University-National Oceanographic Laboratory System

Research Vessel Operators Committee

Volume 17, Number 1 RVOC NEWSLETTER April 1, 1992

Greetings from sunny and rainy California,

Well, this is my first attempt at a newsletter so don't get your hopes up. As in the past I will use the RVOC newsletter as a vehicle for passing on information relative to our annual meeting and other RVOC activities, as a forum for any hot topics and to circulate articles and other information that might be of interest to you. The clipped material will probably always be the biggest part of the newsletter. Feel free to send along anything you think should be shared with the rest of us. If you are real adventurous you could write an article or report on an event.

Mike

ANNUAL MEETING

20 - 22 October 1992 in Lewes, Delaware. Hosted by Waddy Owen and the University of Delaware. Waddy provided the following info on accommodations and schedules.

Monday 10/19/92 Travel day

18:00-19:30	no host bar, Virden Center (on campus)*

Tuesday 10/20/92

07:00	Breakfast, Virden Center*
08:30 - 10:00	Meeting Virden Center
10:00 - 10:30	Coffee Break on R/V Cape Henlopen
10:30 - 12:00	Meeting Virden Center
12:00 - 13:30	Lunch Virden Center*
13:30 - 17:00	Meeting Virden Center
18:00 - 20:00	No host cocktail party; Virden Center* dinner at area restaurants

Wednesday 10/21/92

07:00	Breakfast, Virden Center*
08:30 - 12:00	Meeting Virden Center
12:00 - 13:30	Lunch Virden Center*
13:30 - 17:00	Meeting Virden Center
18:00 - ?	Cocktails and dinner Virden Center, no host, approx cost $20.00*

Thursday 10/21/92

07:00	Breakfast, Virden Center*
08:30 - 12:00	Meeting Virden Center
12:00 - 13:30	Lunch Virden Center*
13:30 - ?	Meeting Virden Center

Possible spouse activities:

Tuesday (all day)
Bus or van to Winterthur Museum and Gardens
(period restoration of Dupont estate) and Longwood Gardens
Wednesday (all day)
Ferry trip to Cape May-Victorian House Tour (outside only)
Thursday
AM
Walking tour of Lewes Historical District
PM
Overnight trip to Atlantic City Casinos

Accommodations:

Inn at Canal Square (17 rooms, 2 suites, one houseboat)
1.5 miles from campus (POSH)
$65-$85 inc continental breakfast,
fine 18th century reproduction furniture, TV + phone
houseboat sleeps 4; $150 total for 4 persons

Virden Center (22 rooms) on campus (new appearance very nice)
$52-$67 inc continental breakfast,
new modern beach decor, TV + phone

New Devon Inn (24 rooms, 2 suites, No houseboat)
1.5 miles from campus (2 years since restoration)
$65-$90 inc continental breakfast,
authentic antique furniture, phone, but no TV

Notes:

We must first fill the Inn at Canal Square, then the Virden Center to get group rates; the New Devon Inn will give group rates for as few as 5 rooms. Rates given above are already discounted. (regular rate for 2 at the Inn at Canal Square is $200). We will need to book the rooms early in order to guarantee the discounts and availability. Please fill out the enclosed response sheet and mail it before May 1st to Waddy or send him the same information on Telemail (W.OWEN). Maybe a group might want to go together and reserve the Houseboat.

* All Virden Center Meals/cocktail hours must have reservations made in advance of meeting. The food is excellent.

Waddy

Suggested Agenda Items:

The following agenda items were suggested at last year's meeting:

- Winches
- MARCO (Mid Atlantic Research Co-operative)
- Coastal Research Vessels
- Integrated Navigation systems
- Customs, Dept. of Agriculture & INS related issues
- Rescue Boats.

The following agenda items have been suggested since then:

- A presentation by a representative of the Fleet Improvement committee or the scientific community that addresses future scientific capabilities for our vessels.
- Lobbying efforts to eliminate the requirement for Radio Officers.
- Level winding 3x19 wire or alternatives to the 3x19 wire. Can anyone perfectly level wind 9000 meters of 1/2 in or 9/16 in 3x19 wire?
- A revisit to the subject of SAIL or data acquisition
- Presentation by a representative of Sampson Ocean Systems concerning lines that could replace wire rope and are stronger than Kevlar.
- presentation by Larry Cleary (Emeritus Dupont Kevlar) and Mr. Whitehill of Sianan Whitehill Mfg. on safety in the use of Kevlar rope
- Application of Convention Tonnage, Solas, GMDSS and others to U.S. R/V's
- A presentation by Willard Marine on Inflatable Rescue boats.
- A presentation by at least one of our members on their Research Vessel, Marine Facilities and Institution. To some extent this is done by the host institution. We have usually included presentations by operators with significant changes or new vessels but there is no reason why we could not get an update from someone that is just conducting business as usual. Volunteers include Steve Rabalais since this is his suggestion.
- Other vendors have made inquiries about attending or making presentations.

Some general thoughts about the agenda and the conduct of the meeting:

- The meeting this year could provide for some extra unstructured time. This would allow speakers extra time, prevent lively discussions from being cut off too soon, and allow for more informal discussions and interaction among members. During the last few meetings, other than at lunch or during social functions in the evening, there has little available time for informal discussion among members of the RVOC Longer breaks and earlier afternoon adjournments might provide time for this kind of activity. I suppose this could be perceived as wasting time; however, one of the major benefits of the annual meetings is the interaction between the participating members and guests.

- Presentations on various types of equipment are generally given by one or more vendor representatives. We have shied away from inviting vendors the last two years; however, several of the suggested agenda items for this year involve equipment and would probably best be covered by vendors. Should we continue to stay away from having presentations by vendors? Should we allow specific vendors to speak in a generic manner about innovations in their field? Should we not have vendors speak to the group but allow them to attend the meetings and set up displays or make themselves available during breaks and after the meeting?

- During last year's meeting we covered a few subjects that were of interest to a particular member by going around the room and having each operator talk about how they handled the situation on their vessel. I personally found this to be a very informative way to discuss a subject. A lot of ideas and first hand knowledge can be exchanged regarding a particular problem or a piece of equipment, etc. when members can discuss their particular experiences regarding the subjects at hand. This method does not need to be confined to the Round Table Discussion, but could be used for subjects such as Navigation Systems, SAIL systems, Winches or Hazardous Materials. As an example we could ask all operators to come to the meeting prepared to talk about the type of navigation equipment they currently have on board, to what extent it is integrated on the bridge and with science equipment and what their plans are for the future. If everyone planned to speak for five minutes or less and allowing for the normal discussions and digressions we could probably cover a subject pretty thoroughly even without bringing in any outside experts. If we did have vendor representative attending, such as, from Magnavox, Trimble and Furuno then they could throw in their two cents worth when appropriate and could discuss specific ideas with anyone interested. Regarding Hazardous Materials, we could have everyone spend a couple of minutes discussing any changes or strengthening of procedures that they have implemented since last year.

- If you have read this far you probably have some thoughts of your own about any of the above subjects or other possible ways to improve our agenda. If you do, how about writing them down and sending them to Jim Williams and myself. If you know of any electrifying speakers that might fit into our agenda let Jim know about them as well.

SAFETY STANDARDS

RVOC operators should have received DRAFT #3 dated 3/25/92 of the UNOLS Safety Standards by now. This draft incorporates all the changes approved by the Safety Committee at a meeting in February and one subsequent review by mail. The goal is for the RVOC to approve a final draft so that it can be sent to the UNOLS Council in time for them to review it and approve it at their Mid July meeting. This means that the RVOC needs to complete its review as soon as possible.

HAZARDOUS MATERIALS

At last years RVOC meeting the Ad Hoc committee on Hazardous Materials was asked to compile a compendium of information available as guidance on the issue of handling Hazardous Materials. The current plan for accomplishing that task is for Bruce Cornwall to oversee the project once he gets settled in at his new location at the University of Maryland. First he has to tie up all the loose ends associated with the move of the Warfield.

GMDSS

The FCC adopted their regulations implementing the Global Maritime Distress and Safety System (GMDSS) on January 16, 1992. Portions of their Report and Order on the subject are included in the appendix of this newsletter. The requirement to carry radio officers is still included.

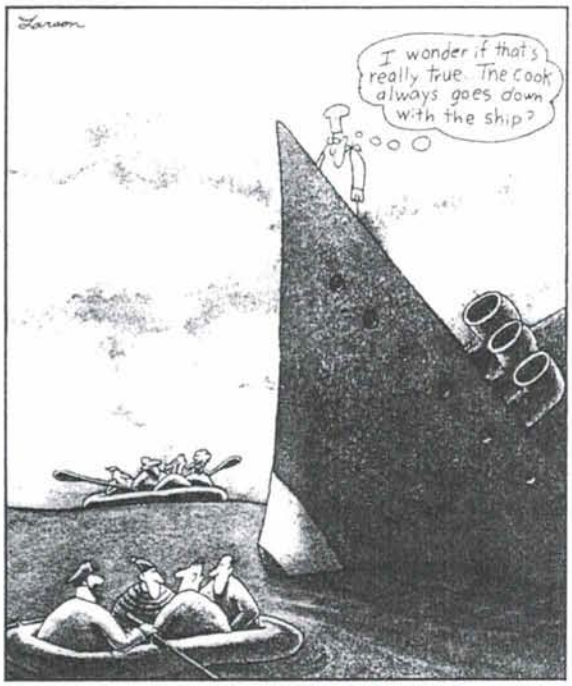
UNIVERSITY OF WASHINGTON

Bill Jeffers has retired as the Marine Superintendent at UW as of March 20th. We all wish him smooth sailing in his new endeavors and hope that he will have the opportunity to join us at future RVOC meetings. Taking his place is Robert Hinton. Robert has been with UW for the past three years as the on-site rep for the construction of the new Thompson. Prior to that he spent 22 years in the U.S. Navy as an Engineering Duty Officer, retiring in 1988. His wife's name is Julie and they have two children Eric and Maggie. We are looking forward to meeting Robert and Julie at the October meeting.

RVOC OVERHEAD SURVEY

Institution	Description of overhead structure
Alaska	30% MTDC
Bermuda	17.3% MTDC
Delaware	No Overhead Taken
Duke	15% MTDC (less fuel costs)
Harbor Branch	25% MTDC
Hawaii	24% of Salaries
Johns Hopkins	12% MTDC (less fuel costs)
LDGO	10% MTDC
LUMCON	No Overhead Taken
Miami	14.5% MTDC (less fuel costs)
Michigan	29% MTDC
Oregon State	23.5% of Salaries(1/3 of Overtime)
San Jose State	20.71% of Salaries
Skidaway	15% MTDC
Texas A&M	6% MTDC
UCSD	12.5% MTDC
URI/GSO	18.5% MTDC (less fuel costs)
USC	33.13% of Salaries
WHOI	22% of Salaries (2/3 of Overtime
Washington	25% of Salaries

The following items have been clipped from various sources and are included for your information.



THE FAR SIDE

WEDNESDAY

APRIL

1

RVOC DIRECTORY
April 1, 1992

Name	Institution	Tel. No.	Fax No.	Telemail
Tim Askew	Harbor Branch	407-465-2400	407-465-2446	HBOI.SHIPS
Harry Barnes	Bermuda, BBS	809-297-1880	809-297-8143	BDA.BIOSTATION
Joe Coburn	WHOI	508-548-1400	508-540-8675	WHOI.SHIPS
Bruce Cornwall	Univ. of Maryland	410-326-4284	410-326-6342	CHEASAPEAKE.BAY
Bill Coste	Univ. of Hawaii	808-847-2661	808-848-5451	UH.SNUG.HARBOR
Don Gibson	Univ. of Texas	512-749-6735	512-749-6777	T.WHITLEDGE
Linda Goad	Univ. of Michigan	313-763-5393	313-747-2748	T.MOORE
Bill Hahn	Univ. of Rhode Is.	401-792-6203	401-792-6574	RHODE.ISLAND
Robert Hinton	Univ. of Washington	206-543-5062	206-543-6073	R.HINTON
Ron Hutchinson	Univ. of Miami	305-361-4880	305-361-0546	R.HUTCHINSON
Lee Knight	Skidaway	912-598-2486	912-598-2751	D.MENZEL
Dean Letzring	Texas A & M	409-740-4469	409-740-4456	RV.GYRE
Quentin Lewis	Duke	919-728-2111	919-728-2158	DUKE.UNC
Paul Ljunggren	LDGO	914-359-2900	914-359-6817	LAMONT
Don Newman	USC	310-830-4570	310-830-4570	R.PIPER
Waddy Owen	U of Delaware	302-645-4320	302-645-4006	W.OWEN
Ken Palfrey	OSU	503-867-0224	503-867-0294	OSU.SHIPS
Mike Prince	Moss Landing	408-633-3534	408-633-4580	MLML.SHIPS
Steve Rabalais	LUMCON	504-851-2800	504-851-2874	LUMCON
Tom Smith	U of Alaska	907-224-5261	907-224-3392	T.SMITH
Jim Williams	SIO, UCSD	619-534-1643	619-534-1635	SCRPPS.MARFAC
Entire RVOC				RVOC.OPERATORS

Please call Mike Prince at 408-633-3534 to make any corrections to this list.

COLLEGE OF OCEANOGRAPHY

Ship Operations

OREGON STATE UNIVERSITY
Hatfield Marine Science Center
Newport, Oregon 97365
Telephone 503·867·0295

DATE: 12 February 1992

FROM: Ken Palfrey

TO: Mike Prince, Bruce Cornwall, Bill Hahn

SUBJECT: Homework Assignment, RVOC Safety Comm. Meeting, LVNV

The U. S. Coast Guard Marine Safety Manual is in several volumes and is available from GPO. Volume 1 (Administration) and Volume 5 (Investigations) are of limited interest - I don't subscribe to these. The other volumes can be obtained on an annual subscription basis like any other GPO pub as follows:

GPO 950-038-00000-4, $50. Volume II, Materiel Inspection

GPO 950-039-00000-1, $45. Volume III, Marine Industry Personnel

GPO 950-040-00000-9, $73. Volume IV, Technical

GPO 950-042-00000-1, $43. Volume VI, Ports and Waterways Activities

The procedures for obtaining NVIC's is attached along with a copy of the GMDSS chart I had at the meeting.

Hope this all helps.

Regards,

Ken

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U.S. Department of Transportation
United States Coast Guard

Commandant (G-MP-4)
United States Coast Guard

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COMDTPUB P16700.4
NVIC 0-91

19 FEB 1991

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 0-91

Subj: Index of Navigation and Vessel Inspection Circulars (NVIC's)

1. PURPOSE. This Circular provides the current listing of NVIC's.

2. PERIODICALS AFFECTED. NVIC No. 0-90 is cancelled.

3. DISCUSSION. Enclosure (1) is an alphabetical listing of NVIC's. Paragraph 1 of enclosure (2) lists those NVIC's issued prior to 1 January 1991 that remain in effect, the price for individual copies, and the price for a full set. Paragraph 2 lists those NVIC's that were cancelled during calendar year 1990. Enclosure (3) provides ordering information.

4. PROCEDURES.

   a. Previously Issued NVIC's. Private sector orders for full sets or individual copies of previously issued NVIC's (1990 and earlier) may be submitted to the Marine Safety Center (G-MSC) where stock will be maintained for back orders. Requests should be addressed to:

Commanding Officer
U.S. Coast Guard
Marine Safety Center
400 Seventh Street, SW
Washington, DC 20590-0001

Phone: (202) 366-6480

DISTRIBUTION—SDL No. 129

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NON-STANDARD DISTRIBUTION: (See page 2.)

4. b. Current Calendar Year NVIC's. Private sector orders for NVIC 1-91 and all subsequent calendar year 1991 Circulars may be placed by subscription from the Superintendent of Documents, Government Printing Office (see enclosure (3)).

c. Payment. See enclosure (2) for methods of payment for either of the above services.

J. D. SIPES
Rear Admiral, U.S. Coast Guard
Chief, Office of Marine Safety,
Security and Environmental Protection

Encl: (1) Alphabetical Index of NVIC's
(2) Numbered Index of NVIC's
(3) Notice to Subscribers of NVIC's

Non-Standard Distribution:

C:e New Orleans (90); Baltimore (45); San Francisco (40); Philadelphia, Port Arthur, Honolulu, Puget Sound (35); Miami, Houston, Mobile, Los Angeles/Long Beach, Morgan City (25); Hampton Roads, Jacksonville, Portland OR (20); Boston, Portland ME, Charleston, Galveston, Anchorage (15); Cleveland (12); Louisville, Memphis, Paducah, Pittsburgh, St. Louis, Savannah, San Juan, Tampa, Buffalo, Chicago, Detroit, Duluth, Milwaukee, San Diego, Juneau, Valdez (10); Providence, Huntington, Wilmington, Corpus Christi, Toledo, Guam (5).

C:m New York (70); St. Ignace (5); Sturgeon Bay (4).

D:d Except Baltimore, Monterey, Moriches.

D:l CG Liaison Officer MILSEALIFTCOMD (Code N-7CG), CG Liaison Officer RSPA (DHM-22), CG Liaison Officer MARAD (MAR-720.2), CG Liaison Officer JUSMAGPHIL (1).

