# Proceedings

of the Marine Safety Council

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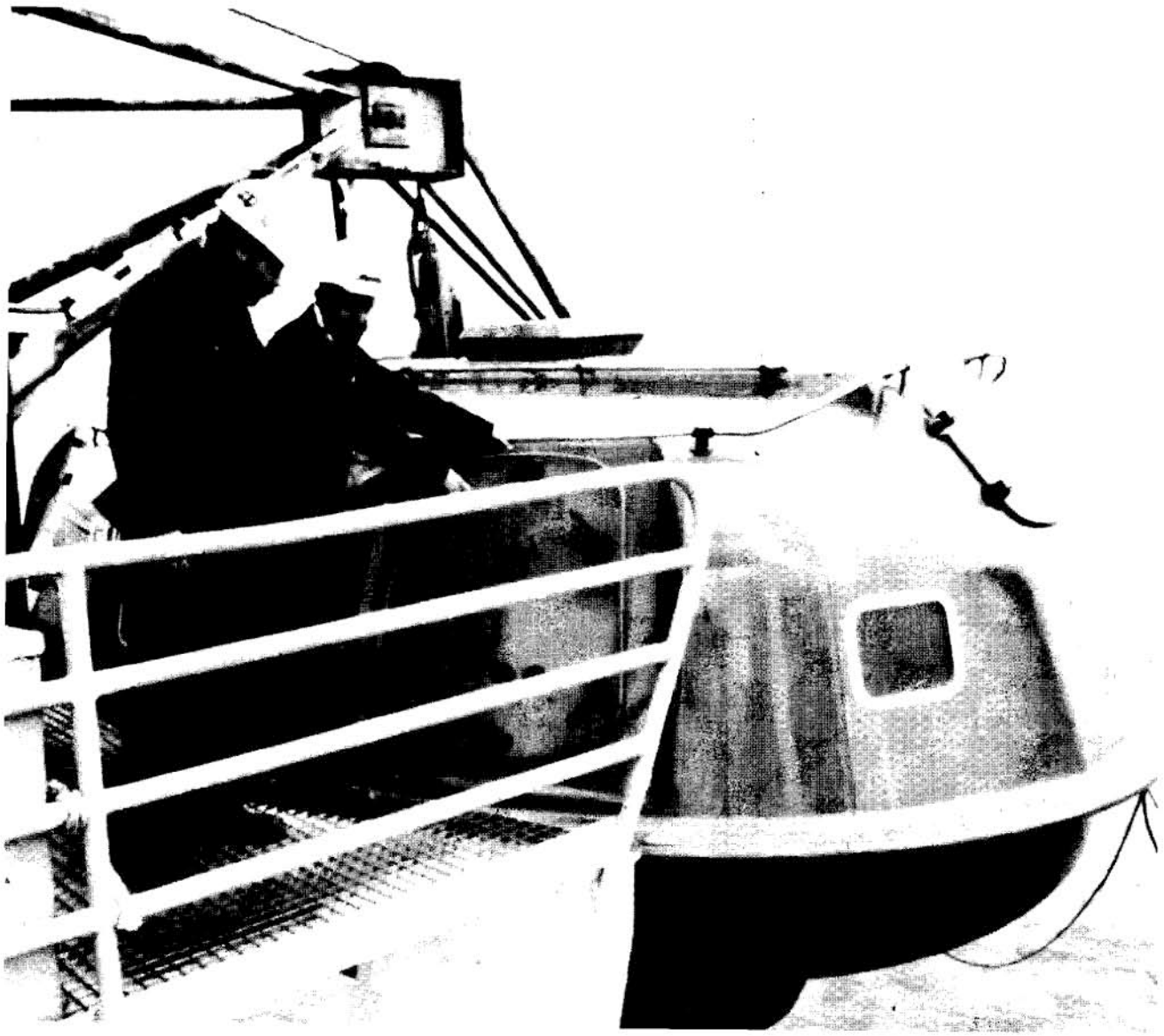

U.S. Department of Transportation
U.S. Coast Guard

**CG-129**

# Proceedings
of the Marine Safety Council

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**Please pass this magazine along when you have finished reading it.**

# Contents

## features



## departments



## cover

*Coast Guard Lieutenant Joe Pepe (right) makes a safety check of the "survival capsule," a motorized escape capsule on board a mobile offshore drilling unit. Such capsules, which are covered, fireproof, and self-propelled, afford more protection in the event of a fire than conventional lifeboats. For more on Lieutenant Pepe's inspection of a drilling rig, see the story beginning on page 40.*

# Maritime Sidelights

### Changes in CTAC Membership

On January 13, 1981, the Secretary of Transportation filled the open seats on the Chemical Transportation Advisory Committee (CTAC). Seven new people were appointed, and six incumbents were reappointed.

Appointed for second terms were: Walter G. Neal, Jr., Manager, LNG and Special Projects, Keystone Shipping Co., Philadelphia, Pennsylvania (the current chairman); Rudolph R. Avila, Staff Engineer, Plans and Analysis Administration, Shell Oil Co., Houston, Texas; C. van Mook, Manager—Marine Engineering, Marine Transport Lines, Inc., Pittsburgh, Pennsylvania; Edward F. McIntyre, Manager, Safety and Loss Prevention, Farrell Lines Inc., New York, New York; and W. M. Hannan, Vice President, American Bureau of Shipping, New York, New York.

Newly appointed members are: Betty Jean McClelland, Special Assistant to the Governor for Hazardous Materials, Olympia, Washington; Richard G. Donaldson, Port Captain, Western LNG Terminal Associates, Los Angeles, California; Alfred Brooks, Railroad Safety Specialist-Hazardous Materials Specialist, Federal Railroad Administration, Washington, DC; William Clark, Member, Advisory Staff, Sterling Systems, Inc., McLean, Virginia; Leo R. Dartz, Manager—Transportation and Terminals, Freeport Sulphur Co., New Orleans, Louisiana; Paul V. DeGregorio, Vice President, Tanker Operations, Hvide Shipping, Inc., Fort Lauderdale, Florida; and Paul T. Hicks, Secretary, Coastal Resources Management Council, Providence, Rhode Island.

### TSAC Members Appointed

On January 19, 1981, the Secretary of Transportation appointed the members of the newly formed Towing Safety Advisory Committee (TSAC). On October 6, 1980, legislation requiring this committee to be established was signed into law (P.L. 96-380). This law established sixteen positions on the committee, each representing a specific interest either in the towing industry or a directly related industry.

Frank T. Stegbauer, Executive Vice President, Southern Towing Co., Memphis, Tennessee, and Steven T. Scalzo, General Manager—Marine Operations, Foss Launch and Tug Co., Seattle, Washington, were appointed chairman and vice chairman, respectively. Also appointed to TSAC were: Charles Lehman, Vice President, American Commercial Barge Line Co., Jeffersonville, Indiana; Lobie Stone, President—Supply and Distribution, Torco Oil Co., New Orleans, Louisiana; Lester E. Sutton, President, Dravo Mechling Corp., Pittsburgh, Pennsylvania; William J. Stevens, Jr., President, Stevens Towing Co., Yonges Island, South Carolina; Neil N. Diehl, President, Ohio Barge Line, Inc., Pittsburgh, Pennsylvania; Peter J. Brix, President, Knappton Corp., Portland, Oregon; John F. Brady, Executive Vice President, District 2, MEBA-AMO (AFL-CIO), Brooklyn, New York; Captain Robert E. Younge, President, Local #54, Marine Officers Association, St. Louis, Missouri; Milton P. Barschdorf, Port Director, Greenville Port Commission, Greenville, Mississippi; Robert J. Patrick, P.E., Vice President—Engineering, Apex Oil Company, St. Louis, Missouri; James E. Free, Partner, Charles Walker and Associates, Washington, DC; Palmer C. Hamilton, Partner, Miller, Hamilton and Snider, Attorneys and Counselors at Law, Mobile, Alabama; Thomas C. Magliocca, Marine Manager, Atlantic Cement Co., Inc., Ravena, New York; and Richard M. Currence, President, Gulf Fleet Marine Corp., New Orleans, Louisiana.

### Superfund Completes Legislative Process

On December 11, 1980, Public Law 96-510, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), was signed into law by the President. This new law applies to releases of hazardous substances into the environment. Patterned in large measure after section 311 of the Federal Water Pollution Control Act, CERCLA

(1) requires notification when such substances are so released;
(2) provides authority for the Federal Government to respond to releases and threats of releases;
(3) creates potential liability for response costs and natural resource damages when a release occurs;
(4) establishes a compulsory financial responsibility system for potentially liable persons; and
(5) creates a trust fund to cover response costs, natural resource damages, and other costs, as well as a tax system to support the fund.

### NAS Studies Alternative Fuels

The Maritime Transportation Research Board of the National Academy of Sciences has completed a report called "Alternative Fuels for Maritime Use."

This report was undertaken to review potential fuels which may be available to the marine industry from the present to the year 2000 and to define the economical, technical, and environmental/social impact of these alternative fuels on marine power plants. It discusses primary fuels/prime mover combinations with the aim of helping those in the industry choose the proper power plant for new construction and retrofits.

The study also addresses the question of which fuels can be used in various types of current power plants. It does not attempt to show the comparative economics of various power plant fuel alternatives, since the economics depend to a large extent on service factor and

vessel requirements that are peculiar to each owner.

The report, which is meant to serve as a handbook on alternative fuels, fuel processing, fuel/power plant interaction, and the factors to be considered in selecting a power plant in "today's uncertainty," can be ordered for $ 9.75 from the Maritime Transportation Research Board of the National Academy of Sciences, 2101 Constitution Ave., Washington, DC 20418.

### Texas Maritime College Offers a New Maritime Degree Course

The Texas Maritime College at Texas A&M University's Galveston branch is offering a curriculum leading to a bachelor's degree in maritime administration. School officials say no other college or academy offers such a program.

Dr. Bill Hipple, a professor in the program, says it is designed to prepare students for entry-level jobs in the maritime field, both in private companies and public agencies.

About 25 students are enrolled in the program, which is in its second year. School officials hope to increase the enrollment to 75 within the next two years.

The curriculum includes basic courses in management, finance, marketing, accounting, economics, and other subjects, and specialized courses during the last two years in various aspects of the maritime business such as port operations, brokerage and chartering, maritime law, and inland waterway transportation.

