

PROCEEDINGS

OF THE MARINE SAFETY COUNCIL



DEPARTMENT OF TRANSPORTATION

UNITED STATES COAST GUARD

PROCEEDINGS

OF THE MARINE SAFETY COUNCIL

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FRONT COVER

The GT *Chevron Oregon* is shown on sea trials on the Columbia River. Built by the FMC Corporation at Portland OR, the new 651-foot, 35,000 d.w.t., double-bottom tanker is designed to carry 267,000 barrels of petroleum cargo. (Photo by Ackroyd Photography, Inc.)

BACK COVER

The Commandant, Members of the Marine Safety Council, and the Staff of the PROCEEDINGS wish our readers a Merry Christmas and an accident free New Year.

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**THIS COPY FOR
NOT LESS THAN
20 READERS—
PLEASE PASS IT
ALONG**

maritime sidelights

FREEZEUP

A new technique for predicting ice freezeups in the upper St. Lawrence Seaway is being used operationally by the National Oceanic and Atmospheric Administration with the hope of saving time and money for shippers using the seaway.

The freezeup predictions—tested for 2 years—use mathematical equations developed at the Commerce Department agency's Great Lakes Environmental Research Laboratory in Ann Arbor, Mich., and based on only two quantities—the current water temperature at the mouth of the St. Lawrence at Kingston, and the predicted December flow rate and associated heat loss in the river's 100-mile journey from Kingston to Massena, N.Y.

Using the data, NOAA's National Weather Service Forecast Office in Buffalo issues predictions of the freezeup on the 1st and 15th of October, November, and December.

Freezeup predictions 2-3 months in advance could provide shippers the necessary lead time to schedule vessels into and out of the Great Lakes until ice prevents the continuation of normal navigation.

Commercial shipping activity on and into the Great Lakes normally ceases 3-4 months each winter because of extensive ice cover on the interlake connecting channels and the St. Lawrence River. Until now operators of vessels using the seaway have been forced to assume the system above Montreal would not be open after December 15.

Ocean vessels must vacate the seaway system before it is closed or face the prospect of being locked in for three and a half cold unproductive months.

According to Dr. Frank H. Quinn at the Environmental Research Laboratories, inadequate attention has been given to annual and seasonal weather variations when establishing the closing date. Records show freezeups vary by as much as 3 weeks from year to year.

More than 50 countries presently use the St. Lawrence Seaway. With operating costs running between \$3,000 and \$5,000 per day for ocean-going vessels, more accurate predictions of the exact closing date at Massena could save thousands of dollars daily. In addition, taking necessary ice control measures at the proper time could prevent serious power losses and shoreline damage.

The prediction technique was developed as part of a 5-year federal study—the Great Lakes-St. Lawrence Seaway Navigation Season Extension Demonstration Program—at the request of the St. Lawrence Seaway Development Corporation, which operates the waterway for the Department of Transportation.

NOAA scientists are also developing techniques for predicting the ice breakup date in the St. Lawrence each spring.

HOOKED ?

Inattention to detail and an apparent material defect combined to cause the death of one man and injury to another early this year on a pile driving operation in the Persian Gulf.

Prior to a pile being driven, pad eyes attached to the pile had to be removed. Two workers were placed in a personnel basket and raised approximately 80 feet into the air to accomplish the burning work. The raising and lowering of the basket was con-

trolled by a small air-operated winch. When the work was completed, lowering of the basket was started. While the basket was still approximately 35 feet in the air above the barge, the lifting cable came in contact with the surrounding structure, allowing the cable to slack and the personnel basket to unhook and fall. The lifting hook was not provided with a safety latch nor was it otherwise moused to prevent disengagement of the lifting wire. The basket struck the center deck bracing of the barge and then fell overboard an additional 15 feet into the water.

Both men were wearing Coast Guard approved work vests. One man surfaced and was retrieved from the water and sent to the local hospital for his injuries. The second man did not surface and was retrieved from the seabed approximately 10 to 12 minutes later by divers. He was found lying about 6 feet from the basket. The man was given artificial respiration and also sent to the same local hospital where he was pronounced dead. Death was attributed to drowning. It was also noted that the deceased had received a severe blow on the right side of his head.

Why the man's work vest did not bring him to the surface is unknown. His body weight was small and he was not weighted down with tools or equipment. The Coast Guard investigating officer requested that the vessel owners provide the vest worn by the victim for examination. Owners reported that the vest had been stowed with all the others during the confusion and was therefore unidentifiable.

To avoid the possibility of the same unidentified work vest (possibly faulty) being used again, the owners ordered that all of the vests be disposed of upon receipt of new ones from the U.S. As a result of this casualty, company directives have been issued that no personnel lifting will be done without use of a lifting hook with a safety latch.

Tankers: Safety and the Environment

An Appraisal

By Rear Admiral W. M. Benkert, USCG

Chief, Office of Merchant Marine Safety

Just a glance at the title of this paper may well give a prospective reader fits, heartburn and a general feeling of becoming slightly ill. I fully realize that in one form or another those of us both professionally and nonprofessionally interested have all been inundated, perhaps to saturation, with prose relative to this subject generally or to one or more of its specific facets. Please bear with me—I hope to present in this paper a minimum of background to set the stage, a bit of philosophy, certain thoughts regarding particular aspects of the general subject under discussion, and a delineation of several specific actions which are being studied and/or taken by the U.S. Coast Guard, other agencies, and the marine industry relative to individual pieces of the complex interrelationship which develops when one looks at the marine transport of oil and other bulk liquid products from a safety/environmental protection viewpoint.

Most of you are, I am sure, generally aware of the Federal statutory background incident to this subject. Let me just say that for many years until the very recent past the impetus behind essentially all of our Coast Guard regulatory activities relative to tank vessels has been provided by legislation aimed at safety—safety of the vessels, their cargo, and of the personnel manning them—in a sense, protecting all of *these* from the *environment*. However, recent legislation,



generated by our concern individually, nationally, and internationally, for the preservation (and improvement) of the environment in which we live, has created a shift in emphasis looking toward the protection of this *environment* from vessels, their cargo, and the personnel manning them. A quick recitation of at least a partial listing of these legislative efforts affecting the maritime field (both those in effect and those anticipated to become effective in the near future) would include the Federal Water Pollution Control Act (1972), the National Environmental Policy Act (1969), the Ports and Waterway Safety Act (1972), the National Environmental Policy Act (1969), and

the International Convention for the Prevention of Pollution from Ships, 1973, with its predecessor international agreements. Just a cursory scanning of these statutes and conventions, even by those generally unfamiliar with the subject, will certainly suffice to substantiate the point that environmental concern has come to the fore.

Now what this all means to those of us who are required to deal with the implementation of this complex, recent legislative maze is that we must develop sensible, meaningful, and practical regulatory action to fulfill the general intent and the specific requirements of the laws. We must do this in the manner indicated by our law, specifically, within the procedures outlined in the Administrative Procedures Act (thus achieving the desired appraisal of our contemplated actions by the public across the board) and in certain cases in this designated procedural manner as amplified by the content of the particular law itself being implemented. Further, our environmentally oriented studies, research, and regulatory actions cannot proceed in a vacuum; we must always and most importantly, consider the effect that such actions will have upon safety, and last but certainly not least, consider the economic impact and the cost/environmental benefit of these actions. Perhaps one further thought is ap-

propriate here—we must make every effort to insure that our actions are not unduly influenced by the emotional atmosphere which at times surrounds this entire subject.

I have tried in the above paragraph to outline very briefly both a bit of philosophy and certain general procedural thoughts. For purposes of brevity I do not intend here to carry this further, but for those of you who are particularly interested in a far more complete and thorough expansion in this vein, I should like to commend to your reading the preamble to the regulations (33 CFR 154–156) implementing portions of the Federal Water Pollution Control Act which was published in Federal Register No. 246, Volume 37, on 21 December 1972. Also, I believe that a brief study of the Final Environmental Impact Statement relative to Regulations for Tank Vessels Engaged in the Carriage of Oil in Domestic Trade, published 15 August 1975 and submitted at that time to the Council on Environmental Quality, would provide the reader with a thorough insight into the philosophy, thought, and method of approach pursued by the Coast Guard, in conjunction with other interested and involved parties, looking toward developing environmentally protective regulations while attempting to following the general procedural format outlined in the previous paragraph.

Having dealt (however briefly) with some general observations, I should like to discuss several specific areas of safety/environmental regulatory concern relative to tankers which are either now under appraisal or have already been to a degree developed and implemented:

1. *Vapor Recovery Systems.*—Regulations are presently under development by the Environmental Protection Agency (under the authority and pursuing the intent of the Clean Air Act) in effect requiring such systems for the handling of petroleum products in one geo-

graphical area (Houston/Galveston), and there is certainly the potential for similar regulation applicable to other areas of the country where particular concern exists relative to air quality. We are working very closely with the Environmental Protection Agency and industry to insure that concern for the environment will not result in the generation of a safety problem through the medium of ill-advised, parochial environmental regulation. Additionally, the Coast Guard is developing, in conjunction with the industry, proposed rulemaking which will deal specifically with the safety concerns associated with vapor recovery systems.