INFORMATION ON SUBSCRIPTIONS AND ORDERING BACK ISSUES OF NAVIGATION AND VESSEL INSPECTION CIRCULARS

Current calendar year NVIC's (1991) are available through the subscription and ordering service of the U.S. Government Printing Office. The annual subscription fee, payable in advance, is $14.00, $17.50 if mailed to a foreign address. Any individual or organization desiring to receive future NVIC's should forward the subscription form below, along with the appropriate payment, to the Superintendent of Documents. Make all checks or money orders payable to "Superintendent of Documents, Government Printing Office." The single copy price for 1991 NVIC's is $1.75 domestic, $2.19 foreign.

Order Form Mail To: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

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NVIC 0-"YR" CONTAINS INDEX AND COSTS

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U.S. COAST GUARD
MARINE SAFETY CENTER
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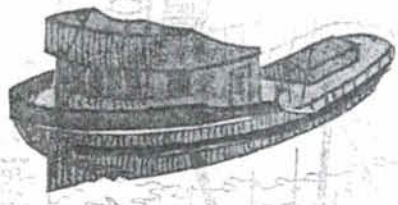
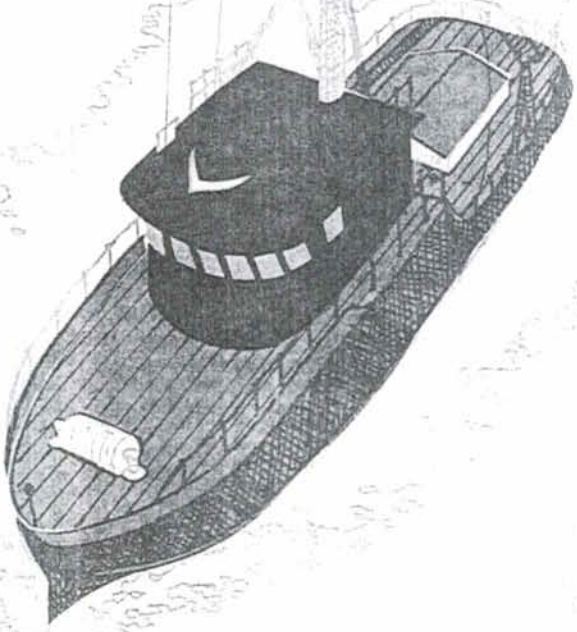
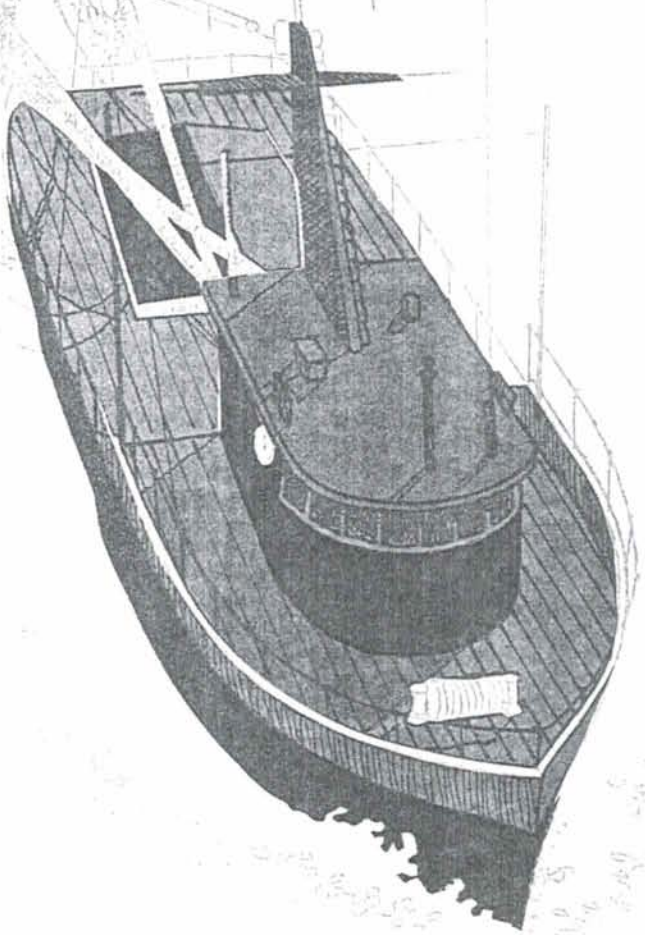




GENERAL REQUIREMENTS FOR COMMERCIAL FISHING INDUSTRY VESSELS



GENERAL INFORMATION

This pamphlet contains federal requirements for fishing industry vessels. Owners/operators may be required to comply with additional regulations specific to the state in which the vessel is registered or operated. To insure compliance with state laws, contact your local authorities.

Each requirement in this pamphlet is followed by its respective cite from the Code of Federal Regulations (CFR). This pamphlet is intended to summarize the regulations as applicable to most vessels. It is not intended to be all inclusive. Additional details on requirements can be found by obtaining a copy of the CFR from your local library or government book store. If the Code is not available from either of these sources, it can be obtained by contacting the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 (telephone 202-783-3238).

What is the "Commercial Fishing Industry Vessel Safety Act (CFIVSA) of 1988"?

It is a law passed by Congress which required the Coast Guard to issue regulations in addition to existing regulations for safety equipment and operating procedures on fishing, fish tender and fish processing vessels. It also increases casualty reporting requirements.

Why are these regulations necessary?

To implement the CFIVSA of 1988 and to make the commercial fishing industry a safer place to work.

Who does this affect?

The regulations apply to all U.S. uninspected commercial fishing, fish tender, and fish processing vessels, whether documented or state registered. Compliance with specific regulations may be based upon: type and length of vessel, location of operations, seasonal conditions, number of persons on board, whether documented or state registered, and date built or converted.

Who do I contact for more information?

Questions may be answered by contacting your Coast Guard District Fishing Vessel Safety Coordinator. A listing of these coordinators is on page 36.

Will my fishing industry vessel be boarded by Coast Guard Officers?

Possibly. Boarding of fishing industry vessels already occurs throughout the country on a random basis; this program will continue. Dockside examinations will also be conducted by the Coast Guard and, on request by the owner, third party organizations accepted and designated by the Coast Guard. These third parties are marine surveying organizations such as the American Bureau of Shipping.

Will the safety examinations by Coast Guard personnel disrupt or delay my fishing operations?

Not necessarily. Most examinations will be performed at dockside. If a boarding is performed when the vessel is underway, efforts will be made to keep it brief. You can assist by becoming familiar with these requirements and being prepared and cooperative when boarded.

If deficiencies are found during a boarding , what will happen?

A violation report may be written which could lead to a civil penalty. A person willfully violating these regulations may be fined up to $5000, imprisoned for not more than 1 year, or both, for each violation.

Is it possible for my vessel to be prohibited from operating or have operations terminated?

Yes, if the boarding officer determines that an especially hazardous condition exists. For more information on "An especially hazardous condition," see the Coast Guard document, "Navigation and Vessel Inspection Circular No. 12-91."

THE NATIONAL FISHERMAN

SAFETY HANDBOOK

1991

$5

A digest of the 1991 Coast Guard vessel safety regulations

Published in cooperation with the National Council of Fishing Vessel Safety and Insurance

THE NATIONAL FISHERMAN

SAFETY HANDBOOK

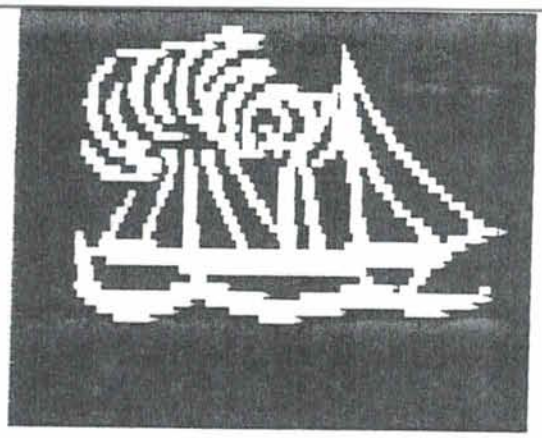
Published by the staff of *National Fisherman* magazine in conjunction with the National Council of Fishing Vessel Safety and Insurance.
Designed by *National Fisherman* Art Director Marydale Abernathy.

Journal Publications
120 Tillson Ave.,
P.O. Box 908
Rockland, ME 04841
(207) 594-6222

National Council of Fishing Vessel Safety and Insurance
1525 Wilson Blvd. Suite 500
Arlington, VA 22209
(703) 524-9216

INSIDE

TABLES



Discovery News

July 1991

The Royal Research Ship Discovery as built in 1962 is no more! The Royal Research Ship Discovery in her 1992 guise is beginning to emerge.

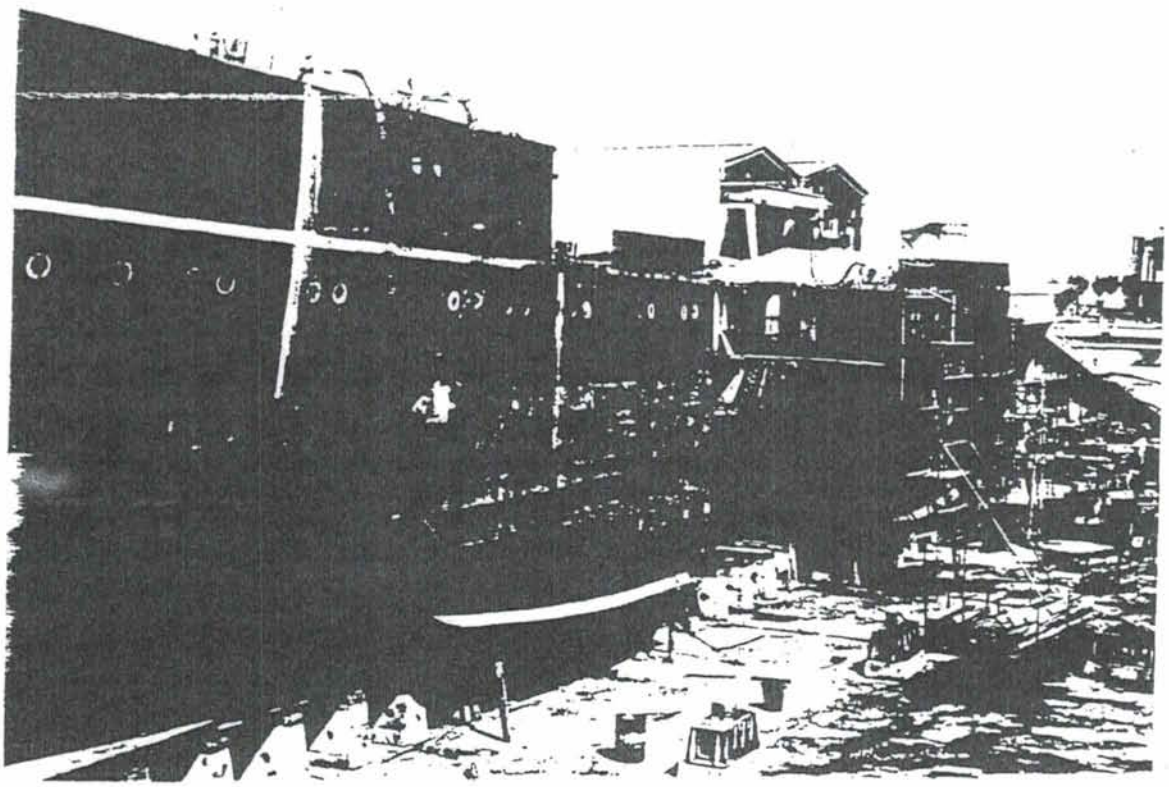
This major step has taken place over the past month since the old lady was towed into drydock in early June, and the men with the "gas axes" got busy. Once the ship was settled onto the blocks in the dock, the yard obeyed the instruction to "cut along the dotted line", and instead of a ship, there were a fore-body and an after-body sitting there. The fore-body was supported by props on three steel plates, each of which sat on a layer of grease on another plate. The gap in the middle of the ship was then opened up to slightly over 12 metres by the simple expedient of using rope-and-pulley purchases attached to eyes on the ship's bow, with a crane and capstan providing the pulling power.

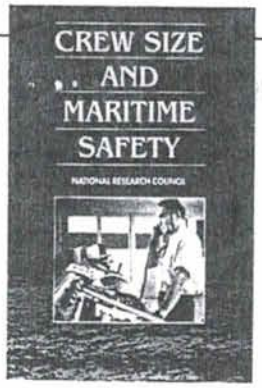
After a day or two to remove the last significant items from the interior, the new prefabricated midships hull section was lowered into place using two of the shipyard cranes. At the moment (19 July) there are still three bits of ship sat in the dock, but some initial "tacking" of the after-end of the new section to the old after-body has begun. The yard and NERC's personnel in Viana are currently taking great care to ensure that all the new sections line up properly with the old, so that our scientists don't have to go to sea in a corkscrew ship.

The next step was to prepare the stern to receive its new, wider, after deck, and this was done by again cutting the hull plating along a pre-defined line before removing the old metal and slotting in the new prefabricated section. This exercise caused the yard some problems (hopefully, now overcome), but with the new sections approximately in place it is possible to see the shape of the new ship emerging from the drawings with which we have all worked for some 3-4 years.

The ship will now be in drydock until end-August/early-September, when the majority of the new construction will take place. In the course of the next two weeks, it is expected that the main engines and control gear will be put in place before the old forebody is brought back to marry up with the new mid-body. Thereafter work will be pursued in earnest on the internals of the vessel, covering everything from the incorporation of ballast in the double bottoms through to fitting the laundry and galley equipment in the appropriate parts of the ship.

The photograph below shows the hull split into two, before the insertion of the new midbody. The view is from port side, looking aft.





CREW SIZE AND MARITIME SAFETY

Committee on the Effect of Smaller Crews on Maritime Safety, National Research Council

U.S. oceangoing vessels have half the crew size of 30 years ago, thanks to automation and mechanization in the shipping industry. But are reductions in crew size increasing the risk of vessel accidents?

This volume explores how we can minimize risk without hindering technology, presenting the most thorough analysis available of key issues:

- Domestic versus foreign manning practices and safety performance.
- Effect of crew size on crew fatigue, level of training, and ship maintenance.
- Modernizing the U.S. Coast Guard approach to crew size regulation.

The volume features a trend analysis of 20 years of maritime safety data, analyzing U.S. and international laws and treaties concerning ship manning and making recommendations for improvements. In addition, it includes a model for setting optimum crew levels based on systems engineering and tested with actual ships.

The worldwide shipping industry, maritime and safety regulators, labor organizations, and insurance officials will benefit from this comprehensive examination of an important component of maritime safety.

ISBN 0-309-04375-1; 1991, 188 pages, 6 x 9, index, hardbound, $22.95

COMMITTEE ON THE EFFECT OF SMALLER CREWS ON MARITIME SAFETY

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RICHARD T. SOPER, *Chairman (From January 1990),* American Bureau of Shipping, Paramus, New Jersey
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ABS Offers Rules on CD-Rom

Shipyards, naval architects, and marine engineers now have swift, easy-to-use, personal computer access to the American Bureau of Shipping's (ABS) 1991 edition of *Rules for Building and Classing Steel Vessels* on CD-ROM.

The 5-inch laser disk contains 2,000 pages of text and illustrations for viewing on a PC via a compact-disk reader (also available through ABS). ABS is the first classification society to utilize this new publishing technology.

Readers can view the ABS rules on a computer monitor and print sections on paper. A special feature called *Hotlinks* allows the reader to jump from a topic in one section of the rules to a reference or illustration in another and back to the starting point.

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- Printer options–for image and text, HP Laserjet II, IIP, or III, with at least 1 megabyte of memory; for text only, Epson-compatible dot matrix printer

The CD-ROM version of 1991 *Rules* can be ordered from ABS, P.O. Box 201614, Houston, TX 77216-1614. The price is $195 in the U.S.; $210 outside the U.S. The price of the CD-ROM drive is $595, U.S.: $645 outside U.S.

other countries; the interrelationship of port and terminal practices; and the implications of port and terminal costs, practices, engineering design, and use of technology.

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Seaman gets $1.17 million in ship fall

By Sharon Spivak
Tribune Staff Writer

A San Diego seaman who said he injured a knee when he slipped and fell after getting out of his shower on a supertanker was awarded more than $1 million in a jury verdict against the Mobil Oil Corp. here yesterday.

Conrad Leslie, 31, was awarded $1.17 million in a three-day trial before U.S. District Judge Marilyn Huff. The jury deliberated four hours.

Leslie said he worked long shifts at sea on the tanker Mobil Arctic and that on Oct. 7, 1986, he got out of his shower, slipped and wrenched his left knee.

Leslie's attorney, John A. Marin, said the floor previously had been covered with a non-skid material, including particles of sand that made the surface rough. However, it had been worn and left slippery, Marin said.

The lawyer said Leslie has had two knee surgeries and is "mobile, but he can't go out to sea" because sea duty would involve climbing ladders and standing on moving decks.

"The medical testimony is that he can't return to the sea as a seaman anymore," Marin said. "That's been taken away from him."

An economist testified that Leslie's loss of wages because of his accident could range from $263,000 to $1.35 million. A doctor testified that Leslie needs a third knee operation.

Mobil attorneys could not be reached for comment. Marin said they argued that "the floor wasn't bad and he should've put a towel down."

Recounting his client's career, Marin said Leslie followed his merchant-mariner father's lead, attending a maritime academy and becoming a licensed third mate. After graduation in 1985, Leslie went to work for Mobil Oil, taking a job as an apprentice seaman and hoping to work his way up, the attorney said.

He was labeled a "very good" employee, Marin said.

