

Proceedings

of the Marine Safety Council

U.S. Department
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United States
Coast Guard



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of the Marine Safety Council

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cover

Anyone who makes it safely away from the scene of a disaster is bound to feel strong emotions. Here, a crewman from the *CLAUDE CONWAY*, a Panamanian tanker which exploded off the Carolina coast in 1977, kisses the ground as he disembarks from a Coast Guard rescue helicopter. His troubles may not be over, however. How many times will he relive the explosion? How will he face the wives and families of fellow crew members who didn't survive? The Navy has formed a team to help survivors (and those close to them) deal with the emotional consequences of disasters. An article on *SPRINT*, the Special Psychiatric Rapid Intervention Team, begins on page 68. Cover illustration by Emily Carlton

New Coast Guard Light Lists Available

Volume III of the 1983 Light List, Pacific Coast and Pacific Islands (CG-162), is now available through the Government Printing Office. This book contains a list of lights, fog signals, buoys, daybeacons, radiobeacons, RACONS, and Loran stations. For the convenience of mariners, the list also includes those lighted aids, fog signals, and radiobeacons maintained by British Columbia which may be used by vessels proceeding directly from the United States to Alaska.

Volume I of the 1983 Light List, Atlantic Coast (CG-158), is expected to be available through the Government Printing Office by March 25. This book contains a list of lights, fog signals, buoys, daybeacons, radiobeacons, RACONS, and Loran stations on the Atlantic Coast from the St. Croix River, Maine, to Little River, South Carolina.

Orders should be sent to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Ordering information is as follows:

- Volume III, stock no. 050-012-00195-2, \$8.50;
- Volume I, stock no. 050-012-00193-6, \$11.

Materials on Companies and Organizations Sought

The transportation library at the U.S. Coast Guard Acad-

emy is in need of current informational materials on firms and trade organizations in the maritime industry.

LCDR Craig A. Leisy will be using such materials in an upcoming course on transportation planning and policy. The course will deal primarily with economics, regulation, equipment, current issues, and public transportation planning and policy. It is designed to give cadets, whose careers will involve regulatory duties, insight into the industry and its problems. LCDR Leisy is trying to update the transportation library with current annual reports and brochures, pamphlets, and booklets from maritime firms or organizations. Complimentary copies should be sent to LCDR Leisy at the following address: Superintendent (db), U.S. Coast Guard Academy, New London, Connecticut 06320.

Fifth CAORF Symposium to be Held

The Fifth Symposium of the Computer Aided Operations Research Facility (CAORF) will be held May 12 and 13, 1983, at the National Maritime Research Center, located on the campus of the U.S. Merchant Marine Academy in Kings Point, New York. This symposium is being presented by the Maritime Administration's Office of Research and Development.

The 1983 program will include a combination of technical papers, workshops, and featured speakers in an effort to mesh scientific research and technology with industry needs. The first day of the

symposium will be oriented toward the issue of port productivity. The role of simulation in designing harbor and waterways improvements will be the main area of discussion. The second day will focus on vessel productivity and safety. CAORF research on the design and maneuverability of vessels will be presented.

The research presented in technical papers will serve as a basis for discussion in four scheduled workshops. The workshops are planned to explore issues in the areas of port planning, ocean transport operations, Great Lakes operations, and tug, towboat, and offshore services. The purpose of the workshops is to help define, through communication between experts in these areas, important issues and problems to which research should be directed. The program will be rounded out with CAORF simulator demonstrations.

For further information, write The Fifth CAORF Symposium, Computer Aided Operations Research Facility, National Maritime Research Center, Kings Point, New York 11024.

AIMS Seeking Entries for Safety Contests

The American Institute of Merchant Shipping (AIMS) has announced the 1983 kick-off of two contests designed to honor high achievement in safety at sea, the Ship Safety Achievement and Jones F. Devlin Awards.

The Ship Safety Achievement Awards are sponsored by

AIMS and the National Safety Council, Marine Section. These awards are conferred on vessels representing all segments of the American-flag Merchant Marine who have performed outstanding feats of rescue or seamanship illustrative of the high safety standards in the nation's fleet. Such feats may include, in addition to rescue, assistance to distressed vessels, transfer of ill or injured persons under difficult conditions, and outstanding demonstrations of safety training in which the ship as a whole was involved, rather than individual achievement. Each ship winning first place in the various categories is presented with the "Green Cross of Safety" pennant, and the vessel and its crew receive citations. Entries for calendar year 1982 will be accepted until March 18, 1983.

The Jones F. Devlin Awards, also sponsored by AIMS, are given to any self-propelled American-flag vessel which operates for two consecutive years without a crew member's losing a full turn at watch because of an occupational injury. Higher honors go to vessels completing four accident-free years, and there are special awards for exceptional records. Devlin Award entries, again for calendar year 1982, will be accepted through April 15, 1983.

Entries should be sent to Barbara D. Burke, Director of Public and Legislative Affairs, American Institute of Merchant Shipping, 1625 K Street NW, Suite 1000, Washington, DC 20006; tel.: (202) 783-6440.

Fish Expo '83 Scheduled

Fish Expo '83, a showcase of commercial fishing gear and

processing equipment sponsored by *National Fisherman*, will be held in Seattle, Washington, October 26 - 29, 1983.

In past years, the exposition, now in its 17th year, has been attended by fishermen and vessel owners, processors, brokers and distributors, researchers and educators, boat-builders, marine suppliers, engineers, technicians, naval architects, administrators, and consultants, among others.

Trends predicted for 1983 include an increased number of joint ventures and continuing diversification in boat, equipment, and product utilization. Seminars and workshops will be directed at management of fishery resources, innovations in fishing technology, higher value-added product, and seafood marketing.

Further details are available from Fish Expo, 21 Elm Street, Camden, Maine 04843; tel. (207) 236-4342 or Fish Expo, 4215 21st Avenue West, Seattle, Washington 98199; tel. (206) 283-1150.

Calendar of Upcoming Events

Schedules have been set for the following events:

Ro-Ro '83
The Sixth International Conference and Exhibition on Marine Transport using Roll-On Roll-Off Methods
Svenska Mässan Stiftelse
Gothenburg, Sweden
May 17 - 19, 1983

MariChem '83
The Fifth International Conference and Exhibition on the Transportation, Handling and Storage of Bulk Chemicals
Congress Centrum Hamburg

West Germany
October 18 - 20, 1983

Gastech '84
The Tenth International LNG/LPG Conference and Exhibition
RAI Congress and Exhibition Centre
Amsterdam, The Netherlands
November 6 - 9, 1984

Details on these conferences are available from:

Conference Secretariat
2 Station Road
Rickmansworth
Herts WD3 1QP
England

Coast Guard Plans Seminar on Fire Protection

To provide a forum for exchanging information about the Coast Guard's marine fire protection program, the Coast Guard will conduct a one-day Marine Fire Protection Seminar on Wednesday, May 18, 1983, at the Federal Aviation Administration Building, FOB 10A, 800 Independence Avenue SW, Washington, DC, 20591, from 8:30 a.m. to 5:00 p.m. The seminar will provide an overview of the marine fire protection standards mandated by the Safety of Life at Sea (SOLAS) Convention, the Tanker Safety and Pollution Prevention (TSPP) Conference, and related International Maritime Organization (IMO) work. Also to be covered are changes in the carbon dioxide fixed fire extinguishing system requirements, modifications to the fixed fire extinguishing system rules in general, developments in fire protection equipment approval procedures, and progress in flame arrestor design and problems

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with bulk solids. For all topics, both recent changes and future plans will be discussed.

All interested representatives of the marine and fire protection industries are invited to this seminar. Please contact Dr. Alan L. Schneider, U.S. Coast Guard (G-MTH-4/13), 2100 Second Street SW, Washington, DC 20593, at least one week prior to the seminar to reserve a place.

