

PROCEEDINGS

OF THE MARINE SAFETY COUNCIL



DEPARTMENT OF TRANSPORTATION

UNITED STATES COAST GUARD

Avoidable Fire Injures Three . . . Towing Industry Advisory Committee . . .

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

PROCEEDINGS

OF THE

MARINE SAFETY COUNCIL

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Admiral C. R. Bender, USCG
Commandant

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COVERS

FRONT COVER: Lykes' Brothers SEABEE *Doctor Lykes* is shown immediately following its launching in the Quincy Massachusetts shipyards of General Dynamics Corp. The first of three barge and inter-modal carriers to be completed for Lykes, the *Doctor Lykes* underwent her maiden voyage last January.

BACK COVER: The behavior of an experimental floating oil barrier is watched by marine engineers from a lifeboat as the Coast Guard Cutter *Point Thatcher* stands by, during developmental tests. Tests were made using soybean oil, which is non-toxic and biodegradable, in place of crude oil. This barrier, with its series of aprons strung on supporting pontoons, is designed to operate in seas up to five feet, with a current up to two knots, and winds at 20 miles per hour. It can be deployed within four hours of notification of a spill.

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The Marine Safety Council of The United States Coast Guard

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The membership may be expanded by the Commandant or Chairman, Marine Safety Council to deal with special problems or circumstances.

Ensign A. W. Vander Meer, Jr., Editor

AVOIDABLE FIRE INJURES THREE

ON APRIL 16, 1971, William C. Chick, attendant at the Mobil Oil Corporation fueling pier on the Southern Branch of the Elizabeth River in Chesapeake, Va., was helping to fuel the Tug *Warrengas*. He was on the pier, and he expected the tug's Chief Engineer to call over to him from the vessel, telling him when to slow or stop the delivery of diesel fuel and lube oil which were being pumped aboard simultaneously. The tug's diesel engine was idling during the fueling operation. At 9:45 p.m. Mr. Chick heard the tug's main engine speed up; and he looked toward the vessel. Moments later he heard a muffled explosion and saw flames coming out of the openings on the starboard side of the tug's engineroom and the galley as well as the stack cowl. He immediately secured pumping lube oil and ran to a protective enclosure on the pier. There he obtained a 150 pound capacity "Purple K" dry chemical extinguisher on wheels. He laid a protective screen along the dock near the *Warrengas* so that he could get to his fuel line and cut off the diesel fuel flow to the tug. Having accomplished this, he emptied the contents of the extinguisher into the engineroom, temporarily extinguishing the fire.

Mr. Chick heard one of the vessel's crewmen calling for help from near the vessel's bow. The man said he could not see. The pier attendant told him to stay put until he could help him. At this moment a small fire re-flashed in the engineroom, and Mr. Chick obtained two 30 pound capacity "Purple K" extinguishers from the pier and emptied them into the

engineroom. Another crewman who had escaped unhurt from the stern of the *Warrengas*, arrived to assist the pier attendant. Mr. Chick handed him a third 30 pound capacity extinguisher which he used to put out a fire in the tug's galley. The two of them helped to remove the injured man—the cook—from the bow of the *Warrengas*.

The crewman who had assisted Mr. Chick, prior to his arrival to lend a hand fighting the fire, had rushed to a nearby telephone to notify the fire department and the Coast Guard. Personnel from the Chesapeake fire and police departments arrived at 9:51 p.m. according to their log—only 6 minutes after the fire broke out. By that time, firemen noticed, all machinery on the *Warrengas* was secured, and the vessel was quiet. But heavy smoke and diesel fumes were evident in the upper level of the engineroom.

The pier attendant told the firemen that he believed the Chief Engineer of the tug was in the engineroom. Using self-contained breathing apparatus, firemen entered the *Warrengas* and found the Chief Engineer lying unconscious in the athwartship passageway located immediately aft of the tug's galley.

At 10:05 a Coast Guard utility boat arrived on scene from Norfolk Station, followed by the Coast Guard Cutter *Chock* at 10:12. Chesapeake firemen had run firehose from shore to the *Warrengas*. The utility boat lay along the port side of the tug, and its crew ran a hose from their fire pump to the engineroom of the *Warrengas*, to serve as an emergency hose in the

event of a reflash. From the time the firemen and the Coast Guard personnel arrived, scattered small fires were found in the engineroom (rags on top of the switchboard), in the galley, and in one stateroom. All fires had been completely extinguished by 10:55, but a watch remained through the night. The three burned men—the Master, the Chief Engineer, and the Cook—were all taken to the Burn Center at Norfolk General Hospital. All had to be hospitalized.

After the fire a Coast Guard Investigating Officer inspected the tug and reported on his investigation of the casualty. He determined that negligence of the Chief Engineer of the *Warrengas* caused a sequence of events which culminated in the explosion and fire.

The *Warrengas* moored starboard side to the Mobil fueling pier at about 8:45 p.m. the evening of the casualty. The Chief Engineer had remained aboard the tug the night before, and early that morning he had commenced work on the vessel's main engine. He decided to leave the engine operating at idling speed while the vessel was being fueled in order to further check its operating condition.

In addition to the main engine, number one ship service diesel generator was operating and was on the line supplying electrical power to the vessel's electrical system.