After the accident, Leslie had surgery and was released back to work but again complained of knee problems and was sent ashore at Valdez, Alaska, to see other doctors, Marin said. He continued to have problems and to see more doctors, the lawyer said.

Marin said Leslie received "a very fair verdict, because he's been deprived of his lifelong wish as a youngster to be a merchant mariner."

Explosion kills two aboard ship doing secret research for Navy

WESTPORT, Wash. (AP) — An explosion aboard a ship doing secret research for the Navy killed two people yesterday, authorities said.

The explosion aboard the 265-foot Amy Chouest happened about 13 miles off the southern Washington coast, the Coast Guard said.

Researchers were planting explosives in the water as part of a seismic testing project when some of the ordnance exploded on deck, killing two people, said Cliff Kaldor, Coast Guard chief boatswainsmate in Westport.

None of 47 others aboard was injured, officials said.

The accident didn't involve nuclear material, said Lt. Cmdr. Scott Wilson, spokesman for the Navy's Trident Submarine Base at Bangor.

The vessel suffered no major structural damage and was moving on its own power, Kaldor said.

The Navy first confirmed, then denied it had anything to do with the vessel. Finally it would say only that the ship was chartered by the Johns Hopkins University Applied Physics Laboratory near Columbia, Md.

Edward Cochran, assistant to the laboratory's director, said the vessel was conducting classified oceanographic research for the Navy.

The ship was owned by Alpha Marine Services, a subsidiary of Edison Chouest Offshore Corp. of Galliano, La., said Edison Chouest operations coordinator Mark Gisclair. He said 16 Edison Chouest crew members were aboard, and Johns Hopkins said in a statement there had been 33 researchers on the ship.

The dead were two Arkansas men, Mike Sinclair, 44, of El Dorado and Leroy Burke, 39, hometown unclear, said Dennis Booth, commanding officer of the Coast Guard station in Westport. He said they worked for a Johns Hopkins research subcontractor, Marine Specialty Inc. of East Camden, Ark.

Safety: A dead horse?

You can't beat safety and safety consciousness into crews — it must grow from within.

BY

CAPTAIN JONATHAN E. KJAERULFF

President
Fremont Maritime Services, Inc.
(A maritime training and education corporation based in Seattle.)

"Stop beating that dead horse!" the engineer said. "You done killed him three or four times over at last month's safety meeting." Selling safety to your shipmates is never easy. Everybody always has an excuse: somewhere they'd rather be or something that needs doing. On many boats, safety is an intruder to the daily routine; "taking time out for safety" means taking time away from something else more pressing. It's hard to measure what is accomplished by spending time in a safety meeting. Ideas. Good feelings. Good intentions. New rules. More paperwork.

Safety discussions are seen as unwelcome intruders into the routine, like a man demanding last month's rent for an apartment you don't much like and haven't spent much time in anyway.

I'm not sure why so many crews find it hard to set aside time for safety, but after visiting a lot of boats and doing a lot of listening, I can identify at least three common contributing factors.

1)Safety is not seen as part of the normal routine, but something which is added on top of it (when there's time).

When the lube oil truck pulls up to make a delivery, everybody turns to help. Why? Because you can't run a boat without lube oil. You need it. If you don't have it, you don't go anywhere (at least not for long).

2)Safety is too often pushed from above, not from within.

Port engineers, port captains, and most other members of the company shoreside force are considered *support* personnel. They are there to work *with* captains and engineers. Safety officers, on the other hand, too often seem more like cops. "They're not here to help us, they're here to bust us," a disgruntled crewman once revealed.

By reducing safety to an "us vs. them" situation, many crews feel the only stake they have in the safety game is not getting caught. When it comes to safety, they feel that the company no longer sees them as skilled and competent professionals, but as suspicious characters with questionable loyalty.

3)Boats don't burn and sink like they used to.

While this is an admirable statistic (and probably is due to improvements in vessel design as much as improvements in crew training), it reduces the number of active sailors in the fleet who have experienced firsthand the horror of a boat— their boat, their home— engulfed in flames from stem to stern. We have a whole bunch of sailors out there, both rookies and veterans, who lack a fundamental appreciation of what can happen when safety precautions are ignored or disregarded.

So where does that leave us?

For too many burned-out safety officers and safety instructors, this translates into flogging the rancid carcass of a beast which probably expired long before their employment with the company even began. Time after time, they roll out the same dry old platitudes, and urge their listeners to "Think safety, guys."

Management and safety personnel do a poor job at best when they do little more than threaten and browbeat crews into final and abject safety submission (ie: "Wear those lifejackets or you'll get fired"). They provide a much better service when they act as catalysts and resources to help crewmembers see through their own eyes why safety does pay, and why it is in their own self-interest, as well as the company's, to run a safe operation.

Testimonials from crewmen with a real-life experience, whether provided on videotape or in person, make a far more powerful and dynamic impression than the most elaborate or eloquent safety officer's speech ever will. Investing in hands-on training programs, such as firefighting and sea-survival classes, not only makes participants more aware of the hazards they may someday have to deal with, but gives them a source of personal experience with which to confront future safety naysayers they may encounter.

Vessel captains should be the cornerstones of any and all safety training programs, whether on or off their vessels. They don't need preaching from the company, they need support. When they say they need to send two deckhands to firefighting school, they need a date, not an excuse. When they report an unsafe operating condition on their vessel, they need the assurance of action, not delays. When they put aside one hour a week from the vessel's other business to hold emergency drills and safety meetings, they need to know that their standing within the company will go up, not down.

Companies should reflect their commitment to safety in all departments, not as a separate concept, but as one integral to the entire operation. Port captains, port engineers, personnel managers and purchasing agents should be just as aware and concerned with safety training, safe operating procedures, and safe vessel outfitting as are the designated safety officers, the captain and the crew. Money for safety equipment and crew safety training should be written into the fleet's annual budget as an operating expense every bit as essential as food, fuel, and lubricating oil.

You can't beat safety and safety consciousness into crews — it must grow from within. It must be a cooperative effort, with equal participation from management and vessel personnel. It's not good enough to simply *say* that safety is a priority in your company or on your vessel; your actions and expenditures must *show* it.

Beating dead horses isn't the answer. The answer lies in leadership, training, and reshuffling priorities regarding time, effort, and money. Otherwise, you're likely to end up with just a pile of something the crew doesn't need and the glue factory probably won't accept.

Injured shipyard worker can sue

Hearing local case, high court resolves conflict in 'seaman' law

By Dori Meinert
Copley News Service

WASHINGTON — The Supreme Court today ruled against a San Diego ship repair company, finding that injured maritime workers covered by a federal workers' compensation law may seek damages from their employers under a "seaman" law.

In an 8-0 vote, the justices upheld a 9th Circuit Court of Appeals ruling that an employee of Southwest Marine Inc. is entitled to a jury trial to prove he has "seaman" status under the Jones Act and was injured as a result of the negligence of his employer.

"Because a ship repairman may spend all of his working hours aboard a vessel in furtherance of its mission — even one used exclusively in ship repair work — that worker may qualify as a Jones Act seaman," Justice Byron R. White wrote for the court.

Justice Clarence Thomas, the newest member of the Supreme Court, took no part in the decision.

The court's action today resolved a conflict that existed among the federal appellate courts.

The dispute stemmed from the April 6, 1987, injury of Byron Gizoni, who was working as a rigger at Southwest Marine's San Diego shipyard when his foot broke through a wooden platform covering a hole on a floating platform or barge.

Gizoni filed for and received some workers' compensation benefits from Southwest Marine under the Longshore and Harbor Workers' Compensation Act, which provides recovery for injury to a broad range of land-based maritime workers but excludes "a master or member of a crew of any vessel."

On Sept. 30, 1987, Gizoni filed a civil suit against Southwest Marine alleging he had "seaman" status under the Jones Act, which allows "any seaman" injured "in the course of his employment" to sue his employer for negligence. But the Jones Act doesn't define "seaman."

Southwest Marine claimed Gizoni was a land-based employee covered by the Longshore act and barred

Please see RULING: AA-2, Col. 4

from making a Jones Act claim. But Gizoni's attorney argued that an employee's status as a seaman or harbor worker can only be decided by a jury.

A U.S. District Court judge ruled in favor of the ship repair company without a trial. But the 9th Circuit overturned that ruling.

Officials at Southwest Marine and the Shipbuilders Council of America had said the 9th Circuit decision, if upheld as it was today, would add another expense to the already ailing shipbuilding industry because it would require ship repair firms to purchase two types of insurance.

The University of Rhode Island Graduate School of Oceanography
Narragansett Bay Campus, Narragansett, RI 02882-1197

September 2, 1991

Bruce Cornwall
Johns Hopkins University
Chesapeake Bay Institute
4800 Atwell Road
Shady Side, MD 20764

Subject: INMARSAT and GPS Surveys

Dear Bruce,

Mark has finally completed the surveys.

I have enclosed copies for you to look at. Since the RVOC Newsletter has already been published I am not sure whether you still have an interest the data. If you do, please feel free to use them as you see fit.

I have the data on a computer and can reconstitute the information in most any style you would like. I attempted to make the format as compact as possible.

Sincerely,

William Hahn
Marine Superintendent

The University of Rhode Island is an affirmative action and equal opportunity employer.

8/31/91

GPS SURVEY

VENDOR	MODEL	LIST PRICE	PORTABLE	RECEIVER PERFORMANCE	# OF CHANNEL	FIRST FIX (min)	FIX UPDATE (sec)	# OF WAY-POINTS	# OF ROUTES	SYSTEM ACCURACY (meters)	GRAPHIC DISPLAY	COMPUTER INTERFACE	DIFFERENTIAL CAPABILITY	NEMA 0183	WARRANTY (years)	COMMENTS
Magnavox	MX 100	$3,555.00	no	continuous	6	< 2	1	200	20	10	yes	no	no	yes	2	Magnovox GPS receivers aboard the JOHN V. V
2829 Maricopa Street	MX 200	$3,960.00	no	continuous	6	< 2	1	200	20	10	yes	no	yes	yes	2	ALPHA HEXIX, THOMPSON & MOANA WAVE.
Torrance, CA 90503	MX 4200 B	$3,200.00	no	continuous	6	1	1	N/A	N/A	30	no	yes	no	yes	2	RS-422 used for computer interface.
(213) 618-1200	MX 4200 D	$4,700.00	no	continuous	6	1	1	N/A	N/A	1 to 5	no	yes	yes	yes	2	
Trimble Navigation	NavTrac	$3,995.00	no	sequential	3	< 2	1	500	50	15	yes	yes	yes	yes	1	Trimble GPS receivers aboard all Scripp R/V's &
645 N. Mary Ave.	NavGraphic II	$9,995.00	no	sequential	3	< 2	1	500	50	15	yes	yes	yes	yes	1	RS-422 used for computer interfac
P.O. Box 3642	TransPak	$3,995.00	yes	sequential	3	< 2	1	99	0	15	no	no	no	no	1	Hand-held GPS receiver.
Sunnyvale, CA 94088	TransPak II	$4,495.00	yes	sequential	3	< 2	1	999	0	15	no	yes	no	no	1	Hand-held GPS receiver.
(800) 221-3001	Acutis	$2,995.00	no	sequential	3	5-7	1	n/a	n/a	15	no	no	no	yes	1	GPS antenna/receiver with NMEA-0183 i
	10X Navigator	$7,495.00	no	sequential	3	< 2	1	100	50	15	no	yes	yes	yes	1	
Northstar/Digital																
30 Sudbury Road	800-GPS	$4,090.00	no	continuous	6	1	1	120	99	15	no	no	yes	yes		800-GPS aboard WEATHERBIRD II and CAPE H
Acton, MA 01720	9000	$4,895.00	no	continuous	6	1	1	250	100	15	no	yes	yes	yes	3	RS-422 used for computer interface.
(508) 897-7241																9000 GPS aboard OSU WECOMA.
Tecom																
9324 Topanga Canyon Blvd.	M2000	$3,950.00	no	continuous	6	< 2	0.5	25	10	15	no	yes	yes	yes	1	RS-232 and RS-422 used for computer interface.
Chatsworth, CA 91311																
(818) 341-4010																
Micrologic																
9610 De Soto Avenue	Explorer	$2,395.00	no	multiplex	1	< 3	1	100	0	9	no	yes	no	yes	1	RS-232 used for computer interface.
Chatsworth, CA 91311																
(818) 709-3658																
Navstar	XR4	$2,995.00	no	multiplex	2	< 3	1	199	9	15	no	no	no	yes	2	
1500 N.Washington Blvd.	XR4-PC	$2,995.00	no	multiplex	2	< 3	1	unlim	unlim	15	no	yes	no	no	2	Compatible with IBM or AT PCs
Sarasota, FL																including the larger lap tops.
(800) 486-6338																
Koden																
77 Accord Park Drive	KGP-900	$3,495.00	no	continous	5	< 2	1	100	10	15	no	no	no	yes	1	Interfaces with Koden LR-771 Loran receiver.
Norwell, MA 02061																
(617) 871-6223																
Raytheon	Raystar 590	$2,995.00	no	multiplex	5	< 3	1	500	10	15	yes	no	no	yes	2	
46 River Road	Raystar 920	$3,995.00	no	multiplex	5	< 3	1	99	10	15	no	yes	no	yes	2	RS-232 and RS-422 used for computer i
Hudson, NH 03051																
(603) 881-5200																
Furuno	GP-1500	$4,895.00	no	multiplex	2	< 5	1	99	10	15	yes	yes	no	yes	1	RS-232 used for computer interface.
271 Harbor Way	GP-500	$4,495.00	no	multiplex	2	< 5	1	100	10	15	no	yes	no	yes	1	
San Francisco, CA 94083																
(415) 872-3403																
Magellan																
260 East Huntington Dr.	Nav 1000 Plus	$2,400.00	yes	sequential	1	2.5	2.5	100	1	25	no	no	no	yes	1	Hand held GPS receiver.
Monrovia, CA 91016																
(818) 358-2363																

Si-Tex P.O. Box 6700 Clearwater, FL 34618 (813) 535-4681	GPS-77P	$2,495.00	no	multiplex	1	1	0.6	90	9	15	yes	no	no	yes	1	
Garmin 11206 Thompson Ave Lenexa, KS 66219 (913) 599-1515	MRN 100	$2,610.00	no	multitrack	priority technology	< 2	1.0	90	10	15	no	yes	no	yes	1	RS-232 used for computer interface.
Robertson-Shipmate 400 Oser Ave Hauppauge, NY 11788 (516) 273-3737	RS 5500 RS 5300	$3,195.00 $3,995.00	no no	multiplex multiplex	1 5	3-5 3-5	1 1	200 20	0 10	15 15	no no	no yes	yes yes	yes yes	1 1	 RS-232 used for computer interface.
Ashtech 390 Potrero Ave Sunnyvale, CA 94086 (408) 737-2400	Ranger	$15,000.00	no	continous	12	2	.5	99	0	15	yes	yes	yes	yes	1	Two RS-232 ports available for computer interfa Software upgrade available 4 years after purcha

* The information presented is based on manufacturer's specifications In many cases this information was verified by telephone or fax. However The University of Rhode Island has not tested, nor attempted to certify the accuracy of of the specifications.

References:

Ermmano DiLorenzo. (1991). "GPS Test Finds Real Differences Between Portable and Fixed Models," Practical Sailor, June, 11-15.

Harvey Walters. (1991). "The GPS Buyer's Guide," Cruising World, July, 67-72.

8/31/91

INMARSAT- A TERMINALS

VENDOR	MODEL	PRICE	ABOVE-DECK EQUIPMENT HEIGHT (inches)	RADOME DIA (inches)	ANTENNA DIA (inches)	WEIGHT (pounds)	BELOW-DECK EQUIPMENT HEIGHT (inches)	WIDTH (inches)	DEPTH (inches)	WEIGHT (pounds)	COMPUTER CAPABILITY	STANDARD PERIPHERALS	OPTIONAL PERIPHERALS	STATISTICS	WARRANTY	COMMENTS
Magnavox 2829 Maricopa Street Torrance, CA 90503 (213) 618-1200	MX2400	$35,500.00	53.84	50.84	34.00	209.00	13.20	17.08	15.96	39.60	yes	one telephone one printer	Modem, fax, PABX sys, voice security and computers.	979 terminals since 1976	two years parts and labor	The Universities of Miami and Alaska operate the 2400 terminals, the University of Southern California has reconditioned her MX 21 terminal.
MOBILE TELESYSTEMS, INC 300 Professional Drive Gaithersburg, MD (301) 590-8500	MSC-9120	$32,000.00	64.52	45.71	36.00	158.4	5.32	17.52	17.00	33.00	yes	wall or desk telephone and telex	Phone ext, PC, encrypt (data, fax, telex), PABX, photo phone, daul ID.	689 terminals since 1982	three years parts and labor	Oregon State's R/V WECOMA operates the MCS 9100 terminal. The University of Washington's R/V THOMPSON operates the 9120 terminal.
RADAR DEVICES, INC. 2955 Merced Street San Leandro, CA (415) 483-1953	Satcom II	$29,750.00	54.6	46.44	40.00	196.00	15.24	16.24	24.40	31.90	yes	two telephones, telex, alarm and printer	PABX, phone extensions, fax, PC's and satnav.	67 terminals since 1984	one year parts and labor	
SPERRY MARINE 1070 Seminole Trail Charlotteaville, VA (804) 974-2000	MCS2B	$37,825.00	65.2	59.2	40.00	220.00	10.80	13.20	16.40	83.60	yes	one printer, one telephone and MC500 computer	Dual ID, modem, fax and PABX. Phone ext, Starbaud sys, postion reporting.	357 terminals since 1977	one year parts & labor	MCS2B A-terminals aboard seven MSC oceanographic ships Sperry manufactures Standard C terminals.
JAPAN RADIO CO. U.S. Distributors: Raytheon Service Co. One Edgewater Plaza Staten Is. NY (718) 981-1090	JUE-45A	$36,950.00	54	50.8	34.00	209.00	13.20	17.08	15.96	39.60	yes	VDU, telephone and printer	Phone ext, fax, modem, satnav, GPS and PABX sys. Postion reporting, personal acess code, PC w/ auto-dial data and call logging.	2975 terminals since 1975	three years parts and labor	Lamont-Doherty's R/V MAURICE EWING operates the JUE-45-A. Scripps MELVILLE, T. WASHINGTON, NEW HORIZON and FLIP have JRC terminals installed.
Radio Holland Group. 500 South 31st Street Kenilworth, NJ (906) 298-9100	JUE-45A	$39,995.00	54	50.8	34.00	209.00	13.20	17.08	15.96	39.60		VDU, telephone and printer			three years parts and labor	
EB NERA U.S. Distributor: 441 U.S. Highway One Elizabeth, NJ (201) 527-0300	Saturn 3S.90	$33,500.00	57	56	40.00	209.00	5.36	17.28	13.60	22.00	yes	telephone and OKITEX teminal	Phone ext, remote traffic alarm, fax, satnav, data modem.	1492 terminals	one year parts and labor	EB has designed, manufactured and installed ten CES. EB manufactures Standard C terminals.