The seminar's major goal is to provide an opportunity for two-way communication between the Coast Guard and the industry on marine fire protection issues, and the seminar's schedule includes time for response to questions and comments. To maximize this seminar's effectiveness, please prepare in writing any questions or comments you may have and send them to Dr. Schneider. Time permitting, all questions and comments that are received at least two weeks prior to the seminar will be covered. Questions from the floor will also be entertained.

If you have any questions about the seminar, please contact Dr. Schneider at (202) 426-2197.

Don't Forget Chemsea '83

The coming into force of the 1973 MARPOL Convention and its Annex II dealing with chemicals is one of the subjects to be covered at Chemsea '83, the conference and exhibition sponsored by the Chemical Industries Association and the General Council of British Shipping (see Proceedings, May 1982). Account will also be taken of the recent International Maritime Organization STCW Conven-

tion with its training requirements for those on ships carrying hazardous cargoes in bulk. Details on the conference, to be held in London April 13 - 15, are available from the Conference Secretariat, 30-32 St. Mary Axe, London EC3A 8ET, England; tel.: 01-283 2922.

URI Conference to Examine U.S. Ocean Policy Under Law of the Sea

How will the United States' use of the ocean be affected by the new international Law of the Sea treaty? This topic will be explored at the University of Rhode Island's Center for Ocean Management Studies (COMS) seventh annual conference, scheduled for June 12 - 15, 1983.

The COMS program will be held at the URI Narragansett Bay Campus. It will examine in detail what significant impacts the United States' decision not to sign the worldwide convention will have on U.S. ocean interests and policy.

Opening the June conference will be a look at the international political context of the negotiations and the U.S. position as it changed from support to opposition. The costs and benefits of signing and not signing the treaty will also be examined.

Later sessions will focus on the status of nonseabed provisions as customary international law and the special problems and opportunities which exist in seabed mining and navigation. The meeting will close with a discussion of what the U.S. strategy ought to be in the future.

Chairing the conference will be Dr. Lawrence Juda, chairman of the URI Depart-

ment of Geography and Marine Affairs, who has closely followed the progress of the Law of the Sea negotiations. The vice president for marine programs at URI, Dr. John A. Knauss, has served as an advisor to the Law of the Sea delegation and is a member of the planning committee.

For further information, contact the Center for Ocean Management Studies, Kingston, Rhode Island, 02881; tel.: (401) 792-2145.

Films Available from England

Four new safety and technical training films have been produced by Videotel Marine International with the assistance of the Secretariat of the International Maritime Organization. The four films, available as 16mm film prints or video cassettes, are:

- "Fire Prevention" (No. 146)
- "Basic Fire Fighting" (No. 147)
- Command and Control—Part I (No. 148)
- Command and Control—Part II (No. 149)

Also produced by Videotel since January 1982 are: "Helicopter Operations at Sea" (No. 142), "The Handling and Treatment of Heavy Fuels" (No. 143), "Meteorological Conditions at Sea" (No. 144), "Operation Refit" (No. 145), "Internal Care of Marine Boilers" (No. 150), and "Metal Spraying—Why and How" (No. 151). For further information, contact A. Lowson, General Manager/Consultant, Videotel Marine International Ltd., 44

Great Marlborough Street,
London W1V 1DB, England.

MTB Redesigns Training Course

The Department of Transportation's Materials Transportation Bureau has redesigned its two-week training course "Hazardous Materials Compliance and Enforcement" into three phases. Personnel attending this course must now qualify by completing home-study assignments in order to meet the standards set as a prerequisite for attending the classroom phase of the course. They must also take a qualifying examination prior to acceptance into the latter phase. This ensures that participants will be familiar with the Hazardous Materials Regulations found in Title 49 of the Code of Federal Regulations. (Participants with sufficient basic knowledge to pass the qualifying examination do not have to complete the home study.)

Phase I materials are furnished to the participants approximately one month before classroom study. Phase II, is to begin. This gives students sufficient time to complete the assignments and take the qualifying examination. Phase II, which lasts one week, includes lectures, films, demonstrations, projects calling for practical application of Title 49, hands-on experience, and examinations. Phase III is an optional follow-up to Phase II to be instituted by the participants' local coordinator; this phase would include additional practical application of Title 49 and/or field assignments.

The new approach has been generally well received by participants from Arizona, Arkansas, Maryland, Mississippi, Oklahoma, Utah, Virginia,

Washington, and the District of Columbia.

The course is designed for Federal, state, and local government personnel responsible for inspecting hazardous materials in transportation for compliance with regulations.

The following locations and dates have been scheduled for sessions of this course:

Washington, DC: March 14 - 18

Pipestem State Park, West Virginia: March 21 - 25

Portland, Oregon: May 9 - 13 and May 16 - 20

Each of the locations has a local coordinator. For specific details concerning the course, contact the Information Services Division, DMT-11, Materials Transportation Bureau, Department of Transportation, Washington, DC 20590; tel.: (202) 426-2301.

IALA Preparing Manual

The International Association of Lighthouse Authorities (IALA) is preparing a Manual on Radio Aids to Navigation. Nine chapters (including General Review of Aids to Navigation, Direction Finding, Consol, Decca, Loran, Omega, Radar, Satellite Navigation (Transit), and Accuracies and Errors in Radionavigation systems) are now available in loose-leaf form, so that new chapters can be added as they become available. This format will also facilitate the updating of information in the manual, as the IALA plans to periodically review it. The price is 15 Swiss Francs per chapter or 90 Swiss Francs for all nine chapters. Orders

should be directed to the IALA Secretariat at 13, rue Yvon Villarceau, 75116 Paris, France.

(Reprinted from the January 1983 Newsletter of the Radio Technical Commission for Maritime Services)

RTCM to Hold Annual Meeting

The Radio Technical Commission for Maritime Services will hold its annual Assembly Meeting April 18 - 20, 1983, at the Hyatt Regency Hotel in Savannah, Georgia. The theme of the meeting will be "Maritime Telecommunications—Today and Tomorrow."

Major areas of interest covered at the meeting will include:

- Meeting user needs through government services and activities,
- International programs and activities,
- Problems of operators of small commercial and recreational craft, and
- Technological developments in maritime telecommunications.

For further information, contact William T. Adams, RTCM, P.O. Box 19087, Washington, DC 20036; tel.: (202) 296-6610. ‡

**The next issue of the
Proceedings will be a
combined April/May issue.**



The following items of general interest were published in the Federal Register between December 23, 1982, and January 24, 1983:

Final rules: CGD 07-82-12 Drawbridge Operation Regulations; St. Lucie River, Martin County, Florida, December 23, 1982. CGD 82-036 Rules of Road and Navigational Equipment; Removal of References and Requirements, January 3, 1983. CGD 82-046 Regulated Navigation Area; San Pedro Bay, California, January 13, 1983. CGD 13-82-09 Drawbridge Operation Regulations; South Fork River, Willapa, Washington, January 24, 1983. CGD 82-105 Allotments from Military Pay for Certain Support Obligations, January 24, 1983.

Advance notice of proposed rulemaking (ANPRM): CGD 81-101 Tank Vessels Carrying Noxious Liquid Substances in Bulk; Pollution Prevention and Control, Equipment and Operational Requirements, January 13, 1983.

Notices of proposed rulemaking (NPRMs): CGD 01-82-016 Drawbridge Operation Regulations; Mitchell River, Chatham, Massachusetts, December 30, 1982. CGD 08-82-02 Drawbridge Operation Regulations, Gulf Intracoastal Waterway, Harvey Canal Route, Louisiana, December 30, 1982. CGD 13-82-18 Anchorage Ground, Elliot Bay, Seattle, Washington, January 13, 1982.