In preparation for the fueling, the sounding caps were removed from three of the four diesel fuel tank sounding tubes located in the deck of the centerline fore and aft passageway on the main deck level. The remaining sounding tube cap located

in the starboard after tank was difficult to remove, and so was left intact. The two fill pipe caps located on the starboard side of the vessel's main deck were removed and the fueling hose from the pier was connected to the after tank fill pipe. The fuel tanks vented in "U" bends one deck level above. The Chief Engineer intended to fuel the after two tanks first and then fuel the forward two tanks. All fueling was to be done by way of the starboard tank fill pipes, allowing the fuel to gravitate to each adjoining tank on the port side. Approximately 20,000 gallons would be required to top off the four tanks. In addition to the diesel fuel, there were plans to pump aboard lube oil through a fill pipe located at the main deck near the stern of the vessel.

Preparations had been completed by 9:30. The Chief Engineer called over to Mr. Chick to commence pumping operations. The pumping of both diesel fuel and lube oil was begun. Diesel fuel was being pumped aboard at a rate of 250 to 300 gallons per minute through a 2-inch hose. Lube oil was pumped from 55-gallon drums, emptying one drum every 5 minutes.

The Chief Engineer was in charge of the fueling operation and was to call to Mr. Chick on the pier when to slow or stop delivery. The Chief Engineer asked two fellow crewmen who were sitting at the stern of the vessel to tend the lube oil fill hose.

At approximately 9:40, the Chief Engineer left the stern of the vessel and went forward along the starboard side and into the upper engineroom. From there he went into the centerline passageway through the open door. Although a sounding tape was available in this centerline passageway in the vicinity of the sounding tubes, he chose to peer into the sounding tube opening of the port after tank to check the level in the tank with the aid of a flashlight. He had resorted to this method of sounding the tanks in the past, and when he could see the fuel in the tube at a level of 6 inches below the tube open-

THE TUG WARRENGAS

The *Warrengas* is a 105.2 foot, 188 gross ton vessel designed for towing service. Her home port is Norfolk, Va. She is uninspected by the Coast Guard, but is classed for A1 towing service by the American Bureau of Shipping.

Her galley is the forward-most compartment at the main deck level, and is shaped in the form of a semicircle with portlights spaced equidistant along the uppermost part of the exterior bulkhead. A door is located on each side of the galley leading to the exterior main deck. All of the ports and both doors were open at the time of the fire.

Immediately aft of the galley is an athwartships passageway. A ladder located in the starboard side of this passageway leads up to the Master's cabin and the wheelhouse on the next higher deck level. Doors at either end of the athwartships passageway lead to the exterior of the vessel. Both of these were closed at the time of the casualty. Another door, on the centerline, leads forward into the galley.

On the centerline, extending aft from the athwartships passageway is a fore and aft passageway. Doors to four staterooms open on this passageway, the aftermost of which was open at the time of the casualty. Within the centerline passageway at the main deck level are located the sounding tubes for the port and starboard, forward and after fuel tanks. The vent openings for the fuel tanks are located one deck above the main deck and terminate in "U" bends.

At the after end of the centerline passageway is a door to the upper level of the engineroom, directly above the main engine air intake. This door was open at the time of the casualty.

ing, he would have the fuel pier attendant secure from pumping fuel. Apparently satisfied that the predetermined level of fuel desired would not be reached for awhile, the Chief Engineer continued forward to the galley.

When the Chief Engineer entered the galley, the Master and the Cook were seated behind a table drinking coffee. Another crewmember was standing just inside of the open starboard doorway watching television. The Chief Engineer was getting himself a cup of coffee when he heard the main engine rev up. He left the galley to investigate. Moments later the explosion occurred in the engineroom.

A flash fire broke out, engulfing the upper level of the engineroom in flame. Flames spurted out the open engineroom side doors and out through the open stack cowl. Flames then raced forward through the open door of the centerline passageway, and finally burst into the galley. The last thing the Engineer could remember before losing consciousness was seeing flame and feeling the force of the explosion immediately after he

entered the athwartship passageway from the galley.

The crewman who had been watching television near the galley's starboard door fell over the side of the *Warrengas* and into the water. He swam 100 feet to shore unhurt. The Master and the Cook ran out the starboard door, where the Master scrambled up onto the dock. The Cook remained standing on the open deck calling for help. Both men were seriously burned. The two crewmen sitting on the main deck of the vessel at the stern when the main engine revved up, heard the muffled explosion soon afterward and saw flames seemingly coming from every opening to the outside of the vessel. They scrambled off the stern of the *Warrengas* and onto the pier. From there, one of them ran to the telephone and then returned to assist in combating the fire.

Inspection of the *Warrengas* after the fire revealed the following:

Three sounding tube caps were found on the deck in the main deck level centerline passageway; the fourth cap remained screwed down tightly.

There was diesel fuel in the centerline passageway seeping over the top of the door sill leading into the engine room. Because of the trim of the vessel, the diesel fuel accumulated only in the after part of the passageway—deep enough to completely cover the after sounding tubes, but not extending to the forward sounding tubes.

There was evidence that the starboard after fuel tank vent terminating above the staterooms on the starboard side of the vessel's exterior had overflowed with diesel fuel which was found in the vicinity of the vent opening.

The main engine, a General Motors Model 12-278A diesel, its throttle in the idle running position, was not operating. The engine was fitted with an overspeed trip, but it had not been activated. The air box inspection covers, port and starboard sides, were not in place. These covers were found on engine room deck plating nearby. No other damage to the engine was evident; there was no evidence of a crankcase explosion. The engine fresh water expansion tank indicated a water level present in the sight glass. The main engine's air intake, atop the engine, is located in a position directly beneath the door leading from the upper engine room to the centerline passageway. Diesel fuel seeping over the door sill was dripping onto the air intake.

Neither of the two ship service diesel generators was in operation, though the forward generator had been operating before the casualty occurred and was on the line at the time of the casualty.