2. *Tanker Cargo Handling.*—A Research and Development study has been initiated by the Coast Guard on tank venting and generally we have other like efforts underway both in-house and out. The total subject of tank venting, tank cleaning, inerting of cargo tanks, etc., deserves a comprehensive evaluation relative to tanker safety. It is obvious that any appraisal along this line has direct environmental overtones.

3. *Tank Ship Design and Construction.*—The design requirement for incorporating particularly located segregated ballast space in new tank vessels over 70,000 DWT engaged in domestic trade is aimed at the goal of significantly reducing operational pollution and providing a degree of protection against accidental pollution resulting from collisions and groundings. This inclusion of excess cubic does complicate the structural problem and can have a certain adverse effect on damage stability, thus presenting the potential for a compromise of the overall survivability of a vessel in case of a casualty (collision and grounding). In essence, another case of the necessity for safety evaluation in conjunction with implementing environmentally oriented requirements.

4. *Tank Barge Design.*—The Coast Guard, in proceeding toward the de-

velopment of improved environmentally oriented barge design requirements, is presently evaluating the results of a joint Maritime Administration/Coast Guard Tank Barge Study (published December 1974) relative to the effectiveness of differing basic barge designs in combating pollution resulting from casualties to the barges. It is quite apparent that the specific regulatory action to be developed in this particular field must be the result of a very careful appraisal of all of the appropriate influencing factors mentioned earlier in this paper, with an all-important consideration being that of maintaining and, if possible, improving safety.

A number of other specific areas of effort could be cited here, but I am hopeful that these few examples may serve the purpose that I have intended. My purpose has not been to fully itemize all of the particular activities relative to the total regulatory appraisal of tank vessels which are being undertaken or contemplated. My purpose has been to be to a degree informative while stressing the need for all of us not to operate in a tunnel while losing sight of all that surrounds the tunnel. Undue and poorly thought-out regulatory concern for the environment can act to the detriment of overall safety. On the other hand, properly developed actions aimed at improving safety will almost invariably result in a condition, status, or operation which may well have a beneficial effect on the environment directly or indirectly. In this particular vein, the work that the Coast Guard, MARAD, and the entire marine industry are doing toward insuring better trained and more capable shipboard and dockside personnel, coupled with a thorough review and upgrading of shipboard operating procedures, will undoubtedly yield dividends not only in overall safety but in facilitating resultant conditions favorable to an improved environment. †

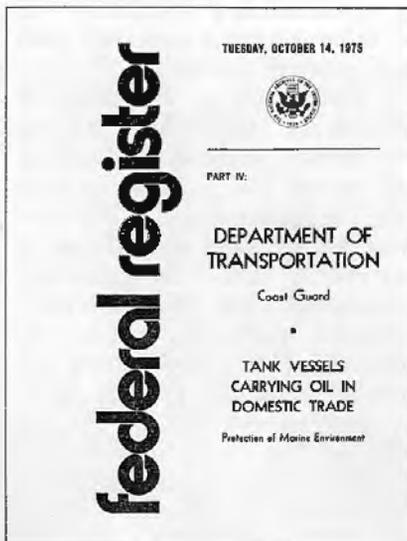
New Tanker Regulations

By Lieutenant Commander W. D. Snider, USCG

Marine Systems Evaluation Branch

The Coast Guard has just recently published a change to Title 33, Code of Federal Regulations. These new regulations, 33 CFR 157, are entitled "Rules and Regulations for Protection of the Marine Environment Relating to Tank Vessels Carrying Oil in Domestic Trade." They are applicable to U.S. flag seagoing tankers (both tankships and tank barges) carrying oil in domestic trade. The design and equipment requirements do not apply to inland tank barges, except that subdivision and stability requirements are applicable to tank vessels carrying oil on the Great Lakes. Restrictions on the discharge of oily mixtures apply to tank vessels operating on both inland waters and the high seas. The purpose of these new rules is to control the discharge of oily mixtures from tank cleaning and deballasting operations. These regulations include construction requirements to reduce spill size in some future casualties and improve survivability of tankers after damage.

The regulations are based on requirements contained in the International Convention for the Prevention of Pollution from Ships, 1973, commonly referred to as "the 1973 Marine Pollution Convention." Although these regulations are applicable only to U.S. tankers in domestic trade (defined as trade between U.S. ports, either direct or via a foreign port), the Coast Guard will publish early next year a proposal to make similar regulations applicable to U.S. tankers



in foreign trade and foreign tankers entering U.S. waters.

The new regulations are broken down into two parts—design and equipment requirements, and vessel operating requirements. Some provisions of the regulations apply only to new vessels constructed or converted after specific dates, and others apply to both new and existing vessels. Applicability of key features of the new regulations is summarized in Table 1, and these features are described briefly in the following paragraphs.

Design and Equipment Requirements

The section of the regulations concerned with design and equipment requirements includes regulations re-

quiring segregated ballast on new tankers of 70,000 DWT and larger. New vessels are defined as vessels constructed under a contract awarded after December 31, 1974, or vessels delivered after December 31, 1977. The regulations do not specify where segregated ballast spaces must be located within the vessel, but a notice of proposed rulemaking published at the same time (Coast Guard Docket 75-201 at page 48289 in the October 14, 1975, issue of the Federal Register), proposes to add certain requirements for the distribution of segregated ballast so they will serve as protective spaces in the event of collision, ramming, or grounding.

The bulk of these new regulations is concerned with establishing standards for discharges of oily mixtures into the sea from cargo and machinery spaces, and with equipment and vessel modifications necessary to practice load-on-top (LOT) or retention-on-board techniques. Both new and existing vessels will be required to have pumping and piping systems to permit settling and separation of cargo slops in one or more cargo slop tanks, discharge of oil-free water overboard from a discharge point that can be visually monitored, and discharge of oily wastes to shore reception facilities. New vessels must have a designated area on deck from which overboard discharge of water from deballasting or tank cleaning operations can be observed and stopped at or before the point where oil starts to be discharged. Later, when suitable oil

TABLE 1—Key requirements of the new tanker regulations

Requirements	Applicable to—	
	New vessels	Existing vessels
Design and Equipment Requirements:		
Segregated ballast.....	X
Pumping, piping and discharge requirements.....	X	X
Designated observation area.....	X
Cargo slop tanks.....	X	X
Oily residue tanks.....	X	X
Cargo tank arrangement and size.....	X	(¹)
Subdivision and stability.....	X
Cargo and ballast system information.....	X	X
Vessel Operating Requirements:		
Discharge requirements.....	X	X
Use of fuel tanks for water ballast prohibited.....	X
Cargo and ballast system valves closed at sea.....	X	X
Vessel required to be operated in accordance with information provided.....	X	X
Changes to required Oil Record Book entries.....	X	X

¹ Some vessels.

content monitoring equipment is available, Coast Guard regulations will be changed to include a requirement that such equipment be installed and used. Both new and existing vessels are required to have a tank or tanks which can be used for accumulating cargo slops from deballasting and tank cleaning operations. Existing vessels will be permitted to use a cargo tank as a slop tank so long as it is fitted with separate inlet and outlet connections. Slop tanks may be used to carry cargo on the loaded leg of a voyage. Tank vessels of 400 gross tons or more must also have an oily residue tank to receive oily residues from purification of fuel and lubricating oil, accumulation of used lube oil, and oil leakage into machinery spaces. Provision must be made for discharging contents of the oily residue tank to shore reception facilities.

Two additional requirements of a design and equipment nature included in the new regulations are cargo tank arrangement and size requirements, and subdivision and stability requirements. Cargo tank size requirements limit maximum size of cargo tanks to restrict oil out-

flow resulting from breach of a tanker's shell plating due to a collision or grounding. The new subdivision and stability requirements improve the ability of a tanker to remain afloat following hull damage. One final design and equipment requirement concerns the provision of an instruction manual describing the automatic and manual operation of a vessel's cargo and ballast system. This is intended to provide the crew with information needed to operate the vessel within the oil discharge limits established by the regulations.

Some of the above design and equipment requirements do not apply to seagoing tank barges that do not ballast cargo tanks or clean tanks underway. These include the pumping, piping and discharge requirements, and requirements for designated observation area, slop tank, and cargo and ballast system information. The cargo tank arrangement and size requirements and the subdivision and stability requirements do not apply to tank barges whose certificates are endorsed by the Coast Guard for a limited short protected coastwise route if these barges were

constructed and certificated primarily for service on an inland route. The subdivision and stability requirements are, however, applicable to tank vessels carrying oil on the Great Lakes.