Notices: CGD 07-82-14 Drawbridge Operation Regulations; Atlantic Intracoastal Waterway, Halifax River, Volusia County, Florida, Revocation of Final Rule, December 23, 1982. CGD 82-110 and

CGD 82-111 Chemical Transportation Advisory Committee, Notices of Meetings, December 23, 1982. CGD 81-092 Electrical and Fuel Systems Standards, Extension of Comment Period, December 30, 1982. CGD 07-82-016 Bridge Permit Amendment; Sunshine Skyway Bridge Pier Protection System, Tampa Bay, Gulf Intracoastal Waterway, Florida, Notice of Public Hearing, January 3, 1983. CGD 82-105 Documentation of Vessels; Controlling Interest, Extension of Comment Period, January 6, 1983. CGD 83-001 Towing Safety Advisory Committee, Notice of Meeting, January 10, 1983. CGD 8-82-09 Anchorage Regulations, Mississippi River below Baton Rouge, Louisiana, Includes South and Southwest Passes, Notice of Withdrawal of ANPRM, January 24, 1983.

Questions concerning regulatory dockets should be directed to the Marine Safety Council at the following address: Commandant (G-CMC), U.S. Coast Guard, Washington, DC 20593; tel: (202) 426-1477.

* * *

Licensing of Pilots; Manning of Vessels— Pilots (CGD-77-084)

On January 27, 1983, the Coast Guard published a supplemental notice of proposed rulemaking for CGD 77-084, the proposal implementing the Port and Tanker Safety Act amendment authorizing the Coast Guard to license pilots.

The original proposal to amend the regulations concerning the licensing of Federal pilots was detailed in an NPRM published on November 28, 1980. That proposal has been modified in response to comments received and the opinions expressed to the Coast Guard at three public hearings. The modified proposal would 1) set the minimum age requirement at 21 years, 2) require pilots to have an annual physical examination, 3) change the experience requirement for a tonnage endorsement of "any gross tons," 4) require pilots to maintain knowledge of the routes on their licenses, and 5) maintain the authority of the Coast Guard to establish limitations on licenses. The proposal also has been expanded by the addition of amendments to the regulations pertaining to pilots on those non-self-propelled vessels of not more than 20,000 gross tons carrying cargoes subject to the provisions of 46 USC 391a.

The Marine Safety Council (address shown above in bold-face type) will be accepting comments on this proposal until April 27.

Electronic Position Fixing Devices (CGD 81-081)

In a rule published on December 30, 1982, the Coast Guard eliminated a requirement for electronic position-fixing systems to complement satellite navigation receivers. Such complementary systems would have been required by 1984 on vessels of 1,600 GRT or more using satellite navigation receivers in lieu of a Loran-C

receiver to meet the requirements for an electronic position-fixing device. After reviewing its files for groundings of vessels between 1977 and 1979, the Coast Guard found that, of the 176 groundings of vessels 1,000 GRT or more, none involved a grounding of a vessel using a satellite receiver. There appeared to be no evidence that safety would be enhanced by a requirement for a complementary system. Also, the requirement would have meant up to \$24 million in installation costs for the vessel owners concerned, which would have numbered at least 3,000. With this in mind, the Coast Guard decided to eliminate the requirement.

Actions of the Marine Safety Council

January Meeting

At its January meeting, the Council was briefed on three projects:

CGD 80-159 Stability Requirements for Great Lakes Vessels

The first item brought before the Council was a proposal for a third ANPRM specifying damage stability requirements for cargo ships operating on the Great Lakes.

There have been several sinkings involving loss of life on the Lakes in the last 25 years, the most notable being that of the EDMUND FITZGERALD. As a result, the National Transportation Safety Board (NTSB) recommended that the Coast Guard establish standards. In response to the NTSB recommendation, the Coast Guard published two

ANPRMs and held a public meeting. The comments received in response have been considered in preparation of the latest ANPRM.

The major issue is, of course, the expense of subdividing the vessels involved. One of the major costs to the industry would be the loss of income that would result from laying up a vessel which was earning money to have it retrofitted with bulkheads. This problem has been eliminated under the latest ANPRM, which would apply to new construction only. The Council voted to approve the project, and the ANPRM is expected to be published later this spring.

CGD 82-108 Great Lakes Pilotage Rates

Each year the governments of Canada and the United States implement bilateral agreements concerning the fees that can be charged by U.S. and Canadian pilots on the Great Lakes. The Council agreed that the fee schedules should be published in the Federal Register as rules. Since the rates must be identical for both Canadian and U.S. pilots, there were no policy issues for the Council to consider.

CGD 77-196 Navigation Safety Regulations—Confined and Congested Waters

Navigation regulations presently contain operating requirements for vessels navigating in waters defined as "confined and congested." However, the "confined and congested" areas to which the requirements apply have never been designated. This does not seem to have created any

operating difficulties, so, rather than designate "confined and congested" waters, the Coast Guard is proposing that the term and the operating requirements be eliminated from the regulations entirely.

A notice should appear in the Federal Register this summer. †

A deadly combination

Recent American research has shown that, after three hours' exposure to wind, sun glare, noise, vibration, and alcohol, a boat operator may be fatigued to the point where his reaction time doubles. At night the result is even more dangerous. Further research suggests that drunken boat operators incur the greatest color loss in red and green, the colors used as port and starboard running lights.

More beer than tackle

Another piece of research carried out in America showed that fishermen, who make up the largest sub-group in drowning statistics, spent twice as much on beer as they did on their tackle!

Being drunk in charge of a boat may sound funny, but it can be lethal. Apart from increasing the danger of drowning, alcohol can be a major contributory factor in hypothermia, as it lowers the body temperature.

(Reproduced from Coastguard: the Magazine of Her Majesty's Coastguard)



1,1,1-Trichloroethane:



Synonyms:

methyl
chloroform

Physical Properties

boiling point:

70 - 80°C
(158 - 190°F)*

freezing point:

-50°C (-58°F)

vapor pressure at

20°C (68°F):

100 mm Hg

30°C (86°F):

144 mm Hg

Threshold Limit Values (TLV)

time weighted average:

350 ppm;
1,900 mg/m³

short term exposure limit:

450 ppm;
2,450 mg/m³

Flammability Limits in Air**

lower flammability limit:

8.0% by vol.

upper flammability limit:

10.5 % by vol.

Combustion Properties

flash point:

none

autoignition temperature:

537°C (999°F)

Densities

liquid (water = 1.0):

1.28 - 1.32*

vapor (air = 1.0):

4.55

Identifiers

U.N. Number:

2831

CHRIS Code:

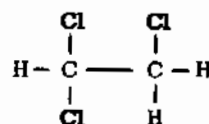
TCE

Cargo Compatibility Group:

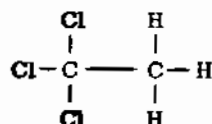
36 (Halogenat-
ed Hydro-
carbons)

Last month in this space we introduced you to 1,1,2-trichloroethane. This month's chemical, 1,1,1-trichloroethane, can be thought of as last

month's "fraternal twin." The two chemicals have the same formula: each consists of two carbon atoms, three hydrogen atoms, and three chlorine atoms. The arrangement of the atoms is slightly different, however, as you can see from the diagrams below. This slight difference has a rather dramatic effect on the nature of the chemical. While 1,1,2-trichloroethane is highly toxic, its brother, 1,1,1-trichloroethane is relatively benign.



1,1,2-trichloroethane



1,1,1-trichloroethane

1,1,1-trichloroethane dates back to around 1840, when it was first prepared in a laboratory by Henri Victor Regnault, a French chemist and physicist. It is a clear, colorless liquid with a mild, sweetish odor somewhat like that of chloroform.

1,1,1-trichloroethane is one of the least toxic chlorinated solvents used in industry today. One of its main uses is in metal degreasing, for which it lends itself to both the "dunking," or cold, method and the vapor, or hot, method. (Compare trichloroethylene, featured in the November 1981 issue of the Proceedings.) It is also used as a solvent for various organic materials, waxes, oils, and tars, in fabric-finishing processes, and as an ingredient in machine-tool metal-cutting fluids, where it increases speeds and tool life, and adhesive formulations. 1,1,1-trichloroethane is very reactive with aluminum and magnesium and their alloys. This would theoretically interfere with its usefulness as a metal degreaser, but the addition of an inhibitor will prevent reactions from taking place. 1,1,1-trichloroethane is usually inhibited for shipping, as well.