All of these facts led the Coast Guard Investigating Officer to conclude that the following sequence occurred to cause the casualty:

The Chief Engineer failed to use adequate means of sounding the fuel tanks, and he failed to sound them frequently enough. In addition, he failed to replace the caps on the sounding tubes when he left the area unattended. Fuel vapors vented through the fuel tank sounding tube

openings, creating an explosive atmosphere in the centerline passageway. The after fuel tanks then overflowed through the sounding tubes into the centerline passageway, filling the passageway with diesel fuel which ran over the door sill and onto the main engine air intake directly below. With the engine operating, the engine blower assembly could draw in the diesel fuel, causing the engine to speed up, thus further drawing in the fuel vapor laden air from the passageway above. An explosion in the air box followed, the force of which blew the air box covers from the engine. The resulting heat from the explosion ignited the explosive diesel-fume-laden atmosphere, creating the flash fire that followed.

The results of the casualty may have been minimized, the investigator concluded, had the door leading from the centerline passageway to the upper engine room been closed during the fueling operation.

A license was not a requirement of employment for officers on the *Warrengas*, and none of the tug's officers was licensed by the Coast Guard. Since licensed personnel are required to be knowledgeable about the hazards and safe handling of combustible liquids, the Investigating Officer recommended that consideration be given to Coast Guard licensing of officers on all towing vessels regardless of tonnage or route.

The quick thinking, fast acting response on the part of the fuel pier attendant was particularly noted by the Investigating Officer. Mr. Chick prevented this casualty from developing into a major waterfront catastrophe. Through his actions, the life of the Chief Engineer of the *Warrengas* was saved, and possibly the Cook's life was as well.

The Investigating Officer also reported that taking the following precautions might prevent the recurrence of similar casualties:

- a. Secure unnecessary machinery prior to commencement of fueling operations.
- b. Close doors and other openings

leading to areas where internal sounding tubes are located so as to limit oxygen supply which would support combustion should an ignition source become present.

c. Use proper sounding devices, and closely regulate the fueling rate when topping off tanks.

d. Use sufficient personnel during fueling operations so that the sounding tubes are not left unattended.

NOTE: In the past, the *Proceedings* has published feature articles on casualties reported by formal Marine Boards of Investigation and by the National Transportation Safety Board. By far the majority of the casualties reported to the Coast Guard are handled by an investigating officer without resort to the formal Boards. Many casualties of this type are worth publicizing in the interest of safer future operations. The above article is taken from the Report of the Investigating Officer of such a casualty. ✠

READERS INVITED TO SUBMIT MATERIAL FOR FUTURE ISSUES



ALL READERS are invited to submit comments, safety suggestions, cartoons, articles, or similar material for publication in future issues of this publication. Submissions should concern the promotion of maritime safety and will be selected and edited at the editor's discretion. Credit for published material will be given to the author, as appropriate, but unused items will not be returned. A brief biographical sketch is requested of the author of any article in excess of 1,000 words.

Articles or requests for further information should be directed to:

Editor
Marine Safety Council Proceedings
U.S. Coast Guard Headquarters
Washington, D.C. 20590

TOWING INDUSTRY ADVISORY COMMITTEE



Members of the new Towing Industry Advisory Committee to the Marine Safety Council met with Coast Guard representatives at an organizational meeting on December 13, 1971. Persons in attendance were: **FRONT ROW** (left to right) RADM W. M. Benkert, Chief Office of Marine Environment and Systems, Coast Guard Headquarters; RADM O. W. Siler, Commander, Second Coast Guard District; ADM C. R. Bender, Commandant; Braxton B. Carr, Chairman; RADM M. A. Whalen, Commander, Twelfth Coast Guard District; RADM W. F. Rea, III, Chief, Office of Merchant Marine Safety, Coast Guard Headquarters; CAPT D. H. Clifton, Executive Secretary, Marine Safety Council. **SECOND ROW** (left to right) William D. McNeal; Robert L. Gray; William E. Law; Alvan D. Osbourne; Walter D. Verner; CAPT J. V. Caffrey, Chief, Merchant Vessel Personnel Division, Coast Guard Headquarters; Robert J. Hasler; F. T. Ainsworth; LTJG W. T. Maguire, Marine Safety Council Staff. **THIRD ROW** (left to right) Lester C. Bedient; Francis B. Bushey; Frank J. Hughes; Arnold Sobel; John W. Lambert, S. V. Gardner; William S. Streckfus; CAPT S. S. Beckwith, Chief, Merchant Vessel Inspection Division, Coast Guard Headquarters; W. A. Creelman; Thomas L. Gladders; Melvin E. Lemmerhirt. **FOURTH ROW** (left to right) A. J. Tordella; Adrian S. Hooper; Gresham Hougland; CDR P. A. Yost, Chief, Bridge Division, Coast Guard Headquarters; J. W. Von Herbulis; CAPT S. A. Wallace, Chief, Marine Environmental Protection Division, Coast Guard Headquarters; W. F. Hagestad; and CAPT J. W. Yager, Traveling Inspector Staff, Office of Merchant Marine Safety, Coast Guard Headquarters. For a full listing of the members of the Committee, see box on page 47.

The Coast Guard has long recognized its obligation to solicit advice and counsel from the maritime public in exercising its regulatory responsibilities. Soon after the Bureau of Marine Inspection and Navigation joined the Coast Guard in 1942, the new Office of Merchant Marine Safety began establishing a number of industry advisory committees. In

1943, the Commandant created the first of these, the Western Rivers Panel to the Merchant Marine Council¹ to advise the Coast Guard on matters relating to the safety of life and property on those waters.