Vessel Operating Requirements

The major portion of the vessel operation section of the new regulations is devoted to describing limitations on the discharge of oily mixtures to the sea. Tank vessels carrying oil on inland waters (including the Great Lakes) and small seagoing tank vessels must retain all oily mixtures from cargo spaces on board until they can be discharged to a shore reception facility. Seagoing tank vessels over 150 gross tons must also retain oily mixtures on board and transfer them to a reception facility, or discharge them in accordance with the criteria established by the regulations. (Vessels must be underway over 50 miles from land discharging at a rate of less than 60 liters of oil per mile. The total amount of oil discharged cannot exceed 1/15,000 of the vessel's previous cargo for existing vessels, 1/30,000 for new vessels. The vessel must discharge the mixture above the waterline where it can be visually monitored.) The discharge must be constantly visually monitored by a member of the crew and stopped before the oil/water interface in the tank is reached or as soon as oil is observed in the discharge. Decanting of clear water from the slop tank overboard through the pumproom seachest is thus no longer an acceptable procedure. The above-the-waterline discharge points required to be installed on both new and existing tankers must be used instead.

If the ship is equipped with an automatic oil discharge monitoring and control system, visual monitoring is not required as long as the equipment is operating properly. The Coast Guard intends that all oil tankers will eventually be equipped with oil content meters to monitor these discharges and newer vessels will be equipped to automatically stop dis-

charges that are too high in oil content, or divert them back to the slop tank for further settling. Development work on this equipment and necessary specifications and testing is underway now, and once suitable equipment is available its installation and use will be required. Effective discharge monitoring and control systems will make the use of load-on-top and retention-on-board techniques easier and more effective.

The regulations also limit discharges of oily mixtures from machinery spaces. Used lubricating oil, oily residues from purification of fuel and lube oil, and other concentrated oily mixtures must be stored in the required oily residue tank until they can be discharged to a reception facility, or they may be added to the cargo slop tank. Oily bilgewater from machinery spaces may be transferred to a cargo slop tank or discharged overboard in accordance with criteria established in the regulations. (The vessel must be underway more than 12 miles from land and cannot discharge an effluent with an oil content of greater than 100 parts per million.) Vessels will be required to have an oil discharge monitoring and control system and oil-water separating equipment once specifications have been developed by the Coast Guard for this equipment and suitable equipment is available. Oily mixtures that cannot be discharged overboard must be retained for discharge to a shore reception facility or disposed of onboard by mixing with fuel oil, burning in the boiler or incinerator or other means.

The regulations prohibit the use of chemical additives, detergents, emulsifiers, or the like to circumvent the discharge criteria by allowing oil to be discharged overboard in an emulsified form. New tankers are not permitted to carry water ballast in fuel tanks. (Tankers generally do not need to ballast fuel tanks as passenger vessels and warships sometimes must for stability reasons.) The regulations permit segregated ballast tankers to carry additional water ballast in car-

go tanks during severe weather if the master feels it is needed for the safety of the vessel.

The regulations provide that the discharge restrictions do not apply where oil or oily mixtures are discharged into the sea for the purpose of securing the safety of a vessel, saving life at sea, or as a result of damage to the vessel.

Before segregated ballast is discharged to the water while a tanker is in a port or at an offshore terminal, the tank must be checked for oil, either by visual examination or use of an oil-water interface detector. This precaution is required to avoid discharging oil overboard as a result of a leak between cargo tank and segregated ballast tank due to a cracked bulkhead or similar failure.

While a loaded tanker is at sea, valves in the cargo system and in the ballast system are required to be kept closed except when transfer of cargo or ballast is required to trim the vessel.

The regulations require that the master or person in charge of a tank vessel must be provided with stability information, for both intact and damaged conditions, and information on loading and distribution of cargo. These new regulations require the master to operate the vessel in accordance with these instructions and information and also to see that the instruction manual on cargo and ballast system operation is available and is utilized when these systems are operated.

The new regulations will change the requirements for entries in the Oil Record Book, both for tank vessels and for ships other than tank vessels. On tank vessels entries must now be made whenever the following operations take place:

1. Loading of oil cargo;
2. Internal transfer of oil cargo during voyage;
3. Opening or closing before and after loading and unloading operations of valves or similar devices which inter-connect cargo tanks;

4. Opening or closing of means of communication between cargo piping and seawater ballast piping;

5. Opening or closing of ships' side valves before, during and after loading and unloading operations;

6. Unloading of oil cargo;

7. Ballasting of cargo tanks;

8. Cleaning of cargo tanks;

9. Discharge of ballast except from segregated ballast tanks;

10. Discharge of water from slop tanks;

11. Disposal of residues;

12. Discharge overboard of bilge water which has accumulated in machinery spaces while in port, and the routine discharge at sea of bilge water which has accumulated in machinery spaces;

13. The discharge of oil or oily mixture from a ship for the purpose of securing the safety of the ship, preventing damage to the ship or cargo, or saving of life at sea; or,

14. The escape of oil, or of oily mixture, resulting from damage to the ship or unavoidable leakage; or,

15. Accidental or other exceptional discharges or escapes of oil from tankers or ships other than tankers.

Ships other than tankers will now be required to make entries in the Oil Record Book when operations 13, 14, or 15 above take place. Revised Oil Record Books will be prepared by the Coast Guard for distribution through Marine Inspection Offices.

These new tanker regulations are now in effect. Certain of the equipment requirements are not effective until December 31, 1977, in order to provide a reasonable time for necessary piping modifications to be accomplished. The basic discharge criteria for discharges from both cargo and machinery spaces are now in effect for U.S. tankers engaged in carriage of oil in domestic trade.

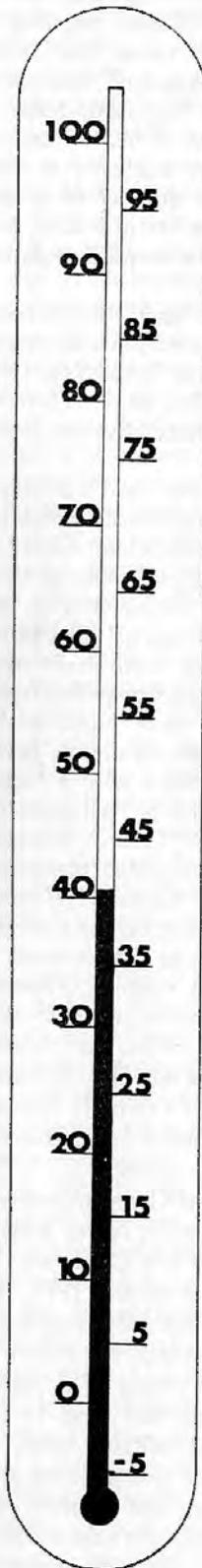
Copies of these new regulations are available on request from Executive Secretary, Marine Safety Council (G-CMC/81), U.S. Coast Guard, Washington, D.C. 20590. ‡

COLD WATER TRAGEDY

At 0710 hours on 19 May 1973, the *MV Comet* with a fishing party on board departed Galilee, R.I., en route to the fishing grounds off Block Island. Shortly after departing Point Judith Harbor, R.I., the vessel encountered heavy seas and at approximately 0800 hours, the *Comet* foundered and quickly sank by the stern. All hands immediately abandoned the vessel. The captain and passengers clung together in the water utilizing life preservers, buoyant apparatus, and flotsam to support themselves. At 1230 hours a passing yacht, the sailing sloop *Decibel* sighted them and commenced picking up survivors. Captain Lemmerman of the *Decibel* notified the Coast Guard Station at Block Island and an active air, surface, and shoreline search was commenced. Active search efforts were discontinued on 23 May 1973. Of the 27 persons on board 11 were rescued. Twelve had perished in the sea and four are missing. The *Comet* was not certified by the Coast Guard for the carriage of passengers for hire at the time of the casualty.

The *Comet* (ex-*Wander*) was built by the U.S. Navy at the Brooklyn Navy Shipyard in 1941. The original hull design was that of a standard open deck Navy liberty launch of carvel-design, round bottom construction. In 1955 the vessel was purchased by a private party and a GM 671 Diesel of 165 horsepower was installed, the hull decked over, and a small wheelhouse installed with a trunk cabin aft approximately 10 ft. by 20 ft. The vessel had 1600 lbs. of permanent cement ballast located amidships. It had one bilge pump driven from the propeller shaft by

(Continued on page 194)



COLD WATER SURVIVAL

The thought of a sudden and prolonged plunge into cold water is not very pleasant. The initial reaction to such a thought usually engenders visions of instant and inexorable death. But, in light of recent research, the certainty of death caused by immersion in cold water is not absolute. The chances of survival are good, if you know and understand what is happening to you.

Before we get into the water, let's discuss the will to live. Studies of immersion casualties have shown that roughly 20 percent of the deaths were caused by spiritual failure. In the face of apparently insurmountable odds, immersion victims simply lost the will to live and gave up. But, as the saying goes, forewarned is forearmed. A positive attitude towards rescue and your ability to survive will add significantly to your survival time—and time is the central issue here.

