
11. Science Safety
12. Documentation
    - UNOLS Cruise Assessments
    - Cruise Planning Manual
    - Logs and Records

---

1. WORKING DECK ARRANGEMENTS

Includes:

- Layout of Science Workdeck for effective operations.
- Acess and egress between deck and labs.
- Visibility and communications
- Lighting

Chief Discrepancies:

- Wet Decks (often slippery).
- Obstructions
- Inadequate hold downs (or boltdowns)

2. OVERSIDE HANDLING GEAR

Includes:

- A-Frames, J-Frames
- Cranes and Booms
- Davits

Chief Discrepancies:

- Understrength - Frames should have higher load rating than breaking strength of wire in use.
- Undersized - too small for equipment in use.
- Testing - Should be tested every two years at 125% of rating. Test data should be logged and posted.
- Inadequate Crane Lubrication, leaking hydraulic fittings.
- No load diagram at crane controls.

3. OCEANOGRAPHIC WINCHES

Includes:

- Sizing and Power
- Maintenance
- General Performance, Controls, Level winding, Brakes
- Wire Monitors
- Fairleads, Sheaves, and Alignment

Chief Discrepancies:

- Poor lubrication
- Autobrakes need adjustment
- Inoperative or missing wire monitors
- Undersized and/or faulty fairleads
- Inoperative or missing manual/emergency brake
- Generally poor maintenance, no maintenance logs

4. WIRE AND CABLE

Includes:

- Condition and age of wire
- Serviceable length
- Suitable sizes - preferably UNOLS standards
- Level winding
- Spares
- Wire Logs and histories

Chief Discrepancies:

- Overage, "suspect" wires and cables
- Loss of protective galvanizing due to undersized or misaligned fairleads
- Inadequate spares on hand
- Wire logs not maintained
- Handbook not available

5. SCIENCE LABORATORIES

Includes:

- General condition, especially cleanliness
- Benches and cabinetry
- Lighting and ventilation
- Clean power
- Radioisotope controls
- Fume Hoods
- Sinks and drains

Chief Discrepancies:

- Lab dirty; substandard maintenance
- Worn out benches, cabinets, and furnishings
- Inadequate fume hoods; poorly vented
- No written procedures for handling isotopes; overdue swab tests
- Inadequate lighting
- Labs being used for stowage or installation of non-science equipment

6. SCIENCE STORAGE

Includes:

- Access: from labs and for loading and unloading
- Hazardous materials storage
- Portable vans

Chief Discrepancies:

- Inadequate storage space except in laboratories
- Poor loading/unloading access
- No suitable storage for hazardous materials
- Portable vans and reefers in poor condition

7. SCIENTIFIC OUTFITTING

Includes:

- Installed instrumentation
- Data Acquisition System (SAIL)
- Echo Sounding Systems
- Uncontaminated Sea Water System
- "Shared Use" equipment pool

Chief Discrepancies:

- Substandard meteorological outfit
- No remote navigation, meteorology, or winch readouts in lab(s)
- Workboats in poor condition; inflatable boats not covered
- None - or inoperative - or unsuitable Data Acquisition System. Should have "User Friendly" display of standard parameters with remote readouts in key locations
- Overage, worn out transducers in echo sounding systems
- Dry paper echo sounding recorders not vented. (Note: This is health hazard)
- Excess obsolete equipment in shared use pool.

8. TECHNICAL SERVICES

Includes:

- Shipboard Technicians
- Cruise preparation and outfitting
- Scientific Diving

Chief Discrepancies:

- Items requested from shared use pool not available
- Too rapid turnover of shipboard techs.
- No approved institution diving manual pursuant to AAUS standards

9. SHORESIDE SUPPORT

Includes:

- Support shops
- Staging and Storage space
- Cranes and loading equipment
- Communication Facilities

Chief Discrepancies:

- Inadequate inside storage

10. SCIENCE ACCOMMODATIONS

Includes:

- Scientific berthing
- Messing and Lounge facilities

Chief Discrepancies:

- Substandard berthing arrangements

11. SCIENCE SAFETY

Includes:

- Science Hazards
- Preventative Measures
- First Aid Facilities

Chief Discrepancies:

- Sloppy chemical storage in labs
- Lifelines not rigged at science work-stations
- Life Vests and/or Hardhats not worn during operations
- No First Aid kits in lab(s)
- No emergency Eye Wash in Lab(s)
- Emergency Deluge Shower not available

12. DOCUMENTATION

Includes:

- UNOLS Cruise Assessments
- Cruise Planning Manual
- Logs and Records

Chief Discrepancies:

- Assessment forms not submitted
- Cruise Manual should have better arrangement drawings
- Cruise Manual should contain description of shared use equipment pool
- Science equipment logs not maintained (i.e. cranes, echo sounders, winches, etc)

REPORTS

INSPECTORS TO ABS

ABS CONSOLIDATES SENDS TO NSF

NSF SENDS TO INSTITUTIONS

INSTITUTION REVIEW AND ACTION

INSTITUTION CORRECTIVE ACTION TO NSF

NSF TO INSPECTORS

INSPECTORS COMMENT AS NEEDED

RESULTS

1. THE NSF INSPECTED UNOLS FLEET IS RAPIDLY APPROACHING A PLATEAU OF EXCELLENCE IN BOTH MATERIAL CONDITION, SAFETY, TRAINING AND SCIENTIFIC CAPABILITIES.

2. PURPOSE OF SHIP INSPECTION PROGRAM IS BEING MET

Goals for Workshop

Safety Standards:

1. Input and comment on needed changes to the RVSS.

2. Decision on the addition of a chapter concerned with Shipboard Hazardous Waste and Pollution control.

3. Decision on making Explosives a separate chapter and rearranging chapters so that all concerned with hazardous materials are together.

Hazardous Materials, Waste and Pollution Control:

1. Promote a better understanding of the Hazardous Materials, Waste and Pollution control issues, identify any specific problems in the UNOLS fleet and any recommended solutions to those problems.

2. Decision and policy statement about the need or lack of need for RVOC fleet wide guidelines on the handling of Hazardous Materials, Waste, Garbage and pollutants.

3. Decision on the need for a workshop or expanded committee to generate RVOC guidelines or manual on Hazardous Materials, Waste and Pollution control.

4. Policy statement concerning the need or lack of need for a comprehensive policy to reduce plastics and garbage on UNOLS vessels. Include statement about the state of compliance with MARPOL regulations by UNOLS vessels.

5. Identify some soursces of information, training and equipment for handling hazardous materials.

Other Issues:

1. Welcome aboard safety video

2. Training programs

3. Accident Statistics

4. Need for other programs

AGENDA FOR WEDNESDAY AFTERNOON

1. Safety Standards

Overview of review process

Areas requiring the most attention
- Communications
- Lifesaving Equipment
- Hazardous Materials

Review by chapters of suggested changes to date/Solicit input for changes.

Discussion and decision concerning the need for separating explosives into a stand alone chapter and adding a chapter on Shipboard hazardous waste and pollution control.

2. Hazardous materials, Waste and Pollution Control

Report on concerns by Grant Gross and UNOLS Council (Jim Williams)

Report from the committee that reviewed this issue (Bruce, Linda, and Bill)
- Objectives of committee
- Conclusions and problem areas
- Recommendations

Presentation of background on the definitions and regulations concerning Hazardous Materials and Waste and intro to the NOAA Manual and regs (Mike)

Open discussion with RVOC about specific problems, issues and solutions (Panel)

Discussion, decision and drafting of policy statements concerning needs for further action, guidelines, manuals, workshops etc.

Discussion of pollution control issues (Mike, Bruce and Jim)
- PRIME (Navy Program)
- MARPOL

Decision and drafting of policy statement concerning garbage and pollution control including control of plastics and other packaging materials.

Presentation of information and materials for hazardous materials cleanup and spill response. (Linda)

Other issues and time permits.

Safety Standards Review and Revision

Ch. 1 Introduction

Add reference to RVOC Safety Training Manual.

Ch. 2 Procedures

No changes

Ch. 3 Certification, Documentation, and Inspection

Addition of section on Custom's clearances, Foreign clearances.

Question concerning the need for ABYC references.

Ch. 4 Stability

Add reference to F/V Stability requirements.