After almost 29 years of counsel to the Coast Guard, the Panel underwent a major revision in June, 1971. Recognizing that the towing and

barge industry in areas other than the Western Rivers had no formal means

¹In March, 1971, the Merchant Marine Council became the Marine Safety Council, undergoing minor administrative revision to streamline its function. This body will continue to act as a focal point for comments and suggestions gathered from the Coast Guard and from the advisory committees as well as from the general public, in order that the Commandant can fairly assess all points of view before taking final action on regulatory proposals.

TOWING INDUSTRY ADVISORY COMMITTEE MEMBERSHIP

BRAXTON B. CARR, *Chairman*, is the President of the American Waterways Operators, Inc., Washington, D.C. He served previously as Chairman of the Western Rivers Panel to the Merchant Marine Council, a position he assumed in 1957.

F. T. AINSWORTH is manager of U.S. Area Marine Distribution and Traffic for the Dow Chemical Co. in Freeport, Tex. He has worked for Dow since 1944.

LESTER C. BEDIENT holds the position of General Manager of Harbor Carriers, Inc. in San Francisco. He has a varied background in inland and coastwise operations on the Pacific Coast.

JESSE E. BRENT is President of Brent Towing Co. in Greenville, Miss., and a former member of the Western Rivers Panel.

PETER J. BRIX serves as President of the Knappton Towboat Co. in Portland, Ore. He is a former Chairman of the Board of Directors of the American Waterways Operators.

FRANCIS B. BUSHEY is President of Spentonbush Transport Service, Inc. in New York City. His professional background in coastwise and harbor operations dates from 1946.

LEO J. COLLAR is President of Alaska Hydro-Train in Seattle, Wash. His career in Pacific Coast marine transportation began in 1948.

W. A. CREELMAN serves as Vice President of National Marine Service, Inc. in St. Louis. He is a former Western Rivers Panel member.

STANLEY J. FAIRHURST is Vice President for Administration of the Foss Launch and Tug Co., an affiliate of the Dillingham Corp., in Seattle. He has a broad background in oceangoing, coastal, and harbor operations beginning in 1955.

LOUIS R. FIORE is President of the Ohio River Co. in Cincinnati. His background is principally in river and coastal operations.

S. V. GARDNER holds the position of Manager of the Marine Department at Humble Oil and Refining Co. in Baton Rouge, La. He is a former Western Rivers Panel member.

T. E. GARSIDE is Vice President of Pacific Inland Navigation Co., Inc. in Seattle. He began his career in oceangoing operations and later moved into coastal and river areas.

THOMAS L. GLADDERS is Vice President, Operations of the G. W. Gladders Towing Co., Inc. in St. Louis, a position he has held since 1968.

ROBERT L. GRAY serves as Manager of River Operations for the Ashland Oil and Refining Co., Inc. in Ashland, Ky. He is a former Western Rivers Panel member.

W. F. HAGESTAD holds the position of Executive Vice

President of the Canal Barge Co., Inc. in New Orleans and is a former member of the Western Rivers Panel.

ROBERT J. HASLER is Vice President of the Marine Services Group at Willamette-Western Corp. in Portland, Ore.

ADRIAN S. HOOPER is President of Interstate Oil Transport Co. in Philadelphia. His career in coastal and harbor operations began in 1950.

GRESHAM HOUGLAND is President of the Crounse Corp. in Paducah, Ky., and a former member of the Western Rivers Panel.

JOHN W. LAMBERT is President of the Twin City Barge and Towing Co. in St. Paul, Minn. He has spent 20 years in river operations.

CAPT. FRANK J. HUGHES is President of the Curtis Bay Towing Co. in Baltimore, Md. His varied career has ranged from oceangoing master to marine superintendent.

WILLIAM E. LAW is President of Allied Towing Corp. in Norfolk, Va. He has an extensive background in oceangoing and coastal areas.

MELVIN E. LEMMERHIRT serves as Vice President, Operations of the Great Lakes Dredge and Dock Co. in Union, N.J. His career with that company began in 1938.

WILLIAM C. MCNEAL holds the position of Executive Vice President of Oil Transport Co., Inc. in New Orleans. He is a former member of the Western Rivers Panel.

ALVAN D. OSBOURNE is Vice President, Operations of the Union Barge Line Corp. in Pittsburgh, Pa., and a former member of the Western Rivers Panel.

FRANK P. SILLIMAN is President of the Hillman Transportation Co. in Pittsburgh and a former Western Rivers Panel member.

ARNOLD SOBEL is Chairman of the Executive Committee of the Great Lakes Towing Co. in Chicago. He is a former Western Rivers Panel member.

WILLIAM S. STRECKFUS serves as Vice President of Streckfus Steamers, Inc. and was a member of the Western Rivers Panel.

A. J. TORDELLA is Vice President, Operations of the Sheridan Transportation Co. in Philadelphia. He has been employed by the company since 1946.

WALTER D. VERNER is Vice President, Operations of the Ingram Barge Co. in New Orleans. He served previously as a member of the Western Rivers Panel.

J. W. VON HERBULIS is President of the Pittston Marine Corp. in New York City. His career spans over 25 years of harbor and coastal operations.

for expressing their views to the Commandant, a recommendation was made to the Secretary of Transportation that the Western Rivers Panel be expanded to fulfill the need for broader representation.

Following Secretary Volpe's final approval of this change, an intensive search for qualified members began. Although many highly qualified persons were found, membership had to be limited. However, in an effort to provide others an opportunity to serve on the Committee, the Coast Guard plans to rotate approximately one-third of the membership off of the Committee every 2 years.