If you have any control over your situation, enter the water as slowly as possible; this will help to minimize the physiological shock. If you cannot enter slowly a properly secured life preserver will help to minimize immersion. The immediate physical reaction to cold water entrance is terrific; your heart pounds, you try to breathe in and out at the same time (or so it seems), your muscles may cramp, you may lose control of normally voluntary bodily functions, you start to shiver uncontrollably, your teeth chatter, you may bite your tongue, and your joints will ache. However, none of these things will kill you, not even if you put them all together. So now is no time to give up and become another casualty

(Continued on page 197)

COLD WATER TRAGEDY

(Continued from page 193)

belt. The vessel first came under Coast Guard inspection at the Marine Inspection Office, Philadelphia, in April 1958. The lifesaving equipment required was one Coast Guard approved adult life preserver for each person on board plus four children's life preservers, also one Coast Guard approved life-ring and one piece of buoyant apparatus for 20 persons. The vessel was certificated to carry 40 passengers plus a crew of one licensed operator and one deck hand. The next year the certificate was changed (at the owner's request) to carry 38 passengers. The vessel was certificated for coastwise operation between the hours of sunrise and sunset and to operate (under reasonable conditions not in excess of 20 miles from a safe harbor of refuge between Sandy Hook, N.J., and Indian Inlet River, Del. In May 1970 the *Comet* changed employment from Portland, Me. to Providence, R.I.

On 23 June 1970 inspection for certification of the MV *Comet* was commenced by the Marine Inspection Office, Providence, R.I., prior to the issuance of a new Certificate of Inspection changing the vessel's route to the Rhode Island Sound area. Certification would be contingent upon the satisfactory correction of 25 deficiencies found during the inspection.

On 26 June 1970 the vessel was visited by a Coast Guard Inspector and most requirements were found to have been satisfactorily completed. However some requirement still remained outstanding. These outstanding requirements were discussed with the Officer in Charge, Marine Inspection, after which a temporary Certificate of Inspection was issued to the vessel. The vessel was visited by a Coast Guard Inspector on 22 July 1970. All outstanding requirements were observed to have been satisfac-

torily completed. A permanent Certificate of Inspection was issued to the MV *Comet* expiring 26 June 1973. Its route was changed to: Lakes, Bays, and Sounds; between Martha's Vineyard, Mass. to Montauk Point, N.Y., not more than 20 miles from a harbor of safe refuge. The total number of persons to be allowed on board was 40, including a crew of one licensed operator and one deckhand.

On 19 May 1971 a routine dry-dock examination was commenced by the Marine Inspection Office, Providence, R.I. at Wickford Shipyard, 125 Steamboat Avenue, North Kingston, R.I.

The *Comet* had a 2-inch tail shaft and during Coast Guard Inspection the attending Coast Guard Inspector found the clearance to be excessive to such a degree that he could "flop it up and down." The fastenings on the *Comet* were nails and screws. One of each was pulled from the hull and they were found to be in apparent good condition. Testing of the hull was done with a "blunt screwdriver" and in "a couple of places" the Coast Guard Inspector completely penetrated the 2-inch planking of the *Comet*. The only weather deck opening on the *Comet* is an access hatch to the forepeak. This is a watertight opening, consisting of a wooden cover, wood-to-wood fitup, with a metal flat bar on the top edge. One other opening is found in the passenger's cabin. It consists of two wooden access batches over the engine room space.

Mr. Paul Casey, manager of Wickford Shipyard, North Kingston, R.I. where the MV *Comet* was in storage during the winters 1970, 1973, testified that the only work his yard did was to replace some fuel lines and discharge piping. The yard changed some hoses and pipes to the engine head and exhaust. Also, the bilge pump hose was replaced and two remote fuel line shut-off valves installed. The work done was primarily to correct the deficiencies found by

the Coast Guard Inspector on 23 June 1970. Mr. Casey stated that no repairs were made by the shipyard to correct the deficiencies found in the hull of the *Comet*. It was estimated that the required hull repairs would cost approximately \$4,000. The owners of the MV *Comet*, being advised of the deficiencies in the *Comet's* hull, decided not to make the repairs and surrendered the vessel's Certificate of Inspection to the Officer in Charge, Marine Inspection, Providence, R.I. on 20 May 1971. Subsequently they placed the *Comet* up for sale. On 7 September 1971, the new owner made his first downpayment on the *Comet*. On 14 June 1972 the sale was completed. At the time of the sale, the new owner was advised by the old owner that the vessel did not have a Coast Guard Certificate of Inspection.

On the evening of 18 May 1973 at approximately 1800 hours, crewman Ralph Nickerson of Central Falls, R.I. was picked up by William Jackson, the owner/operator of the *Comet*, and the two drove to Wickford Shipyard in North Kingston where the vessel was tied up. Preparations were then made for the *Comet's* forthcoming trip to Galilee, R.I. where a fishing party of 25 persons would board the vessel. It is not known what hour the *Comet* departed Wickford Shipyard. It arrived at Galilee at approximately 0700 hours on 19 May 1973. The organizer of the fishing party had collected \$10 per person and had given Mr. Jackson an advance deposit of \$100 for the use of his boat. At approximately 0710 hours the vessel departed Galilee and proceeded to sea via the west jetty of Point Judith Harbor. After departing the jetty, a southerly course was set towards Block Island. Seas were from the southwest at a height of 3 feet. Most of the passengers had gathered on the stern area and the rest were in the main cabin.

After being underway for approximately 45 minutes, the vessel was observed by the passengers on the

stern to be taking heavy spray and sometimes water over the stern, and the vessel appeared to be slowly settling by the stern. At approximately 0755 hours one of the passengers went up to the pilothouse to see Captain Jackson and advise him of this situation. The starboard pilothouse door appeared to be jammed and he was unable to open it. He shouted to the captain, "We're taking water", and shortly thereafter the engine stopped. It is not known whether Captain Jackson stopped the engine or if it failed as the result of flooding in the engine room space. Captain Jackson immediately came out of the port pilothouse door and ordered everyone to put on life preservers and stay with the boat.

It is estimated that approximately 35 Coast Guard approved life preservers were on board the vessel. Testimony by survivors indicated that everybody was able to put on a life preserver with the possible exception of two or three passengers. Immediately after the engine stopped the *Comet* swung to port and broached in the seas. The vessel rolled heavily in the seas and quickly assumed a port list and commenced to sink by the stern. Captain Jackson was able to cast loose the Coast Guard approved box-typed buoyant apparatus stowed on top the amidship house prior to abandoning his vessel. Ralph Nickerson, who did not survive the casualty, was seen attempting to use the ship-to-shore radio transmitter, but was unable to send a "MAYDAY" message before the *Comet* went under. As the *Comet* rolled heavily in the seas and sank by the stern, the amidship house was torn loose from the hull. At approximately 0800 hours the *Comet* went under and all hands abandoned the vessel.

A small dinghy of fiberglass construction floated free from the *Comet* as it sank. Three passengers climbed into the partially submerged dinghy with approximately 5 others hanging onto the side. It was shortly thereafter that the first passenger suc-

cumbed to the elements. The survivors in the dinghy decided to paddle over to the buoyant apparatus which was floating nearby; it was reached after approximately one-half hour and the dinghy was abandoned. Several other passengers also found their way to and were supported by the buoyant apparatus. Captain Jackson instructed everybody to keep legs and arms moving as much as possible in order to keep circulation going. Within 2 hours, three more persons—one of them Captain Jackson—had succumbed. After approximately 3 hours in the water the toll had risen to five.

Some passengers found their way to a small piece of flotsam, a section of the amidship house, approximately 8 feet by 10 feet and were supported by it. They could see the buoyant apparatus about a quarter to one-half mile away; efforts to paddle over to it proved futile.

At one point, about 2 hours after the sinking, the group on the buoyant apparatus had decided that two of them should make an attempt to reach shore. Utilizing a long wooden bench which had floated free from the *Comet*, they started to paddle, surf-board fashion, towards shore. After about 2 hours the yacht *Decibel*, O.N. 539028, sighted them and took them on board.

Captain Lemmerman of the *Decibel*, with a crew of three, had left Stonington, Conn., at approximately 0800 hours on the morning of 19 May 1973, enroute to Marion, Mass. While transiting the Point Judith area, Captain Lemmerman made a course change to put the wind more on the vessel's stern. At this time he heard voices to windward, and looking up he saw what appeared to be two persons in a kayak. As the *Decibel* closed he saw that they were on a wooden bench and waving to him requesting assistance. At approximately 1230 the two men were taken aboard the *Decibel*. Captain Lemmerman called the Coast Guard Station on Block Island and immediately commenced a search for the remaining survivors. The pro-

cedure the *Decibel* used for rescuing the survivors was to come up to windward of a group in the water under sail and auxiliary motor, stop his engine, and let the yacht drift toward the survivors. In this way Captain Lemmerman was able to keep them close aboard on his lee side and also offer them some protection from the seas. The *Decibel's* crew would then tie several survivors alongside the yacht in a group. A line was then passed around each survivor's waist and he would be hoisted aboard with a rope tackle which had been rigged to the *Decibel's* main boom. The boom would then be swung inboard and the survivor lowered to the deck. A total of ten survivors were taken aboard in this manner.