* COMPUTER CAPABILITY denotes that most SES have transmission editing capability. Data/Facsimile transmission is up to 2.4 Kbps. High speed data is available at a rate of 56 Kbps for vessels properly equipped.

** The information presented is based on the manufacturer's specifications. In many cases we have verified information by phone or fax, providing the vendor a chance to elaborate. However, The University of Rhode Island has not tested these units nor attempted to certify the accuracy of specifications provided.

Before the
Federal Communications Commission
Washington, D.C. 20554

PR Docket No. 90-480

In the Matter of

Amendment of Parts 13 and 80 of the Commission's Rules to implement the Global Maritime Distress and Safety System (GMDSS) to improve the safety of life at sea.

REPORT AND ORDER
(Proceeding Terminated)

Adopted: January 16, 1992; Released: February 7, 1992

By the Commission: Commissioner Marshall not present.

TABLE OF CONTENTS

I. INTRODUCTION

1. This *Report and Order* implements the Global Maritime Distress and Safety System (GMDSS) in the Commission's Maritime Service Rules substantially as proposed. By this action, we adopt the requirements of the international Safety of Life at Sea (SOLAS) Convention for large oceangoing U.S. vessels. These requirements will be phased in during the 1992 to 1999 time period.

II. BACKGROUND

2. The GMDSS represents the biggest improvement in marine safety since the first maritime regulations were enacted following the sinking of the *Titanic* in 1912. It is an automated ship-to-shore distress alerting system that relies on satellite and advanced terrestrial systems. By incorporating these advanced communications techniques into the safety system and using ship-to-shore communications links, the GMDSS will significantly improve safety of life and property at sea throughout the world.[1] It represents more than a decade of work by the International Maritime Organization (IMO) and the International Telecommunication Union (ITU).[2] In November 1987, the ITU adopted GMDSS associated revisions to the Radio Regulations. *See*, Final Acts of the World Administrative Radio Conference for Mobile Services (MOB-87), Geneva, 1987. In November 1988, the IMO adopted amendments to the 1974 SOLAS Convention to implement the GMDSS internationally. *See*, Final Acts of the Conference of Contracting Governments to the International Convention for the Safety of Life at Sea, 1974, on the Global Maritime Distress and Safety System, London, 1988 (GMDSS Amendments). In October 1990, we proposed to

[1] The advent of satellite and automated terrestrial communications systems offers important advantages for distress and safety communications. The current distress and safety system is primarily a manual, ship-to-ship system that relies on Morse code radiotelegraphy on 500 kHz and voice radiotelephony on 2182 kHz and 156.8 MHz. Its effectiveness depends on the location of the nearest vessel, propagation conditions, and the technical proficiency of the radio officer. Under the GMDSS, licensed radio operators on board GMDSS-equipped ships will use modern radio equipment to send distress alerts over long distances with assurance that they will be received on shore.

[2] The IMO and the ITU are both agencies of the United Nations. The IMO specifies regulations for the maritime service, such as equipment carriage requirements for certain classes of ships. The ITU specifies regulations for radio matters, such as operating procedures and frequency allotments.

adopt the international GMDSS provisions for U.S. vessels in a *Notice of Proposed Rule Making (Notice)*, PR Docket No. 90-480, 5 FCC Rcd 6212 (1990).

3. Parts 13 and 80 of the Commission's Rules currently specify the radio operator licenses and the radio equipment requirements for U.S. vessels. They are based on international requirements contained in the 1974 SOLAS Convention and similar domestic requirements delineated in the Communications Act of 1934, as amended (Communications Act), 47 U.S.C. §§ 351-364 . Ships subject to either the SOLAS Convention or the Communications Act are required to carry certain radio equipment and personnel for safety purposes. These ships are termed "compulsory" ships. In the *Notice*, we proposed revising our requirements for compulsory radio-equipped ships to reflect the international GMDSS provisions.[3] An extension of time to file comments and reply comments was granted on December 24, 1990. *Order*, PR Docket No. 90-480, 6 FCC Rcd 6 (1990). The comment period closed on June 7, 1991, and the reply comment period closed on July 6, 1991. We received twenty-two comments, seven reply comments, and two *ex parte* comments.[4] (Appendix A lists the commenters.)

III. DISCUSSION

4. We will begin our discussion with a brief description of the GMDSS outlining its differences from the present maritime distress communications system. We will also clarify the relationship of the SOLAS Convention and the Communications Act, and consider the general issue of whether to adopt the GMDSS for U.S. vessels. We will then address the controversial matters concerning the radio operator and equipment maintenance issues. Finally, we will discuss the operational and technical issues relating to satellites, terrestrial systems, and equipment performance requirements.

A. GMDSS Implementation

5. The GMDSS is primarily a ship-to-shore system, though it retains ship-to-ship capability.[5] The GMDSS consists of several communication systems, some of which are new, but most of which have been in operation for several years. The COSPAS-SARSAT satellite system, which has been in operation since 1982, provides distress alerting using the 406 MHz emergency position-indicating radiobeacon (406 MHz EPIRB).[6] The International Maritime Satellite Organization's (INMARSAT) maritime mobile satellite system has also been in operation since 1982 and forms a major component for distress alerting and communications. In addition to satellites, new automated terrestrial data systems and existing systems are combined into one overall communications system. The GMDSS will provide for new digital selective calling (DSC) services on high frequency (HF), medium frequency (MF), or very high frequency (VHF) bands depending upon the location of the ship in distress. These new DSC services will be used for ship-to-ship, ship-to-shore, and shore-to-ship automatic alerting, while existing terrestrial HF, MF, and VHF radiotelephony equipment provides distress, urgency, and safety related communications. The GMDSS will enhance search and rescue (SAR) operations through the use of the new 9 GHz search and rescue transponder (SART). Finally, it will create a global network for the dissemination of maritime safety information (MSI) using three systems: NAVTEX, IMMARSAT enhanced group calling (EGC), and HF narrow-band direct-printing (NBDP) radiotelegraphy.

6. The two most notable features of the system are that it is based on sea areas of operation and that it offers multiple communications options. The first of these features, sea area basing, divides the seas into four-communications areas. Sea Area A1 is the area within VHF radiotelephone coverage of at least one coast station at which continuous DSC is available (approximately 20-30 miles). Sea Area A2 is the area within MF radiotelephone coverage of at least one coast station at which continuous DSC is available (approximately 75-150 miles), excluding Sea Area A1. Sea Area A3 is the area within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available (approximately 70^0 North to 70^0 South), excluding Sea Areas A1 and A2. Sea Area A4 is the remainder of the seas of the world (essentially the polar regions) and relies primarily on HF communications. Sea areas are established by individual countries, which equip their shore stations with appropriate VHF, MF, HF or satellite facilities to "cover" particular segments of ocean.[7]

7. The second significant feature of the GMDSS, multiple communications options, ensures that each ship using the GMDSS will have at least two options of distress alerting appropriate to its sea area. This redundancy will minimize the chance that a ship in distress will be unable to communicate because of weather, radio propagation difficulties, equipment failure, or other circumstances. This feature represents a significant improvement over the current distress system. A comparison of the primary features of the current distress and safety system and the GMDSS is given below.

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[3] The *Notice* stated that the proposed rules addressed compulsory ships. It defined "compulsory ships" as cargo ships 300 tons gross tonnage and over and all passenger ships that carry more than twelve passengers regardless of their size, as specified in the SOLAS Convention or Title III, Part II of the Communications Act. *See Notice, supra*, at para. 21.

[4] Additionally, we received a letter signed by Thomas C. Harper, president of the Radio-Electronic Officers Union (ROU), stating that comments filed in the name of the ROU and bearing Lewis D. Smith's signature were not authorized by the ROU Executive Board. ROU indicates that the filing does not represent ROU's views and requests that the filing be "expunged from the files of the FCC...." Thus, we have not considered the disputed comments, as requested by ROU.

[5] This section contains a very brief overview of the GMDSS. A more detailed description of the GMDSS is contained in the *Notice*. *See Notice, supra*, at paras. 8-20. Additionally, a simplified diagram of the GMDSS radiocommunication systems is presented in Appendix B.

[6] COSPAS-SARSAT is a joint international satellite-based search and rescue system established by Canada, France, USSR, and the United States to locate emergency radiobeacons transmitting on 121.5 MHz and 406 MHz. The U.S. satellites in this system also receive on 243 MHz.

[7] For example, a shore station must add VHF-DSC equipment to establish an A1 sea area for a particular geographic region. IMO has delineated the various sea areas, both established and planned, in the Master Plan of Shore-based Facilities for the GMDSS (Master Plan). *See* IMO COM 37/WP. 2, July 10, 1991.

CURRENT DISTRESS & SAFETY SYSTEM	GMDSS
Primarily a ship-to-ship system	Primarily a ship-to-shore system
Radio equipment requirements determined by size of ship	Radio equipment requirements determined by area of ship operation
Nominal communications range is approximately 150-200 miles	Communications range can be worldwide for ships using HF or satellites
Communications quality depends upon propagation conditions	Communications quality improved by use of satellites and multiple frequency digital data transmissions
Manual watch on distress frequencies required	Automatic watch on distress frequencies
Morse code skilled radio officer is required on ships >1600 tons	Licensed radio operator required on all ships
Different requirements for ships of different sizes	All ships over 300 gross-tons and all passenger ships are subject to identical requirements

8. The basic concept of the GMDSS is that SAR authorities on shore, as well as shipping in the immediate vicinity of the ship in distress, can be rapidly alerted to a distress incident. The shore-based authorities designated as a Rescue Coordination Center (RCC) can then assist in coordinating rescue operations with minimal delay. In the United States, the Coast Guard is the designated maritime SAR organization and will operate the necessary RCCs. The particular GMDSS equipment used to communicate varies by sea area and may have several alternatives. The following is a simplified chart of GMDSS equipment and its primary functions assuming a mid-ocean distress situation:

Shipboard radio equipment	Function
406 MHz EPIRB	Ship-to-shore alerts via COSPAS-SARSAT
VHF radio (DSC and voice)	SAR communications
MF radio (DSC and voice)	Ship-to-ship alerts and communications
INMARSAT ship earth station (SES) plus EGC capability*	Ship-to-shore alerts, communications, and MSI (SafetyNet)
NAVTEX receiver	MSI (518 kHz)
9 GHz SART	SAR locating beacon
Two-way VHF portable radios	SAR communications
2182 watch receiver/auto alarm	Receipt of 2182 kHz alerts until 1999

*Alternatively, a HF radio (DSC, voice, and NBDP) which includes a HF-DSC watch receiver may be used in lieu of the INMARSAT SES/EGC terminal. The HF radio is required for sea area A4.

9. By the terms of the SOLAS Convention, the GMDSS provisions apply to cargo ships of 300 tons gross tonnage and over and ships carrying more than twelve passengers traveling on international voyages. Title III, Part II of the Communications Act sets forth radio provisions that apply to these same ships when traveling in the open sea. Because the same radio requirements are currently specified for these ships for both international and domestic voyages, we proposed to adopt the GMDSS provisions for ships subject to either the SOLAS Convention or Title III, Part II of the Communications Act. Thus, this proceeding addresses cargo ships of 300 tons gross tonnage and over when traveling on international voyages or in the open sea, and to all passenger ships irrespective of size when traveling on international voyages or in the open sea. We will refer to these ships as compulsory ships, as defined in paragraph 3 above, or simply as GMDSS ships.

10. The SOLAS Convention specifies, and we proposed, the following implementation dates:[8]

February 1, 1992 voluntary compliance, any ship may be GMDSS-equipped

August 1, 1993 all compulsory ships must have satellite EPIRB and NAVTEX

February 1, 1995 newly constructed compulsory ships must be GMDSS-equipped

February 1, 1999 all compulsory ships must be GMDSS-equipped

11. In response to the *Notice*, several commenters advocate retention of the current requirements either permanently or until February 1, 1999. Generally, they wish to retain the requirement for radio officers or delay implementation of the GMDSS in the United States. Many of the radio officers also want to retain the carriage requirements for manual Morse code radiotelegraphy on 500 kHz, essentially opposing any change. We have considered all arguments carefully and emphasize that the implementation of the GMDSS is mandated by the SOLAS Convention, to which the United States is signatory.[9] Thus, we have treaty obligations to enact certain

[8] The GMDSS implementation dates are summarized in Appendix C.

[9] Several commenters, arguing for continuation of the current distress and safety system, indicate that U.S. vessels should continue to abide by the SOLAS Convention. We emphasize that the GMDSS requirements *are* the actual SOLAS Convention provisions. The 1988 Amendments to the SOLAS Convention implementing the GMDSS received acceptance on February 1, 1990, and enter into force on February 1, 1992. The SOLAS Convention simply allows the current system to remain in effect for existing ships until 1999.

GMDSS provisions as early as August 1993. The remaining provisions must be enacted for new ships by 1995, and for existing ships by 1999. The SOLAS Convention also permits ships to voluntarily comply with the GMDSS in lieu of the current manual Morse code system as early as February 1, 1992. We agree with this schedule for U.S. ships, although U.S. ships cannot eliminate the current manual radiotelegraphy system and radio officers until changes to the Communications Act are adopted. The GMDSS represents more than a decade of development by the IMO. The GMDSS offers significant advantages over the current system, and the United States has been a strong advocate of the GMDSS internationally. It was unanimously adopted by 66 countries representing the world maritime community. Moreover, if U.S. vessels are delayed in implementing the GMDSS, American lives and property could be at risk by perpetuating an outmoded ship-to-ship system that is less able to communicate with ships and shore facilities of the major maritime nations.[10] Although some commenters claim that the GMDSS should be delayed because there are insufficient RCCs and SAR facilities in many parts of the world for the shore-based system to be effective, this is not a sound argument. IMO considers these facilities to be adequate, and, furthermore, even a distant RCC can coordinate rescue resources and efforts for a ship in distress. Compared to a ship equipped under the current distress and safety system, the GMDSS will enhance a ship's ability to communicate during a distress by ensuring multiple communications options. We therefore conclude that adoption of the GMDSS is in the public interest and it should not be delayed. Comments regarding radio personnel and equipment requirements for GMDSS ships were examined and many changes have been incorporated where appropriate.

B. Radio Operators and Radio-equipment Maintenance

12. Radio operators and radio-equipment maintenance proved to be the two most controversial issues addressed in comments. In the *Notice*, we proposed to follow the GMDSS provisions as prescribed by the IMO Conference:

> - For radio operations, GMDSS ships must carry personnel qualified for distress and safety radiocommunications purposes. The personnel should be holders of certificates specified in the Radio Regulations as appropriate,[11] any one of whom shall be designated to have primary responsibility for radiocommunications during distress incidents.
>
> - For radio maintenance, the availability of the functional requirements of the radio equipment must be ensured by using such methods as duplication of equipment, shore-based maintenance, or at-sea maintenance, or a combination of these methods (two of these three methods are required in sea areas A3 and A4).

13. Specifically, we proposed that each GMDSS ship have at least one qualified radio operator who holds a GMDSS-endorsed license issued by the Commission, and that a qualified GMDSS operator must be designated to act as a dedicated communications operator in cases of distress. Because GMDSS ships are not equipped with manual Morse code telegraphy equipment, they would not be required to carry radio officers.[12] We also proposed the flexible approach to maintenance enacted by the IMO. IMO regulations allow ship owners the option of choosing among shore-based maintenance, duplication of equipment, and at-sea maintenance. Ships operating in sea areas A3 and A4 would be required to use two of these methods. We requested comments on whether a certificate is needed for the at-sea maintainer to ensure the functioning of equipment during a distress situation. *See Notice* at paras. 40-41.