With an object to maintain continuity from the Western Rivers Panel, 13 former members of that Panel were reappointed to the expanded committee. This core of members has been joined by 17 new members representing a wide variety of towing and barge operations from coastal, harbor, and ocean areas. The list of the Committee's members on the previous page includes a brief summary of each member's back-

ground and present employment.

In order to plan the first formal meeting of the Committee, the Chairman, Braxton B. Carr, requested an organizational session in December of last year. At that meeting, Coast Guard representatives had an opportunity to meet the Committee members. Substantive discussion of all pending matters was delayed until the first full meeting of the Committee, scheduled for April 6 and 7 in Portland, Oreg. At this meeting, the Coast Guard will request advice from Committee members on various topics. In addition, a number of Coast Guard officers will be available to answer specific questions of interest to members.

Between annual meetings, the Committee's subcommittees will continue to advise the Coast Guard through the Chief, Office of Merchant Marine Safety, RADM W. F. Rea III, and through the Chief, Office of Marine Environment and Systems, RADM W. M. Benkert.

The Western Rivers Panel established a long record of valuable assist-

ance to the Coast Guard in protecting the safety of life and property on the Western Rivers. The new Towing Industry Advisory Committee promises to continue that tradition with a broadened base in the towing and barge industries.

EDITOR'S NOTE: Five advisory committees have joined the Western Rivers Panel over the last three decades as the need for more formal channels of communication between the Coast Guard and segments of the industry has arisen. Future articles in the *Proceedings* will describe in more detail the backgrounds, current projects, and memberships of the other industry advisory committees to the Marine Safety Council—the Chemical Transportation Industry Advisory Committee, the National Offshore Operations Industry Advisory Committee, the Industry Advisory Committee on Rules of the Road, the Industry Advisory Committee on Oil Pollution, and the Motorboat and Yacht Industry Advisory Committee. The new Boating Safety Advisory Council has been established under authority of the Federal Boat Safety Act of 1971. The June 1972 *Proceedings* will explain its operation along with plans for future boating regulations, placing special emphasis on new safety requirements. ✠

Multi-Media First Aid

Until recently, a standard first aid course was taught over a 5-week period. Each session lasted 2 hours, and the student spent the intervening time studying the textbook. On the New York waterfront, the experience of the NYSA Safety Bureau was that about 15 percent of the students who started this course failed to participate in the necessary five sessions and, consequently, did not receive certificates.

A "Multi-Media" system was devised which makes it possible to teach the course in one 8-hour day. After a brief introduction, a movie projector depicts an injury situation requiring first aid, and immediately shows the proper first aid being rendered. The

skill demonstrated is then practiced by each student. Again, the movie projector is used and a new skill is demonstrated and practiced. The training aids which are used, include in addition to the movie projector, bandages, compresses, splints (both improvised and prepared), blankets, 7-foot poles, towels, and stretchers. In addition, four programmed workbooks are used. These workbooks contain reading material, questions, and answers, and are used to teach more abstract information. The material is presented; then questions are asked on that material, and the student writes his answer in the workbook. He can then check himself to see if the answers are correct.

The course achieves its goal through the excellent visual presentation of the film, reinforced by the practice sessions. The programmed

workbooks achieve their purpose through simplicity in design and subject matter plus repetition. In both general areas, all errors are instantly corrected by either the workbook or the instructor.

The standard course is taught in a somewhat different manner by each instructor; different aspects are emphasized and some skills better taught than others. Using the huge variety of training aids, each in a carefully prescribed manner, the Multi-Media course provides each set of students with almost exactly the same information. Students who have taken both courses discover many things which are better taught under the new system.

The use of these training aids is not new; however, the use of so many

(Continued on page 53)

COAST GUARD RULE MAKING

(Effective February 22, 1972)