The life preservers the survivors were wearing had no crotch line and in several cases the life preserver had slipped up on the body of the man and was no longer keeping his head out of the water. Two bodies were seen floating in this position, face down in the water. The group of survivors holding onto the buoyant apparatus had become entangled in the small diameter manrope around the edge and had to be cut loose by the crew of the *Decibel*. The majority of the survivors still had their shoes on.

A Coast Guard 40-foot utility boat from Point Judith Coast Guard Station arrived on scene at 1253. As the seas were running high, it was decided not to transfer the survivors and at 1257 the *Decibel* departed the scene enroute to Point Judith Coast Guard Station with survivors. At 1340 the *Decibel* moored at the Coast Guard dock and all survivors were transported to the South County Hospital, Wakefield, R.I. The Coast Guard remained on scene to continue rescue operations.

A utility boat from the Coast Guard Station at Castle Hill, R.I. arrived on scene and shortly thereafter rescued one survivor. The passenger was in fair condition and requested to stay aboard the boat in order for it to

continue the search for the remaining survivors. At 1355 a Coast Guard helicopter from the Coast Guard Air Station, Cape Cod, landed at Point Judith Coast Guard Station with two bodies.

Five Navy helicopters on a training mission overheard the search and rescue traffic on radio and volunteered their assistance. The Navy aircraft marked bodies by smoke flares and searched the perimeters of the area.

One of the utility boats placed a towline on the bow section of the hull; however, the line parted and the hull sank at approximately 1500 hours. At approximately the same time, the CGC *Point Jackson* arrived on scene and shortly thereafter marked the *Comet's* position with a buoy. Four Coast Guard utility boats dispatched from nearby stations continued the search and rescue efforts until 1645, recovering seven bodies.

At 1608 the U.S. Navy Helicopter 403 lowered four Navy scuba divers to the CGC *Point Jackson*. Diving operations were commenced at 1805 to locate the hull of the *Comet*. At 1944 all diving operations were terminated with negative results. All bodies taken to the Coast Guard Station at Joint Judith were transported to the South County Hospital by personnel of the Narragansett Bay Rescue Squad. A shoreline search for bodies was conducted by personnel from the Rhode Island Department of Natural Resources and Rhode Island Police with negative results. At the end of the day, 11 persons had been rescued and 12 bodies had been recovered; four persons remained missing. All survivors had been wearing Coast Guard approved life preservers, and all bodies except one had been found wearing approved life preservers.

An active air and surface search was maintained for the four missing persons until approximately 2000 hours on 21 May 1973. Throughout this period the CGC *Towline*, using

side-scanning sonar and assisted by U.S. Navy scuba divers, searched to find the hull of the *Comet* but was unsuccessful. The CGC *Towline* secured its operations at approximately 1700 hours 23 May 1973.

The MV *Comet* was equipped with a Bendix "Skipper 430" marine radio transceiver with three working frequencies: 2182 kHz, 2638 kHz, and 2406 kHz. The vessel had a valid Communications Act Safety Radiotelephone Certificate on board issued by the Federal Communications Commission on 24 August 1971. The certificate was valid until 24 August 1973. It is not known if Mr. Jackson had a Federal Communications Commission operator's license authorizing use of the radiotelephone installation on board the *Comet*. Further, it is undeterminable whether or not the radio transceiver was in satisfactory working condition at the time of the casualty.

The MV *Comet* on the morning of 19 May 1973 was carrying passengers for hire; therefore, under the provisions of 46 USC 390c the vessel was required to be certificated by the Coast Guard. 46 USC 360d authorizes a penalty of not more than \$1,000 against the owner or person in charge for carrying passengers without a valid Coast Guard Certificate of Inspection. Under the provision of 46 USC 390b and the regulations promulgated thereunder, the person in charge of the MV *Comet*, Mr. Jackson, was required to have a Coast Guard Operator's License. Again, 46 USC 390d authorizes a penalty of not more than \$1,000 against the owner/person in charge for operating a small passenger-carrying vessel without a Coast Guard operator's license. Mr. Jackson did not hold such a license. Among the conclusions listed in the final report of the Coast Guard Marine Board of Investigation were the following:

The source of flooding which caused the sinking of the *Comet* is unknown. The most probable source of

flooding was a leak originating in hull planking, the stern tube, a through-hull fitting, or piping which caused the vessel to settle and submerge.

This casualty could possibly have been prevented had the required repairs been completed and the vessel kept under U.S. Coast Guard certification.

This loss of life could have been prevented or minimized had the personnel aboard the *Comet* been able to send a "MAYDAY" radio message prior to abandoning.

That this loss of life could have been prevented or minimized had the vessel been equipped with primary lifesaving equipment with a capacity of 100 percent of the total persons allowed on board instead of 50 percent, and of a type which would keep people out of the water.

The Marine Board of Investigation recommended that the boating public be made aware of existing laws and regulations covering small passenger vessels. The Commandant concurred and directed the following actions: a public information program is underway to publish a feature article in newspapers and boating magazines pointing out the licensing and inspection requirements for small vessels; to better identify and inform the public of small vessels that are operating legitimately under valid certificates of inspection, a distinctive inspection decal will be developed and a proposed regulation change will be prepared to require it to be prominently displayed.

The Board also recommended that the Coast Guard require emergency position indicating radiobeacons on all small passenger vessels certificated under the provisions of 46 CFR Subchapter T and operating on partially protected waters more than one mile offshore or on exposed waters. The Coast Guard has issued regulations effective 1 March 1975 which require an emergency position indicating radiobeacon on small passenger vessels engaged in ocean and coastwise

service. After careful consideration of the number of vessels users and comments received in response to the proposed rules, the implemented regulations specifically exempt those small vessels in coastwise service equipped with a VHF radiotelephone and whose certificate of inspection is endorsed for a route which does not extend more than 20 miles from a safe refuge.

Although the Board recommended further investigation of the evidence of violation of the law by the vessel's operator, the Commandant found that the initial investigation provided sufficient evidence of violation of the law to recommend either referral to the Attorney General or assessment of a civil penalty.

COLD WATER SURVIVAL

(Continued from page 193)

statistic. You are wet, cold, and miserable and things are not going to get any better, but you *can* survive!

You are now in the water, shivering, teeth chattering, your fingers and toes are growing numb, and you are telling yourself you can make it. The next thing I tell you may seem like the height of lunacy in your present situation, but it is true—don't move! Hopefully you have your life preserver on, or are able to get to something which will support you. If so, tuck your legs up in front of you with your knees as tight against your stomach as possible. Bring your upper arms tight against the sides of your chest and fold your forearms against the front of your chest. You may have to relax from time to time should you get cramps, but keep this posture as long as you can. Don't tread water unless you have to, and don't move your limbs to keep circulation moving. Unless you know of no other way to stay afloat, *do not* use any of the drownproofing techniques.

If there is a large group of people in the water get everyone together and huddle up as close as you can get, facing the other people, protecting your front and sides of your body. Group protection has the added benefits of reinforcing your positive attitude toward survival, giving buoyancy to those who have no life preservers, and vastly improving search and rescue efforts.

We have discussed what to do and now we will consider the whys. Until 4 years ago the bulk of the data used for predicting expiration times in cold water were obtained from cold immersion tests conducted on prisoners in German concentration camps during World War II. Based on these and a few other tests the survival predictions were rather bleak. However, a research team at the University of Victoria, Victoria, Canada composed of Dr. J. S. Hayward, Dr. M. L. Collis, and Dr. J. D. Eckerson began to study the problem in depth (see the March 1975 issue of the PROCEEDINGS). They did a large number of immersion tests on human volunteers and made infrared photometry examination of these volunteers to determine the areas of the body which give off the greatest heat loss. (The inner core temperature is the determining factor in cold water immersion. Therefore, the prime importance is keeping that temperature from falling.) From these tests it was determined that the principal heat loss areas were at the groin and the sides of the chest. Accordingly they were able to increase survival time by using the "heat escape lessening posture" (HELP) technique I have described earlier. Because of the many variables involved in the heat loss of human beings in cold water, it is difficult to predict a precise time that a given individual might survive. Therefore the times I will mention are to be considered average times. Using the University of Victoria data, an individual dressed in light clothing with a life preserver could expect to survive about 2½ hours in 40° F

water using the self protection technique. Treading water, swimming, or drownproofing will reduce the survival time significantly.