*(Reprinted from Lykes Fleet Flashes, February 1981)*

### Casualty Reporting Requirements Changed

The following major changes have been made in the requirements for reporting casualties (all changes became effective January 1, 1981): the physical damage monetary criterion has been increased to $ 25,000; some intentional groundings need not be reported; losses of main propulsion of primary steering systems or components are a separate reporting criterion; and occurrences which materially adversely affect a vessel's fitness for service or route must be reported. These amendments were necessary to provide more comprehensive and useful reporting criteria as the initial step in a marine investigation.

The owner, agent, master, or person in charge of a vessel involved in a marine casualty is now required to give notice as soon as possible to the nearest Coast Guard Marine Safety or Marine Inspection Office whenever the casualty involves any of the following:

(a) All accidental groundings and any intentional grounding which also meets any of the other reporting criteria or creates a hazard to navigation, the environment, or the safety of the vessel;

(b) Loss of main propulsion or primary steering or any associated component or control system, the loss of which causes a reduction of the maneuvering capabilities of the vessel. Loss means that systems, component parts, subsystems, or control systems do not perform the specified or required function;

(c) An occurrence materially and adversely affecting the vessel's seaworthiness or fitness for service or route, including but not limited to fire, flooding, or failure or damage to fixed fire-extinguishing systems, lifesaving equipment, auxiliary power-generating equipment, or bilge pumping systems;

(d) Loss of life;

(e) Injury causing a person to remain incapacitated for a period in excess of 72 hours;

(f) An occurrence not meeting any of the above criteria but resulting in damage to property in excess of $ 25,000. Damage includes the cost of restoring the property to the service condition which existed prior to the casualty, including the cost of salvage, gas freeing, and drydock. It does not include such items as demurrage.

### New Coast Guard Academy Superintendent Appointed

Rear Admiral Charles E. Larkin has been appointed to succeed the late Rear Admiral Malcolm E. Clark as superintendent of the U.S. Coast Guard Academy in New London, Connecticut.

Rear Admiral Larkin is himself a graduate of the Academy, having received a Bachelor of Science Degree in Marine Engineering from the institution in 1949. He also attended the Naval Air Training Center in Pensacola, Florida, from which he graduated in 1952, and George Washington University in Washington, DC, which granted him a Master of Science Degree in 1968.

In the course of his career Rear Admiral Larkin has received such awards as the Silver Life Saving Medal, the Air Medal, a Coast Guard Commendation Medal, a Coast Guard Unit Commendation, and the Meritorious Service Medal.

He is presently completing his duties as Commanding Officer of the 13th Coast Guard District headquartered in Seattle, Washington, and is expected to assume command of the Academy this summer. Until then, Captain Arnold M. Danielsen will continue to serve as acting superintendent.

### Coast Guard Extends Comment Period for Tankerman Proposals

The period for submission of comments on CGD 79-116 (Qualifications of the Person in Charge of Oil Transfer Operations) and CGD 79-116A (Tankerman Requirements) has been extended to May 1, 1981. The original cut-off date was April 1.

Comments should be directed to Commander A. D. Utara (G-CMC), U.S. Coast Guard Headquarters, 2100 Second St. SW, Washington, DC 20593; (202) 426-1477.

As announced in the Keynotes section, an additional public hearing has been scheduled for Washington, DC for April 1.

### SAR Bibliography Update

The National Technical Information Service (NTIS), Springfield, Virginia 22161, has updated its bibliography entitled Search and Rescue Methods and Equipment, a Bibliography with Abstracts 1964 - June 1980. First published in 1977, the bibliography lists unclassified reports since 1964 available through the NTIS. The updated version covers 1964 to June 1980. The publication number is PB 80-812837, and the price is $ 30.00. ‡

The following were published between January 16, 1981, and February 19, 1981:

**Final rules:** CGD 79-151 Inland Waterways Navigation Regulations—Great Lakes, January 23, 1981.

**Proposed rules:** CGD 77-136 Interpretation and Implementation 72 COLREGS, January 23, 1981.

**Notices:** CGD 81-011 Safety Measures for Diving Systems, February 5, 1981.

Any questions regarding regulatory dockets should be directed to Commander A. D. Utara (G-CMC), U.S. Coast Guard Headquarters, 2100 Second St. SW, Washington, DC 20593; (202) 426-1477.

* * *

Revision of Electrical
Regulations
CGD 74-125(A)

This regulation will constitute a general revision and updating of the electrical regulations to conform with the latest technology. It will include steering requirements for vessels other than tank vessels.

This revision is necessary because industrial standards for electrical engineering have changed in the past few years and the regulations must be brought up to date to reflect current industry practices.

An initial notice of proposed rulemaking (NPRM) was published on June 27, 1977 (42 FR 32700). A supplemental NPRM was published as CGD 74-125A on March 3, 1980 (Part VII).

New Tank
Barge Construction
CGD 75-083
Upgrade of Existing Tank
Barge Construction
CGD 75-083a

This action comprises two regulatory projects centered on tank barge construction standards. These projects were the result of a Presidential initiative of March 17, 1977, directing a study of the tank barge pollution problem. One project will address new barge construction, while the other will pertain to existing barges. Joint public hearings were held, and regulatory documents for both will be published at the same time.

In July 1977 the Coast Guard began a reexamination of the tank barge construction standards. It was determined that new construction would be treated separately from existing barges. An advance notice of proposed rulemaking (ANPRM) was then issued to gather additional data and assess impacts related to existing barges.

The new NPRM on tank barge construction, withdrawing the prior NPRM, and the ANPRM for existing tank barges were published as part VI of the Federal Register of June 14, 1979 (44 FR 34440 and 44 FR 34443, respectively).

Public hearings on the dockets were held as follows: August 2, 1979, Washington, DC; August 15, 1979, Seattle, Washington; August 23, 1979, New Orleans, Louisiana; September 5, 1979, Washington, DC; and September 7, 1979, St. Louis, Missouri. The comments made at the hearings have been incorporated in the docket.

On Thursday, November 8, 1979, a Federal Register notice extended the comment period on the project. This extension was based on the continued public interest and ran to December 1, 1979.

A Supplementary Notice was published as Part III of the Federal Register of March 13, 1980 (44 FR 16438). This notice informs the public of a deferment in the rulemaking process for these dockets. The comments received have raised significant questions concerning these proposals. It was decided that the entire tank barge pollution problem warranted a carefully considered study by a recognized independent body. The National Academy of Sciences/National Research Council will conduct the study. Part of the study, a two-day workshop, took place April 15 and 16, 1980. The study will be completed by the end of January 1981. The Coast Guard will defer any further rulemaking on these proposals until completion of the study, and the dates in the proposals of June 14, 1979, are no longer valid. If the Coast Guard should pursue further action on these proposals, a new timetable will have to be developed.

Anyone wishing to obtain copies of the rulemaking may do so by contacting Commander A. D. Utara, Marine Safety Council (address is given in the introduction to the Keynotes section).

Pollution Prevention,
Vessels and Oil Transfer
Regulations
CGD 75-124a

This regulation will reduce accidental or intentional discharge of oil or oily wastes during vessel operations.

The basis of this regulation is threefold. First, there is the need to reduce the number and incidence of oil spills. Second, this regulation will help to clarify the existing rules. Finally, this regulation covers the additional requirement for oil-water separators under the 1973 International Convention for the Prevention of Pollution from Ships.

An NPRM was published on June 27, 1977 (42 FR 32670), and a supplemental NPRM was published on October 27, 1977 (42 FR 56625). Because of substantive changes in the regulation, there is currently no scheduled publication date for the final rule.

Construction and Equipment
Existing Self-propelled
Vessels Carrying Bulk
Liquefied Gases
CGD 77-069

These regulations will amend the current ones to include the substantive requirements of the "Code for Existing Ships Carrying Liquefied Gases in Bulk" adopted by the Inter-Governmental Maritime Consultative Organization (IMCO). The use of liquefied gas has increased, as have the problems as-

sociated with it. Because of its unique properties and the dangers associated with them, new regulations are being drafted. The environmental impact statement and regulatory analysis were completed in February 1979, and an NPRM on these regulations is anticipated in April 1981.

### Licensing of Pilots
### CGD 77-084

This regulation takes into account the problems caused by increased ship size and unusual maneuvering characteristics. The proposal will require recency of service for each route upon which a pilot is authorized to serve, licensing with tonnage limitations commensurate with pilot experience, and consideration of ship-handling simulator training for pilots of very large vessels. A regulatory analysis and work plan were completed in October 1978. The NPRM was published on November 28, 1980 (45 FR 79258), and corrected on December 8, 1980 (45 FR 80843).

### Revision of 46 CFR 157.20-5 Division into Three Watch Regulation
### CGD 78-037

This revision will require an adjustment in vessel manning requirements to bring them into line with current legislation. It will change the requirements which identify personnel who must be used on the three watches and personnel who may be employed in a day working status. An NPRM formerly scheduled to be published on this docket in January 1980 has been deferred pending legislative action in Congress.

### Tank Vessel Operations-- Puget Sound
### CGD 78-041

This regulation governs the operation of tank vessels in the Puget Sound area. It was initiated to reduce the possibility of environmental harm resulting from oil spills in Puget Sound. This is to be accomplished by governing the operation of tankers and reducing the risk of collision or grounding.

Former Secretary of Transportation Brock Adams signed a 180-day interim rule on March 14, 1978, prohibiting entry of oil tankers in excess of 125,000 deadweight tons in Puget Sound; this appeared in the Federal Register of March 23, 1978 (43 FR 12257). An ANPRM was published on March 27, 1978 (43 FR 12840). An extension of the interim rule was published in the Federal Register in order to allow the Coast Guard adequate time to complete this rulemaking.

The public hearings scheduled for June 11 and 12 in Seattle, Washington, June 13 in Mt. Vernon, Washington, and June 14 in Port Angeles, Washington, have been completed, and all the comments received have been entered in the docket files for consideration. The extension of the interim navigation rule was published on June 21, 1979 (44 FR 36174). This extension became effective July 1 and will be in effect until the Coast Guard prints notice of its cancellation. A supplemental NPRM was published on July 21, 1980 (45 FR 48827). Copies of documents or the transcripts of the hearings may be obtained by writing to the Marine Safety Council. A final rule on the docket is currently expected in December 1981.

### Personnel Job Safety Requirements for Fixed Installations on the Outer Continental Shelf
### CGD 79-077

This regulation is concerned with the health and safety requirements for installations engaged in oil field exploration and development. This action was mandated by pending Outer Continental Shelf (OCS) legislation. It will provide more comprehensive protection for personnel employed in vessels and installations in the oil trade.