1,1,1-trichloroethane's major hazard is the narcotic effect of its vapor at high concentrations (5,000 to 10,000 parts per million, or 0.5 to 1% by volume). Such high concentrations

* These two values are for the "inhibited" grades of 1,1,1-trichloroethane usually preferred for shipping, rather than the pure form of the chemical.

** A high-energy source (such as an electrical charge) is necessary to ignite 1,1,1-trichloroethane.

can depress the central nervous system, causing victims to feel dizzy or light-headed. While less dangerous than its brother, 1,1,2-trichloroethane, 1,1,1-trichloroethane is an anesthetic and will put to sleep anyone imprudent enough to enter and stay in an enclosed space (such as a cargo tank) where the concentration is high. Prolonged exposure could lead not only to unconsciousness, but eventually to irregular heart beat and even death. Deaths believed to have been caused by the anesthetic effects have been reported from exposure to high-concentration vapor. Most of them were the result of carelessness or abuse (sniffing). In cases where the exposure victim was alive when removed from the high-concentration area, recovery was almost always rapid and complete. Proper tank entry procedures such as positive ventilation, testing of the tank's atmosphere for vapor concentration and oxygen content, the proper use of respiratory equipment, safety lines, and harnesses, and insistence on the presence of an observer should always be followed. (Of course, such procedures should be followed no matter what chemical you're handling.)

Both 1,1,2- and 1,1,1-trichloroethane can be absorbed through the skin, but 1,1,1-trichloroethane, unlike its highly toxic brother, apparently presents no danger of permanent systemic (liver and kidney) damage. Skin exposed to 1,1,1-trichloroethane may develop a slight reddening, however, and, upon prolonged exposure, could become irritated. Common sense thus dictates that affected areas be washed with soap and water. Contaminated clothing should be removed and laundered before being worn again. If the liquid splashes in the eyes and is left there, it may cause irritation. The eyes should thus be flushed with plenty of water. Contact lenses should not be worn by persons working around this chemical.

Victims of overexposure to the vapor (this condition will manifest itself as dizziness or light-headedness) should be removed to fresh air at once. If breathing has stopped, artificial respiration should be administered. Ingestion (swallowing) should be treated by inducing the victim to vomit, either by having him touch the back of his throat with his finger or by giving him syrup of ipecac (follow directions on the package). Unconscious persons, of course, should not be made to vomit. In all cases of overexposure, medical attention should be sought.

The U.S. Coast Guard considers 1,1,1-trichloroethane an "unregulated" cargo and includes it in Table II of Appendix I, List of

Cargoes Not Regulated Under Part 153 (Subchapter D) of Title 46 of the Code of Federal Regulations. The U.S. Department of Transportation considers it an ORM-A material. (Substances in the ORM (Other Regulated Material) category are those not meeting any of the definitions of the other hazard classes specified in Subchapter C of Title 49, Hazardous Materials Regulations. Those in class A are described as having "an anesthetic, irritating, noxious, toxic, or other similar property" and capable of causing "extreme annoyance or discomfort to passengers and crew in the event of leakage during transportation.") The International Maritime Organization (IMO) puts 1,1,1-trichloroethane in Chapter 7 of its Chemical Code (chemicals to which the code does not apply). Finally, 1,1,1-trichloroethane is found on page 6178-2 of the IMDG (International Dangerous Goods Code) and is assigned a Hazard Class of 6.1

**Cargo and Hazards Branch
Marine Technical and
Hazardous Materials Division**



Produced as part of the Safety, Health and Training Program for the Barge and Towing Industry by
THE AMERICAN WATERWAYS OPERATORS, INC.
1400 Wilson Boulevard
Arlington, Virginia 22209

Notice to Users of

Navigation and Vessel Inspection Circulars

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"SPRINT":

A Navy Team Helps with the Human Side of Disasters at Sea

by CDR Thomas G. Carlton
Medical Corps, United States Navy



You are 250 miles out, on a dark night, in 15-foot seas, when your ship is rocked by an explosion. Almost immediately, it lists to starboard, and smoke starts pouring through the ventilators. As you begin to make your way to weather, the lights go out and the sound of the engines stops. You grope your way outside and find the list has increased. The damage is beyond repair. You are going down.

Jim, who only half an hour ago was playing acey-deucey with you, tries to launch a boat but goes sliding over the side, screaming, and disappears. You manage to get a boat launched. Somewhere downwind a man screams for help, but you can't see him. The ship goes down. You look for survivors in the water, but the nine of you in the boat find only the badly burned second engineer, floating face down. You try CPR but to no avail. Was a distress signal sent? Nobody seems to know. Are there any other survivors? Is help coming? Where is

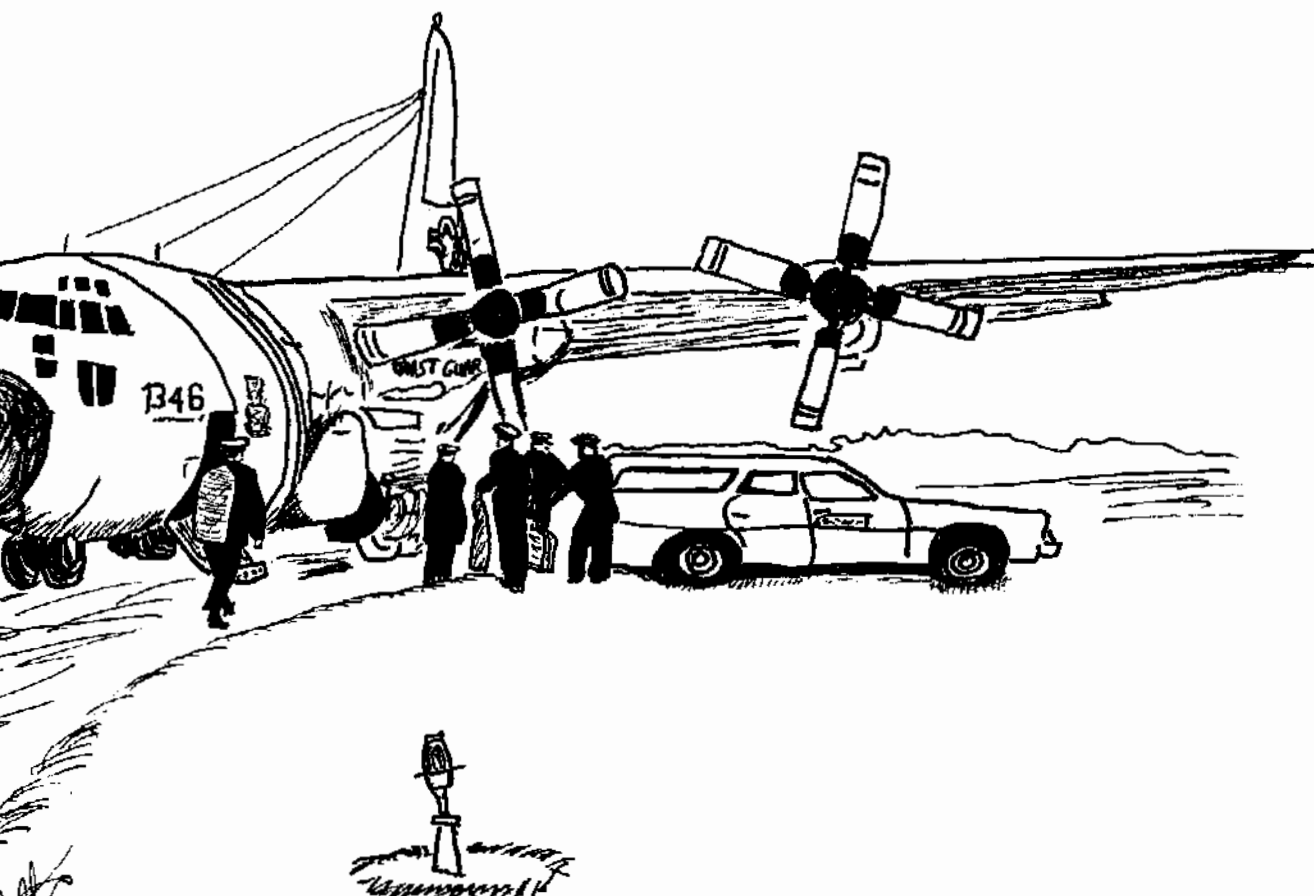
George? What about the men who worked with you and for you?