From a study done by the University of Victoria for the U.S. Coast Guard it was found that survival time could be increased to about 3 hours if the individual were wearing heavy winter clothing and using the self-protection technique. There are several articles of clothing available which provide some buoyancy and thermal protection. These were also tested by the University of Victoria team and were found to increase the survival time by 3 times over a person wearing only light clothing. These articles included an "exposure" jacket developed at the University of Victoria and a set of anti-exposure coveralls.

Anti-exposure suits, or bloopy suits, of one-piece construction which provide waterproof protection of the individual also have been tested and show adequate protection. However there are difficulties which quickly negate their capability. If they are not sealed completely, they leak and thus lose their insulating capability. Further, a person wearing one of these must be fully familiar with it in the water and know of its pitfalls, such as air entrapment in the legs which must be overcome in order to keep the head out of the water. Further, under cold stress, an individual will urinate about four times the normal amount which will quickly negate any insulating capability. Still further, the higher freeboard associated with these suits—when coupled with a life preserver—presents difficulty with helicopter recovery. There have been instances where the potential rescuee was blown across the water by the helicopter rotor wash.

Finally, the diver's type wet suit was tested by the University of Victoria and yielded an expected survival time of 12 to 16 hours in 40° water.

In summary, should you find yourself in cold water, remain quiet, use the HELP technique, and keep on smiling. You can survive. ‡

COAST GUARD RULEMAKING

(Status as of 1 November 1975)

	Notice of proposed rulemaking	Public hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as rule	Effective date
BOATING SAFETY							
Lifesaving devices on white water canoes & kayaks (CGD 74-159) comment period extended 6-12-75....	2-4-75		7-15-75	X			
Safe loading and safe powering standards (CGD 73-250).....	3-6-75		4-21-75			9-23-75	3-23-76
Inboard safe loading standard (CGD 74-83).....	3-6-75		4-21-75			8-13-75	2-9-76
Boats and associated equipment (CGD 75-110).....	9-19-75		11-5-75				
BRIDGE REGULATIONS							
Cheesequake Ck., NJ (CGD 73-162).....	8-10-73		9-11-73			10-22-75	11-24-75
Chicago River, IL (CGD 74-137).....	6-3-74		7-16-74	X			
AIWW, Hallandale, FL (CGD 74-257).....	11-5-74		12-5-74		10-15-75		
Coney Island Creek, NY (CGD 74-300).....	1-29-75		3-4-75	X			
Matanzas River, FL (CGD 75-024).....	1-29-75		3-4-75	X			
Fox River, WI (CGD 75-035).....	2-6-75		3-7-75	X			
Mystic River, MA (CGD 75-053).....	3-27-75		4-29-75	X			
West Palm Beach Canal, FL (CGD 75-070).....	3-27-75		4-29-75	X			
Illinois River, IL (CGD 75-060).....	4-1-75		5-6-75	X			
Passaic River, NJ (CGD 75-052).....	4-4-75		5-6-75	X			
Back Bay of Biloxi, MS (CGD 75-088).....	4-30-75		6-10-75			9-8-75	10-10-75
Peace River, FL (CGD 75-086).....	4-30-75		6-3-75			9-19-75	10-20-75
Snake R. & Clearwater R., Lewiston ID & Clarkston, WA (CGD 75-099).....	4-30-75		6-10-75	X			
Coosaw R., FL (CGD 75-087).....	5-5-75		6-9-75	X			
Duwamish Waterway, WA (CGD 75-097).....	5-13-75		6-30-75	X			
Gulf Intracoastal Waterway, LA (CGD 75-131).....	6-18-75		7-22-75	X			
Tombigbee River, AL (CGD 75-153).....	8-5-75		9-5-75	X			
Clearwater Pass, FL (CGD 74-299).....	8-12-75		9-12-75	X			
Deep River, WA (CGD 75-172).....	9-8-75		10-17-75	X			
Harlem R., East R., & Gowanus Canal, NY (CGD 75-181).....	10-1-75		10-31-75	X			
AIWW Hallandale, FL (CGD 74-257).....	10-15-75		11-14-75				
Indian River, FL (CGD 75-180).....	10-30-75		12-2-75				
HAZARDOUS MATERIALS							
Miscellaneous Dangerous Cargoes (CGD 72-182).....	11-11-72	12-12-72	12-29-72			8-26-75 Corrected 9-9-75	11-24-75
Sodium sulfide solution and sulfur dioxide (CGD 73-275).....	7-16-74 Corrected 9-5-74		12-5-74	X			
Portable tanks, proposed DOT specification (CGD 74-292).....	6-9-75	7-1-75	7-16-75	X			
Dangerous cargo labeling (CGD 75-050).....	6-18-75	7-16-75	7-31-75	X			

COAST GUARD RULEMAKING—Continued

	Notice of proposed rulemaking	Public hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as rule	Effective date
MARINE ENVIRONMENT AND SYSTEMS (GENERAL)							
Pipelines, lights to be displayed (CGD 73-216).....	9-19-74 Corrected 10-18-74	10-21-74	11-4-74	X			
Oil and hazardous substance liability (CGD 73-185)....	12-4-74		1-16-75	X			
Mooring barges on the Mississippi (CGD 74-185).....	2-4-75	2-19-75	3-17-75	X			
Deepwater ports (CGD 75-002); corrected 5-19-75.....	5-7-75	New Orleans 6-6-75	6-23-75	X			
Demarcation line, Guayanilla Bay, PR (CGD 73-287)...	6-18-75		8-4-75	X			
MERCHANT MARINE SAFETY (GENERAL)							
Bulk Dangerous Cargoes, Inspection of Barges (CGD 73-271).....	3-11-74	4-15-74	4-30-74	X			
First Aid Certificates (CGD 73-272).....	4-2-74		6-15-74	X			
Carriage of Solid Hazardous Materials in Bulk (CGD 74-13).....	5-15-74	7-16-74	8-31-74	X			
Tank vessels in domestic trade (CGD 74-32).....	6-28-74 Corrected 7-23-74	7-23-74 Seattle 7-30-74 Wash. D.C.	8-19-74			10-14-75 Corrected 10-22-75	10-14-75
Load line regulations, rail height adjustment (CGD 74-164).....	10-4-74		11-15-74	X			
Construction and equipment of tank vessels (CGD 74-127); advance notice 9-5-74.....	4-21-75	5-21-75	6-5-75	X			
Great Lakes pilotage (CGD 74-233).....	11-5-74	11-20-74	11-26-74			9-8-75	10-8-75
Manning of nautical school ships (CGD 74-201).....	1-21-75		3-6-75			8-13-75	9-12-75
Licensing and certificating; apprentice mate endorsement (CGD 74-226); Comment period extended 3-7-75.....	1-23-75		4-9-75	X			
Oceanographic vessels (CGD 75-031).....	6-12-75		7-28-75			10-15-75	11-17-75
Specifications for inflatable life rafts (CGD 75-040)....	8-1-75		9-15-75	X			
Metal borings, shavings, turnings, and cuttings (CGD 75-133).....	8-1-75		9-15-75	X			
Marine occupational safety and health standards (CGD 75-101); Advance notice.....	8-11-75		12-9-75				
Tank vessels; air compressors, cargo handling room bilges (CGD 75-017).....	8-13-75		9-29-75	X			
Load line fee schedule (CGD 75-139).....	8-15-75		9-29-75	X			
Civil penalty procedures (CGD 75-123).....	9-11-75		10-27-75	X			
Vessel inspection regulations (CGD 75-074).....	9-16-75		10-31-75	X			
Fire hydrants and hose (CGD 74-60).....	9-23-75		11-10-75				
Electrical cable splicing (CGD 74-305).....	10-8-75		11-24-75				
Tank vessels in domestic trade (CGD 75-201); corrected 10-22-75.....	10-14-75		11-13-75				
Great Lakes pilotage rates (CGD 75-175).....	10-31-75		12-1-75				

NOTE: This table which will be continued in future issues of the Proceedings is designed to provide the maritime public with better information on the status of changes to the Code of Federal Regulations made under authority granted the Coast Guard. Only those proposals which have appeared in the Federal Register as Notices of Proposed Rulemaking, and as rules will be recorded. Proposed changes which have not been placed formally before the public will not be included.



THIRD BI-ANNUAL MARINE SAFETY POSTER CONTEST

1st Prize

GOLDEN SAFETY POSTER AWARD — to be presented at the 1976 National Safety Council Congress, in Chicago, Illinois.

2nd Prize

SILVER SAFETY POSTER AWARD — to be awarded to employer's representative attending the above Congress for eventual presentation to the 2nd Prize Winner.

Sponsor's Award

SPECIAL GOLDEN SAFETY AWARD — Plaque to employer of First Prize winner to be awarded to corporate representative attending the above Congress as a thank you for their cooperation and interest in furthering safety in our industry.