### Qualifications of the Person in Charge of Oil Transfer Operations, Tankerman Requirements
### CGD 79-116 and 79-116A

These regulations will redefine and establish qualifying criteria for the certifying of individuals engaged in the carriage and transfer of dangerous cargoes in bulk.

In has been found that most pollution incidents are the result of personnel error; consequently, the minimum qualifications of persons involved in handling polluting substances should be specified.

New NPRMs have been approved by the Secretary of Transportation and were published on December 18, 1980 (45 FR 83268 and 83290). A calendar of scheduled public hearings appears at the end of the Keynotes.

### Shipboard Noise Abatement Standards
### CGD 79-134

These standards will establish acceptable sound levels for each of the various vessel compartments based on the latest technology. The standards will differentiate acceptable sound levels for both existing vessels and new vessels, specify acceptable methods of compliance, and establish a hearing conservation program.

During the development of these standards, the U.S. Naval Ocean Systems Center (NOSC), San Diego, California, was contracted by the Coast Guard to evaluate sound levels aboard several U.S. merchant vessels, study the data obtained, and define the extent of the noise problem. NOSC was asked to use this data and other information available to recommend a set of noise levels to be included in the proposed standards for the control and/or elimination of the shipboard noise problem.

This study has been completed. Copies are available through the National Technical Information Service (NTIS), Springfield, Virginia 22161; request NOSC technical documents numbers 243, 254, 257, 267, and 405.

### Personnel and Manning Standards for Foreign Vessels
### CGD 79-081(B)

This regulation, deemed necessary to reduce the probability of oil spills, will establish minimum manning levels for foreign tank vessels operating in U.S. navigable waters. It will also establish procedures for the verification of

training, qualification, and watchkeeping standards. An NPRM was published in the Federal Register on November 17, 1980 (45 FR 75712).

* * *

**A complete listing of all Coast Guard proposed regulations, both "significant" and "non-significant," appeared in the Monday, August 25, 1980 Federal Register (45 FR 56538).**

**ANY COMPANIES OR INDIVIDUALS WISHING TO SPEAK AT PUBLIC HEARINGS SHOULD CONTACT LIEUTENANT DONALD *M. JOHNSON, JR., (G-CMC), U.S.* COAST GUARD HEADQUARTERS, 2100 SECOND ST. SW, WASHINGTON, DC 20593; (202) 426-1477. THE COAST GUARD HAS SCHEDULED THE FOLLOWING PUBLIC HEARING (ALL HEARINGS BEGIN AT 10:00 A.M.):**

APRIL 1981

1: CGD 79-116 and 79-116A Qualifications of the Person in Charge of Oil Transfer Operations, Tankerman Requirements
Nassif Building (DOT)
(Room 2232)
7th and D Streets SW
Washington, DC

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Actions of the
Marine Safety Council

February 4 Meeting

Annexes to Inland Navigation Rules

Section 3 of the Inland Navigational Rules Act requires the establishment of technical annexes which ". . . shall be as consistent as possible with the respective annexes to the International Regulations." (the 72 COLREGS)

**CGD-81-008 Annex I Positioning and Technical Details of Lights and Shapes**

This annex would apply only to vessels operating solely on United States Inland Waters. Other vessels must comply with Annex I to the 72 COLREGS even when operating on inland waters. The regulations might differ from the 72 COLREGS in the following respects:

a. Vertical and horizontal positioning (and spacing) of lights
b. Specifications for sidelight screens
c. Horizontal sector specifications

A target date for a notice of proposed rulemaking is March or April.

**CGD 81-006 Annex II Additional Signals for Fishing Vessels**

Annex II will be basically the same as its counterpart in the 72 COLREGS and will provide trawlers and purse seiners with standardized signals to indicate what operations they are engaged in or what problems with gear they might be experiencing. The use of the signals will probably be voluntary. A notice of proposed rulemaking is scheduled for March or April.

**CGD 81-009 Annex III Sound Signal Appliances**

This annex provides the technical details needed to satisfy those Inland Rules dealing with sound signals. Differences from the 72 COLREGS might include a change in the frequency range over which intensity is measured. The regulations will not be applicable to vessels which must be in compliance with the 72 COLREGS. June is the target date for a notice of proposed rulemaking.

**CGD 81-007 Annex IV Distress Signals**

Annex IV will provide the mariner with standardized signals to be used exclusively for indicating distress and the need for assistance. No divergence from the 72 COLREGS is contemplated.

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**CGD 81-010 Modification of Requirements for the Approval and Servicing of Inflatable Life Rafts**

This change would call for independent organizations to inspect servicing facilities and monitor servicing quality, delete the requirement that a Coast Guard inspector be in attendance during life raft overhaul, and require life raft manufacturers to periodically visit the facilities and submit reports to the Coast Guard. Some further technical and administrative requirements for life raft testing would be added. The project has been withdrawn pending receipt of additional information on paperwork burdens, impact on small businesses, and methods of informing the affected public regarding the proposal.

**CGD 77-029 Ocean Dumping Surveillance Equipment**

This project was started as a result of a mandate in the Marine Protection, Research and Sanctuaries Act (MPRSA) of 1972. A notice of proposed rulemaking regarding electronic monitoring devices was published in December 1979. Because of the costs involved and the absence of a major unauthorized dumping problem, the Marine Safety Council agreed with the program director's recommendation that the project be withdrawn. ‡

# A Look at the New Inland Navigation Rules

## (Part 1 of a 5-part series)

This article is the first in a series discussing the major provisions of the new Inland Navigation Rules which will go into effect on December 24, 1981. The new Inland Rules follow the format and numbering system used in the 72 COLREGS. Most of the Inland Rules are very close or identical to the 72 COLREGS. This article will cover Part A (General) and Subpart I (Conduct of Vessels in Any Condition of Visibility) of Part B (Steering and Sailing Rules). The next four issues of the Proceedings will provide a look at Subparts II and III of Part B, Part C (Lights and Shapes), Part D (Sound and Light Signals), and Part E (Exemptions), as well as the five regulatory technical annexes.

### PART A--General

This part sets forth general requirements and definitions.

**Rule 1. Application**

The new Rules shall apply to all vessels operating on United States navigable waters inside the COLREGS demarcation lines and on the United States side of the Great Lakes international boundary line. The Rules shall also apply to United States vessels when on the Canadian side of the Great Lakes, to the extent that the Rules do not conflict with Canadian law.

Vessels operating on both the inland waters and waters governed by the 72 COLREGS need comply only with the 72 COLREGS construction and equipment requirements, even when on inland waters, but must follow the Steering and Sailing Rules found in the new Inland Rules and use Inland Rules sound signals (or radiotelephone) when operating on inland waters.

Vessels of special construction or purpose whose special function would be hampered by full compliance with the technical provisions for lights, shapes, and sound-signaling appliances can apply for a certificate of alternative compliance. Under this provision, they must comply as closely as possible consistent with their special purpose. Procedures for alternative compliance are to be published this year.

**Rule 2. Responsibility**

Rule 2 is identical to Rule 2 of the 72 COLREGS and retains the "Rule of Good Seamanship" and "Rule of Special Circumstance" concepts found in the Inland Rules 27 and 29, Western Rivers Rules 25 and 26, and Great Lakes Rules 27 and 28 presently in effect. It recognizes that a body of rules cannot cover every possible situation and requires the mariner in special circumstances to use his experience and judgment to supplement the Rules or act in conflict with the Rules, if necessary. This rule has been extended to include all the Rules rather than just those relating to lights, signals, or a proper look-out, as is the case with the rules currently in effect. It does not contain a specific reference to the "neglect to keep a proper look-out," since there is now a specific requirement to maintain a look-out under Rule 5.

**Rule 3. General definitions**

Rule 3 contains general definitions that are necessary to carry out the provisions of the rules. Many of the definitions are the same as those found in the 72 COLREGS. The term "vessel constrained by her draft," found in the 72 COLREGS Rule 3(h), does not appear in the Inland Navigation Rules and therefore is not defined. It will be discussed in the section on Rule 18. The definitions found in Rules 3(l) through 3(q) have been added to define terms that are peculiar to United States inland waterways.

Rule 3(a) defines "vessel" and is identical to Rule 3(a) of the 72 COLREGS. The rules currently in effect do not contain a definition of vessel, since such a definition is found in Title 1 of the United States Code. This definition is necessary because, for the purposes of these rules, the term "vessel" has been broadened to include nondisplacement craft and seaplanes.

Rule 3(b) defines "power-driven vessel" and is identical to Rule 3(b) of the 72 COLREGS. This definition is similar to those found in the rules currently in effect, wherein "steam vessel" includes any vessel propelled by machinery.

Rule 3(c) defines "sailing vessel" and is identical to Rule 3(c) of the 72 COLREGS. This definition is similar to those found in the rules currently in effect except that the wording has been inverted to stress sailing vessels equipped with machinery rather than power vessels with sail. This addresses the many auxiliary-powered sailing vessels.

Rule 3(d) defines "vessel engaged in fishing" and is identical to Rule 3(d) of the 72 COLREGS. This definition has been modified to include the words "which restricts maneuverability." This is a much-needed modification intended to clarify the question of what constitutes the status "engaged in fishing" within the meaning of these rules; the rule excludes vessels that may have a few lines over the side but whose maneuverability is not restricted by them.

Rule 3(e) defines "seaplane" and is identical to Rule 3(e) of the 72 COLREGS. This definition is not in the rules currently in effect and has been added for completeness.

Rule 3(f) defines "vessel not under command" and is identical to Rule 3(f) of the 72 COLREGS. This definition is not in the rules currently in effect and has been added for completeness. The Great Lakes Rule 30 presently in effect, however, does contain requirements for such vessels.

Rule 3(g) defines "vessel restricted in her ability to maneuver" and is similar to Rule 3(g) of the 72 COLREGS. This definition is not in the rules currently in effect and has been added for completeness. It includes vessels which, because of the nature of their work, are unable to deviate from their course. The rule lists certain vessels in this category, but the preamble to the list makes it clear that the list is not exhaustive.

Rule 3(h) defines "underway" and is identical to Rule 3(h) of the 72 COLREGS. This definition is similar to those found in the rules currently in effect.

Rule 3(i) defines "length" and "breadth" and is identical to Rule 3(i) of the 72 COLREGS. These definitions are not in the rules currently in effect and have been added for completeness.