Ch. 5 Loadlines, Subdivisions and Watertight integrity

Ch. 6 Electrical and Marine Engineering

Ch. 7 Fire Fighting Equipment

7.2 Fixed Fire Extinguishing System
Add sentence about CO2 flooding alarms; reference 46 CFR 193.15-30.

7.3 Fire Pumps
Add sentence concerning remote operation of a fire pump in an unmanned engine room; reference 46 CFR 193.10.

7.4 Tests and Inspections
In the first sentence, change should to must to show requirement to have portable and fixed equipment tested (46 CFR 196.15-60b). Add sentence concerning testing of fire hose (46 CFR 189.25-20).

7.8 Fire Fighting Equipment

It is my understanding that according to NVIC 12-86 the USCG now allows replacement of the flame safety lamp, required as part of the Fireman's Outfit, with a combination oxygen/combustible gas indicator. Unit must be intrinsically safe and approved by either UL or FM. Flame safety lamps are still legal but no longer manufactured. Recommend adding this information to paragraph 7.8.

On July 30, 1990 the USCG issued a Notice of Proposed Rulemaking (NPR), which proposes to update the approval and carriage requirements for breathing apparatus and gas masks (46 CFR Parts 35 and 160). In brief, this NPR, among other things, proposes to require that only pressure-demand or other positive-pressure SCBA be approved for carriage. The rationale given is that it is generally recognized in the shoreside fire fighting industry that only pressure-demand or other positive-pressure, self-contained breathing apparatus (SCBA) should be worn by firefighters performing interior structural fire fighting. The level of protection afforded by an SCBA is necessary because the smoke generated by fire today contains unknown varieties and quantities of toxic materials. It is further recognized that OBA's do not provide adequate protection for personnel against this smoke. As currently written, paragraph 7.8 calls for either an air-pack and/or OBA to satisfy the RVSS carriage requirements for the fireman's outfit. We can wait for this NPR to become a Final Rule before we change paragraph 7.8 to indicate that only an SCBA is acceptable as part of the Fireman's Outfit, or we can change it now. My recommendation is to change it now. At a minimum, this sentence of 7.8 should be changed from air-pack to self-contained breathing apparatus (SCBA).

I further recommend changing the title of this paragraph to Fireman's Outfit and rewrite it to indicate that all vessels should, if practical, have at least one aboard. My rationale for changing this paragraph is simple. The only difference between what the RVSS currently requires (Fire Fighting Equipment) and a full-fledged Fireman's Outfit is the requirement to carry a rigid helmet, boots, gloves and protective clothing. These items are readily available and easily stowed, even on a small vessel. Also add that inspected vessels of 300 GT and over must carry two outfits; reference 46 CFR 195.35.

7.9 Fire Fighting Training
Add recommendation that all crew members should attend USCG approved firefighting school at least every five years. If possible, crew should attend as a group.

7.11 Emergence Escape Breathing Device
In the second sentence change oxygen to air. Add recommendation that units be checked at least yearly and that an appropriate number be located in the engineroom.

In addition, I recommend that two short paragraphs be added:7.12 Fire Axe and 7.13 Markings for Fire Equipment.

Ch.8 Lifesaving Equipment

Defer rewrite until final rule for new subchapter W is published.

8.5 Suggestion to include shoulder type line throwing gun in recommended equipment in addition to canister type.

Ch.9 Explosives, Flamables & Hazardous Materials.

See recommended rewrite of this chapter from committee on hazardous waste.

Also recommended was the addition of chapter on Shipboard hazardous wastes and pollution control.

Further recommendation to separate the explosives section into a separate chapter and rearrage the order of chapters so that the Hazardous Materials, Hazardous waste and pollution control, Explosives and Radio Active materials chapters are all grouped together.

Update reference to instructions for notifying the DMAHTC with current instructions and correct address.

Ch.10 Scientific equipment

Typo on pg 37 line 7: change "posed" to "posted"

10.4 mention additonal frequencies that may be used for pingers such as 27 and 37 Mhz.

Ch.11 Radioactive Materials

Review and approved just prior to last reprint. No suggested changes to date. Will request review by the same people that drafted this version for any needed changes.