	Notice of proposed rulemaking	Public Hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as Rule	Effective date
1971 PUBLIC HEARING							
PH 1-71 Personnel and manning of vessels (subchapters B, K, and P):							
1a. Authorization to serve as pilot of vessels.....	2/24/71	3/29/71	5/15/71			1/13/72	3/18/72
1b. Apprentice engineer training for license as third assistant engineer.....	2/24/71	3/29/71	5/15/71			12/8/71	1/10/72
1c. Fee for duplicate merchant mariners documents.....	2/24/71	3/29/71	5/15/71			12/8/71	1/10/72
1d. Able seamen.....	2/24/71	3/29/71	5/15/71		12/8/71		
1e. Suspension and revocation procedure.....	2/24/71	3/29/71	5/15/71		1/20/72		
PH 2-71 Marine engineering (subchapters F, Q, and T):							
2a. Miscellaneous changes.....	2/24/71	3/29/71	5/15/71	X			
2b. Aluminum fuel tanks.....	2/24/71	3/29/71	5/15/71	X			
PH 5-71 Electrical (subchapter D, J, and T):							
5a. Definitions, clarifications, and Manuals.....	2/24/71	3/29/71	5/15/71	X			
5b. Insulation materials.....	2/24/71	3/29/71	5/15/71	X			
5c. Requirements for Underwriters' Laboratories, Inc., listing or labeling.....	2/24/71	3/29/71	5/15/71	X			
5d. Impressed cathodic protection systems on tank vessels.....	2/24/71	3/29/71	5/15/71	X			
5e. Explosionproof equipment on tank vessels.....	2/24/71	3/29/71	5/15/71	X			
5f. General alarm systems for barges.....	2/24/71	3/29/71	5/15/71	X			
5g. Wiring on small passenger vessels.....	2/24/71	3/29/71	5/15/71	X			
PH 6-71 Bulk dangerous cargoes (subchapters D and O):	2/24/71	3/29/71	5/15/71	X			
PH 7-71 Lifesaving equipment (subchapters D, H, I, J, Q, O, and U):							
7a. Ring life buoys and waterlights.....	2/24/71	3/29/71	5/15/71	X			
7b. Additional lifepreservers on passenger vessels.....	2/24/71	3/29/71	5/15/71	X			
7c. Illumination of lifesaving launching areas.....	2/24/71	3/29/71	5/15/71	X			
PH 8-71 Specification:							
8a. Lifeboat winches.....	2/24/71	3/29/71	5/15/71	X			
8b. Lifeboats.....	2/24/71	3/29/71	5/15/71	X			
8c. Line-throwing appliances.....	2/24/71	3/29/71	5/15/71	X			
8d. Inflatable liferafts.....	2/24/71	3/29/71	5/15/71	X			
PH 9-71 Fibrous glass-reinforced plastic construction of small passenger vessels.....	2/24/71	3/29/71	5/15/71	X			
***	***	***	***	***	***	***	***
Hazardous materials:							
Corrosive liquids.....	5/26/71	8/10/71	8/17/71	X			
Pentaerythrite tetranitrate containers.....	5/26/71	8/10/71	8/17/71			11/15/71	12/15/71
Bromine containers.....	5/26/71	8/10/71	8/17/71			11/15/71	12/15/71
Hydrochloric acid and sodium chlorite solution containers.....	5/26/71	8/10/71	8/17/71			11/15/71	12/15/71
Chromic acid solutions.....	5/25/71	8/10/71	8/17/71			11/15/71	12/15/71
Refrigerant gas containers.....	5/25/71	8/10/71	8/17/71			11/15/71	12/15/71
Chlorpicrin containers.....	5/25/71	8/10/71	8/17/71			11/15/71	12/15/71
Boron tribromide transportation.....	5/27/71	8/10/71	8/17/71	X			
Flammable liquid containers.....	5/27/71	8/10/71	8/17/71			11/15/71	12/15/71
Radioactive materials.....	7/9/71	8/24/71	8/31/71	X			
Cold compressed gases.....	10/16/71	1/11/72	1/18/72	X			
{ ¹ 1/21/72	12/22/72	12/29/72					

¹ Extension of comment period and second public hearing.

COAST GUARD RULE MAKING—Continued

	Notice of proposed rulemaking	Public Hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as Rule	Effective date
Radioactive materials.....	11/20/71	2/22/72	2/29/72				
Stabilized methylacetylene propadiene on board vessels..	11/30/71	1/18/72	1/25/72				
Etiologic agents.....	1/7/72	3/28/72	4/4/72				
Vessel bridge-to-bridge radiotelephone.....	10/20/71	11/18/71	12/10/71	X			
Interim lifesaving requirements for boats.....	11/10/71	12/16/71	12/26/71			2/16/72	4/17/72
Oil pollution prevention.....	12/24/71	4/15/72	2/21/72				
Washroom and toilet facilities.....	1/15/72	None	2/18/72				
Special water safety buoyant devices.....	1/29/72	None	3/15/72				
Dangerous cargoes.....	11/19/71	1/18/72	1/25/72				
Dangerous cargo containers.....		5/4/71				12/7/71	3/6/72
Claims in favor of the U.S.						11/30/71	11/30/71
Drawbridges							
Neuse and Trent Rivers, N.C.....	11/13/71	None	12/17/71				
Fort Point Channel—Boston, Mass.....	5/22/71	None	6/12/71			11/17/71	12/17/71
West River, Conn.....						12/16/71	12/16/71
Flint River, Ga.....						12/16/71	1/17/72
Black River, S.C.....	8/26/71	None				11/24/71	1/7/72
Grant Line Canal, Calif.....	4/15/71	None				11/24/71	12/24/71
Nehalem River, Oreg.....	5/22/71	None				11/24/71	1/1/72
Nanticoke River, Del.....	11/24/71	None	12/24/71				
Nassau Sound, Fla.....						12/29/71	1/29/72
Old Tampa Bay, Fla.....						12/29/71	1/29/72
Sinepuxent Bay, Md.....	12/29/71	None	2/7/72				
Mispillion River, Lewes and Rehobeth Canal, Del.....	12/29/71	None	2/7/72				
Sacramento River, Calif.....	12/29/71	None	2/7/72				
Bridges:							
Chattahoochee River.....	12/29/71	1/26/72 (Florida)	1/26/72				
Union Pacific RR Co., Columbia River.....	12/29/71	2/23/72 (Wash- ington)	2/3/72				
Interstate I-90 at Lake Washington.....	12/29/71	1/27/72 (Wash- ington)	1/27/72				
Idaho State Memorial Bridge—Clearwater River, Lewiston, Idaho.....	12/29/71	2/1/72	2/1/72				
Anchorage grounds:							
Willington River, Ga.....	11/25/71		12/27/71				
St. John's River, Fla.....	12/22/71		1/31/72				
Neenah Harbor, Neenah, Wisconsin.....	2/1/72		3/4/72				

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.

SEAMANSHIP TROPHY NOMINATIONS FOR 1972 AWARD

NOMINATIONS ARE now being received for the American Merchant Marine Seamanship Trophy.

The award, pictured on this page, is a sterling silver cup, inscribed at its base with the names and deeds of the recipients, which has been presented six times in the last 10 years to U.S. citizens for deeds exemplifying the highest traditions of seamanship and maritime skills. A Select Committee of labor and management officials from the steamship industry will review the nominations and determine if the trophy is merited this year.