Rule 3(j) is a precautionary note found in the 72 COLREGS but not in the rules currently in effect. It has been added for completeness. It cautions that the Rules do not intend the use of electronic observations, such as those obtained from radar, to be a substitute for the use of visual observations.

Rule 3(k) defines "restricted visibility" and is identical to Rule 3(k) of the 72 COLREGS. This definition is similar to those found in Rule 15 of all three sets of the rules currently in effect. "Sandstorms" has been added as an example of restricted visibility. "Similar causes" could mean unnatural causes, such as smoke, in addition to natural causes.

Rule 3(l), which defines "Western Rivers", changes and extends the definition currently being used. The "Western Rivers" have been extended from the present line at the Huey P. Long Bridge above New Orleans to include all of the Mississippi above the line of demarcation through the main navigation channels of South Pass and Southwest Pass. The definition is not intended to include any other distributaries, such as Pass A Loutre, Main Pass, or Bayou Baptiste Collett. There is also no intent to include that portion of the Intra-Coastal Waterway that is not a part of the Mississippi River or the Mississippi River-Gulf Outlet. The Red River of the North has been deleted from the definition, since it has little or no commercial traffic. It continues to come within the larger category of inland waters defined in Rule 3(o). The Red River (Louisiana) is included as a major tributary of the Old River. This definition also includes the Port Allen-Morgan City Alternate Route as part of the Western Rivers in keeping with current Coast Guard regulations.

Rule 3(m) defines "Great Lakes" more specifically than the existing statutory definition to reflect the regulatory boundaries.

Rule 3(n) defines "Secretary" in such a way as to ensure that the Coast Guard will remain the enforcement agency for these Rules when it operates as part of the Navy.

Rule 3(o) defines "inland waters" to clearly specify those waters on which these navigation rules apply. This definition is not related to, nor does it apply to, other marine safety or environmental safety laws, nor does it have any relation to international law, nor does it affect any of the jurisdictional issues between the Federal Government and the States of the United States.

Rule 3(p) defines "Inland Rules" or "Rules" and is self-explanatory.

Rule 3(q) defines "International Rules."

## PART B--Steering and Sailing Rules

This part sets forth standards for vessel behavior and rights of way to minimize vessel collisions. The rules in Part B are the heart of the Navigation Rules.

### Subpart I. CONDUCT OF VESSELS IN ANY CONDITION OF VISIBILITY

#### Rule 4. Application

Rule 4, the first in Subpart I of Part B, states simply, "Rules in this subpart apply in any condition of visibility," and is identical to Rule 4 of the COLREGS. The rules in Subpart I relate to look-outs, safe speed, risk of collision, action to avoid collision, narrow channels, and vessel traffic services.

#### Rule 5. Look-out

Rule 5 is identical to Rule 5 of the 72 COLREGS and in effect perpetuates one of the requirements of the existing Good Seamanship Rule. Keeping a proper look-out is often termed the first rule of seamanship. Accordingly, it is appropriate that the first operating rule should be dedicated to the duty of look-out. Whoever is keeping a look-out must be able to give proper attention to that task and should not be assigned or undertake duties that would interfere with this function.

On vessels where there is an unobstructed all-round view provided at the steering station, as on certain

pleasure craft, fishing boats, and towing vessels, or where there is no impairment of night vision or other impediment to keeping a proper look-out, the watch officer or helmsman may safely serve as the look-out. However, it is expected that this practice will be followed only after the situation has been carefully assessed on each occasion and it has been clearly established that it is prudent to do so. Full account shall be taken of all relevant factors, including but not limited to the state of the weather, conditions of visibility, traffic density, and proximity of navigation hazards. It is not the intent of these Rules to require additional personnel forward, if none is required to enhance safety.

**Rule 6. Safe speed**

Rule 6 is identical to Rule 6 of the 72 COLREGS and is not in the rules currently in effect. The Inland Rule 16, Western Rivers Rule 16, and Great Lakes Rule 15 currently in effect admonish a vessel to "go at a moderate speed," but only when encountering conditions of restricted visibility. The terminology in the new Rule 6 is broader in concept and requires a vessel to proceed at a "safe speed" at all times. The rule is so written as to make mariners aware of the need for operating at a safe speed in all conditions of visibility. This does not mean the same speed will be safe in good visibility as in restricted visibility; indeed, the first mandate under this rule is to consider the state of visibility. What it does mean is that speed in any condition is intimately related to the immediate circumstances at hand. There is no reference in the rule to stopping a vessel's engines or reducing speed to bare steerageway, as in the rules presently in effect. Safe speed may very well require these or other actions in good or restricted visibility. Under this new rule, the prudent mariner must use his best judgment in determining what constitutes safe speed for his vessel in order that proper effective action can be taken to avoid collision. The factors the mariner is to take into account are judgmental, but this rule, coupled with Rule 2 and the responsibilities enumerated there, is believed to be an improvement over the rules presently in effect. This rule, while listing a number of factors to be considered in determining a safe speed, also provides a number of precautions that a vessel equipped with operations radar must consider. (See also Rule 19).

**Rule 7. Risk of collision**

Rule 7 is identical to Rule 7 of the 72 COLREGS and is an elaboration of the rules presently in effect on inland waters.

Rule 7(a) admonishes every vessel to use "all available means appropriate to the prevailing circumstances and conditions," including eyes, electronic devices that may be available, and any other operational or mechanical procedure that may be of help in determining if "risk of collision exists." (See also Rule 19).

Rule 7(b) recognizes the prevalent use of radar on all types of vessels. These rules are not intended to impose a requirement to outfit all vessels with radar. Manual plotting by radar is not required when the information would be meaningless, as in winding channels or close conditions in a river or canal. Systematic observation by radar would be just as or more effective than manual plotting in a narrow or twisting channel. The term "equivalent systematic observation of detected objects" refers to repeated or continuous visual radar scope observation that enables the mariner to determine the risk of collision.

Rule 7(c) strengthens Rule 7(a) by cautioning the mariner to use all means appropriate and not to make faulty assumptions from only part of the information available to him. The rule recognizes that radar can be fallible and that other means may provide better information.

Rule 7(d) repeats the existing precautionary rule for determining risk of collision; that is, if the bearing of an approaching vessel does not appreciably change, then risk of collision is deemed to exist. It also adds a precautionary comment concerning a vessel at close range, a very large vessel, or a tow, pointing out that in such situations a risk of collision may exist even if there is an appreciable change of bearing. Many vessels in United States waters are not equipped with compasses. Even in the absence of a compass, the bearing of a vessel can be determined by frequent visual observation.

**Rule 8. Action to avoid collision**

Rule 8 is identical to Rule 8 of the 72 COLREGS and is essentially a new rule insofar as the inland waters are concerned. It states that action to avoid collision shall be positive and taken in ample time. Course and speed changes should be readily apparent to the other vessels, and a succession of small changes should be avoided. The rule recognizes the fact that the course of a vessel is not necessarily a straight line and that the constraints of a narrow or winding channel may dictate how a course is to be maintained, e.g., by making small changes to avert other dangers such as running aground. It states that, given sufficient sea room, an alteration of course alone may be the most effective action to avoid close quarters, provided that action does not create additional problems with vessels elsewhere in the vicinity. It requires that action taken to avoid collision result in passage at a safe distance and, further, that the effectiveness of the action be carefully checked until the other vessel is indeed past and clear. (See also Rule 19).

Rule 8(e) requires, as a general rule, that a vessel must, if necessary, slow down or stop not only to avoid collision but also to allow more time to assess the situation. This rule must be read in conjunction with Rule 17, which prescribes the duties of the stand-on vessel. In a crossing situation, the stand-on vessel is required to keep her course and speed, except under circumstances described in Rule 17(a)(ii) and (b). (This rule will be discussed further in the section on Rule 17.)

**Rule 9. Narrow channels**

Rule 9(a)(i) is identical to Rule 9(a) of the 72 COLREGS and is similar to the Inland Rule 25 currently in effect. There is presently no requirement on the

Western Rivers for vessels to keep to the starboard side of a channel. This new rule, however, requires compliance by all vessels, not solely steam vessels (now described as "power-driven vessels"), on all waters. The rule places a burden on a vessel which is on the port side of a channel to have a need for being there or to establish agreement for a starboard-to-starboard passage.

Rule 9(a)(ii) is not found in the 72 COLREGS and is the result of the need for different rules because of peculiar or special operating conditions on certain inland waters. This rule is similar to the Western Rivers Rule 19, Western Rivers Pilot Rule 95-11, and Great Lakes Rule 24 now in effect. It recognizes the limited maneuverability of a downbound vessel and the occasional need to deviate from Rule 9(a)(i) because of river current patterns when rounding a bend in twisting, narrow channels and fairways. Giving the right of way and choice in passing to downbound vessels with a following current in the waters designated in Rule 9(a)(ii) is considered essential for the safety of navigation in narrow channels and fairways.

Rules 9(b) and 9(c) are identical to 9(b) and 9(c) of the 72 COLREGS and are similar to the Inland Rules 20, 23, and 26 now in effect. These rules recognize the confines and constraints of narrow channels or fairways, as well as the relative inability of larger vessels to maneuver as quickly as smaller vessels. They require vessels less than 20 meters in length, all sailing vessels, and all fishing vessels to navigate in such a manner so as not to impede the passage of a vessel which can safely navigate only within a narrow channel or fairway.

This is the first place in the Rules that reference to a specific vessel size appears, and it is to be noted that the metric system is used. Since one meter is equal to 3.28 feet, a 20-meter vessel is approximately equivalent to the usual 65-foot limitation for a Class 3 motorboat under the Motorboat Act of 1940 (46 U.S.C. 526-52u). From this point on, all linear measurements are given in meters, with the sole exception of the nautical mile, which remains unchanged.

Rule 9(d) is similar to Rule 9(d) of the 72 COLREGS and is essentially a new rule insofar as the inland waters are concerned. It will have wide application in harbor channels and river areas. It recognizes the problems experienced by mariners in narrow channels—currents, congestion, restricted maneuverability because of lower speed, and other similar impediments. This "stay-clear commandment" for the crossing vessel is similar to the Western Rivers Rule 19 now in effect, which is restricted to tugs with tows. Failure to sound the danger signal, although mandatory under these Rules (the word "may" is used in the 72 COLREGS) does not shift the burden of avoiding collisions. For the responsibilities of crossing vessels in relation to ascending and descending vessels on certain specified rivers, see Rule 15(b).