Ch.12 Communications

Revisions to several paragraphs will be needed when the final rule implementing GMDSS is published by the FCC.

12.8 Update to include 406 mhz EPIRBS.

Ch.13 Manning

No recommended changes

Ch.14 Operations

14.7 Add reference to drug testing requirements for post serious marine incident.

Add paragraph refering to the notification to DMAHTC of towed and submerged objects.

Ch.15 Diving Operations

Just revised, approved and published as an interim change to the standards.

Ch.16 Charter of Non-Institutional Vessels

16.1 Add reference to stability criteria in subparagraph 1.

DRAFT, 1 July 1991

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9. EXPLOSIVES AND HAZARDOUS SCIENTIFIC MATERIALS

9.0 EXPLOSIVES ORGANIZATION:

Each oceanographic institution using explosives for research at sea shall have the following organization as a minimum:

1. COMMITTEE ON EXPLOSIVES USE AND SAFETY: The responsibilities of this committee shall include judging scientific merit, and also approval at each stage of planning, acquisition of permits, purchasing, loading, storage, and the overall use of explosives for their institutions.

2. EXPLOSIVES CONTROL OFFICER: The responsibilities of the Explosives Officer shall include working contact with local authorities and with the local USCG office; supervision of the institution's explosive shooters; custody of explosive handling and shooting equipment; purchasing explosives; vendor contacts; maintenance of operations; technical files; knowledge of local, state, and federal explosives regulations; and safety. The Explosives Officer should go to sea and shoot explosives as part of his duties.

3. EXPLOSIVE SHOOTERS: Shooting of explosives shall only be done by those thoroughly qualified. Personnel assigned to this task should be trained formally outside the institution involved. As an example, the Basic Underwater Demolitions School, Naval Amphibious Base Coronado, San Diego, CA, 92155 has provided training to civilian oceanographers and marine technicians in the use and safe handling of explosives, including classwork and practical application.

9.1 EXPLOSIVES, PERMITS, AND AUTHORIZATION:

The Port Captain, USCG Office, should be contacted well in advance, since USCG rules are stringent and strictly enforced. In addition, Fish and Game Departments, local and state law enforcement agencies, the fire department, etc., should be contacted for information on possible restrictions, truck routing, spot assistance and inspections, etc.

The use of explosives, sonic emitters, or towed devices (as well as instrumentation moorings) present special hazards to submarine operations and navigation. The Defense Mapping Agency Hydrographic/Topographic Center (DMAHTC) has agreed to disseminate information concerning underwater hazards as part of the Notice to Mariner system. Operators intending to use explosives, sonic emitters, or towed devices should notify in advance: Chief, Navigation Department, Defense Mapping Agency Hydrographic/Topographic Center, 6500 Brooks Lane, Washington, D.C., 20315, Telephone (202) 227-3130. For further details, see UNOLS letter of November 20, 1984, "Procedures for Reporting Surface and Subsurface Obstacles" or in National Oceanographic Fleet Operating Schedules for 1985, see "Procedures for Reporting Surface and Subsurface Obstacles."

9.2 EXPLOSIVES STOWAGE:

Rules for carrying, stowage, and labelling of explosives on board inspected ships are given in Subchapter U, CFR. These rules should be followed by all research vessels. In addition, 49 CFR 176 prescribes requirements for all vessels carrying hazardous materials in the domestic waters of the United States, with some exceptions. Magazines and storage areas should be properly labelled and inspected daily, and safety precautions should be posted. (46 CFR 194.05, 194.10, 196.80, 196.85)

9.3 MILITARY EXPLOSIVES:

Since military explosives such as Navy SUS charges may be used by research institutions, users should be aware that there are special requirements for these munitions. 46 CFR 146.29, "Detailed Regulations Governing the Transportation of Military Explosives and Hazardous Munitions on Board Vessels" is applicable.

9.4 EXPLOSIVE "STAND OFF" LIMITS:

Explosive Safety Precautions for Research Vessels, NAVORD OP-3696, Appendix B, provides vital information that should be used in calculating stand off distances, in order to prevent hull damage.

9.5 EXPLOSIVE BLASTING CAPS:

Electric blasting caps should not be used on board ships because of the potential hazard of pre-fires from induced current through radio and radar radiated energy.