A long 30 hours later you are spotted by a Coast Guard C-130, which drops drinking water and emergency supplies. After a seemingly endless stretch of time, a ship appears on the horizon. The crew of a frigate, the USS AINSWORTH, helps you aboard. No other survivors have been found, but now at least somebody knows you are alive.

Reunited with your wife and children, you find that you had been reported dead briefly. Your wife cries a lot. The 7-year-old acts distant, and the 11-year-old berates you for having such a "dumb" job. George's wife has a thousand questions. Jim's wife, Mary, greets you with an icy stare and turns her back.

Two months later your 7-year-old is wetting the bed, and some nights he awakens screaming, "Daddy, please don't die!" Your wife is begging you not to go back to sea, even if it is the only decently-paying job you can get. You are edgy and down in the dumps. Doubling your alcohol intake helps with the nerves, but you still awaken in a cold sweat from the dream in which Jim keeps screaming for you to help him.

The opinions expressed are those of the author and do not necessarily represent the official positions of the Department of the Navy or the Naval Medical Command.



Why did you survive, anyway? Frank surely didn't deserve to die any more than you did. Mary still can't look at you.

Of course this could never happen to you or your friends . . . or could it?

Collision, fire, break up, sinking—these have held terror for men of the sea since the dawn of history. For some, however, the terror is much more real. In recent times the crews of the KEY TRADER, the USS BELKNAP, the EXXON SAN FRANCISCO, the USCGC CUYAHOGA, the CLAUDE CONWAY, and the USCGC BLACKTHORN have been among those who have faced mortal peril on the water.

For many victims of disasters at sea and their families, the horrors of death and destruction live on long after the event. Anxiety, depression, inappropriate anger, nightmares, family troubles, poor work performance, medical problems, and alcohol abuse have been observed in survivors of maritime disasters at least since World War II. (In that war, many seamen were referred to psychiatrists because of incapacitating symptoms that had developed following sinkings. At that time, too, psychia-

trists proposed that torpedoed merchant seamen be offered some sort of preventive help. Before that help could be made available, however, the war had ended.)

After the BELKNAP-KENNEDY collision and fire, which occurred in 1975 in the Mediterranean Sea, Navy psychiatrists became increasingly interested in finding ways to help survivors of disasters at sea before problems set in. The first chance to try their new ideas came in March of 1977, when the Panamanian tanker CLAUDE CONWAY exploded off the Carolina coast, killing 12 of the crew. Seventeen survivors were flown to the Naval Regional Medical Center, Camp Lejeune, North Carolina, where they were provided with medical care and emergency psychiatric crisis intervention. The psychiatrists helped the survivors cope with the numbness, grief, anger, guilt, fear, and other emotions that developed after the explosion. More importantly, they taught the survivors how they could help each other through the crisis.

Following the CLAUDE CONWAY incident, a Navy team was organized to help survivors of disasters. The Special Psychiatric Rapid Inter-

vention Team (SPRINT) of the Naval Regional Medical Center in Portsmouth, Virginia, was formed primarily to provide rapid, early preventive crisis intervention for members of the sea services and their families following disasters.

The team had its first chance to prove itself in October 1978, when the USCGC CUYAHOGA went down following a collision with the SANTA CRUZ II in Chesapeake Bay. Eleven of the 29 people aboard were lost. The SPRINT was sent to the CUYAHOGA's home port at the Coast Guard Reserve Training Center in Yorktown, Virginia, where it provided help and support in both individual and group settings for survivors, co-workers, classmates, family members, medical personnel, instructors, support personnel, and Coast Guard officers. The team members worked with these people to ward off the emotional consequences of a maritime disaster: the irritability, nightmares, unrealistic feelings of guilt, sense of impending doom, prolonged and incapacitating bereavement, emotional numbing, and increased frequency of medical problems.

The whole idea behind the SPRINT is prevention, and the team members don't wait to see who is going to have problems. Just like the preventive medicine teams that give shots to everyone who might be exposed to a disease, the SPRINT tries to work with everyone who might be susceptible to the complications of the severe (and sometimes hidden) emotional stresses of a disaster.

Since the CUYAHOGA case, the SPRINT

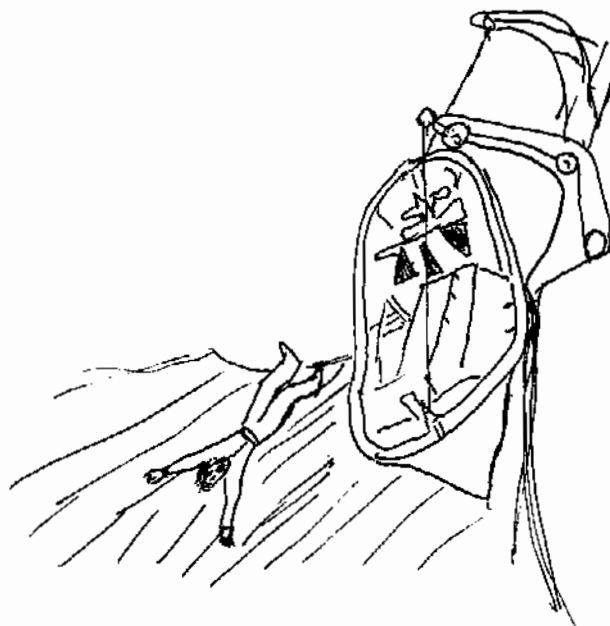


Illustration by Emily Carlton

"... over the side, screaming, and you never see him again."

has been called to help in seven other disasters in locations ranging from the Gulf of Alaska to the Caribbean. Since the first deployment, a standard team has taken shape, composed of two psychiatrists, a chaplain, a psychiatric nurse, and several psychiatric technicians. The psychiatrists, with both medical and psychological skills, lead the team. They coordinate the work and are trained to work with the more severe reactions that might be encountered. The chaplain is specially trained in pastoral counseling and the religious issues of death and disaster. The nurse and the technicians are skilled in both individual and group counseling techniques. The team usually includes both men and women so that it will be better able to work with families. Each SPRINT is put together from members of the regular clinical staff of the Naval Hospital to meet the specific needs of the situation. No special resources are allocated for the team.

Of the many problems that team members have faced, perhaps the most difficult with which they have had to deal is survivors' unconscious denial of the seriousness of what has happened. "Well, those are the risks you take in this job," "It didn't affect me," and "Real men don't have emotional problems after something like that," are common responses. Often these come from the very people who will later be



Illustration by Emily Carlton

"Doubling your alcohol intake helps with the nerves, but ..."

troubled by nightmares and depression because they have refused or been unable to work through the emotions beneath the surface. Like a boiler with a faulty pressure-release valve, these people run the risk of major trouble as the pressure builds inside. Some men have taken frustrations out on their families or turned to drink without ever realizing where the pressures came from. Others have suffered a deep, empty sense of depression that seems to come from nowhere and for which they can see no end. SPRINT members try to prevent complications like these by helping people work through their inner turmoil in a constructive way before the pressure builds to the boiling point. Sometimes simple education of survivors