The last sentence of the 72 COLREGS Rule 9(d) reads in part ". . . may use the sound signal in Rule 34(d) if in doubt. . . " The new rule uses the word "shall" instead of the word "may," thereby making the signal mandatory. It is important for safe navigation that a vessel in doubt of another's intended action be required to sound the danger signal prescribed in Rule 34(d). This signal should help to clarify the crossing vessel's intentions.

Rule 9(e)(i) differs from Rule 9(e)(i) of the 72 COLREGS and adopts the whistle signals prescribed by the Inland Pilot Rule 80.6(a), Western Rivers Pilot Rule 95.17, and Great Lakes Pilot Rule 90.8 now in effect. The 72 COLREGS Rule 9(e)(i) requires signals in an overtaking situation only if the vessel being overtaken must maneuver to permit a safe passing. The vessel to be overtaken must then take steps to permit a safe passing and must sound a prolonged, a short, a prolonged, and a short blast in succession.

Rule 9(e)(i) of the new Rules, on the other hand, requires an exchange of signals regardless of the need to maneuver. The overtaken vessel gives its assent to being overtaken by sounding the same signal given by the vessel doing the overtaking, i.e., one short blast or two short blasts. Both the International Rules and the rules presently in effect on inland waters provide for sounding the danger signal when the intentions of the vessels are in doubt. The overtaking signals now being used have worked well in the inland waters and should continue to prevent unexpected maneuvers by the overtaken vessel. They are, therefore, being retained.

Rule 9(f) is identical to Rule 9(f) of the 72 COLREGS and is similar to the bend signals found in the three sets of Pilot Rules now in effect. This rule does not limit itself to bends but includes areas in narrow channels or fairways that may be obscured from other vessels. The rules currently in effect address only steam vessels; the new rule, however, is not limited to power-driven vessels, the term replacing "steam vessels."

Rule 9(g) prohibits vessels from anchoring in narrow channels in normal circumstances. It is identical to Rule 9(g) of the 72 COLREGS and is essentially an embodiment of existing law. Section 409 of Title 33, United States Code, states:

> It shall not be lawful to tie up or anchor barges or other craft in navigable channels in such a manner as to prevent or obstruct the passage of other vessels or craft.

**Rule 10. Vessel traffic services**

Rule 10 is somewhat different from Rule 10 of the 72 COLREGS, which refers to traffic separation schemes normally found only in International Rules waters. It is also considerably less detailed and leaves the specifics to be promulgated by regulations. The rule requires compliance with such Federal vessel traffic service (VTS) regulations as may be established. Inclusion of this rule also serves as a reminder to the mariner that VTS regulations may be in effect in certain port areas.

This concludes this issue's installment on the new Inland Navigation Rules. Next month's installment will begin with Subpart II of Part B. As noted in the last issue, copies of the new Inland Navigational Rules Act are available for $ 1.50 from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; (202) 783-3238 (specify P.L. 96-591, Stock Number 022-003-92759-0). A new edition of CG-169, Navigation Rules, International--Inland, will be published late this year. ‡

**As the need for new energy sources pushes oil and gas development further offshore and into new areas, the Coast Guard is making a concerted effort to ensure that these offshore operations are safe.**

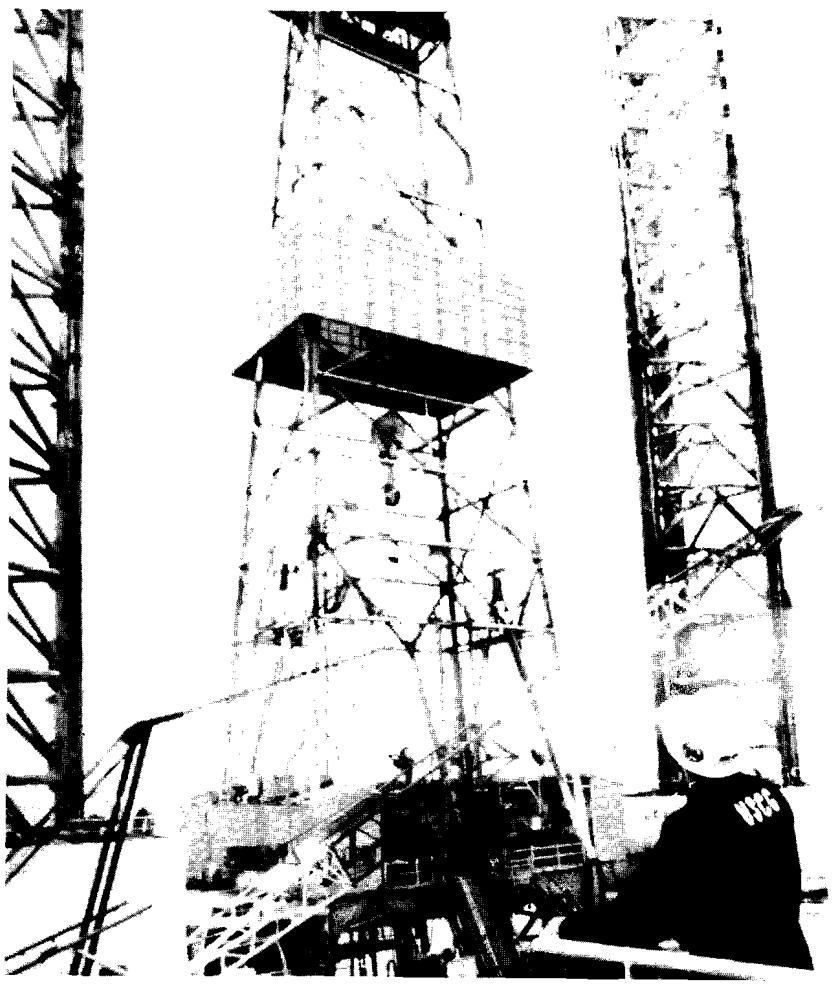
# Safety on Stilts

by Brice H. Kenny

ABOARD THE DRILLING PLATFORM GULFTIDE . . . The yellow and white helicopter hovered briefly after lifting off from the helo pad on the Offshore Drilling Exploration Company's (ODECO) drilling platform in the Gulf of Mexico.

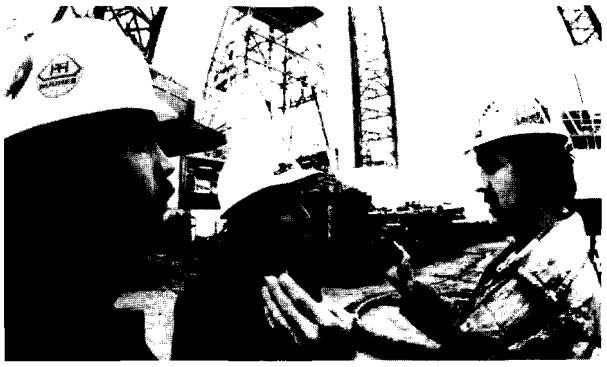
Coast Guard Lieutenant Joe Pepe hunched over, keeping one hand planted on his hard hat as the helo banked to the right and headed across the 80 miles of open water between the platform and New Orleans.

Pepe had come to do a safety inspection on the GULFTIDE, one



*Lieutenant Pepe makes an overall scan of the rig as part of his safety check.*

*Left: Lieutenant Pepe checks a life ring. Directly above him is the survival capsule. Below: David Eoff (right) and Pete Daley (left) talk over safety equipment with Lieutenant Pepe (center). Below left: Lieutenant Pepe and David Eoff check the fire extinguisher.*



of 160 mobile offshore drilling units operating on the Outer Continental Shelf (OCS).

Soon the whine of the helicopter's jet engine had been replaced by the sound of the drilling rig in full swing.

At the top of the ladder that led to the drilling floor Pepe was met by David Eoff, the industrial relations representative or "safety man," and Pete Daley, the rig foreman. On the GULFTIDE Daley was called the "tool pusher."

The Coast Guard has been tasked with ensuring compliance with safety standards on these rigs since passage of the OCS Lands Act of 1953. More recently, Congress has directed the Coast Guard to pay increased attention to occupational safety and health, a special concern because of the constant industrial activity taking place on these rigs.

"The Coast Guard is like Big Brother watching us," Eoff said. "It keeps us on our toes. We work with the Coast Guard as closely as we can and try to keep eveything up to standard. You don't see them out here that often, but you know they mean business."

Pepe's inspection ensured that firefighting gear, industrial machinery, and lifesaving equipment were all in working order. This is no small task, given the complexity and unusual nature of much of the equipment used on drilling units.

"Our supervisors try to work their men as safely as possible," Eoff said. "In spite of safety checks, there is always a certain element of danger, no matter how many precautions you take."

In addition to an annual inspection of every operational rig, the Coast Guard investigates casualties and accidents and checks overall "work place" safety.

"Awareness is a large part of any safety program," Pepe said as he checked one of the orange life rings. "The time I have spent in a Coast Guard casualty investigation office has made me aware of what can happen. So when I come out here, I look at everything as a potential hazard.

"You just see things in a different light when you become aware of what can happen. People fall into routines in a work area and might not notice a problem, but if somebody new comes aboard, a potential hazard is more likely to stick out."

The threat of pressure building in a well and causing a blowout is a constant concern. Every precaution is taken to ensure that things runs smoothly.

"We test our blowout preventers up to 10,000 pounds pressure," Daley said. "When you put 10,000 pounds of pressure on steel and something ruptures, you're going to have an explosion.

"We tested one last night, and it didn't pass. It split into two pieces. And that's why we test."

Daley keeps an especially watchful eye on his new hires.

"It's kind of rough when you first start working out here," he said. "Some of these fellas are just out from under mama's apron strings. It's kind of a shock when they come out here and work their first seven days straight. I tell my men that everything out here is iron. It will break you. You won't break it. That's the simple truth about working out here."

A traveling block on the drill floor weighs 35,000 pounds. The string of pipe it holds weighs another 350,000 pounds.

"With these weights, if something breaks, something has to give. It's crucial that you keep your mind on the job," said Daley.