RULES

1. Contest open to any and all employees in the maritime industry, who like to draw. All posters must be on a Marine Safety subject. Any maritime operation or situation afloat or ashore may be used.
2. Confine drawing to 7½" x 10" on standard 8½" x 11" white paper, using either black or red ink only. Draw for vertical display only. We print from your artwork. Bold letters and strong art counts as well as subject matter. Emphasize only one idea.
3. Sign your work. Submission automatically gives copyright to Executive Committee Marine Section, National Safety Council and entrant releases all rights thereto.
4. Employer's name and address, as well as entrant's name, address and position, must be PRINTED and submitted with each entry.
5. All entries must be post marked on or before midnight, July 31, 1976. As many entries may be submitted as desired.
6. Winners will be notified via employer as soon as possible after closing date.
7. Carefully read and comply with all the above rules, and mail your entries to:
Chairman, Audio/Visual Aids and Posters Committee
c/o Ships' Operational Safety, Inc.
284 Main Street
Port Washington Harbor, N.Y. 11050

OFFICIAL JUDGES

Elizabeth V. Stephens, Chairman
Vice President
Ships' Operational Safety, Inc.

Mr. Ted Alff
Vice Chairman
Audio/Visual Aids and Posters Committee

Capt. Robert E. Hart
Executive Vice President
Marine Index Bureau, Inc.

Mr. C. Bradford Mitchell
Maritime Consultant

Golden Award Winner



Inland Waterways
Smart Duck Club

MARINE SAFETY COUNCIL MEMBERSHIP

In August of this year, Rear Admiral Glenn O. Thompson succeeded Rear Admiral Robert H. Scarborough as Chief, Office of Operations, and as a member of the Marine Safety Council; Admiral Scarborough remains at Headquarters as Chief of Staff. Prior to assuming his present post, Admiral Thompson was Commander of the 17th Coast Guard District, Juneau, Alaska.

Glenn Owen Thompson was born on July 31, 1920, at Deming, N.M. He was graduated from Newport Harbor High School at Newport Beach, Calif., in 1938, and from Whittier College, Whittier, Calif., with a B.A. Degree in June 1942. While at Whittier he was class president for 2 years and a member of the track and football teams, and appeared in *Who's Who in American Colleges and Universities*.

Thompson enlisted in the Coast Guard Reserve in August 1942, and shortly thereafter was ordered to the Reserve Officers Training School at Groton, Conn. Graduating with a commission of Ensign in February 1943, he was assigned as watch officer on board the cutter *Hermes* on anti-submarine patrol for 6 months. For the remainder of that year he served as Assistant Shipping Commissioner at San Pedro, Calif. From February 1944 to May 1946, he served first as Executive Officer and then as Commanding Officer of LST 166 in the Pacific, participating in the invasions of Saipan, Okinawa, Iwo Jima, Guadalcanal, and the Philippines, and in the Occupation of Japan.

Released from active duty in August 1946, he was recalled in the rank of Lieutenant (jg) a month later and was assigned as navigator on the cutter *Minnetonka* which operated out of Long Beach, Calif., on ocean station patrol and search and rescue in the Pacific.

From January 1947 to July 1948, he was a flight student at the Naval Air Training Bases at Dallas and Corpus Christi, Tex., and at Pensacola, Fla. After completing his first assignment as an aviator at the Coast Guard Air Station, San Francisco, he made his next flight missions out of Coast Guard Air Station, Miami, between February 1951 and August 1952. During the following 2 years he served as Executive Officer of the Coast Guard Air Station at Kodiak, Alaska.

While assigned at the San Diego Air Station from October 1954 to August 1956, Lieutenant Commander Thompson served as Operations Officer and Deputy Captain of the Port of San Diego. After commanding the Air Station at Biloxi, Miss., for 3 years, he was transferred to the Air Station at Elizabeth City, N.C., in September



1959, where he served as Operations Officer and as Executive Officer in addition to his duties as pilot. From May 1962 to June 1964, he commanded the Coast Guard Air Station at Argentia, Newfoundland, which provided aircraft for the International Ice Patrol. He served the latter year of that period as Commander of the International Ice Patrol. He next served 2 years as Assistant Chief, Aviation Units Division at Coast Guard Headquarters, Washington, D.C.

In June 1966, Captain Thompson transferred to San Francisco to duty as Chief of Operations in the Office of Coast Guard Commander, Western Area. That 3-year tour of duty earned him the Coast Guard Commendation Medal. He was awarded the Meritorious Service Medal for his next tour, during which he was stationed on Guam as Commanding Officer, Coast Guard Section, Mariana Islands, and as Commander, Coast Guard Activities in that area of the Pacific. In July 1971, he was assigned to the 3rd Coast Guard District Office on Governors Island, N.Y., where he served as Chief, Operations Division until April 1972, when he assumed the post of Chief of Staff, 3rd Coast Guard District.

By nomination of the President on January 22, 1973, and approval of the Senate, Captain Thompson was appointed permanent Rear Admiral to rank from July 1, 1973, and subsequently was assigned as Commander of the 17th District.

Nautical Queries

The questions on this page are selected from examinations presently in use for deck officers (2d and 3d Mate) and engineers (2d and 3d Assistant).

1. Which end point is most critical in a boiler?

- A. Circulation
- B. Combustion
- C. Heat transfer
- D. Moisture carry-over

2. Which statement concerning automatic auxiliary boiler control system alarms complies with applicable Coast Guard Regulations?

- A. Audible alarms shall not be silenced manually.
- B. Visible indicators require manual resetting.
- C. Failure of the flame safety system need not be monitored.
- D. Visible indicators are not required for low water shutdown.

(Open Book)

3. Water hardness in an auxiliary boiler can be reduced by adding

- A. magnesium
- B. calcium
- C. sulfate
- D. carbonate

4. Bottom blow valves are installed on auxiliary watertube boilers to

- A. completely drain the boiler in an emergency.
- B. prevent sludge deposits in the water drum.

C. remove floating impurities for the boiler water surface.

D. remove suspended solids from the boiler water.

5. Which petroleum products have the lowest autoignition temperature?

- A. Benzene
- B. Diesel fuel
- C. Lubricating oils
- D. Gasoline

6. Which of the following statements about a Class A-60 bulkhead on a passenger vessel is (are) correct?

- I. It must be made of steel or equivalent metal construction.
 - II. It must be constructed to prevent any temperature rise in compartments adjacent to a fire for a period of 60 minutes.
- A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II

(Open Book)

7. On charts of the east coast of the United States, the datum from which heights of land features (such as lighthouses) is measured is

- A. mean low water.
- B. mean high water.
- C. mean sea level.
- D. half tide level.

8. Which of the following statements concerning the use of the fathometer is (are) correct?

- I. If the vessel is not rolling or listing, the echo sounder meas-

ures the actual depth of water.

II. Most fathometers are automatically adjusted for nonstandard water temperature.

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

9. Deck beams perform which of the following functions in the hull structure of a vessel?

- I. They transfer deck loads to the frames.
 - II. They help to maintain the shape of the hull.
- A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II

10. Under which of the following conditions may a power-driven vessel underway in reduced visibility be excused from stopping its engines upon hearing the fog signal of another vessel forward of its beam?

- I. When the power-driven vessel is taking early and substantial action to avoid a close quarters situation.
 - II. When the power-driven vessel must avoid immediate or imminent danger.
- A. I only
 - B. II only
 - C. Either I or II
 - D. Neither I nor II

Answers

1. A 2. B 3. D 4. D 5. C 6. A 7. B 8. D 9. C 10. B

MERCHANT MARINE SAFETY PUBLICATIONS

The following publications of marine safety rules and regulations may be obtained from the nearest marine inspection office of the U.S. Coast Guard.* Because changes to the rules and regulations are made from time to time, these publications, between revisions, must be kept current by the individual consulting the latest applicable Federal Register. (Official changes to all Federal rules and regulations are published in the Federal Register, printed daily except Saturday, Sunday, and holidays.) The date of each Coast Guard publication in the table below is indicated in parentheses following its title. The dates of the Federal Registers affecting each publication are noted after the date of each edition.