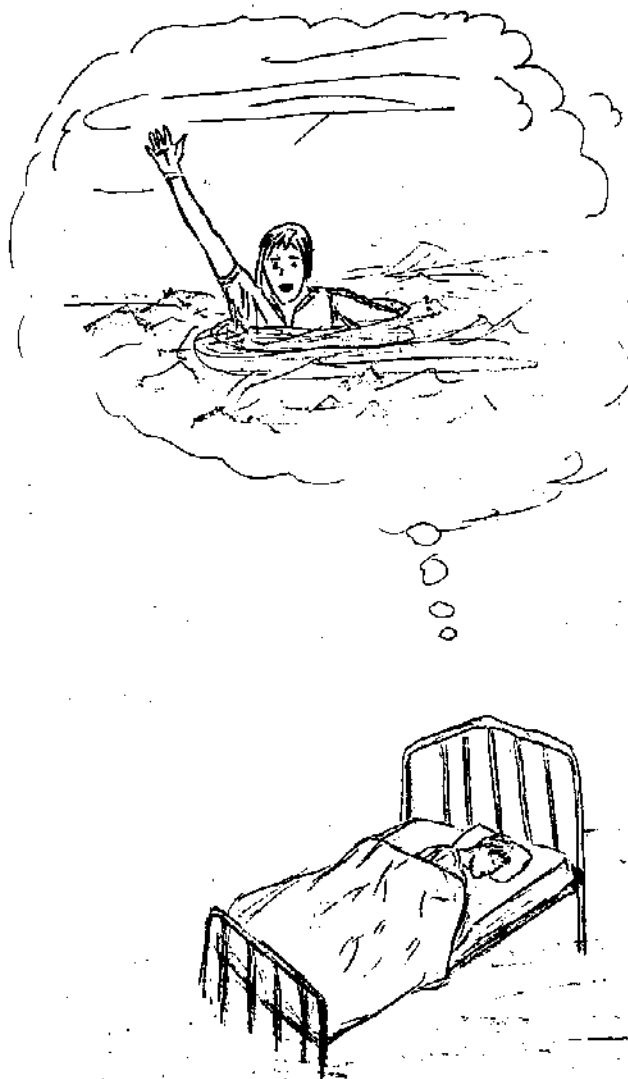


Illustration by Kristy Rathbone

"... a dream in which Jim keeps screaming to you for help ..."

Proceedings of the Marine Safety Council

is enough to get them to recognize their own problems and help each other. The shared experience is often the key that opens the door to the hidden turmoil.

Aches, pains, and other medical problems without apparent physical cause are another problem area. Emotional tension often converts itself into muscle tension, "nervous stomach," or other physical symptoms. Many people are unwilling to look at the underlying emotional stresses which may need to be worked through if the physical discomfort is to be relieved. Again, SPRINT members try to help victims, families, and others work through the stresses before they become deeply buried and before symptoms appear.

The team members work with people in their "natural" groups to enable victims and others who share a common experience to be of help to each other. For example, men who work together or are berthed together may form a natural group. Wives who know each other and whose husbands are exposed to similar risks may form another group. Often the realization that one's concerns and feelings are not unique is helpful in itself. A shared burden is often easier to carry.

In each of its eight deployments to disaster scenes, the SPRINT has gained new insights and improved its skills. With each crisis the team has become better able to help the victims of the next one. No matter how safety-conscious we become, disaster will strike again. The SPRINT stands ready when it happens.

The Navy is in the process of establishing other SPRINTs so that it will be ready to respond to disasters immediately from either coast. The teams are unfunded, and expenses such as travel and lodging are normally paid by the agency requesting assistance (the Coast Guard, for example, following the sinking of the USCGC BLACKTHORN). The teams exist primarily to respond to disasters within the military and can be made available for civilian (e.g., Merchant Marine) disasters only if the military mission allows. The deployment of teams is coordinated through the Naval Medical Command (formerly the Bureau of Medicine and Surgery) in Washington, DC, and any requests for SPRINT assistance should be channeled through that command.

In summary, there has been a growing recognition of the emotional impact of disasters at sea, and the Navy has taken the lead in preventing the development of long-term problems through early use of the innovative Special Psychiatric Rapid Intervention Team—SPRINT. †

Where Have All the Regulations Gone?

(GPO Knows)

by Frank K. Thompson
Technical Staff
Marine Technical and Hazardous Materials Division

Readers of the August 1982 issue of the *Proceedings* (specifically, page 250) are aware that the Coast Guard has discontinued the free distribution of reprints of commercial vessel safety regulations. The best sources for these regulations are now the publication known as the "Code of Federal Regulations" ("CFR") and, on a daily basis, the *Federal Register*. This article is intended to provide additional information for those who must keep up-to-date on Coast Guard regulations.

As most readers know, the Coast Guard, like all Federal agencies, publishes its new regulations and amendments to its existing regulations in a publication called the *Federal Register*. The *Federal Register* is published Monday through Friday by the Office of the Federal Register, an agency of the General Services Administration. It contains not only final rules but also executive orders of the President, proposed rules, legal and informational notices, and other Federal agency documents of public interest. The *Federal Register* is generally sold on a semi-annual and annual mail subscription basis. Copies of individual issues are also available. Information regarding Federal Reg-

ister subscriptions and individual issues can be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; tel.: (202) 783-3238.

Since the Coast Guard issues only about 30 final rules (new regulations and amendments) each year, it is unlikely that a reader interested in nothing but marine safety regulations would want a full annual subscription to the *Federal Register*. To ensure that its "public" was informed of regulatory actions, the Coast Guard, in the past, mailed reprints of final rulemaking documents directly to persons who had requested them or who were on any of several mailing lists. Because of budgetary constraints, this policy has had to be largely discontinued. Interested persons can learn of Coast Guard regulatory activities through the Keynotes section of the *Proceedings* or from maritime industry periodicals such as the *Marine Reporter and Engineering Log*, the *Waterways Journal*, or the *Weekly Letter* of The American Waterways Operators, Inc. Also, a number of private companies put together digests of important items published in the *Federal Register*. Two examples of such digests are the *Marine Operations Reporter* and the

Weekly Regulatory Monitor (see the January issue of the *Proceedings*, page 7, for details).

All of the regulations issued by the Coast Guard, like those of other Federal agencies, are compiled in the Code of Federal Regulations, published annually by the Superintendent of Documents. The CFR is divided into 50 "Titles" roughly paralleling the titles of the U.S. Code. A title contains the regulations pertaining to a single broad subject matter area. Each title is divided into chapters; each chapter contains the regulations of a single agency dealing with the subject matter area of the title. Nearly all of the Coast Guard regulations relating to marine safety are found in Chapter I of Title 33 (33 CFR), Navigation, and Chapter I of Title 46 (46 CFR), Shipping.* The chapters are further subdivided into subchapters, which apply either to a single class of vessels (46 CFR Subchapter D—Tank Vessels or 46 CFR Subchapter H—Passenger Vessels, for example) or to a single subject affecting all classes of vessels (46 CFR Subchapter E—Load Lines, 46 CFR Subchapter J—Electrical Engineering). Each title is also subdivided into "Parts." These are the basic means of identifying provisions of the CFR. 46

CFR Subchapter D, for example, comprises 46 CFR Parts 30 through 40; 46 CFR Subchapter J comprises Parts 110 through 113.

Each title and/or chapter of the CFR is published in one or more volumes. Chapter I of Title 33 is contained in a single volume identified as 33 CFR Parts 1 to 199. Chapter I of Title 46, however, consists of nine volumes, each comprising one to four subchapters. Because of this method of publishing, a person who needed any part of Chapter I of Title 33 would have to purchase the entire chapter. A person needing only Subchapter F of Chapter I of Title 46 would fare a little better, but he would still have to get Subchapters E and G as well, since these three subchapters are published together in the volume marked "46 CFR Parts 41 to 69." The following table (a modified reprint of the table which appeared in the August 1982 issue of the *Proceedings*) shows the numbers of the "Coast Guard" volumes of the CFR, the parts each volume contains, and the subject matter covered. The table also shows the old Coast Guard-numbered publications (no longer being printed) which the volumes of the CFR replace.

* Also of interest to shippers are the Hazardous Materials Regulations, which are found for all modes of transportation in Title 49.