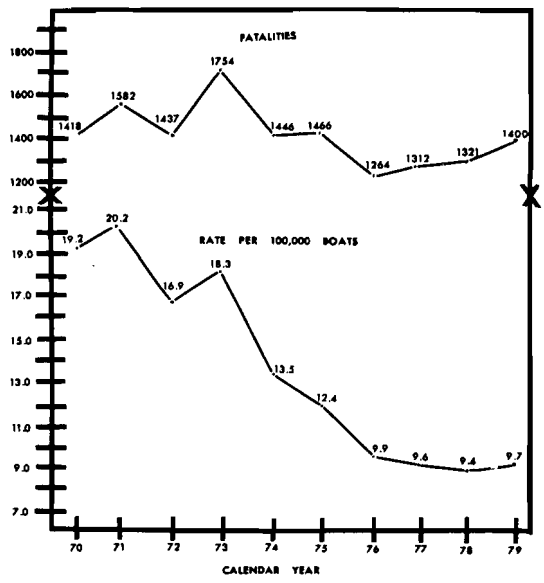
The inspection complete, Pepe climbed the ladder to the helo pad. Braced against the stiff Gulf winds, he shook hands with the two "roughnecks" and climbed into a waiting helo for the flight home. ‡

# The Anatomy of a Boating Accident

The 1979 casualty statistics appearing in the December 1980 issue of the Proceedings covered commercial vessels only. Statistics on noncommercial recreational boating accidents are compiled separately.

As is evident from the figures and graph on this page, the recreational boating fatality rate has declined sharply since 1971, when the Federal Boat Safety Act was passed, authorizing the Coast Guard to assist states in developing boating safety programs. Although in absolute terms, the number of deaths has increased since 1961, the number of boats in use has almost tripled, and the fatality rate thus shows a proportionate decrease. Funding for the safety programs was discontinued in 1979. The fatality rate shows a slight increase for that year. As noted in the Maritime Sidelights section of the January/February 1981 issue of the Proceedings, a new Recreational Boating Safety and Facilities Improvement Act was signed into law on October 14, 1980. As this issue was going to press, the funds authorized by the Act had yet to be appropriated.

Recreational Boating Fatality Rates, (1970 – 1979)




| YEAR | FATALITIES | C.G. ESTIMATE OF BOATS (in millions) | RATE (PER 100,000 BOATS) |
|---|---|---|---|
| 1961 | 1,218 | 5.85 | 20.8 |
| 1962 | 1,114 | 5.95 | 18.7 |
| 1963 | 1,167 | 6.05 | 19.3 |
| 1964 | 1,192 | 6.20 | 19.2 |
| 1965 | 1,360 | 6.35 | 21.4 |
| 1966 | 1,318 | 6.50 | 20.3 |
| 1967 | 1,312 | 6.65 | 19.7 |
| 1968 | 1,342 | 6.85 | 19.6 |
| 1969 | 1,350 | 7.10 | 19.0 |
| 1970 | 1,418 | 7.40 | 19.2 |
| 1971 | 1,582 | 7.85 | 20.2 |
| 1972 | 1,437 | 8.50 | 16.9 |
| 1973 | 1,754 | 9.60 | 18.3 |
| 1974 | 1,446 | 10.75 | 13.5 |
| 1975 | 1,466 | 11.80 | 12.4 |
| 1976 | 1,264 | 12.75 | 9.9 |
| 1977 | 1,312 | 13.60 | 9.6 |
| 1978 | 1,321 | 14.05 | 9.4 |
| 1979 | 1,400 | 14.50 | 9.7 |

According to the statistics compiled by the Coast Guard's Office of Boating Safety, the most typical scenario for a fatal accident in 1979 was as follows:

- At the time of the accident the vessel involved was cruising (in 584 of the 1,400 deaths reported).
- The vessel was an open motorboat (673 cases), its hull was made of aluminum or fiberglass (421

and 485 cases, respectively), it had an outboard motor (660 cases), and it was less than 26 feet long (1,067 cases).
- The operator was 26 to 50 years old (573 cases). Of those whose level of experience was known, 239 of the victims had had 20 to 100 hours' experience, and 190 had had over 500 hours' experience.
- There were two persons on board (472 cases), and the operator had had no known formal instruction (576 cases).
- The fault of the operator contributed to the accident (664 cases).
- There were either insufficient or no personal flotation devices on board (300 cases), or they were approved and accessible but not used (505 cases).
- The vessel involved was operating on a lake, pond, reservoir, dam, or gravel pit (668 cases) or a river, stream, or creek (410 cases).
- The water was calm (493 cases), the wind was light (503 cases), and visibility was good (835 cases).
- The accident occurred on a Saturday (358 cases) or Sunday (340 cases) in the period March to September (1106 cases) between 10:30 a.m. and 8:30 p.m. (849 cases).

Coast Guard studies show that, although 95 to 100 percent of all annual boating-related fatalities are reported, only 4 to 10 percent of non-fatal accidents are reported.

* * * * * * *

The chart below breaks down the accidents according to type. (The type refers only to the first event that occurred. Some accidents involve more than one event. A grounding followed by a sinking is included here only as a grounding, even though the sinking may have directly led to a drowning).

A complete report of boating accident and registration statistics as well as synopses of all Coast Guard boating safety regulations and narrative summaries of boating safety activities can be obtained free of charge by writing to: Commandant (G-CMA), U.S. Coast Guard, Washington, DC 20593. When ordering, specify Boating Statistics 1979, COMDTINST M16754.1A.

TYPE OF ACCIDENT

| | Total Vessels Involved | Fatalities |
|---|---|---|
| TOTAL | 6,934 | 1,400 |
| Grounding | 274 | 16 |
| Capsizing | 694 | 518 |
| Swamping/Flooding | 236 | 94 |
| Sinking | 234 | 38 |
| Fire/Explosion (Fuel) | 423 | 24 |
| Fire/Explosion (Other) | 1 | 0 |
| Collision with another vessel | 3,162 | 90 |
| Collision with fixed object | 705 | 96 |
| Collision with floating object | 230 | 32 |
| Falls overboard | 423 | 327 |
| Falls within boat | 48 | 6 |
| Struck by boat or propeller | 87 | 18 |
| Other | 341 | 49 |
| Unknown | 74 | 91 |

# Coast Guard Officer Receives National Safety Council Award

Commander David S. Smith, Acting Chief, Boating Safety Division, Second Coast Guard District, St. Louis, Missouri, recently received the National Safety Council's General Chairman's Award in recognition of his paper "The Cold Water Connection."

The award, which is the highest for papers given in the Marine Section, was presented at the 68th Annual National Safety Congress and Exposition held in Chicago October 20 - 23, 1980.

In his paper Commander Smith discusses both the harmful and helpful effects of cold water:

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## Excerpts from "The Cold Water Connection"

*As reported in "The Anatomy of a Boating Accident," the greatest number of water-related fatalities occurs in the period March to September, when the use of recreational boats is heaviest. The number of deaths in proportion to the number of accidents, however, is much higher during the cold-water months (September through May). Commander David S. Smith describes what happens after two weekend fishermen capsize on an isolated pond or lake in late September or May . . .*

"Their reactions in the next seconds will determine life or death. Unless they have been specially prepared or trained, they will probably panic. If they have been drinking alcoholic beverages, they may be confused or disoriented. They may struggle or attempt to remove their heavy clothing or try to swim to the nearest safety. They will quickly lose heat and ability to function in cold water, especially if their capillaries have been dilated by consumption of alcohol. They may have massive cardiac arrest induced by shock of cold water, lose consciousness, and rapidly sink to the bottom. It may be hours before anyone realizes they are in difficulty. It may be days before their bodies are found, if ever.

"What can be done to prevent this particular type of accident? Understand and appreciate the inherent problems of small boat instability, plus accept the idea that the older we get, the more unstable we become. Tell someone where you are going and exactly what time you will be back. Appreciate the fact that increased amounts of alcohol speed instability and disorientation, especially in colder water. In cold weather boating always wear a PFD. And learn to swim. Note that insulated clothing, minimized movement, clear thinking, and a PFD provide the best possible defenses against cold water.

"Shopping for one of the warm, serviceable, and stylish "float coats," which are also Coast Guard-approved PFDs, is one good way of protecting yourself from cold water. Floatable snowmobile suits are also on the market. One of the Canadian makers of these coats claims they will protect and extend your survival in 50°F water up to nine hours, which is two to four times longer than if unprotected. These float coat PFDs are truly thoughtful Christmas and birthday gifts, as well as being worthwhile insurance policies in themselves. Spending a lot of money for a boat and associated gear, but not buying or actually practicing proper use of personal flotation devices, can be fatally foolish."

*Whether a person thrown into cold water is wearing a PFD or not, he can conserve vital body heat by going into H.E.L.P., the Heat Escape Lessening Posture:*

"Vital body heat can be conserved through insulating those areas where heat is most readily lost. The three prime heat loss areas are: the head, the armpits and down the sides, and the groin. In H.E.L.P. the arms are securely held to the side with wrists placed over the chest. The ankles are crossed, with legs drawn up as close as possible to the chest. The head should be maintained as much out of the water as possible. This posture, or tightly huddling side to side with two or more people, may extend survival time two times longer than swimming or other activity. If thrown into cold water, the best survival technique is to initially move slowly and deliberately, using as little physical activity as possible. Rapid motion or other vigorous activity wastes body heat, forces out insulating air trapped in clothing, and disturbs warmed, insulating layers of water next to the body. Therefore, in most cold water cases, it is advisable to assume the H.E.L.P. position or to raise the body as high as possible from the water (as on the bottom of an overturned boat) unless assistance is within very short swimming range. Practice H.E.L.P. and PFD use, in the water, before you really need them.

*Commander Smith goes on to point out that while cold water is the villain in many water fatalities, it might also be an unappreciated life preserver. Dr. Martin Nemiroff of the U.S. Coast Guard has successfully revived a number of "drowning victims" without permanent brain damage. People presumably dead from drowning who have been under far longer than four minutes still have breathable air in their lungs or usable oxygen in their bloodstream.*

"Survival in these cases where the body tissues (especially the brain) are cooled, requiring less oxygen, is apparently aided by an involuntary reflex triggered by immersing the face in cold water. This reflex is known as 'diving response.' In diving response, a small, yet sufficient oxygen supply is very slowly and imperceptibly circulated between the lungs, heart, and brain, but not to the extremities or skin. This diving response has been observed in air-breathing, aquatic mammals such as the whale, porpoise, or seal. When threatened, these animals have the ability to remain submerged for extended periods of time, up to a half hour for some species. Man, as a mammal, unknowingly has a capability for similar behavior. However, we are less apt to use this lifesaving response. Diving response is related to hypothermia, since both involve the retreat of warm, oxygen-carrying blood into the body's core.