Last year's award went to Captain E. A. Olsen for his masterful seamanship while commanding the American President Lines' S.S. *President Jackson* in rescuing seven men from a sinking schooner during a North Atlantic storm in January 1970. Despite the heavy pounding of waves and winds, he held his vessel abreast of, and close by the schooner for 9 minutes—long enough for the sinking ship's crew to climb aboard the *President Jackson* using nets, lines, and ladders manned by the freighter's crew.

Nominations must be made according to the following criteria:

1. The candidate must be a U.S. citizen. Only individuals are eligible—corporations, partnerships, associations are excluded.

2. The candidate must have performed a feat of distinguished seamanship while aboard a civilian-manned U.S.-flag vessel during the calendar year 1971.

(a) "Distinguished seamanship"

has been defined by the Select Committee to include either a distinguished feat of professional competence in the presence of extreme peril to life or property or an outstanding feat of seamanship exemplifying the highest standards of professional competence.

(b) "U.S.-flag vessels" may include yachts or other small craft.

3. All nominations must be received by the Secretariat, c/o Eastern Region Director, Maritime Administration, 26 Federal Plaza, New York, N.Y. 10007, by April 1, 1972. ⚓



Pictured above is the American Merchant Marine Seamanship Trophy, now on display in the lobby of the offices of the American President Lines. Nominations for this year's award, based on events which occurred during 1971, are now being sought. See sidelight this page.

Boiler Approvals To Be Governed by Marine Engineering Regulations

The rewrite of the U.S. Coast Guard Marine Engineering Regulations, Subchapter F, 46 CFR 50-63, which became effective 1 July 1969, revised the procedures for Coast Guard approval of heating boilers and automatically controlled packaged auxiliary boilers. Such approvals were previously covered by a Certificate of Approval, Form CG-HQ-10030 and were listed in pamphlet CG-190, Equipments Lists, under sections 162.003 and 162.026 respectively.

Because these Certificates of Approval are no longer applicable, all have been officially terminated and will not be listed under "Approved Instruments, Machines, and Equipment" in the next edition of CG-190. Notwithstanding this termination, existing equipment may be continued in use as long as it remains in good and serviceable condition. In the future, these boilers will be approved when constructed and tested in compliance with the provisions of the Marine Engineering Regulations in Subchapter F. ⚓

Water Pollution Publications

Pollution of our waterways, its prevention and treatment, have made news headlines for the past several months. Several publications dealing with this timely and vital topic have recently been released.

On December 24, 1971, the Coast Guard published in the Federal Register a package of proposed regulations to prevent oil pollution in U.S. waters. The package went to a public hearing for comments by interested persons last February 15. The deadline for receipt of written comments

was February 21. Copies of the proposed regulations can be obtained by writing U.S. Coast Guard (CMC/82), 400 Seventh Street SW., Washington, D.C. 20590. The proposed regulations are designed to implement the Federal Water Pollution Control Act as amended by the Water Quality Improvement Act of 1970. The latter Act declared it the policy of the United States "that there should be no discharge of oil into or upon the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone. The proposals deal with four general problem areas of oil pollution: tank cleaning and ballast; bilges, leaks, and fueling spills; vessel casualties; and facility (terminal) or oil transfer operations.

A Report to the American Petroleum Institute, C-71958, October 1970 entitled "Oil Spill Treating Agents—Selection Based on Environmental Factors" has been released. The report evaluates the usefulness of various classes of oil spill treating agents and techniques in several typical environments. When a determination to use special treating agents has been made pursuant to the provisions of Annex X to the National Oil and Hazardous Substances Pollution Contingency Plan, this report may be used to good advantage in selecting the techniques to use. Annex X divides the possible substances into collecting agents, sinking agents, and dispersing agents, plus biological and burning agents. The Annex also states that chemical agents should be used only under certain circumstances. The Report, "Oil Spill Treating Agents—Selection Based on Environmental Factors" is available for \$4 from the American Petroleum Institute, Publication and Distribution Section, 1801 K Street NW., Washington, D.C. 20006.

The International Chamber of Shipping has published a 1,000-page safety guide for bulk chemical carriers. The work, said to be the world's first in the field, is the result of 4 years of preparation and collection of data.

The three volumes are companion to the ICS oil tanker safety guide published in mid-1970. This work may be obtained from the International Chamber of Shipping, 30/32 St Mary AXE, London EC3, England at a cost of £35 sterling.

A DIRTY CASE OF SPONTANEOUS COMBUSTION

A marine inspector in Galveston recently investigated a shipboard fire early this year that was apparently caused by spontaneous combustion.

Smoke was spotted coming from the No. 2 cargo hold of a vessel 25 miles at sea. After initial attempts at pinpointing the fire failed, the ship asked for and received permission to enter a nearby port. There, 500 pounds of CO₂ was discharged into the No. 2 port after deep tank, but temperature readings the next day continued to indicate excessive heat.

To determine the source of the high temperatures, the cargo was soon offloaded from the tank. Containers of salad oil were found broken with their contents seeping through three tiers of plywood flooring laid over and separating bags of diatomaceous earth. These bags had been stowed in the space for over 5 weeks and the earth had begun to decompose in that time generating sufficient heat to ignite the oil-soaked layers above.

Two principal lessons are to be learned from this incident. First is that masters should always be wary of long-stowage periods for possibly spontaneously combustible cargo. Second, carriers should remember their right to refuse to transport any commodity determined by them to be packaged inadequately. Masters and shipowners are encouraged to establish procedures to avoid the conditions of stowage or packaging which could later affect the safety of their vessels.