46 CFR, Coast Guard Regulations on Shipping

Current CFR Volume and Parts	Contains	Replaces
1. 46 CFR Parts 1 to 29	Subchapter A - Procedures Applicable to the Public (Parts 1 to 9)	CG-200 Marine Investigation Regulations and Suspension and Revocation Proceedings
	Subchapter B - Merchant Marine Officers and Seamen (Parts 10 to 16)	CG-191 Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel
	Subchapter C - Uninspected Vessels (Parts 24 to 29)	CG-258 Rules and Regulations for Uninspected Vessels
2. 46 CFR Parts 30 to 40	Subchapter D - Tank Vessels (Parts 30 to 40)	CG-123 Rules and Regulations for Tank Vessels
3. 46 CFR Parts 41 to 69	Subchapter E - Load Lines (Parts 42 to 46)	CG-176 Load Line Regulations
	Subchapter F - Marine Engineering (Parts 50 to 64)	CG-115 Marine Engineering Regulations
	Subchapter G - Documentation and Measurement of Vessels (Parts 66 to 69)	CG-177 Yacht Admeasurement and Documentation
4. 46 CFR Parts 70 to 89	Subchapter H - Passenger Vessels (Parts 70 to 89)	CG-256 Rules and Regulations for Passenger Vessels

5.	46 CFR Parts 90 to 109	Subchapter I - Cargo and Miscellaneous Vessels (Parts 90 to 106)	CG-257 Rules and Regulations for Cargo and Miscellaneous Vessels
		Subchapter I-A - Mobile Offshore Drilling Units (Parts 107 to 109)	No Coast Guard-numbered equivalent
6.	46 CFR Parts 110 to 139	Subchapter J - Electrical Engineering (Parts 110 to 139)	CG-259 Electrical Engineering Regulations
7.	46 CFR Parts 140 to 155	Subchapter N - Dangerous Cargoes (Parts 146 to 149)	CG-108 Rules and Regulations for Military Explosives and Hazardous Munitions
		Subchapter O - Certain Dangerous Bulk Cargoes (Parts 150 to 154)	No Coast Guard-numbered equivalent
8.	46 CFR Parts 156 to 165	Subchapter P - Manning of Vessels (Part 157)	CG-268 Rules and Regulations for Manning of Vessels
		Subchapter Q - Specifications (Parts 160 to 165)	No Coast Guard-numbered equivalent
9.	46 CFR Parts 166 to 199	Subchapter R - Nautical Schools (Parts 166 to 168)	CG-269 Rules and Regulations for Nautical Schools
		Subchapter T - Small Passenger Vessels (under 100 gross tons) (Parts 175 to 187)	CG-323 Rules and Regulations for Small Passenger Vessels
		Subchapter U - Oceanographic Vessels (Parts 188 to 196)	No Coast Guard-numbered equivalent
		Subchapter V - Marine Occupational Safety and Health Standards (Part 197)	No Coast Guard-numbered equivalent

33 CFR, Coast Guard Regulations on Navigation

33 CFR Parts 1 to 199	Contains	Replaces
	Subchapter A - General (Parts 1 to 26)	No Coast Guard-numbered equivalent
	Subchapter B - Military Personnel (Parts 45 to 53)	No Coast Guard-numbered equivalent
	Subchapter C - Aids to Navigation (Parts 60 to 76)	CG-208 Aids to Navigation Regulations
	Subchapter D - International Navigation Rules (Parts 80 to 82)*	CG-169 Navigation Rules, International/Inland*
	Subchapter E - Inland Navigation Rules (reserved for future regulations)*	CG-169 Navigation Rules, International/Inland*
	Subchapter F - Interim Inland Navigation Rules (Parts 92 to 98)*	CG-172 Rules of the Road—Great Lakes* CG-184 Rules of the Road—Western Rivers*
	Subchapter G - Regattas and Marine Parades (Part 100)	No Coast Guard-numbered equivalent
	Subchapter H - Routes for Passenger Vessels (Part 105)	No Coast Guard-numbered equivalent
	Subchapter I - Anchorages (Parts 109 and 110)	No Coast Guard-numbered equivalent

* Sections of Title 33 of the CFR were altered to incorporate the new unified Inland Navigation Rules, which went into effect December 24, 1981. The only publication now needed for a complete listing of Navigation Rules is COMDTINST M16672.2, Navigation Rules, International/Inland. It is available from the Government Printing Office.

**33 CFR Parts 1 to 199
(continued)**

Subchapter J - Bridges (Parts 114 to 118)	No Coast Guard-numbered equivalent
Subchapter K - Security of Vessels (Part 122)	CG-239 Security of Vessels and Waterfront Facilities
Subchapter L - Waterfront Facilities: Security Zones and Regulated Navigation Areas (Parts 125 to 128)	CG-239 Security of Vessels and Waterfront Facilities
Subchapter M - Marine Oil Pollution Liability and Compensation (Parts 135 and 136)	No Coast Guard-numbered equivalent
Subchapter N - Artificial Islands and Fixed Structures on the Outer Continental Shelf (Parts 140 to 147)	CG-320 Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf
Subchapter NN - Deepwater Ports (Parts 148 to 150)	No Coast Guard-numbered equivalent
Subchapter O - Pollution (Parts 151 to 159)	No Coast Guard-numbered equivalent
Subchapter P - Ports and Waterways Safety (Parts 160 to 165)	No Coast Guard-numbered equivalent
Subchapter S - Boating Safety (Parts 173 to 183)	M16752.2 (old CG-497) Rules and Regulations for Recreational Boats

Persons wishing to obtain copies of these volumes of the CFR may do so by ordering them from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Information regarding availability, prices, etc., can be obtained by calling (202) 783-3238. Such information can also be found in the first issue of the Federal Register each month and in a publication called the "List of Sections Affected" (more on that later). Holders of VISA or MasterCard may place orders by phone; otherwise, orders must be in writing and must be accompanied by payment (check or money order; no cash). The ordered CFR volumes should be delivered within 10 to 15 working days after payment is received by GPO. Shipments to foreign addresses are subject to a 25 percent handling charge and are sent by surface mail unless other arrangements are made when the order is placed. Readers residing in or visiting the Washington, DC, metropolitan area may find it more convenient to purchase their CFR publications at a GPO retail bookstore, several of which are located in Federal office buildings there. GPO also operates bookstores in many major U.S. cities. For locations, see the chart on the next page.

Readers who do not need or wish to purchase volumes of the CFR may, nevertheless, obtain the information they seek from a number of sources. Many central public libraries of major metropolitan areas, Federal courthouse law libraries, and university law schools receive sets of the Code of Federal Regulations which may be made available for public reference. To

assist persons who wish to consult the CFR, the Office of the Federal Register has published a list of "Government Depository Libraries" which provide such a service. Information regarding Government Depository Libraries can be obtained by writing the Library, U.S. Government Printing Office, 5236 Eisenhower Avenue, Alexandria, Virginia 22034, or by calling the Office of the Federal Register at (202) 523-5227.

The entire Code of Federal Regulations is published annually, with groups of titles appearing at quarterly intervals. Each annual issue of Title 33 contains all the Coast Guard navigation regulations that were in effect as of July 1 of the publication year, and the annual issue of Title 46 contains the shipping rules in effect as of October 1. If a final rule is published in the Federal Register before one of those dates but does not become effective until after the date, both the new rule and the one it replaces, if any, are printed. Although each volume contains the regulations in effect on a given date, the lead time for editing, printing, and stocking is generally in the range of three to five months. The 1982 editions of both Title 33 and Title 46 should be available by the time of this printing.

To have a complete, current set of Coast Guard regulations, a person must have each of the CFR volumes listed in the table plus a copy or reprint of each final rule published by the Coast Guard since the issue date of the title. The Government Printing Office each month prints a "List of Sections Affected" (LSA) which

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contains all CFR sections added, amended, revised, or removed since the last issue date of the CFR title. The LSA can be ordered by subscription from the Government Printing Office. For those who do not wish to take out a full subscription to the Federal Register, checking the LSA is probably the best means of keeping abreast of current Coast Guard regulations.