"The treatment for hypothermia and cold water near drowning is also similar. In both cases, the patient is warmed from the inside out. The best method for this is inhalation of moist, heated oxygen. Aggressive, sustained resuscitation, initially attempted using rescue breathing and cardiac massage (cardiopulmonary resuscitation, or CPR) is recommended by Dr. Nemiroff in all drowning cases. He further recommends that even though the victim shows no apparent vital signs, he should be taken immediately to an adequate medical facility, treated with continuing CPR or moist, warm oxygen inhalation, and rewarmed to normal body temperature. As internal body temperature approaches its normal level, vital signs will become more apparent. Additionally, Dr. Nemiroff warns that many revived near drowning victims die within 24 hours of the accident. This is caused by residual, untreated water in their lungs. Therefore, in all drownings or near drownings, the victim should be taken to a hospital immediately.

"Cold water can kill, or, in an unknown number of instances, cold water can prolong life. Much has to be learned about this interaction. The water temperature that marks the lethal/beneficial threshold has yet to be clearly identified. However, if you and your family go near the water, learn to swim. After that, find out how you can protect or defend yourself against the Cold Water Connection. Lastly, attempt to teach your children the cardinal rule of safety: aprreciation of the eventual outcomes of their actions. If you do this, you will not only teach safety, but you'll be teaching something much more valuable. Some call it common sense, some call it responsibility. All thinking adults respect it as maturity."

*Commander Smith would like to give credit to the following sources:*

*Concept Systems Inc., of Fort Collins, Colorado, for the slide show Cold Water Near Drowning: What You Can Do;*

*(British) Royal Navy Training Films for the film Cold Can Kill;*

*Crowley Environmental Services Corporation, Seattle, and J. Hayward for the film Man in Cold Water; and*

*TIME Magazine for "Natural Life Preservers," August 22, 1977.*

*Anyone desiring more information on the Cold Water Connection is invited to contact Commander Smith at the Boating Safety Division, Second Coast Guard District, 1430 Olive, St. Louis, Missouri 63103; (800) 325-7376 (for the area between the Rocky and Allegheny Mountains) or (314) 425-5971.* ⚓

*Commander Smith is given a plaque by Rear Admiral Venzke. He is wearing one of the coverall-type survival suits he uses in demonstrations.*

# Operation "Hope Not"—Man Overboard

*The following article is reprinted courtesy of the Chevron Shipping Company, which featured it in the February 1980 issue of its Safety Bulletin.*

It it time again to review and plan for the emergency which all hope will never happen.

What do you do when the word is passed to the bridge that a man has been lost overboard? Turn around and look for him? In simple words, that is exactly what you do, but there is more to it than that. As in any emergency, the action to be taken must be planned ahead if the rescue is to be successful.

A RESCUE PLAN FOR MAN OVERBOARD MUST INCLUDE:

**Mark the Spot**—If it is a hot trail and the man just went overboard, release at least one of the bridge wing life rings which are equipped with light and smoke; get other life rings overboard as quickly as you can.

**At the Same Time, Commence Turning the Ship Around**—If the bridge watch is immediately aware of the incident and conditions permit, the first helm order should be full rudder in the direction of the side of the ship from which the man fell. This may throw the stern away from him and prevent him from being drawn into the propeller. If you don't know from which side of the ship he fell, do not give the rudder order until you are sure that he has passed the stern.

A properly executed Williamson turn is the most effective way to turn the ship on the reciprocal course and regain the vessel's track line. As little as a quarter of a mile off the track line reduces the chance of spotting the man in the water (probably without life jacket). A man's head and the tops of his shoulders are a small target. Use the position of the life rings to assist in regaining the original track line.

**Sound the Man Overboard Alarm**—This is important, but commence the above actions first.

**Post Extra Eyes**—Post as many extra lookouts as you can muster and station them as high as possible near the bridge and at bow and stern.

**Notify All Shipping in the Area**—Get on the radio immediately and notify all shiping in the area, giving the time and position of the incident and any additional facts to assist in rescue operations.

**Have Rescue Gear and Apparatus at the Ready**— Have one ship's lifeboat on each side uncovered and swung out. In the case of motor lifeboats, make sure the motor works beforehand. Have your boat crew ready. Blankets and hot coffee in the rescue boat are important. Have a stretcher ready. Ladders over the side. Provide portable radios for the lifeboat and the weather deck and test communications with the bridge. Brief the boat officer on visual signals between lifeboat and ship in the event of radio failure. At night, have search lights and lifeboat embarkation lights uncovered and ready.

**Comments--A Muster of the Crew**—If there is any doubt as to the number of men overboard, it is important to determine quickly the exact number of those who are in fact missing. The muster must not interfere with recovery efforts, but should be done as rapidly as possible.

**Conduct a Thorough Search Pattern**—Make certain that you have retracked a sufficient distance and that you have exhausted all possibilities of effecting rescue before you give up the search.

**What if Heavy Seas Prevent Launching a Lifeboat?**—One accepted method is to bring the ship as close to the man as possible, and dead in the water to windward, so that the vessel will be set down to the man, bringing him alongside at the ladder. In some cases, the man will not be physically able to take a line, gain the ladder, and climb it without assistance. If conditions permit, it may be possible for a volunteer to go down the ladder, secure a line to the man, or place him in a sling or cargo net, and assist him as he is hoisted aboard. If this is attempted, the volunteer should wear a buoyant work vest and safety belt with tended lifeline. A cargo net or gangway safety net rigged against the ship's side at the sea surface under the ladder may be used to provide a wider area for support. The forward life raft, inflated and with the canopy cut away, could be launched and made fast at the ladder to provide a platform.

**Plan Ahead**—Senior officers should visualize the various possible situations which can result from a Man Overboard incident and plan for them. When action is required, advance planning can spell the difference between success and failure.

**Additional Comment**—Reports from vessels have emphasized the value of radio communications between the bridge and the lifeboat—particularly when used to guide the boat from the higher vantage of the bridge, where the victim can often be seen when he cannot be sighted from the lifeboat. ‡

# Chemical of the Month

## Asphalt

| | |
|---|---|
| synonyms: | bitumen (natural asphalt)<br>petroleum pitch/asphalt<br>Trinidad pitch<br>mineral pitch |
| flash points: | range from less than 50°F (10°C) to over 400°F (204°C), depending on the type |
| autoignition temperature: | 900+°F (482+°C) for petroleum pitch |
| density: | 1.00 to 1.18 |
| Threshold Limit Values | |
| time weighted average: | 5 $mg/m^3$ |
| short term exposure limit: | 10 $mg/m^3$ |
| Identifiers | |
| U.N. Number: | 1999 |
| CHRIS Codes: | ASP/ARF/ASR |

Unlike the previous substances featured in Chemical of the Month, asphalt is not a specific chemical or chemical compound. The American Society for Testing Materials defines it as "a dark brown to black cementitious material in which the predominating constituents are bitumens [viscous mixtures of hydrocarbons] which occur in nature or are obtained in petroleum processing." The Asphalt Institute in College Park, Maryland, considers the term "asphalt" to include such items as asphalt cement, asphalt fluxes,* asphalt cutbacks (asphalt cement which has been liquefied by blending with petroleum solvents, or diluents), asphalt emulsions, asphalt road oils, roofing and waterproofing asphalts, and all other asphalts and asphalt residuums.

The first asphalts used by man were found in naturally occurring pools. These still exist in various parts of the world. An example here in the United States is the La Brea Tar Pit near Los Angeles. This pit contains the skeletons of prehistoric animals that became trapped in its tar. Asphalt was used as cement to hold the brick walls of Babylon together and to pave the city's streets; the walls of the Tower of Babel were also held together with asphalt. All of this took place 4000 years ago. The Egyptians, around 300 B.C., used asphalt for mummification. More recently, in 1802, the French used rock asphalt for floor, bridge, and sidewalk surfacing. In 1876 Congress directed that Pennsylvania Avenue in Washington, DC be paved with natural asphalt.

Tens of millions of tons of asphalt are still being used as a paving material. In the United States, about 96 percent is used for paving and roofing operations. Asphalt is also used in rust-preventive compounds, expansion joints, waterproofing, cattle sprays, and tennis and handball court surfaces. The list goes on.

Commercial production of asphalt began at the turn of the century. Today, almost all asphalt used is produced during the refining of crude petroleum. During this process, known as fractionation, the lighter hydrocarbons are driven off, themselves to be further refined into naphtha, gasoline, kerosene, and other petroleum products. The remaining residue is called topped crude. The bulk of the topped crude is then further refined to produce asphalt cement. This is an asphalt which meets certain specifications for use in paving and industry and for special purposes. To the asphalt cement is added various diluents, or "cutter stocks," of light petroleum fractions. Upon exposure to atmospheric conditions the diluents evaporate, leaving the asphalt cement to perform its function. Some of the major products are: Rapid-Curing (RC) cutbacks (a fast-setting grade)—asphalt cement to which gasoline or naphtha has been admixed; Medium-Curing (MC) cutbacks—asphalt cement to which kerosene has been admixed; Slow-Curing (SC) or road oils—asphalt cement which, generally, has been reduced during the refining directly to grade; emulsified asphalt—asphalt cement to which water and an emulsifier are admixed; and air blown or oxidized asphalts—asphalt which, through its contact with air heated to 400 - 550°F (204 - 288°C), becomes particularly weather-resistant.

Simple precautions, such as using face masks or breathing apparatus, can be taken to guard against the harmful effects of exposure to asphalt and its fumes during the manufacture, handling, transport, or use of this substance. The fumes are an irritant to the mucous membranes of the eyes and respiratory tract. Since many of the asphalts must be heated before one can work with them, precautions against burns should be taken.

The National Institute of Occupational Safety and Health recommends that a confined space which has previously contained asphalt not be entered until the atmosphere has been tested. If asphalt vapors exceed 50 $mg/m^3$, positive pressure self-breathing apparatus should be used, along with a harness and a lifeline attended by a helper. The helper should also be provided with protective equipment.

*The assistance of the Asphalt Institute is gratefully acknowledged.*

HAZARD EVALUATION BRANCH
CARGO AND HAZARDOUS MATERIALS DIVISION

*Flux: a thick, relatively nonvolatile fraction of petroleum which may be used to soften asphalt to a desired consistency.

# Lessons from Casualties

On June 5, 1979, there was an explosion in the forepeak area of a U.S. containership moored at Terminal 5, Seattle, Washington. Two men engaged in spray painting the forepeak ballast tank of the ship were killed as a result of the explosion. There was no structural damage to the vessel or release of oil to the environment.