14. The American Radio Association (ARA), all "individual radio officers"[13] that commented, and three other commenters oppose the GMDSS generally and insist that each ship must have an individual capable of performing on-board maintenance and emergency repairs of radio equipment. *See, e.g.*, comments of ARA at 1-4, Spencer at 1, Reno at 6, Zbrozek at 3, and Phelps at 1-2. Some also argue that shore-based maintenance and duplication of equipment are not viable options. *See, e.g.*, Reno comments at 7. ARA argues that technological advances like the GMDSS have not removed the need for trained shipboard radio officers/radio electronics officers (RO/REO). It states that a trained and dedicated communications specialist is essential to ensure emergency communications during maritime accidents. ARA *ex parte* comments at 1. Marine Communications, Inc. (MC) echoes this concern and claims that communications will become secondary to other duties, such as fire fighting, etc., during emergency situations. MC comments at 36. Several commenters refer to a number of emergency and distress occurrences aboard merchant vessels, arguing that the GMDSS will be less safe than the current system if ships are allowed to sail without radio officers. *See, e.g.*, comments of Russell, Phelps, and ARA (regarding a fire aboard M/V *Green Lake* in 1989, where a distress message sent via satellite went unanswered). Finally, ARA argues that we failed to consider the evolving role of the

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[10] Many countries, such as Norway, Finland, and Canada, have already enacted regulations requiring their ships to convert to the GMDSS. Canada requires their existing ships to meet GMDSS requirements by 1995, rather than the permitted international deadline of 1999.

[11] Because the United States took reservations on the revisions to Radio Regulations, Articles 55 and 56, which set forth the radio operator certificates, we proposed qualifications based on the Radio Regulations' "operator certificates" rather than the "electronics certificates" (*i.e.*, the General Operator's and Restricted Operator's Certificates versus the First or Second Class Radio Electronic Certificates). *See Notice* at para. 39-40.

[12] Generally, radio officers have the specialized skills necessary to operate manual Morse code radiotelegraph equipment while radio operators have the general knowledge to operate simpler radio equipment, such as radiotelephone (voice), NBDP, and facsimile. Under the Communications Act, ships equipped with radiotelegraphy installations must carry radio officers. Both radio officers and radio operators are tested and licensed by the Commission. Radio officers, when employed to operate radiotelegraph equipment on compulsory ships, are also licensed by the Coast Guard.

[13] Several commenters identified themselves as radio officers or former radio officers. Other individuals presenting similar views did not identify their background. All noted that their comments were prompted by a desire to improve maritime safety and not for individual gain. Collectively, we will be refer to them as "individual radio officers."

APPENDIX C

GMDSS IMPLEMENTATION DATES

The GMDSS regulations apply to cargo ships of 300 tons gross tonnage and over when traveling on international voyages or in the open sea, and to ships carrying twelve passengers or more irrespective of size when traveling on international voyages or in the open sea. These ships are termed "compulsory ships." The following is a summary of the implementation dates for the GMDSS.

February 1, 1992 GMDSS provisions of SOLAS Convention enter into force. U.S. ships begin voluntary fitting of GMDSS equipment. Until Communications Act is amended, carriage of current distress and safety system remains mandatory. (47 C.F.R. § 80.1065(b)(5)).

February 1, 1992 New passenger ships and cargo ships of 500 tons gross tonnage and over constructed on or after this date must carry at least two radar transponders (one on each side of ship) and at least three two-way VHF radiotelephones for use in survival craft. New cargo ships of 300-500 tons gross tonnage must carry at least one radar transponder and at least two two-way VHF telephones. (47 C.F.R. § 80.1095).

August 1, 1993 All compulsory ships are required to carry a NAVTEX receiver and a 406 MHz EPIRB. * Ships will no longer be required to carry a Class S EPIRB for survival crafts after equipping with the 406 MHz EPIRB. (47 C.F.R. § 80.1065(b)(1) and SOLAS Convention, Resolution 4).

February 1, 1995 New compulsory ships constucted on or after this date must comply with all GMDSS requirements. (47 C.F.R. § 80.1065(b)(3)).

February 1, 1995 Passenger ships and cargo ships of 500 tons gross tonnage and over constructed before February 1, 1992, must carry at least two radar transponders (one on each side of ship) and at least three two-way VHF radiotelephones for use in survival craft. Cargo ships of 300-500 tons gross tonnage constructed before February 1, 1992, must carry at least one radar transponder and at least two two-way VHF radiotelephones. (47 C.F.R. § 80.1095).

February 1, 1999 All compulsory ships must meet all GMDSS requirements. (47 C.F.R. § 80.1065(b)(4)).

*Note: Although VHF Channel 70 EPIRBs and INMARSAT 1.6 GHz EPIRBs are also allowed, they are not permitted to be used until equipment standards are adopted and type acceptance has been issued for these EPIRBs. Until that time, the 406 MHz EPIRB is the only EPIRB acceptable for use under the FCC's GMDSS regulations.

APPENDIX D

Regulatory Flexibility Act Final Analysis

1. In accordance with Section 605(b) of the Regulatory Flexibility Act of 1980, 5 U.S.C. § 605(b), our final analysis of the economic impact of these amendments to small entities is as follows:

2. *Need and purpose of this action:* The amendments to the Commission's Rules contained in this *Report and Order* implement the Global Maritime Distress and Safety System. Because of advances in communications technology, the GMDSS will better ensure the safety of life and property at sea than the current distress and safety communications system. The changes are needed to improve maritime distress and safety communications and to ensure that the United States fulfills its international obligations under the Safety of Life at Sea Convention. Refusal to implement the changes will result in failure of the United States to uphold its international obligations and will endanger American lives and property by the perpetuation of an obsolete system incapable of communicating with ships and shore facilities of the major maritime nations.

3. *Summary of issues raised by public comments in response to the Initial Regulatory Flexibility Act Analysis:* The initial analysis in the *Notice* stated that this action would not have a significant economic impact on a substantial number of small entities, as the rules apply to larger cargo and passenger vessels on international voyages and not to smaller vessels, such as recreational or fishing vessels. One commenter, Marine Communications Inc., states that this action would have a significant economic impact on a number of small entities, including manufacturers and maintainers of electronic equipment and entities which provide communications. MC suggests that we issue a new notice of proposed rule making, and publish that notice in maritime trade publications, in order to allow small entities to become aware of this action and comment upon proposed rules. We disagree. First, we reiterate that the majority of the entities affected are not small entities. These rules pertain to cargo ships of 300 gross tons or more and passenger ships on international voyages. Second, while all entities affected by this action will have to change some equipment and procedures, the equipment and procedures involved are already in use to a great extent in the maritime community. No drastically new technology is involved. Thus, adjusting to the GMDSS will not have a significant economic impact on these entities. Most will experience an increase in economic activity as a result of this action. Finally, the broad dissemination in trade publications information about the GMDSS and the pendency of this action gave effective notice to the entire maritime community, as is reflected in the broad spectrum of commenters. We do not feel that the action proposed by MC would significantly increase public awareness of, or response to, this action.

4. *Significant alternatives considered and rejected:* The alternatives to implementing the GMDSS are retaining the current distress and safety system or adopting some other non-GMDSS system. Taking either of these alternatives would both cause the United States to fail under its international obligations and diminish the safety of life at sea, as United States ships would have distress communications systems incompatible with the system used by

the rest of the world. We conclude that the amendments in this *Report and Order* represent the most effective and least burdensome method of complying with our international responsibilities and ensuring the safety of lives and property at sea.

APPENDIX E

Parts 13 and 80 of Title 47 of the Code of Federal Regulations are amended as follows:

1. The authority citation for Part 13 continues to read as follows:

AUTHORITY: Secs. 4, 303, 48 Stat. 1066, 1082 as amended; 47 U.S.C. 154, 303.

2. In Section 13.2, paragraph (b)(7) is added to read as follows:

§ 13.2 Classification of operator licenses and endorsements.

* * * * *

(b) ***

(7) GMDSS Radio Operator's License (general radio operator's certificate).

* * * * *

3. In Section 13.21, paragraph (a)(7) is added to read as follows:

§ 13.21 Examination elements.

* * * * *

(a) ***

(7) *GMDSS operating practices.* Radio operating procedures and practices of the knowledge and qualifications enumerated below:

(i) Detailed practical knowledge of the operation of all GMDSS sub-systems and equipment;

(ii) Ability to send and receive correctly by radio telephone and narrow-band direct-printing telegraphy;

(iii) Detailed knowledge of the regulations applying to radiocommunications, knowledge of the documents relating to charges for radiocommunications and knowledge of those provisions of the International Convention for the Safety of Life at Sea which relate to radio; and

(iv) Sufficient knowledge of English to be able to express themselves satisfactorily both orally and in writing.

(v) Knowledge of and ability to perform each of the functions listed in § 80.1081.

(vi) Knowledge covering the requirements set forth in IMO Assembly Resolution on Training for Radio Personnel (GMDSS), Annex 3.

* * * * *

4. In Section 13.22, paragraph (b)(6) is added to read as follows:

§ 13.22 Required qualifications.

* * * * *

(b)* * *

(6) GMDSS Radio Operator's License.

(i) Written examinations covering elements 1, 2, and 7.

* * * * *

5. The authority citation for Part 80 continues to read as follows:

AUTHORITY: Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, unless otherwise noted. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-155, 301-609; 3 UST 3450, 3 UST 4726, 12 UST 2377.

6. Part 80 is revised by adding Subpart W to read as follows:

PART 80 - STATIONS IN THE MARITIME SERVICES

Subpart W - Global Maritime Distress and Safety System (GMDSS)

GENERAL PROVISIONS

80.1065	Applicability
80.1067	Inspection of station
80.1069	Maritime sea areas
80.1071	Exemptions
80.1073	Radio operator requirements for ship stations
80.1074	Radio maintenance personnel for at-sea maintenance
80.1075	Radio records
80.1077	Frequencies available

EQUIPMENT REQUIREMENTS FOR SHIP STATIONS

80.1081	Functional requirements
80.1083	Ship radio installations
80.1085	Ship radio equipment - General
80.1087	Ship radio equipment - Sea area A1
80.1089	Ship radio equipment - Sea areas A1 and A2
80.1091	Ship radio equipment - Sea areas A1, A2, and A3
80.1093	Ship radio equipment - Sea areas A1, A2, A3 and A4
80.1095	Survival craft equipment
80.1099	Ship sources of energy
80.1101	Performance standards
80.1103	Equipment authorization
80.1105	Maintenance requirements

OPERATING PROCEDURES FOR DISTRESS AND SAFETY COMMUNICATIONS

Subpart W - Global Maritime Distress and Safety System (GMDSS)

This subpart contains the rules applicable to the Global Maritime Distress and Safety System (GMDSS). Every ship of the United States subject to Part II of Title III of the Communications Act or the Safety Convention must comply with the provisions of this subpart. The rules in this subpart are to be read in conjunction with the applicable requirements contained elsewhere in this part: however, in case of conflict, the provisions of this subpart shall govern with respect to the GMDSS. For the purposes of this subpart, distress and safety communications include distress, urgency, and safety calls and messages.

NOTE: No provision of this subpart is intended to eliminate, or in anyway modify, other requirements contained in this part with respect to Part II of Title III of the Communications Act.

GENERAL PROVISIONS

§ 80.1065 Applicability.

(a) The regulations contained in § 80.1119 apply to public coast stations and coast earth stations as of February 1, 1992.

(b) The regulations contained within this subpart apply to all passenger ships regardless of size and cargo ships of 300 tons gross tonnage and upwards as follows:

(1) Ships must comply with §§ 80.1085(a)(4) and 80.1085(a)(6) not later than August 1, 1993.

(2) Ships constructed on or after February 1, 1992, must comply with § 80.1095 as of that date. All other ships must comply with this section as of February 1, 1995.

(3) Ships constructed on or after February 1, 1995, must comply with all requirements of this subpart.

(4) Ships constructed before February 1, 1995, must comply with all requirements of this subpart as of February 1, 1999.

(5) During the period between February 1, 1992, and February 1, 1999, all ships must comply with:

(i) The requirements of this subpart:

(ii) The requirements of Chapter IV of the International Convention for the Safety of Life at Sea, 1974, in force prior to February 1, 1992 (see Subparts Q and R of this part); or

(iii) For ships operated solely on domestic voyages, the requirements of § 80.836.

(6) The expression "ships constructed" means "ships the keels of which are laid, or construction identifiable with a specific ship begins and assembly of that ship has commenced comprising at least 50 tons gross tonnage or 1% of the estimated mass of all structural material, whichever is less.

(c) The requirements of this subpart do not modify the requirements for ships navigated on the Great Lakes or small passenger boats. The requirements contained in the Agreement Between the United States of America and Canada for Promotion of Safety on the Great Lakes by Means of Radio, 1973, continue to apply (see subpart T of this part). The requirements contained in Part III of Title III of the Communications Act continue to apply (see subpart S of this part).

(d) No provision in this subpart is intended to prevent the use by any ship, survival craft, or person in distress, of any means at their disposal to attract attention, make known their position and obtain help.

§ 80.1067 Inspection of station.

(a) Ships must have the required equipment inspected at least once every 12 months. If the ship is in compliance with the requirements of the Safety Convention, a Safety Certificate will be issued: if in compliance with the Communications Act, the license will be endorsed accordingly. The effective date of the ship safety certificate is the date the station is found to be in compliance or not later than one business day later.

(b) Certificates issued in accordance with the Safety Convention must be posted in a prominent and accessible place on the ship.

§ 80.1069 Maritime sea areas.

(a) For the purpose of this subpart, a ship's area of operation is defined as follows:

Sea area A1. An area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available as defined by the International Maritime Organization.

Sea area A2. An area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available as defined by the International Maritime Organization.

Sea area A3. An area, excluding sea areas A1 and A2, within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available.

Sea area A4. An area outside sea areas A1, A2 and A3.

(b) Maritime sea areas are delineated in the International Maritime Organization Publication *GMDSS Master Plan of Shore-Based Facilities*. The *Master Plan* can be purchased from the International Maritime Organization, 4 Albert Embankment, London SE1 7SR, United Kingdom.

§ 80.1071 Exemptions

(a) In certain circumstances, partial or conditional exemptions may be granted to individual ships from the requirements of §§ 80.1085, 80.1087, 80.1089, 80.1091, and 80.1093 provided: such ships comply with the functional requirements of § 80.1081 and a showing is made that such an exemption will not have a material effect upon the general efficiency of the service for the safety of all ships.

(b) An exemption may be granted under paragraph (a) of this section only:

(1) If the conditions affecting safety are such as to render the full application of §§ 80.1085, 80.1087, 80.1089, 80.1091, and 80.1093 of this part unreasonable or unnecessary or otherwise not in the public interest;

(2) In exceptional circumstances, for a single voyage outside the sea area or sea areas for which the ship is equipped; or

(3) Prior to February 1, 1999, when the ship will be taken permanently out of service within two years of a requirement date specified in § 80.1065 of this part.

§ 80.1073 Radio operators requirements for ship stations.

(a) Ships must carry at least two persons holding GMDSS Radio Operator's Licenses as specified in § 13.2 of the Commission's Rules for distress and safety radiocommunications purposes. The GMDSS Radio Operator's License qualifies personnel as GMDSS radio operators for the purposes of operating GMDSS radio installations, including basic equipment adjustments as denoted in knowledge requirements specified in § 13.21 of the Commission's Rules.

(1) One of the qualified GMDSS radio operators must be designated to have primary responsibility for radiocommunications during distress incidents.

(2) A second qualified GMDSS radio operator must be designated as backup for distress and safety radiocommunications.

(b) A qualified GMDSS radio operator, and a qualified backup, as specified in paragraph (a) of this section must be:

(1) Available to act as the dedicated radio operator in cases of distress as described in § 80.1109(a);

(2) Designated to perform as part of normal routine each of the applicable communications described in § 80.1109(b); and

(3) Responsible for selecting HF DSC guard channels and receiving scheduled maritime safety information broadcasts.

(4) Designated to perform communications described in § 80.1109(c).

(5) Responsible for ensuring that the watches required by § 80.1123 are properly maintained.

(6) Responsible for ensuring that the ship's navigation position is entered, either manually or automatically through a navigation receiver, into all installed DSC equipment at least every four hours while the ship is underway.

§ 80.1074 Radio maintenance personnel for at-sea maintenance.

(a) Ships that elect the at-sea option for maintenance of GMDSS equipment (*see* § 80.1105) must carry at least one person who qualifies as a GMDSS radio maintainer, as specified in paragraph (b) of this section, for the maintenance and repair of equipment specified in this subpart. This person may be, but need not be, the person designated as GMDSS radio operator as specified in § 80.1073.

(b) The following licenses qualify personnel as GMDSS radio maintainers to perform at-sea maintenance of equipment specified in this subpart. For the purposes of this subpart, no order is intended by this listing or the alphanumeric designator.

(1) T-1: First Class Radiotelegraph Operator's Certificate

(2) T-2: Second Class Radiotelegraph Operator's Certificate

(3) G: General Radiotelephone Operator License

(c) While at sea, all adjustments of radio installations, servicing, or maintenance of such installations that may affect the proper operation of the GMDSS station must be performed by, or under the immediate supervision and responsibility of, a qualified GMDSS radio maintainer as specified in paragraph (b) of this section.

(d) The GMDSS radio maintainer must possess the knowledge covering the requirements set forth in IMO Assembly on Training for Radio Personnel (GMDSS), Annex 5 and IMO Assembly on Radio Maintenance Guidelines for the Global Maritime Distress and Safety System related to Sea Areas A3 and A4.

§ 80.1075 Radio records

A record must be kept, as required by the Radio Regulations and § 80.409(a), (b) and (e), of all incidents connected with the radiocommunication service which appear to be of importance to safety of life at sea.