9.6 EXPLOSIVES HANDLING GEAR:

Slings, nets, and other portable handling gear used with explosives should be maintained exclusively for that use.

9.7 RESPONSIBILITY FOR CARRYING OUT THESE PRECAUTIONS:

Cases may arise in which one institution's scientists may be doing research involving explosives on another institution's ship. In such cases, the primary responsibility for assuring adherence to safety standards shall lie with the ship operating institution.

9.8 HAZARDOUS SCIENTIFIC MATERIALS:

A hazardous scientific material is any substance which, because of its chemical properties, can cause the deterioration of other materials or injury to living organisms. Hazardous scientific materials may be grouped into five major classes: Flammable or explosive, corrosive, reactive, toxic or poisonous, and cryogenic.

Rules for the stowage, labelling, and protection of flammables and other hazardous scientific stores on inspected vessels are given in Subchapter U, Title 46 CFR, Part 194. These rules should be followed by all

research vessels insofar as practicable. Particular standards are singled out below:

(a) Storage containers should be marked, labelled, and stored in a ventilated and protected area under the supervision of the Chief Scientist with the knowledge and approval of the Master. Consideration should be given to transporting and storing hazardous materials normally shipped in glass containers, in special, non-breakable containers.

(b) Working quantities only should be stored in the laboratory. A reasonable working quantity would be a one day supply, considering the hazard posed by the material. Containers should be marked with the material's chemical and common names, type and classification.

(c) Storerooms for chemicals and flammables, where practicable, should be protected by fixed CO_2 or Halon systems, and used for no other purpose. Where it is not practical to provide such a storeroom, consideration should be given to a hazardous material locker appropriate for the type and quantity of material being stored. (46 CFR 194.05, 194.15, 194.20)

9.9 CRUISE PLANNING

The principal Investigator (PI) will be responsible for providing, in a timely manner, in advance of the departure date for any cruise in which hazardous materials will be used:

(a) A list of such materials by chemical name, common name, type and classification.

(b) A listing of the neutralizing agents, buffers and/or absorbents required for the materials, in the event of a spill.

9.10 INVENTORY LIST

Hazardous materials brought aboard by the scientific party must be accompanied by an inventory list showing the actual amounts and a Material Safety Data Sheet (MSDS) for each hazardous material.

Upon departure from the ship, the scientific party must provide the Master an inventory of hazardous materials showing that all of them have been depleted, removed ashore, or properly stored aboard until such time as it is practicable to remove them from the ship.

9.11 CHEMICAL SPILL RESPONSE

The scientific party will be responsible for supplying neutralizing agents, buffers and/or absorbents in the amounts adequate to address spills of a size equal to the amount of any chemicals brought aboard. This spill response material must accompany the chemicals when they come aboard.

9.12 MATERIAL SAFETY DATA SHEETS

Hazardous materials will be found among both ship and scientific stores and include such items as organic solvents, corrosives, compressed gases, flammable liquids, and toxic or reactive chemicals. Material Safety Data Sheets (MSDS) contain a list of product ingredients, indicating which are hazardous and why; recommended personnel protection and precautions; spill or leak procedures; and fire, explosion, health (including first aid), and reactivity data; and most importantly, an emergency telephone number for assistance in the event of an accident. Employers are required to inform employees of what hazardous materials are present in the work place and train them in proper use and handling with the aid of MSDSs. It is important for vessel operators to ensure a listing of hazardous materials and copies of MSDSs are provided by participating scientific parties. Laboratories have no specific status or exemption with regard to this much of the rules. (29 CFR 1919)

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APPENDIX XIV

xx. SHIPBOARD HAZARDOUS WASTE AND POLLUTION PREVENTION

x.0 BACKGROUND
- cite MARPOL

x.1 OILY WASTE
- discharge standards
- equipment requirements
- cite 33 CFR 151 and 155

x.2 GARBAGE
- disposal standards
- Waste Management Plan
- Placards
- equipment
- cite 33 CFR 151; 46 CFR Part 25

x.3 SEWAGE
- discharge standards
- equipment requirements
- cite 33 CFR 159

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