Persons having difficulty obtaining information about Coast Guard regulations are invited

to contact the Publications Officer of the Marine Safety Council at the following address:

Commandant (G-CMC)
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Washington, DC 20593
Tel.: (202) 426-1477

Contributing to this article was ENS Frederick J. Kenney, Jr., of the Marine Safety Council staff.

†

R&D Studies Fire Prevention in Ships' Lounges

by Darrell Neily
Office of Research and Development

Despite the advent of steel ships, fires on board ships still cause unnecessary loss of life and property. If passengers and crews are forced to abandon a burning ship, they go not to safe refuge outside a building, but rather to lifeboats and the sea. Furthermore, the paths of escape in a ship are generally upward—the same direction that fire and smoke spread most rapidly. For these reasons, the Coast Guard, in concert with other Federal agencies and industry organizations, has promulgated a number of regulations for fire protection and containment on ships.

Since the implementation of some of these regulations, the materials used in outfitting, decorating, and furnishing ships' compartments have changed. Plastics and synthetics used extensively today release more heat and produce more smoke in a fire than did materials previously used.

The Coast Guard Research and Development Center in Groton, Connecticut, has just completed a series of tests evaluating the effectiveness of current fire protection regulations for the modern materials used in ships' lounges. Both scale-model and full-scale tests were conducted. The full-scale burnouts were conducted on board the test vessel A. E. WATTS at the Center's Fire and Safety Test Detachment in Mobile, Alabama.

The fire protection industry evaluates structural assemblies by using a "Standard Fire Test" developed by the National Bureau of Standards, standardized by the American Society for Testing and Materials, and now applied by testing organizations such as Underwriters Laboratories. The results of the R&D Center tests indicated that the "Standard Fire Test" now provides a smaller margin of safety than it once did. In an actual lounge fire, this would mean less time for passengers and crew to escape and

more rapid smoke production. This suggests that a revision to the standard test is warranted.

A report of this study, "Ships Lounge Burn-out Experiments" is now available from the National Technical Information Service (NTIS), Springfield, Virginia 22161. Persons wishing to order the study should specify Report No. CG-D-17-82 and Accession No. AD A116-123. †



Fire spreads from a wastebasket to a sofa on board the test vessel A. E. WATTS.



The ugly remains of the sofa after the lounge burnout

The following items are examples of questions included in the Third Mate through Master examinations and the Third Assistant Engineer through Chief Engineer examinations:

DECK

1. Which of the following extinguishing agents is most effective for fighting a fire in electrical equipment that is energized?

- A. Carbon dioxide
- B. Solid stream of sea water
- C. Aqueous film-forming foam
- D. Low-velocity fog with fresh water

REFERENCE: CG-329, Para. 4-2-11

2. An inert gas system installed on a tanker is designed to

- A. aid in the stripping and cleaning of cargo tanks.
- B. increase the rate of discharge of cargo.
- C. force toxic and explosive fumes from a cargo tank to vent to the outside atmosphere.
- D. lower the oxygen levels inside cargo tanks, making explosion nearly impossible.

REFERENCE: Tanker Operations

3. Combination primers are classed as a

- A. combustible solid.
- B. Class C explosive.
- C. Class A explosive.
- D. flammable solid.

REFERENCE: 49 CFR 172.101

4. If magnetic north is to the right of compass north,

- A. variation is east.
- B. deviation is east.
- C. variation is west.
- D. deviation is west.

REFERENCE: New Dutton's

5. Seeing that all hands are familiar with their duties, as specified in the station bill, is the responsibility of the

- A. master.
- B. chief mate.
- C. safety officer
- D. department heads.

REFERENCE: 46 CFR 97.13-20

If you have any questions about the Nautical Queries, please contact Commanding Officer, U.S. Coast Guard Institute (mvp), P.O. Substation 18, Oklahoma City, Oklahoma 73169; tel.: (405) 686-4417.

ENGINEER

1. A diesel engine may fail to start as a result of

- A. low air-charge temperature.
- B. high cranking speed.
- C. excessive fuel dilution of lube oil.
- D. high compression pressure.

REFERENCE: Stinson

2. What is likely to result if a fuel-injection nozzle overheats?

- A. Fuel metering will vary.
- B. Fuel will explode.
- C. The cylinder head will crack.
- D. The engine will stop.

REFERENCE: Toboldt

3. The operating speed at which excessive engine vibrations are created is the

- A. non-harmonic speed.
- B. critical speed.
- C. maximum speed.
- D. design maximum speed.

REFERENCE: Pounder

4. A diesel engine may fail to start when cranked because of

- A. high lube-oil pressure.
- B. insufficient compression.
- C. low lube-oil viscosity.
- D. fuel-injection lag.

REFERENCE: Maleev

- 5. If the jacket-water temperature in a diesel engine

cooling system is below normal, you should check for

- A. air binding of the cooling system.
- B. cracked water-cooling exhaust manifolds.
- C. a clogged heat exchanger.
- D. faulty thermostat operation.

REFERENCE: Stinson

ANSWERS

I.A;2.A;3.B;4.B;5.D
ENGINEER
I.A;2.D;3.B;4.A;5.A
DECK

Lessons from Casualties

The Peruvian freighter M/V INCA TUPAC YUPANQUI was sailing downbound in the Mississippi River near Good Hope, Louisiana (Mile 125.3, above head of passes—AHP) on the morning of August 30, 1979. The freighter was carrying soda ash and general cargo. While proceeding at approximately 17 knots, the vessel attempted to adjust course to starboard to negotiate a starboard bend turn. A malfunction of the steering gear prevented the vessel from making the turn. Noting that the rudder angle indicator did not register a response, the helmsman tried to direct the rudder from midships to the port side. The rudder angle indicator moved 3° to 5° port rudder. The helmsman, and then the chief mate, attempted to correct the turn by turning the helm to starboard.

When the pilot of the INCA TUPAC YUPANQUI realized that the vessel would not respond to rudder commands, he ordered the engines stopped. At this time, the master of the INCA TUPAC YUPANQUI came from his dayroom to the forward part of the bridge. The master ordered the engines full astern while the pilot blew the danger signal.

The INCA TUPAC YUPANQUI continued to turn to port and struck the tank/barge PANAMA CITY. The barge was moored at the General American Transportation Corporation (GATX) dock No. 4 at Mile 125.3, AHP, on the Mississippi River. The PANAMA CITY was partially loaded with 7,000 barrels of liquefied butane and was awaiting resumption of loading operations.

A cloud of butane gas was released when the freighter struck the barge. Within seconds a fireball had engulfed the INCA TUPAC YUPANQUI, the PANAMA CITY, and a nearby tug, the CAPTAIN NORMAN. Six fatalities and 42 injuries resulted from the fire which spread

through the vessels and dock No. 4.

After completing its investigation of the accident, the National Transportation Safety Board (NTSB) made numerous safety recommendations. One was that vessels loading or unloading cargoes of particular hazard as listed in 33 CFR 124.14 on the Mississippi River be required to conduct operations on the shore side of the facility wherever possible. Another was that the Coast Guard study the use of waterfront facilities located in bends on the Mississippi River for the transfer of cargoes of particular hazard listed in 33 CFR 124.14 and, if necessary, promulgate appropriate regulations to prohibit siting future facilities in bends. The NTSB also recommended that companies mooring barges to the Mississippi River piers which extend from the shore in the shape of a T consider mooring the barges on the shoreward side of such structures. Such inboard mooring might mitigate the effects of collisions with vessels.

If port system development is carefully planned, hazards can be anticipated and avoided. In the opinion of the author, additional Federal regulations for port planning are not the answer. A careful review by the Corps of Engineers, the Environmental Protection Agency, and other interested agencies prior to the granting of permits and licenses will help solve any problems associated with the siting of waterfront facilities. A more detailed article on the permit process appeared in the August 1982 issue of the *Proceedings* ("Setting our Sites on Safety").

The preceding article was written by LTjg Michael J. Powers, formerly of the Program Development Branch in the Port and Environmental Safety Division. †

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