§ 80.1077 Frequencies

The following table describes the frequencies used in the Global Maritime Distress and Safety System:

Alerting

406 EPIRBs	406-406.1 MHz (Earth-to-space) 1544-1545 MHz (space-to-Earth)
INMARSAT A or C SES	1626.5-1645.5 MHz (Earth-to-space)
VHF DSC Ch. 70	156.525 MHz[1]
MF/HF DSC[2]	2187.5 kHz[3], 4207.5 kHz, 6312 kHz, 8414.5 kHz, 12577 kHz, and 16804.5 kHz

On-scene communications

VHF Ch. 16	156.8 MHz
MF radiotelephony	2182 kHz
NBDP	2174.5 kHz

Communications involving aircraft

On-scene, including search and rescue	156.8 MHz[4], 121.5 MHz[5], 123.1 MHz, 156.3 MHz, 2182 kHz, 3023 kHz, 4125 kHz, and 5680 kHz[6]

Locating signals

406 MHz EPIRB beacons	121.5 MHz
9 GHz radar transponders	9200-9500 MHz

Maritime safety information (MSI)

International NAVTEX	518 kHz[7]
Warnings	490 kHz[8], 4209.5 kHz[9]
NBDP	4210 kHz, 6314 kHz, 8416.5 kHz, 12579 kHz, 16806.5 kHz, 19680.5 kHz, 22376 kHz, 26100.5 kHz
Satellite	1530-1545 MHz (space-to-Earth)[10]

General distress and safety communications and calling

Satellite	1530-1544 MHz (space-to-Earth) and 1626.5-1645.5 MHz (Earth-to-space)[10]
Radiotelephony	2182 kHz, 4125 kHz, 6215 kHz, 8291 kHz, 12290 kHz, 16420 kHz, and 156.8 MHz
NBDP	2174.5 kHz, 4177.5 kHz, 6268 kHz, 8376.5 kHz, 12520 kHz, and 16695 kHz
DSC	2187.5 kHz, 4207.5 kHz, 6312 kHz, 8414.5 kHz, 12577 kHz, 16804.5 kHz, and 156.525 MHz

Survival craft

VHF radiotelephony MHz frequency	156.8 MHz and one other 156-174
9 GHz radar transponders	9200-9500 MHz

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FOOTNOTES TO ~~APPENDIX E~~

[1] Frequency 156.525 MHz can be used for ship-to-ship alerting and, if within sea area A1, for ship-to-shore alerting.

[2] For ships equipped with MF/HF equipment, there is a watch requirement on 2187.5 kHz, 8414.5 kHz, and one other frequency.

[3] Frequency 2187.5 kHz can be used for ship-to-ship alerting and, if within sea areas A2, for ship-to-shore alerting.

[4] Frequency 156.8 MHz may also be used by aircraft for safety purposes only.

[5] Frequency 121.5 MHz may be used by ships for aeronautical distress and urgency purposes.

[6] The priority of use for ship-aircraft communications is 4125 kHz, then 3023 kHz. Additionally, frequencies 123.1 MHz, 3023 kHz, and 5680 kHz can be used by land stations engaged in coordinated search and rescue operations.

[7] The international NAVTEX frequency 518 kHz is the primary frequency for receiving maritime safety information. The other frequencies are used only to augment the coverage or information provided on 518 kHz.

[8] Frequency 490 kHz cannot be used for MSI employing NBDP transmissions until February 2, 1999.

[9] Frequency 4209.5 kHz is not used in the United States (see 47 C.F.R. § 2.106 footnote 520A).

[10] In addition to EPIRBs, 1544-1545 MHz can be used for narrowband distress and safety operations and 1645.5-1646.5 MHz can be used for relay of distress alerts between satellites. Feeder links for satellite communications are assigned from the fixed satellite service, see 47 C.F.R. § 2.106.

EQUIPMENT REQUIREMENTS FOR SHIP STATIONS

§ 80.1081 Functional requirements

(a) Ships, while at sea, must be capable:

(1) Except as provided in §§ 80.1087(a)(1) and 80.1091(a)(4)(iii), of transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service;

(2) Of receiving shore-to-ship distress alerts;

(3) Of transmitting and receiving ship-to-ship distress alerts;

(4) Of transmitting and receiving search and rescue co-ordinating communications;

(5) Of transmitting and receiving on-scene communications;

(6) Of transmitting and receiving signals for locating;

(7) Of transmitting and receiving maritime safety information;

(8) Of transmitting and receiving general radiocommunications to and from shore-based radio systems or networks; and

(9) Of transmitting and receiving bridge-to-bridge communications.

§ 80.1083 Ship radio installations

(a) Ships must be provided with radio installations capable of complying with the functional requirements prescribed by § 80.1081 throughout its intended voyage and, unless exempted under § 80.1071, complying with the requirements of § 80.1085 and, as appropriate for the sea area of areas through which it will pass during its intended voyage, the requirements of either §§ 80.1087, 80.1089, 80.1091, or 80.1093.

(b) The radio installation must:

(1) Be so located that no harmful interference of mechanical, electrical or other origin affects its proper use, and so as to ensure electromagnetic compatibility and avoidance of harmful interaction with other equipment and systems;

(2) Be so located as to ensure the greatest possible degree of safety and operational availability;

(3) Be protected against harmful effects of water, extremes of temperature and other adverse environmental conditions;

(4) Be provided with reliable, permanently arranged electrical lighting, independent of the main and emergency sources of electrical power, for the adequate illumination of the radio controls for operating the radio installation; and

(5) Be clearly marked with the call sign, the ship station identity and other codes as applicable for the use of the radio installation.

(c) Control of the VHF radiotelephone channels required for navigational safety must be immediately available on the navigating bridge convenient to the conning position and, where necessary, facilities should be available to permit radiocommunications from the wings of the navigating bridge. Portable VHF equipment may be used to meet the latter provision.

§ 80.1085 Ship radio equipment - General

This section contains the general equipment requirements for all ships subject to this subpart.

(a) Ships must be provided with:

(1) A VHF radio installation capable of transmitting and receiving:

(i) DSC on the frequency 156.525 MHz (channel 70), and it must be able to initiate the transmission of distress alerts on channel 70 from the position from which the ship is normally navigated; and

(ii) Radiotelephony on the frequencies 156.300 MHz (channel 6), 156.650 MHz (channel 13), and 156.800 MHz (channel 16);

(2) A dedicated, non-scanning radio installation capable of maintaining a continuous DSC watch on VHF channel 70 which may be separate from, or combined with, that required by paragraph (a)(1)(i) of this section;

(3) A radar transponder capable of operating in the 9 GHz band, which must be stowed so that it is easily utilized (this transponder may be one of those required by § 80.1095(b) for a survival craft);

(4) A receiver capable of receiving international NAVTEX service broadcasts;

(5) If the ship is engaged on voyages in any area of INMARSAT coverage in which an international NAVTEX service is not provided, a radio facility for reception of maritime safety information by the INMARSAT enhanced group calling system, *i.e.*, SafetyNet, (this requirement does not apply to ships engaged exclusively on voyages in areas where an HF direct-printing telegraphy maritime safety information service, as identified by the IMO GMDSS Master Plan Publication, is provided and the ship is fitted with equipment capable of receiving such service); and

(6) A satellite emergency position-indicating radio beacon (satellite EPIRB) which must be:

(i) Capable of transmitting a distress alert through the polar orbiting satellite service operating in the 406 MHz band (406 MHz EPIRB); and

(ii) Installed in an easily accessible position, ready to be manually released and capable of being carried by one person into a survival craft, capable of floating free if the ship sinks and of being automatically activated when afloat, and capable of being activated manually.

(b) Until February 1, 1999, all ships must be equipped with a radio installation consisting of a radiotelephone distress frequency 2182 kHz watch receiver prescribed by § 80.807. This requirement does not apply to ships constructed on or after February 1, 1997.

(c) Until February 1, 1999, all ships, except ships engaged on voyages in sea area A1 only, must be equipped with a device for generating the 2182 kHz radiotelephone alarm signal as prescribed by § 80.807. This requirement does not apply to ships constructed on or after February 1, 1997.

(d) Ships must carry the most recent edition of the IMO publication entitled *GMDSS Master Plan of Shore-Based Facilities*. Notice of new editions will be published in the Federal Register and copies may be obtained from: International Maritime Organization, 4 Albert Embankment, London SE1 7SR, United Kingdom.

§ 80.1087 Ship radio equipment - Sea area A1

This section contains the additional equipment requirements for ships that remain within sea area A1 at all times.

(a) In addition to meeting the requirements of 80.1085, ships engaged on voyages exclusively in sea area A1 must be provided with a radio installation capable of initiating the transmission of ship-to-shore distress alerts from the position from which the ship is normally navigated, operating either:

(1) On VHF using DSC; or

(2) Through the polar orbiting satellite service on 406 MHz (this requirement may be fulfilled by the 406 MHz EPIRB, required by § 80.1085(a)(6), either by installing the 406 MHz EPIRB close to, or by allowing remote activation from, the position from which the ship is normally navigated); or

(3) On MF using DSC if the ship is engaged on voyages within coverage of MF coast stations equipped with DSC; or

(4) On HF using DSC; or

(5) Through the INMARSAT geostationary satellite service if within INMARSAT coverage. This requirement may be fulfilled by an INMARSAT ship earth station capable of two way communication.

(b) The VHF radio installation, required by § 80.1085(a)(1), must also be capable of transmitting and receiving general radiocommunications using radiotelephony.

§ 80.1089 Ship radio equipment - Sea areas A1 and A2

This section contains the additional equipment requirements for ships that remain within sea areas A1 or A2 at all times. Ships fitting in accordance with this section satisfy the sea area A1 requirements denoted in § 80.1087.

(a) In addition to meeting the requirements of § 80.1085 of this part, ships engaged on voyages beyond sea area A1, but remaining within sea area A2, must be provided with:

(1) An MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:

(i) 2187.5 kHz using DSC; and

(ii) 2182 kHz using radiotelephony;

(2) A radio installation capable of maintaining a continuous DSC watch on the frequency 2187.5 kHz which may be separate from or combined with, that required by paragraph (a)(1)(i) of this section; and

(3) Means of initiating the transmission of ship-to-shore distress alerts by a radio service other than MF operating either

(i) Through the polar orbiting satellite service on 406 MHz (this requirement may be fulfilled by the 406 MHz EPIRB required by § 80.1085(a)(6), either by installing the 406 MHz EPIRB close to, or by allowing remote activation from, the position from which the ship is normally navigated); or

(ii) On HF using DSC; or

(iii) Through the INMARSAT geostationary satellite service if within INMARSAT coverage; this requirement may be fulfilled by an INMARSAT ship earth station.

(b) It must be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs (a)(1) and (a)(3) of this section from the position from which the ship is normally navigated.

(c) Ships subject to this section must be capable of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by either:

(1) A radio installation operating on working frequencies in the bands between 1605-4000 kHz or between 4000-27500 kHz (this requirement may be fulfilled by the addition of this capability to the equipment required by paragraph (a)(1) of this section); or

(2) An INMARSAT ship earth station.

§ 80.1091 Ship radio equipment - Sea areas A1, A2, and A3

This section contains the additional equipment requirements for ships that remain within sea areas A1, A2, or A3 at all times. Ships fitting in accordance with this section satisfy the requirements denoted in §§ 80.1087 and 80.1089 for sea areas A1 and A2. Ships fitting in accordance to this section have the option to comply with either the requirements of paragraph (a) or (b) of this section.

(a) In addition to meeting the requirements of § 80.1085, ships subject to this section must be provided with:

(1) An INMARSAT ship earth station capable of:

(i) Transmitting and receiving distress and safety communications using direct-printing telegraphy;

(ii) Initiating and receiving distress priority calls;

(iii) Maintaining watch for shore-to-ship distress alert, including those directed to specifically defined geographical areas;

(iv) Transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy; and

(2) An MF radio installation capable of transmitting and receiving, for distress and safety purposes, on the frequencies:

(i) 2187.5 kHz using DSC; and

(ii) 2182 kHz using radiotelephony; and

(3) A radio installation capable of maintaining a continuous DSC watch on the frequency 2187.5 kHz which may be separate from or combined with that required by paragraph (a)(2)(i) of this section; and

(4) Means of initiating the transmission of ship-to-shore distress alerts by a radio service operating either:

(i) Through the polar orbiting satellite service on 406 MHz (this requirement may be fulfilled by the 406 MHz EPIRB required by § 80.1085(a)(6), either by installing the 406 MHz EPIRB close to, or by allowing remote activation from, the position from which the ship is normally navigated); or

(ii) On HF using DSC; or

(iii) Through the INMARSAT geostationary satellite service, by an additional ship earth station.

(b) In addition to meeting the requirements of § 80.1085, ships subject to this section must be provided with:

(1) An MF/HF radio installation capable of transmitting and receiving on all distress and safety frequencies in the bands between 1605-27500 kHz using DSC, radiotelephony, and narrow-band direct-printing telegraphy; and

(2) Equipment capable of maintaining DSC watch on 2187.5 kHz, 8414.5 kHz and on at least one of the distress and safety DSC frequencies 4207.5 kHz, 6312 kHz, 12577 kHz, or 16804.5 kHz although it must be possible to select any of these DSC distress and safety frequencies at any time (this equipment may be separate from, or combined with, the equipment required by paragraph (b)(1) of this section); and

(3) Means of initiating the transmission of ship-to-shore distress alerts by a radiocommunication service other than HF operating either:

(i) Through the polar orbiting satellite service on 406 MHz (this requirement may be fulfilled by the 406 MHz EPIRB required by § 80.1085(a)(6), either by installing the 406 MHz EPIRB close to, or by allowing remote activation from, the position from which the ship is normally navigated); or

(ii) Through the INMARSAT geostationary satellite service (this requirement may be fulfilled by an INMARSAT ship earth station).

(4) In addition, ships must be capable of transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by an MF/HF radio installation operating on working frequencies in the bands between 1605-4000 kHz and between 4000-27500 kHz (this requirement may be fulfilled by the addition of this capability to the equipment required by paragraph (b)(1) of this section).

(c) It must be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs (a)(1), (a)(2), (a)(4), (b)(1), and (b)(3) of this section from the position from which the ship is normally navigated.

§ 80.1093 Ship radio equipment - Sea areas A1, A2, A3 and A4

This section contains the additional equipment requirements for ships that sail in all sea areas, *i.e.*, sea areas A1, A2, A3, and A4. Ships fitting in accordance with this section satisfy the requirements denoted in §§ 80.1087, 80.1089, and 80.1091 of this part for sea areas A1, A2, and A3.

(a) In addition to meeting the requirements of § 80.1085, ships engaged on voyages in all sea areas must be provided with the radio installations and equipment required by § 80.1091(b), except that the equipment required by § 80.1091(b)(3)(ii) cannot be accepted as an alternative to that required by regulation § 80.1091(b)(3)(i), which must always be provided.

(b) Ships engaged on voyages in all sea areas also must comply with the requirements of § 80.1091(c).

§ 80.1095 Survival craft equipment

(a) At least three two-way VHF radiotelephone apparatus must be provided on every passenger ship and on every cargo ship of 500 tons gross tonnage and upwards. At least two two-way VHF radiotelephone apparatus must be provided on every cargo ship of between 300-500 tons gross tonnage. Portable two-way VHF radiotelephones must be stowed in such locations that they can be rapidly placed in any survival craft other than liferafts required by Regulation III/26.1.4 of the SOLAS Convention. Alternatively, survival craft may be fitted with a fixed two-way VHF radiotelephone installation. Two-way VHF radiotelephone apparatus, portable or fixed, must conform to performance standards as specified in § 80.1101. Two-way VHF radiotelephone apparatus provided on board ships prior to February 1, 1992, and not complying fully with the performance standards specified in § 80.1101, may be used until February 1, 1999, provided it is compatible with approved two-way VHF radiotelephone apparatus.

(b) At least one radar transponder must be carried on each side of every passenger ship and every cargo ship of 500 tons gross tonnage and upwards. At least one radar transponder must be carried on every cargo ship of 300 tons gross tonnage and upwards but less than 500 tons gross tonnage. Such radar transponders must conform to performance standards as specified in § 80.1101. The radar transponders must be stowed in such locations that they can be rapidly placed in any survival craft other than liferafts required on cargo ships in forward and aft areas (see Regulation III/26.1.4 of the SOLAS Convention). Alternatively, one radar transponder must be stowed in each survival craft other than those required by Regulation III/26.1.4 of the SOLAS Convention. One of these radar transponders may be the radar transponder required by § 80.1085(a)(3).

(c) Survival craft equipment must be tested at intervals not to exceed twelve months. For batteries used for survival craft equipment, the month and year of its manufacture must be permanently marked on the battery. Also, the month and year upon which 50 percent of its useful life will expire must be permanently marked on both the battery and the outside of the transmitter. Batteries must be replaced if 50 percent of their useful life has expired or if the transmitter has been used in an emergency situation.

§ 80.1099 Ship sources of energy

(a) There must be available at all times, while the ship is at sea, a supply of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve sources of energy for the radio installations.