The proximate cause of the explosion in the forepeak area of the ship was the ignition of an accumulation of flammable mixture of air and paint fumes which was present in the forepeak tank and possibly in the 3rd Deck Bosun's Stores compartment of the vessel. The explosion resulted in the deaths of two men. The accumulation of flammable vapors was the result of the spray painting operation, the presence of an open can of solvent (methyl ethyl ketone), and the lack of forced ventilation adequate to disperse the vapors. The specific source of ignition cannot be determined, but the most likely source appears to be one of the non-explosion-proof portable electric lights, perhaps damaged as it was being moved.

The explosion did not result in any structural damage to the forepeak tank or adjacent spaces of the vessel.

This accident was jointly investigated by the Occupational Safety and Health Administration and the Coast Guard. As a result of their investigation, the Bellevue Area Office of OSHA cited the vessel owners for violation of 29 CFR 1915.24(b)(1), 29 CFR 1915.24(b)(7), 29 CFR 1915.24(b)(8), and 29 CFR 1910.134(d)(2)(ii). These regulations require certain special precautions to be taken when flammable solvents with a flash point below 80°F are being used; these include exhaust ventilation, frequent testing to determine vapor concentration, and the use of explosion-proof lights. Proposed penalties for these violations total about $ 25,000. ‡

# Coast Guard Publications Currently Available

The following publications can be obtained by writing to: Commandant (G-CMA), U.S. Coast Guard, Washington, DC 20593:

| | |
|---|---|
| CG-169 | Navigation Rules, International—Inland (5-1-77) |
| CG-169-1 | COLREGS Demarcation Lines (7-15-77) |
| CG-174 | Manual for the Safe Handling of Flammable and Combustible Liquids and Other Hazardous Products (9-1-76) |
| CG-182-2 | Specimen Examinations for Merchant Marine Engineer Licenses; First Assistant, Steam and Motor, any Horsepower (4-76) |
| CG-182-3 | Specimen Examinations for Merchant Marine Engineer Licenses; Chief Engineer, Steam and Motor, any Horsepower (4-76) |
| CG-182-4 | Specimen Examinations for Uninspected Motor Vessel Engineer Licenses (Chief Engineer and Assistant Engineer) |
| CG-439 | Bridge to Bridge Radiotelephone Communications (12-1-72) |
| CG-467 | Specimen Examinations for Uninspected Towing Vessel Operators (10-1-74) |
| CG-486 | Shippers Guide to Hazardous Materials Regulations (Water Mode) (8-77) |
| M16714.3 | (Old CG-190) Equipment Lists—Items Approved, Certified or Accepted under Marine Inspection and Navigation Laws (8-1-79) |
| M16752.2 | (Old CG-497) Rules and Regulations for Recreational Boating (12-78) |

The following publications can be obtained by writing to: Commandant (G-MHM), U.S. Coast Guard, Washington, DC 20593:

| | |
|---|---|
| CG-474 | When You Enter That Cargo Tank (3-76) |
| M16616.4 | (Old CG-478) Liquefied Natural Gas, Views and Practices, Policy and Safety (3-80) |
| (No Number) | Handling Requirements for Vinyl Chloride (1979) |
| M16616.5 | Safe Handling of Styrene (1980) |

The following publications can be obtained by writing to: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, or calling: (202) 783-3238. Please confirm availability and price with the Government Printing Office before placing your order.

| | |
|---|---|
| CG-388 | Chemical Data Guide for Bulk Shipment by Water (1976). Stock No. 050-012-00117-1 |
| CG-515 | Rules and Regulations for Foreign Vessels Operating in the Navigable Waters of the U.S. (12-1-77) |
| | Chemical Hazards Response Information System |
| M16465.11 | A Condensed Guide to Chemical Hazards (Manual 1). Contents Stock No.: 050-012-00146-4. Binder Stock No.: 050-012-00151-1. |
| M16465.12 | Hazardous Chemical Data (Manual 2). Contents Stock No.: 050-012-00147-2. Binder Stock No.: 050-012-90251-8. |
| | Enclosure (1) to Manual 2. Graphs of Temperature Dependent Physical Properties. Contents Stock No.: 050-012-00158-8. Binder Stock No.: 050-012-90251-8. |
| M16465.13 | Hazard Assessment Book (Manual 3). Contents Stock No.: 050-012-00160-0. Binder Stock No.: 050-012-90251-8. |
| M16465.14 | Response Methods Handbook (Manual 4). Contents Stock No.: 050-012-00152-9. Binder Stock No.: 050-012-90251-8. |
| | Revisions |
| | Change 1 to M16465.11. Stock No.: 050-012-00162-6. |
| | Change 2 to M16465.12. Stock No.: 050-012-00165-1. |

# Nautical Queries

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) The prevailing winds in the band of latitude from approximately 15° north to 30° north are called the

A. prevailing westerlies.
B. northeast trade winds.
C. southeast trade winds.
D. doldrums.

REFERENCE: Bowditch

(2) Cyclones that have warm sectors usually move

A. westerly.
B. parallel to the isobars in the warm sector.
C. toward the nearest high pressure area.
D. faster than the accompanying cold front.

REFERENCE: Donn's 2nd Edition

(3) Which of the following will aid evaporation of surface water?

A. A decrease in temperature
B. The absence of wind
C. A low atmospheric pressure
D. All of the above

REFERENCE: Donn's 2nd Edition

(4) At the magnetic equator, there is no induced magnetism in the vertical soft iron because

A. there is no horizontal component of the earth's magnetic field.
B. the quadrantal error is 0°.
C. there is no vertical component of the earth's magnetic field.
D. the intercardinal headings have less than 1° error.

REFERENCE: Dutton 13th Edition

(5) A sextant having an index error that is "on the arc" has a

A. positive error.
B. dip error.
C. negative error.
D. semidiameter error.

REFERENCE: Dutton 13th Edition

ENGINEER

(1) Water hammer in a steam heating system can be caused by

A. filling the auxiliary boiler with cold water.
B. steam admitted to a cold pipe.
C. filling the auxiliary boiler with hot water.
D. draining a soot blower line before cracking the supply valve.

REFERENCE: Osbourne 3-21

(2) When a fixed $CO_2$ system for a propulsion machinery space is energized, it will

I. warn personnel to leave the space.
II. secure power ventilation to the space.

A. I only
B. II only
C. Both I and II
D. Neither I nor II

REFERENCE: Marad FFM 182-183

(3) Which statement concerning the operating characteristics of a squirrel cage motor is true?

A. Rotor slip is dependent on the motor load.
B. An increase in motor load results in less slip.
C. A decrease in rotor speed results in less generated current.
D. A decrease in rotor speed produces a weaker magnetic field.

REFERENCE: Basic Electricity

(4) When the voltage and the current in an A.C. circuit reach their peak value at the same time, the power factor is

A. lagging.
B. leading.
C. unity.
D. infinity.

REFERENCE: Hubert

(5) Monitoring the most remote bearing's oil pressure will ensure that, as long as the pressure remains at its proper value, the

I. system head is being maintained.
II. other bearings in the system are receiving oil.

A. I only
B. II only
C. Both I and II
D. Neither I nor II

REFERENCE: Harrington F89

ANSWERS

DECK
1.B;2.B;3.C;4.C;5.A
ENGINEER
1.B;2.C;3.A;4.C;5.A

## MERCHANT MARINE SAFETY PUBLICATIONS

In previous issues this list has included publications that were unavailable because they were being revised or reprinted. These publications are reprints of selected subchapters of the Code of Federal Regulations (CFR). The Superintendent of Documents publishes the CFR in yearly updated form. The CFRs are thus the best source for those needing up-to-date information on Coast Guard regulations. The price and availability of any desired volume can be obtained by calling (202) 783-3238 or writing: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Publications previously appearing on this page which do not fall into the category described above will henceforth be listed separately. That list will be published periodically; it appears for the first time in this issue, on page 49.

Listed below are the Code of Federal Regulations (CFR) subchapters covering Coast Guard regulations (Title 46, Chapter I). Chapter I comprises nine volumes. A desired volume should be ordered by referring to the parts it contains; for example, if marine engineering regulations (Subchapter F) are needed, 46 CFR Parts 41 to 69 (the third volume) should be ordered. The numbers shown in the "Coast Guard Equivalent" column refer to previous reprints of selected subchapters. See the chart below.

| | Volume | Coast Guard Equivalent | Contents |
|---|---|---|---|
| 1. | 46 CFR Parts 1 to 29 | None | Subchapter A—Procedures Applicable to the Public. Parts 1 to 9. |
| | | CG-191 | Subchapter B—Merchant Marine Officers and Seamen. Parts 10 to 16. |
| | | CG-258 | Subchapter C—Uninspected Vessels. Parts 24 to 29. |
| 2. | 46 CFR Parts 30 to 40 | CG-123 | Subchapter D—Tank Vessels. Parts 30 to 40. |
| 3. | 46 CFR Parts 41 to 69 | CG-176 | Subchapter E—Load Lines. Parts 42 to 46. |
| | | CG-115 | Subchapter F—Marine Engineering. Parts 50 to 64. |
| | | None | Subchapter G—Documentation and Measurement of Vessels. Parts 66 to 69. |
| 4. | 46 CFR Parts 70 to 89 | None | Subchapter H—Passenger Vessels. Parts 70 to 89. |
| 5. | 46 CFR Parts 90 to 109 | CG-257 | Subchapter I—Cargo and Miscellaneous Vessels. Parts 90 to 106. |
| | | None | Subchapter I-A—Mobile Offshore Drilling Units. Parts 107 to 109. |
| 6. | 46 CFR Parts 110 to 139 | CG-259 | Subchapter J—Electrical Engineering. Parts 110 to 139. |
| 7. | 46 CFR Parts 140 to 155 | None | Subchapter N—Dangerous Cargoes. Parts 146 to 149. |
| | | None | Subchapter O—Certain Bulk Dangerous Cargoes. Parts 150 to 154. |
| 8. | 46 CFR Parts 156 to 165 | CG-268 | Subchapter P—Manning of Vessels. Part 157 |
| | | None | Subchapter Q—Specifications. Parts 160 to 165. |
| 9. | 46 CFR Parts 166 to 199 | None | Subchapter R—Nautical Schools. Parts 166 to 168. |
| | | CG-323 | Subchapter T—Small Passenger Vessels (Under 100 Gross Tons). Parts 175 to 187. |
| | | None | Subchapter U—Oceanographic Vessels. Parts 188 to 196. |
| | | None | Subchapter V—Marine Occupational Safety and Health Standards. Part 197. |

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