The Federal Register will be furnished by mail to subscribers, free of postage, for \$5.00 per month or \$50 per year, payable in advance. The charge for individual copies is 75 cents for each issue, or 75 cents for each group of pages as actually bound. Remit check or money order, made payable to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

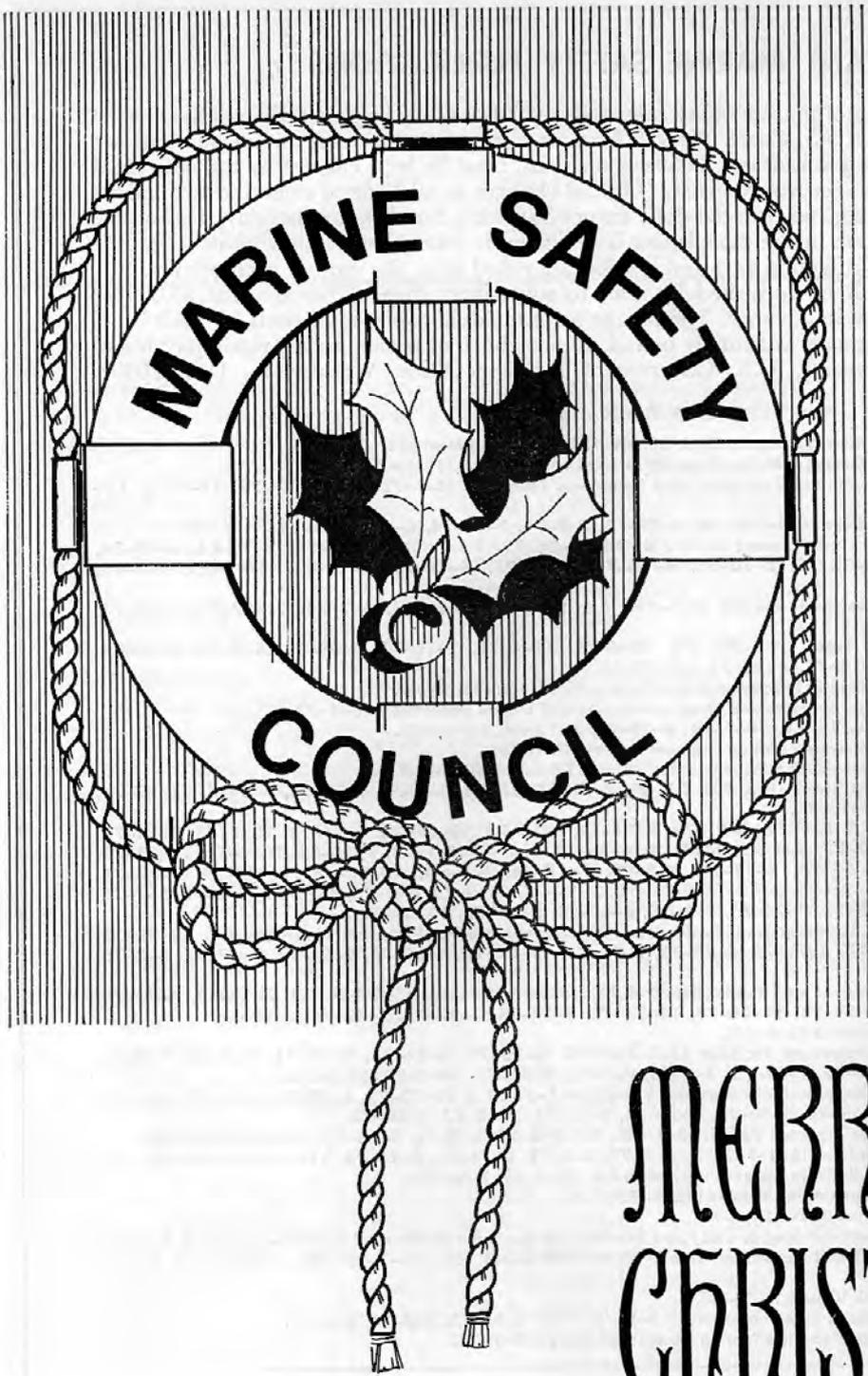
CG No.	TITLE OF PUBLICATION
101	Specimen Examinations for Merchant Marine Deck Officers (Chief Mate and Master) (1-1-74).
101-1	Specimen Examinations for Merchant Marine Deck Officers (2d and 3d mate) (10-1-73).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (4-1-72). F.R. 7-21-72, 12-1-72, 11-14-74, 6-18-75.
*115	Marine Engineering Regulations (6-1-73). F.R. 6-29-73, 3-8-74, 5-30-74, 6-25-74, 8-26-74, 6-30-75.
123	Rules and Regulations for Tank Vessels (1-1-73). F.R. 8-24-73, 10-3-73, 10-24-73, 2-28-74, 3-18-74, 5-30-74, 6-25-74, 1-15-75, 2-10-75, 4-16-75, 4-22-75, 5-20-75, 6-11-75, 8-20-75, 9-2-75, 10-14-75.
169	Rules of the Road—International—Inland (8-1-72). F.R. 9-12-72, 3-29-74, 6-3-74, 11-27-74, 4-28-75, 10-22-75.
*172	Rules of the Road—Great Lakes (7-1-72). F.R. 10-6-72, 11-4-72, 1-16-73, 1-29-73, 5-8-73, 3-29-74, 6-3-74, 11-27-74, 4-16-75, 4-28-75, 10-22-75.
*174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (3-2-64).
*175	Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (3-1-73).
*176	Load Line Regulations (2-1-71). F.R. 10-1-71, 5-10-73, 7-10-74, 10-14-75.
182	Specimen Examinations for Merchant Marine Engineer Licenses (1-1-74).
182-1	Specimen Examinations for Merchant Marine Licenses (2d and 3d Assistant) (4-1-75).
184	Rules of the Road—Western Rivers (8-1-72). F.R. 9-12-72, 12-28-72, 3-8-74, 3-29-74, 6-3-74, 11-27-74, 4-16-75, 4-28-75, 10-22-75.
190	Equipment List (8-1-72). F.R. 8-9-72, 8-11-72, 8-31-72, 9-14-72, 10-19-72, 11-8-72, 12-5-72, 1-15-73, 2-6-73, 2-26-73, 3-27-73, 4-3-73, 4-12-73, 4-26-73, 6-1-73, 8-1-73, 9-18-73, 10-5-73, 11-26-73, 1-17-74, 2-28-74, 3-25-74, 4-17-74, 7-2-74, 7-17-74, 9-5-74, 10-22-74, 11-27-74, 12-3-74, 12-30-74, 1-15-75, 1-21-75, 2-13-75, 2-19-75, 3-18-75, 3-19-75, 4-9-75, 4-16-75, 5-1-75, 5-7-75, 6-2-75, 6-25-75, 7-22-75, 7-24-75, 8-1-75, 8-20-75, 9-23-75, 10-8-75.
*191	Rules and Regulations for Licensing and Certification of Merchant Marine Personnel (6-1-72). F.R. 12-21-72, 3-2-73, 3-5-73, 5-8-73, 5-11-73, 5-24-73, 8-24-73, 10-24-73, 5-22-74, 9-26-74, 3-27-75, 6-2-75, 7-24-75, 8-13-75.
*200	Marine Investigation Regulations and Suspension and Revocation Proceedings (5-1-67). F.R. 3-30-68, 4-30-70, 10-20-70, 7-18-72, 4-24-73, 11-26-73, 12-17-73, 9-17-74, 3-27-75, 7-28-75, 8-20-75.
*227	Laws Governing Marine Inspection (3-1-65).
*239	Security of Vessels and Waterfront Facilities (5-1-74). F.R. 5-15-74, 5-24-74, 8-15-74, 9-5-74, 9-9-74, 12-3-74, 1-6-75, 1-29-75, 4-22-75, 7-2-75, 7-7-75, 7-24-75, 10-1-75, 10-8-75.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (4-1-73). F.R. 12-22-72, 6-28-73, 6-29-73, 8-1-73, 10-24-73, 12-5-73, 3-18-74, 5-30-74, 6-24-74, 1-15-75, 2-10-75, 8-20-75.
*258	Rules and Regulations for Uninspected Vessels (5-1-70). F.R. 1-8-73, 3-2-73, 3-28-73, 1-25-74, 3-7-74.
*259	Electrical Engineering Regulations (6-1-71). F.R. 3-8-72, 3-9-72, 8-16-72, 8-24-73, 11-29-73, 4-22-75.
*266	Rules and Regulations for Bulk Grain Cargoes (5-1-68). F.R. 12-4-69, 8-20-75.
268	Rules and Regulations for Manning of Vessels (12-1-73).
293	Miscellaneous Electrical Equipment List (7-2-73).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (7-1-72). F.R. 7-8-72.
323	Rules and Regulations for Small Passenger Vessel (Under 100 Gross Tons) (9-1-73). F.R. 1-25-74, 3-18-74, 9-20-74, 2-10-75.
329	Fire Fighting Manual for Tank Vessels (1-1-74).
439	Bridge-to-Bridge Radiotelephone Communications (12-1-72). F.R. 12-28-72, 3-8-74, 5-5-75.
*467	Specimen Examinations for Uninspected Towing Vessel Operators (10-1-74).

CHANGES PUBLISHED DURING OCTOBER 1975

The following have been modified by Federal Registers:

CG-239, Federal Registers of October 1 & 8. CG-123 & 176, Federal Register of October 14.
CG-190, Federal Register of October 8. CG-169, 172, & 184, Federal Register of October 22.

*Due to budget constraints or major revision projects, publications marked with an asterisk are out of print. Most of these pamphlets reprint portions of Titles 33 and 46, Code of Federal Regulations, which are available from the Superintendent of Documents. Consult your local Marine Inspection Office for information on availability and prices.



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