(b) A reserve sources of energy to supply radio installations must be provided on every ship for the purpose of conducting distress and safety radiocommunications, in the event of failure of the ship's main and emergency sources of electrical power. The reserve sources of energy must be capable of simultaneously operating the VHF radio installation required by § 80.1085(a)(1) and, as appropriate for the sea area or sea areas for which the ship is equipped, either the MF radio installation required by § 80.1089(a)(1), the MF/HF radio installation required by §§ 80.1091(a)(2)(i) or 80.1093(a), or the INMARSAT ship earth station required by § 80.1091(a)(1) and any of the additional loads mentioned in paragraphs (d), (e), and (h) of this section for a period of at least:

(1) One hour, on ships constructed on or after February 1, 1995;

(2) One hour, on ships constructed before February 1, 1995, if the emergency source of electrical power complies fully with all relevant requirements of SOLAS, Chapter II-1, Regulation 42 or 43 (as amended); or

(3) Six hours, on ships constructed before February 1, 1995, and on cargo ships of less than 500 tons gross tonnage, if the emergency source of electrical power is not provided or does not comply fully with all relevant requirements of SOLAS, Chapter II-1, Regulation 42 or 43 (as amended).

(c) The reserve sources of energy need not supply independent HF and MF radio installations at the same time. The reserve sources of energy must be independent of the propelling power of the ship and the ship's electrical system.

(d) Where, in addition to the VHF radio installation, two or more of the other radio installations, referred to in paragraph (b) of this section, can be connected to the reserve sources of energy, they must be capable of simultaneously supplying, for one hour, as specified in paragraph (b) of this section, the VHF radio installation and:

(1) All other radio installations which can be connected to the reserve sources of energy at the same time; or

(2) Whichever of the other radio installations will consume the most power, if only one of the other radio installations can be connected to the reserve sources of energy at the same time as the VHF radio installation.

(e) The reserve sources of energy may be used to supply the electrical lighting required by § 80.1083(b)(4).

(f) Where a reserve source of energy consists of a rechargeable accumulator battery or batteries:

(1) A means of automatically charging such batteries must be provided which must be capable of recharging them to minimum capacity requirements within 10 hours; and

(2) The capacity of the battery or batteries must be checked, using an appropriate method, at intervals not exceeding 12 months. These checks must be performed when the vessel is not at sea.

(g) The accumulator batteries which provide a reserve source of energy must be installed to ensure: the highest degree of service, a reasonable lifetime, reasonable safety; that the battery temperatures remain within the manufacturer's specifications whether under charge or idle; and that when fully charged, the batteries will provide at least the minimum required hours of operation under all weather conditions.

(h) If an uninterrupted input of information from the ship's navigational or other equipment to a radio installation required by this subpart is needed to ensure its proper performance, means must be provided to ensure the continuous supply of such information in the event of failure of the ship's main or emergency source of electrical power.

(i) An uninterruptible power supply or other means of ensuring a continuous supply of electrical power, within equipment tolerances, shall be provided to all GMDSS equipment that could be affected by normal variations and interruptions of ship's power.

§ 80.1101 Performance standards

(a) All equipment specified in this subpart must meet the general requirements for shipboard equipment as listed below which are incorporated by reference.

(1) IMO Resolution A.694(17), "General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System and for Electronic Navigational Aids."

(2) CCITT Recommendation F.161, "Arrangement of Figures, Letters and Symbols on Telephones and Other Devices that Can Be Used for Gaining Access to a Telephone Network."

(3) CCITT Recommendation Q.11, "Numbering Plan of the ISDN Era."

(4) IEC Publication 92-101, "Electrical Installations in Ships." IEC Publication 533, "Electromagnetic Compatibility of Electrical and Electronic Installations in Ships," English version.

(5) IEC Publication 945, "Marine Navigational Equipment," English version.

(6) ISO Standard 3791, "Office Machines and Data Processing Equipment - Keyboard Layouts for Numeric Applications," English version.

(b) The equipment specified in this subpart must also conform to the appropriate performance standards listed below which are incorporated by reference.

(1)NAVTEX receivers:

(i) IMO Resolution A.525(13), "Performance Standards for Narrow-band Direct Printing Telegraph Equipment for the Reception of Navigational and Meteorological Warnings and Urgent Information to Ships."

(ii) CCIR Recommendation 540-2, "Operational and Technical Characteristics for an Automated Direct-printing Telegraph System for Promulgation of Navigational and Meteorological Warnings and Urgent Information to Ships."

(2)*VHF radio equipment:*

(i) IMO Resolution A.609(15), "Performance Standards for Shipborne VHF Radio Installations Capable of Voice Communication and Digital Selective Calling."

(ii) CCIR Recommendation 493-4, "Digital Selective-calling System for use in the Maritime Mobile Service."

(3)*MF radio equipment:*

(i) IMO Resolution A.610(15), "Performance Standards for Shipborne MF Radio Installations Capable of Voice Communication and Digital Selective Calling."

(ii) CCIR Recommendation 493-4, "Digital Selective-calling System for use in the Maritime Mobile Service."

(4)*MF/HF radio equipment:*

(i) IMO Resolution A.613(15), "Performance Standards for Shipborne MF/HF Radio Installations capable of Voice Communication, Narrow-band Direct Printing and Digital Selective Calling."

(ii) CCIR Recommendations 493-4, "Digital Selective-calling System for use in the Maritime Mobile Service."

(iii) CCIR Recommendation 625-1, "Direct-printing Telegraph Equipment Employing Automatic Identification in the Maritime Mobile Service." Equipment may conform to CCIR Recommendation 476-4, "Direct-Printing Telegraph Equipment in the Maritime Mobile Service," in lieu of CCIR Recommendation 625-1, where such equipment was installed on ships prior to February 1, 1993.

(5)*406 MHz EPIRBs:*

(i) IMO Resolution A.611(15), "Performance Standards for Float-free Satellite Emergency Position-indicating Radio Beacons Operating on 406 MHz."

(ii) IMO Resolution A.662(16), "Performance Standards for Float-free Release and Activation Arrangements for Emergency Radio Equipment."

(iii) CCIR Recommendation 633-1, "Transmission Characteristics of a Satellite Emergency Position-indicating Radiobeacon (Satellite EPIRB) System Operating Through a Low Polar-orbiting Satellite System in the 406 MHz Band."

(iv) The 406 MHz EPIRBs must also comply with § 80.1061.

(6)*9 GHz radar transponders:*

(i) IMO Resolution A.604(15), "Performance Standards for Survival Craft Radar Transponders for Use in Search and Rescue Operations."

(ii) CCIR Recommendation 628-1, "Technical Characteristics for Search and Rescue Radar Transponders."

(7) *Two-way VHF radiotelephone:*

(i) IMO Resolution A. 605(15), "Performance Standards for Survival Craft Twoway VHF Radiotelephone Apparatus."

(8) *INMARSAT-A SES:*

(i) IMO Resolution A.608(15), "Performance Standards for Ship Earth Stations Capable of Two-way Communications."

(ii) CCIR Recommendation 493-4, "Digital Selective-calling System for use in the Maritime Mobile Service."

(9) *INMARSAT-C SES:*

(i) IMO Resolution A.663(16), "Performance Standards for INMARSAT Standard-C Ship Earth Stations Capable of Transmitting and Receiving Direct-printing Communications."

(ii) CCIR Recommendation 493-4, "Digital Selective-calling System for use in the MAritime Mobile Service."

(10) *INMARSAT EGC:*

(i) IMO Resolution A.664(16), "Performance Standards for Enhanced Group Call Equipment."

(c) The above-referenced documents have been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Identification data and place to purchase for each of the above-referenced documents are listed as follows:

(1) Copies of IMO Resolutions, the 1974 SOLAS Convention, and 1983 and 1988 SOLAS Convention amendments can be purchased from Publications, International Maritime Organization, 4 Albert Embankment, London SE1 7SR, United Kingdom.

(i) IMO Resolution A.525(13) is contained in the *Resolutions and Other Decisions of the Assembly of the International Maritime Organization*, 13th Session, 1983, (IMO, London, 1984), Sales Number 073 84.07.E.

(ii) IMO Resolutions A.604(15), A.605(15), A.608(15), A.609(15), A.610(15), A.611(15) and A.613(15) are contained in the *Resolutions and Other Decisions of the Assembly of the International Maritime Organization*, 15th Session, 1987, (IMO, London, 1988), Sales Number 130 88.03.E.

(iii) IMO Resolutions A.663(16) and A.664(16) are contained in the *Resolutions and Other Decisions of the Assembly of the International Maritime Organization*, 16th Session, 1989, (IMO, London, 1990), Sales Number 136 90.04.E.

(iv) IMO Resolution A.694(17) can be ordered from IMO by requesting "A.694 from the seventeenth session" until it is published in the *Resolutions and Other Decisions of the Assembly of the International Maritime Organization*, 17th Session, 1991.

(2) CCIR Recommendations, ITU Radio Regulations, and CCITT publications can be purchased from the International Telecommunications Union (ITU), Place des Nations, CH-1211 Geneva 20, Switzerland.

(i) All CCIR Recommendations referenced in this Section are contained in *Recommendations of the CCIR, 1990, Volume VIII*, (ITU, Geneva, 1990), 92-61-0424104.

(ii) CCITT Recommendation E.161 is contained in *CCITT Volume II - Telephone and Network ISDN - Operation, Numbering, Routing and Mobile Service*, (ITU, Geneva, 1989), ISBN 92-61-03261-3.

(iii) CCITT Recommendation Q.11 is contained in *CCITT Blue Book Volume VI, General Recommendation on Telephone Switching and Signalling*, (ITU, Geneva, 1989), ISBN 92-61-03451-9.

(3) IEC Publications can be purchased from the International Electrotechnical Commission, 3 Rue de Varembe, CH-1211 Geneva 20, Switzerland, or from the American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036, telephone (212) 642-4900.

(4) ISO Standards can be purchased from the International Organization for Standardization, 1 Rue de Varembe, CH-1211 Geneva 20, Switzerland, or from the American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036, telephone (212) 642-4900.

(5) Copies of the publications listed in this Section that are incorporated by reference may be inspected at the Federal Communications Commission, 1919 M Street, N.W., Dockets Branch (Room 239), Washington, D.C. or at the Office of the Federal Register, 1100 L Street, N.W., Room 8401, Washington D.C.

§ 80.1103 Equipment authorization

(a) All equipment specified § 80.1101(b) must be type accepted in accordance with 47 C.F.R. Part 2, except equipment used in the INMARSAT space segment. Equipment intended for use in the INMARSAT space segment must be type-approved by INMARSAT and notified in accordance with 47 C.F.R. Part 2. The technical parameters of the equipment must conform to the performance standards as specified in § 80.1101.

(b) Applicants for type acceptance must submit with their applications measurement data sufficiently complete to ensure compliance with the technical parameters. The application must include the items listed in 47 C.F.R. § 2.983. Additional measurement data or information may be requested depending upon the equipment. For items not listed in § 2.983 of this chapter, the applicant must attest that the equipment complies with performance standards as specified in § 80.1101 and, where applicable, that measurements have been made that demonstrate the necessary compliance. Submission of representative data demonstrating compliance is not required unless requested by the Commission.

(c) Applicants for notification must attest that the equipment complies with performance standards as specified in § 80.1101 and, where applicable, that measurements have been made that demonstrate the necessary compliance. Submission of representative data demonstrating compliance is not required unless requested by the Commission. An application must include the items listed in § 2.975 of this chapter and a copy of the INMARSAT type approval certificate indicating that equipment meets GMDSS standards and includes all peripheral equipment associated with the specific unit under review.

(d) Submission of a sample unit is not required unless specifically requested by the Commission.

(e) In addition to the requirements in Part 2 of this chapter, equipment specified in § 80.1101(b) shall be labelled as follows: "This device complies with the GMDSS provisions of Part 80 of the FCC Rules."

§ 80.1105 Maintenance requirements

(a) Equipment must be so designed that the main units can be replaced readily, without elaborate recalibration or readjustment. Where applicable, equipment must be constructed and installed so that it is readily accessible for inspection and on-board maintenance purposes. Adequate information must be provided to enable the equipment to be properly operated and maintained (see IMO Resolution A.569(14)).

(b) Radio equipment required by this subpart must be maintained to provide the availability of the functional requirements specified in § 80.1081 and to meet the performance standards specified in § 80.1101.

(c) On ships engaged on voyages in sea areas A1 and A2, the availability must be ensured by duplication of equipment, shore-based maintenance, or at-sea electronic maintenance capability, or a combination of these.

(d) On ships engaged on voyages in sea areas A3 and A4, the availability must be ensured by using a combination of at least two of the following methods: duplication of equipment, shore-based maintenance, or at-sea electronic maintenance capability.

(e) Irrespective of the maintenance methods used, a ship must not depart from any port unless and until the ship is capable of performing all distress and safety functions as specified in § 80.1081.

(f) Irrespective of the maintenance methods used, all manufacturers' instruction manuals and maintenance manuals for each piece of equipment required and installed must be available on-board ship. Adequate tools, spare parts, and test equipment appropriate to the methods used by the ship as recommended by the manufacturer should be provided. The manuals, tools, spare parts, and test equipment, as applicable, should be readily accessible.

(g) If the duplication of equipment maintenance method is used, the following radio installations, in addition to other equipment requirements specified in this subpart, must be available on-board ships for their sea areas as applicable. Equipment carried in accordance with this paragraph must comply with §§ 80.1101 and 80.1103. Additionally, each radio installation must be connected to a separate antenna and be installed and be ready for immediate operation.

(1) Ships, equipped in accordance with § 80.1087 for sea area A1, must carry a VHF radio installation complying with the requirements of § 80.1085(a)(1).

(2) Ships, equipped in accordance with § 80.1089 for sea areas A1 and A2, must carry a VHF radio installation complying with the requirement of § 80.1085(a)(1) and an MF radio installation complying with the requirements of § 80.1089(a)(1) and being able to fully comply with watch requirements as specified in § 80.1123(a)(2). The MF radio installation installed for duplication must also comply with the requirements § 80.1089(c).

(3) Ships, equipped in accordance with § 80.1091 for sea areas A1, A2, and A3, must carry a VHF radio installation complying with the requirement of § 80.1085(a)(1) and either an MF/HF radio installation complying with the requirements of § 80.1091(b)(1) and being able to fully comply with watch requirements as specified in § 80.1123(a)(2) or an INMARSAT ship earth station complying with the requirements of § 80.1091(a)(1). The MF/HF radio installation or the INMARSAT ship earth station installed for duplication must also comply with the requirements § 80.1091(c).

(4) Ships, equipped in accordance with § 80.1093 for sea areas A1, A2, A3, and A4, must carry a VHF radio installation complying with the requirement of § 80.1085(a)(1) and an MF/HF radio installation complying with the requirements of § 80.1091(b)(1) and being able to fully comply with watch requirements as specified in § 80.1123(a)(2). The MF/HF radio installation installed for duplication must also comply with the requirements § 80.1091(c).

(h) The radio installations specified in paragraph (g) of this section (referred as "duplicated equipment"), in addition to the appropriate radio equipment specified in § 80.1099 (referred as "basic equipment"), must be connected to the reserve sources of energy required by § 80.1099. The capacity of the reserve sources of energy should be sufficient to operate the particular installation (*i.e.*, the basic equipment or the duplicated equipment) with the highest power consumption, for the appropriate period specified in § 80.1099. However, the arrangement for the reserve sources of energy must be such that a single fault in this arrangement cannot affect both the basic and the duplicated equipment.

(i) If the shore-based maintenance method is used, the following requirements apply.

(1) Maintenance services must be completed and performance verified and noted in the ship's record before departure from the first port of call entered after any failure occurs.

(2) Each GMDSS equipment must be tested and performance verified and the results noted in the ship's record before departure from every port. To accomplish this, each ship shall carry a performance checkoff sheet listing each GMDSS equipment carried on a mandatory basis.

(j) If the at-sea maintenance method is used, the following requirements apply.

(1) Adequate additional technical documentation, tools, test equipment, and spare parts must be carried on-board ship to enable a qualified maintainer as specified in § 80.1074 to perform tests and localize and repair faults in the radio equipment.

(2) Only persons that comply with the requirements of § 80.1074 may perform at-sea maintenance on radio installations required by this subpart.

OPERATING PROCEDURES FOR DISTRESS AND SAFETY COMMUNICATIONS

§ 80.1109 Distress, urgency, and safety communications

(a) Distress traffic consists of all messages relating to the immediate assistance required by the ship in distress, including search and rescue communications and on-scene communications. Distress traffic must as far as possible be on the frequencies contained in § 80.1077.

(b) Urgency and safety communications include: navigational and meteorological warnings and urgent information; ship-to-ship safety navigation communications; ship reporting communications; support communications for search and rescue operations; other urgency and safety messages and communications relating to the navigation, movements and needs of ships and weather observation messages destined for an official meteorological service.

(c) Intership navigation safety communications are those VHF radiotelephone communications conducted between ships for the purpose of contributing to the safe movement of ships. The frequency 156.650 MHz is used for intership navigation safety communications (see § 80.1077).

§ 80.1111 Distress alerting

(a) The transmission of a distress alert indicates that a mobile unit or person is in distress and requires immediate assistance. The distress alert is a digital selective call using a distress call format in bands used for terrestrial radiocommunication or a distress message format, which is relayed through space stations.

(b) The distress alert must be sent through a satellite either with absolute priority in general communication channels or on exclusive distress and safety frequencies or, alternatively, on the distress and safety frequencies in the MF, HF, and VHF bands using digital selective calling.

(c) The distress alert must be sent only on the authority of the person responsible for the ship, aircraft or other vehicle carrying the mobile station or the mobile earth station.

(d) All stations which receive a distress alert transmitted by digital selective calling must immediately cease any transmission capable of interfering with distress traffic and must continue watch until the call has been acknowledged.

§ 80.1113 Transmission of a distress alert

(a) The distress alert must identify the station in distress and its position. The distress alert may also contain information regarding the nature of the distress, the type of assistance required, the course and speed of the mobile unit, the time that this information was recorded and any other information which might facilitate rescue.

(b) The format of distress calls and distress messages must be in accordance with CCIR Recommendation 493 as specified in § 80.1101.

(c) Ship-to-shore distress alerts are used to alert Rescue Coordination Centers via coast stations or coast earth stations that a ship is in distress. These alerts are based on the use of transmissions via satellites (from a ship earth station or a satellite EPIRB) and terrestrial services (from ship stations and EPIRBs).

(d) Ship-to-ship distress alerts are used to alert other ships in the vicinity of the ship in distress and are based on the use of digital selective calling in the VHF, MF, and HF bands.

(e) Shore-to-ship distress alert relays are used by a station or Rescue Coordination Center to relay information about a ship in distress to, as appropriate, all ships, a selected group of ships, or a specific ship by satellite and/or terrestrial means. The distress alert relay must contain the identification of the mobile unit in distress, its position and all other information which might facilitate rescue.

§ 80.1115 Transmission of a distress alert by a station not itself in distress

(a) A station in the mobile or mobile-satellite service which learns that a mobile unit is in distress must initiate and transmit a distress alert relay in any of the following cases:

(1) When the mobile unit in distress is not itself in a position to transmit the distress alert; or

(2) When the master or person responsible for the mobile unit not in distress or the person responsible for the land station determines that further help is necessary.

(b) A station transmitting a distress alert relay in accordance with paragraph (a) of this section or § 80.1121(c) must indicate that it is not itself in distress.

§ 80.1117 Procedure for receipt and acknowledgement of distress alerts

(a) Acknowledgement by digital selective calling of receipt of a distress alert in the terrestrial services must comply with CCIR Recommendation 541, which is incorporated by reference.

(b) Acknowledgement through a satellite of receipt of a distress alert from a ship earth station must be sent immediately (see § 80.1119).

(c) Acknowledgement by radiotelephony of receipt of a distress alert from a ship station or a ship earth station must be given in the following form:

(1) The distress signal MAYDAY;

(2) The call sign or other identification of the station sending the distress message, spoken three times;

(3) The words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);

(4) The call sign or other identification of the station acknowledging receipt, spoken three times;

(5) The word RECEIVED (or RRR spoken as ROMEO ROMEO ROMEO in case of language difficulties);

(6) The distress signal MAYDAY.

(d) The acknowledgement by direct-printing telegraphy of receipt of a distress alert from a ship station must be given in the following form:

(1) The distress signal MAYDAY;

(2) The call sign or other identification of the station sending the distress alert;

(3) The word DE;

(4) The call sign or other identification of the station acknowledging receipt of the distress alert;

(5) The signal RRR;

(6) The distress signal MAYDAY.

(e) The acknowledgement by direct-printing telegraphy of receipt of a distress alert from a ship earth station must be given by the coast earth station receiving the distress alert by retransmitting the ship station identity of the ship transmitting the distress alert.

§ 80.1119 Receipt and acknowledgement of distress alerts by coast stations and coast earth stations

(a) Coast stations that receive a distress alert should defer acknowledgement for a short interval so that receipt may be acknowledged by a Rescue Coordination Center. Where an acknowledgement is not forthcoming within 3 minutes, the coast station in receipt of distress alerts must ensure that they are routed to a Rescue Coordination Center as soon as possible. Coast stations must provide assistance for distress communications when requested to do so by the U.S. Coast Guard. (This subpart does not specify any radio watches for coast stations.)

(b) Coast earth stations in receipt of distress alerts must ensure that they are routed as soon as possible to a Rescue Coordination Center. Coast earth stations must relay, as soon as possible, an acknowledgement of a distress alert from a Rescue Coordination Center.

(c) Certain messages must be carried without charge, regardless of the means by which they are transmitted:

(1) Distress alert messages;

(2) Search and rescue coordination messages;

(3) Medical assistance messages where an imminent danger to life is present, or

(4) Urgent meteorological or navigational danger messages passed in the ship-to-shore direction.

§ 80.1121 Receipt and acknowledgement of distress alerts by ship stations and ship earth stations

(a) Ship or ship earth stations that receive a distress alert must, as soon as possible, inform the master or person responsible for the ship of the contents of the distress alert.

(b) In areas where reliable communications with one or more coast stations are practicable, ship stations in receipt of a distress alert should defer acknowledgement for a short interval so that receipt may be acknowledged by a coast station.

(c) Ship stations operating in areas where reliable communications with a coast station are not practicable that receive a distress alert from a ship station which is, beyond doubt, in their vicinity, must, as soon as possible and if appropriately equipped, acknowledge receipt and inform a Rescue Coordination Center through a coast station or coast earth station (see § 80.1115(a)(2)). However, a ship station receiving an HF distress alert must not acknowledge it but must observe the requirements of § 80.1123, and must, if the alert is not acknowledged by a coast station within 3 minutes, relay the distress alert.

(d) A ship station acknowledging receipt of a distress alert in accordance with paragraphs (b) or (c) of this section should:

(1) Acknowledge receipt of the alert by using radiotelephony on the distress and safety traffic frequency in the band used for the alert;

(2) If acknowledgement by radiotelephony of the distress alert received on the MF or VHF distress alerting frequency is unsuccessful, acknowledge receipt of the distress alert by responding with a digital selective call on the appropriate frequency.

(e) A ship station in receipt of a shore-to-ship distress alert relay (see § 80.1113(e)) should establish communication as directed and render such assistance as required and appropriate.

§ 80.1123 Watch requirements for ship stations

(a) While at sea, all ships must maintain a continuous watch:

(1) On VHF DSC channel 70, if the ship is fitted with a VHF radio installation in accordance with § 80.1085(a)(2);

(2) On the distress and safety DSC frequency 2187.5 kHz, if the ship is fitted with an MF radio installation in accordance with §§ 80.1089(a)(2) or 80.1091(a)(3);

(3) On the distress and safety DSC frequencies 2187.5 kHz and 8414.5 kHz also on at least one of the distress and safety DSC frequencies 4207.5 kHz, 6312 kHz, 12577 kHz, or 16804.5 kHz appropriate to the time of day and the geographical position of the ship, if the ship is fitted with an MF/HF radio installation in accordance with §§ 80.1091(a)(2)(ii) or 80.1093(a) (this watch may be kept by means of a scanning receiver limited to six distress and safety DSC frequencies); and

(4) For satellite shore-to-ship distress alert, if the ship is fitted with an INMARSAT ship earth station in accordance with § 80.1091(a)(1).

(b) While at sea, all ships must maintain radio watches for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating.

(c) Until February 1, 1999, every ship while at sea must maintain, when practicable, a continuous listening watch on VHF Channel 16. This watch must be kept at the position from which the ship is normally navigated or at a position which is continuously manned.

(d) Until February 1, 1999, every ship required to carry a radiotelephone watch receiver must maintain, while at sea, a continuous watch on the radiotelephone distress frequency 2182 kHz. This watch must be kept at the position from which the ship is normally navigated or at a position which is continuously manned.

(e) On receipt of a distress alert transmitted by use of digital selective calling techniques, ship stations must set watch on the radiotelephone distress and safety traffic frequency associated with the distress and safety calling frequency on which the distress alert was received.

(f) Ship stations with narrow-band direct printing equipment must set watch on the narrow-band direct-printing frequency associated with the distress alert signal if it indicates that narrow-band direct-printing is to be used for subsequent distress communications. If practicable, they should additionally set watch on the radiotelephone frequency associated with the distress alert frequency.

§ 80.1125 Search and rescue coordinating communications

(a) The distress signal consists of the word MAYDAY, pronounced in radiotelephony as the French expression "m'aider". For distress traffic by radiotelephony, when establishing communications, calls must be prefixed by the distress signal MAYDAY.

(b) Error correction techniques, in accordance with CCIR Recommendation 625 as specified in § 80.1101, must be used for distress traffic by direct-printing telegraphy. All messages must be preceded by at least one carriage return, a line feed signal, a letter shift signal and the distress signal MAYDAY.

(c) Distress communications by direct-printing telegraphy should be in the ARQ mode when ships are communicating directly to the Coast Guard or other coast stations on channels which they normally guard. Other distress communications, including those on simplex channels provided for that purpose, should be in the broadcast forward error correction mode. The ARQ mode may subsequently be used when it is advantageous to do so.

(d) The Rescue Coordination Center responsible for controlling a search and rescue operation will also coordinate the distress traffic relating to the incident or may appoint another station to do so.

(e) The Rescue Coordination Center coordinating distress traffic, the unit coordinating search and rescue operations, or the coast station involved may impose silence on stations which interfere with that traffic. This instruction may be addressed to all stations or to one station only, according to circumstances. In either case, the following will be used:

(1) In radiotelephony, the signal SEELONCE MAYDAY, pronounced as the French expression "silence, m'aider";

(2) In narrow-band direct-printing telegraphy normally using forward-error correcting mode, the signal SILENCE MAYDAY. However, the ARQ mode may be used when it is advantageous to do so.

(f) Until they receive the message indicating that normal working may be resumed (see paragraph (h) of this section), all stations which are aware of the distress traffic, and which are not taking part in it, and which are not in distress, are forbidden to transmit on the frequencies in which the distress traffic is taking place.

(g) Stations following distress traffic that are able to continue normal service may do so when the distress traffic is well established and on condition that it observes the provisions of paragraph (f) of this section and that it does not interfere with distress traffic.

(h) When distress traffic has ceased on frequencies which have been used for distress traffic, the Rescue Coordination Center controlling a search and rescue operation must initiate a message for transmission on these frequencies indicating that distress traffic has finished.

(i) In radiotelephony, the message referred to in paragraph (h) of this section consists of:

(1) The distress signal MAYDAY;

(2) The call "Hello all stations" or CQ (spoken as CHARLIE QUEBEC) spoken three times;

(3) The words THIS IS (or DE spoken as DELTA ECHO in the case of language difficulties);

(4) The call sign or other identification of the station sending the message;

(5) The time when the distress situation has ceased;

(6) The name and call sign of the mobile station which was in distress;

(7) The words SEELONCE FEENEE pronounced as the French words "silence fini".

(j) In direct-printing telegraphy, the message referred to in paragraph (h) of this section consists of:

(1) The distress signal MAYDAY;

(2) The call CQ;

(3) The word DE;

(4) The call sign or other identification of the station sending the message;

(5) The time when the distress situation has ceased;

(6) The name and call sign of the mobile station which was in distress; and

(7) The words SILENCE FINI.

§ 80.1127 On-scene communications

(a) On-scene communications are those between the mobile unit in distress and assisting mobile units, and between the mobile units and the unit coordinating search and rescue operations.

(b) Control of on-scene communications is the responsibility of the unit coordinating search and rescue operations. Simplex communications must be used so that all on-scene mobile stations may share relevant information concerning the distress incident. If direct-printing telegraphy is used, it must be in the forward error-correcting mode in accordance with CCIR Recommendation 625 as specified in § 80.1101.

(c) The preferred frequencies in radiotelephony for on-scene communications are 156.8 MHz and 2182 kHz. The frequency 2174.5 kHz may also be used for ship-to-ship on-scene communications using narrow-band direct-printing telegraphy in the forward error correcting mode in accordance with CCIR Recommendation 625 as specified in § 80.1101.

(d) In addition to 156.8 MHz and 2182 kHz, the frequencies 3023 kHz, 4125 kHz, 5680 kHz, 123.1 MHz and 156.3 MHz may be used for ship-to-aircraft on-scene communications.

(e) The selection or designation of on-scene frequencies is the responsibility of the unit coordinating search and rescue operations. Normally, once an on-scene frequency is established, a continuous aural or teleprinter watch is maintained by all participating on-scene mobile units on the selected frequency.

§ 80.1129 Locating and homing signals

(a) Locating signals are radio transmissions intended to facilitate the finding of a mobile unit in distress or the location of survivors. These signals include those transmitted by searching units and those transmitted by the mobile unit in distress, by survival craft, by float-free EPIRBS, by satellite EPRIBs, and by search and rescue radar transponders to assist the searching units.

(b) Homing signals are those locating signals which are transmitted by mobile units in distress, or by survival craft, for the purpose of providing searching units with a signal that can be used to determine the bearing to the transmitting stations.

(c) Locating signals may be transmitted in the following frequency bands: 117.975-136 MHz, 121.5 MHz, 156-174 MHz, 406-406.1 MHz, and 9200-9500 MHz.

(d) The 9 GHz locating signals must be in accordance with CCIR Recommendation 628 as specified in § 80.1101.

§ 80.1131 Transmissions of urgency communications

(a) In a terrestrial system the announcement of the urgency message must be made on one or more of the distress and safety calling frequencies specified in § 80.1077 using digital selective calling and the urgency call format. A separate announcement need not be made if the urgency message is to be transmitted through the maritime mobile-satellite service.

(b) The urgency signal and message must be transmitted on one or more of the distress and safety traffic frequencies specified in § 80.1077, or via the maritime mobile-satellite service or on other frequencies used for this purpose.

(c) The urgency signal consists of the words PAN PAN. In radiotelephony each word of the group must be pronounced as the French word "panne".

(d) The urgency call format and the urgency signal indicate that the calling station has a very urgent message to transmit concerning the safety of a mobile unit or a person.

(e) In radiotelephony, the urgency message must be preceded by the urgency signal, repeated three times, and the identification of the transmitting station.

(f) In narrow-band direct-printing, the urgency message must be preceded by the urgency signal and the identification of the transmitting station.

(g) The urgency call format or urgency signal must be sent only on the authority of the master or the person responsible for the mobile unit carrying the mobile station or mobile earth station.

(h) The urgency call format or the urgency signal may be transmitted by a land station or a coast earth station with the approval of the responsible authority.

(i) When an urgency message which calls for action by the stations receiving the message has been transmitted, the station responsible for its transmission must cancel it as soon as it knows that action is no longer necessary.

(j) Error correction techniques, in accordance with CCIR Recommendation 625 as specified in § 80.1101, must be used for urgency messages by direct-printing telegraphy. All messages must be preceded by at least one carriage return, a line feed signal, a letter shift signal and the urgency signal PAN PAN.

(k) Urgency communications by direct-printing telegraphy should be in the ARQ mode when communicating directly to the Coast Guard or other coast stations on channels which they normally guard. Other distress communications, including those on simplex channels provided for that purpose, should be in the broadcast forward error correction mode. The ARQ mode may subsequently be used when it is advantageous to do so.

§ 80.1133 Transmission of safety communications

(a) In a terrestrial system the announcement of the safety message must be made on one or more of the distress and safety calling frequencies specified in § 80.1077 using digital selective calling techniques. A separate announcement need not be made if the message is to be transmitted through the maritime mobile-satellite service.

(b) The safety signal and message must normally be transmitted on one or more of the distress and safety traffic frequencies specified in § 80.1077, or via the maritime mobile satellite service or an other frequencies used for this purpose.

(c) The safety signal consists of the word SECURITE. In radiotelephony, it is pronounced as in French.

(d) The safety call format or the safety signal indicates that the calling station has an important navigational or meteorological warning to transmit.

(e) In radiotelephony, the safety message must be preceded by the safety signal, repeated three times, and the identification of the transmitting station.

(f) In narrow-band direct-printing, the safety message must be preceded by the safety signal and the identification of the transmitting station.

(g) Error correction techniques, in accordance with CCIR Recommendation 625 as specified in § 80.1101, must be used for safety messages by direct-printing telegraphy. All messages must be preceded by at least one carriage return, a line feed signal, a letter shift signal and the safetysignal SECURITE.

(h) Safety communications by direct-printing telegraphy should be in the ARQ mode when communicating directly to the Coast Guard or other coast stations on channels which they normally guard. Other distress communications, including those on simplex channels provided for that purpose, should be in the broadcast forward error correction mode. The ARQ mode may subsequently be used when it is advantageous to do so.

§ 80.1135 Transmission of maritime safety information

(a) The operational details of the stations transmitting maritime safety information in accordance with this section are indicated in the ITU List of Radiodetermination and Special Service Stations and the IMO Master Plan of ShoreBased Facilities.

(b) The mode and format of the transmissions mentioned in this section is in accordance with the CCIR Recommendation 540 as specified in § 80.1101.

(c) Maritime safety information is transmitted by means of narrow-band direct-printing telegraphy with forward error correction using the frequency 518 kHz in accordance with the international NAVTEX system (see § 80.1077).

(d) The frequency 490 kHz may be used, after full implementation of the GMDSS, for the transmission of maritime safety information by means of narrow-band direct-printing telegraphy with forward error correction (see § 80.1077).

(e) Internationally, the frequency 4209.5 kHz is used for NAVTEX-type transmission by means of narrow-band direct-printing telegraphy with forward error correction (see § 80.1077).

(f) Maritime safety information is transmitted by means of narrow-band direct-printing telegraphy with forward error correction using the frequencies 4210 kHz, 6314 kHz, 8416.5 kHz, 12579 kHz, 16806.5 kHz, 19680.5, 22376 kHz, and 26100.5 kHz (see § 80.1077).

(g) Maritime safety information is transmitted via satellite in the maritime mobile-satellite service using the band 1530-1545 MHz (see § 80.1077).