Lessons from Casualties

Preventable casualties happen all too frequently in practically every line of human endeavor and although those listed below did occur in some phase of offshore drilling operations, they are only illustrative of the results when basic safety precautions are not fully observed. It appears evident that this factor, contributed by the victims themselves in far too many incidents, leads directly to their own death.

A floorman serving aboard a fixed drilling platform had laid three joints of pipe on the pipe ramp in the V-door of the derrick. He stepped in front of the ramp under the pipe to pick up the hoist line to tie on to three more joints. A joint slid from the ramp above him and struck him on the head, killing him instantly. Had the floorman, who had 2 years' experience in that capacity, taken the normal precaution of standing clear of the pipe on the ramp, he would not have been killed.

"Making a trip" is the name drillers have given the cycle of pulling a string of drill pipe from a well and rerunning the pipe back in the hole. In order to make a trip a derrickman is stationed high up on a monkeyboard where he connects or disconnects the elevator clamps as each stand of pipe is pulled or run back in the well. On one drilling barge a derrickman preparing to make a trip chose to be hoisted up to the monkeyboard on the elevator used to raise or lower the pipe. He ignored the customary access ladder. The easy way up led to the quick way down, for, as he stepped from the elevator toward the monkeyboard, the derrickman slipped and fell 85 feet to his death. Riding the elevator at any time is unsafe.

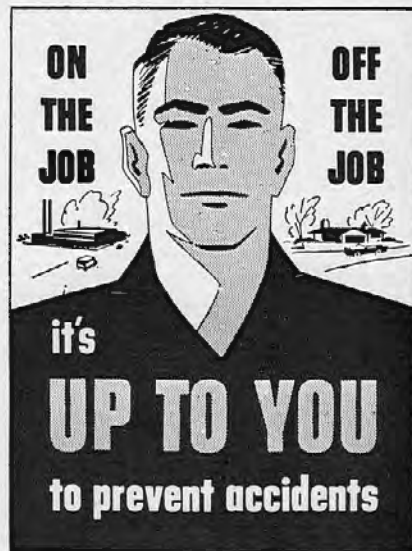
A freight supply boat loading equipment at a dock was the scene of another casualty. A self-propelled portable crane (a cherry picker) was being used to swing baskets

loaded with equipment from the boat to the dock. (The cherry picker was mounted on deck on its own outrigger jack legs and was usually secured with chains to deck pad eyes. At the time of the casualty, however, only the two forward outrigger legs were extended, and the securing chains were not used.) The crane operator lifted a basket and swung it over the dock. The crane toppled toward the dock. A roustabout on deck saw it falling, but too late. He was crushed to death between the falling crane and the vessel's bulwark. Securing the crane as it was designed to be would have averted this casualty.

A helper was engaged in sand washing on a gas injection well. The rigging process for the operation required that the gas supply to all injection wells be shutoff at the main manifold while a unbolt blanking cap was substituted for the gas injection spool on the gas flow line of the well being sand washed. Once the blanking cap was installed, the master valve was reopened to continue supplying the other wells on the platform. When sand washing was completed, the helper began rigging down to reinstall the gas injection spool. He banged with a hammer at the backing bolt holding the blanking cap in place. Suddenly the cap blew free, crashing into the helper's head. The helper had not checked to see that pressure was shut off at the master valve before removing the blanking cap. His oversight killed him. In a similar incident a helper failed to check the pressure gage on a pressurized cement tank before removing the tank's cover to check the quantity of cement. The cover, under pressure, blew off with force enough to break its hinges and struck the helper on the head. He fell about 13 feet. He was dead on arrival at the hospital. Fittings on potentially pressurized vessels should never be opened until

it is certain that the vessel is not pressurized.

These casualties have one specific thing in common. In all of them someone was killed, and in all of them the death could have been easily prevented. Shortcuts, oversights, and failure to habitually take normal, everyday safety precautions have proven themselves to be the reasons behind a large percentage of fatal accidents. ‡



—National Safety Council

MULTI-MEDIA

(Continued from page 48)

training aids in such a brief period is new. The results so far indicate that this presentation achieves as much as the 10-hour course.

Information concerning this method can be obtained from your local office of the American Red Cross. ‡

—National Safety Council Newsletter

NAVIGATION AND VESSEL INSPECTION CIRCULAR 6-71

September 23, 1971

Subj: Monitoring carbon monoxide (CO) in ship's cargo spaces

Ref: (a) 46 CFR Parts 35.70-20(d), 78.80-15(c), 78.83-1(b), 97.70-15(c), 97.80-1(b), 146.07-5(d), 146.09-15(e)(3), 146.27-30(d)(1), 146.27-31(d)(1), and 146.27-32(d)(1).

PURPOSE

The purpose of this circular is to present detailed guidance on the proper carbon monoxide monitoring techniques for ship's cargo spaces.

BACKGROUND

a. The use of motor vehicles and mechanized equipment powered by internal combustion engines during loading and unloading operations generates a buildup of carbon monoxide in the cargo spaces. Personnel working in cargo spaces under these conditions may become asphyxiated or may be poisoned due to a high level of carbon monoxide. Prevention of injuries from carbon monoxide can be accomplished by adequate ventilation of the cargo spaces and a carbon monoxide monitoring system which will inform personnel when CO levels reach dangerous concentrations in the air that they are breathing.

b. The Coast Guard, being concerned with this question, consulted with industry and government groups that were familiar with the carbon monoxide personnel problem. Included among the groups that the Coast Guard consulted with were the American Conference of Governmental Industrial Hygienists and the Bureau of Labor Standards of the Department of Labor. Evolving from these consultations was a regulatory change to parts of Title 46 of the Code of Federal Regulations outlined in reference (a). The proposed change to the regulations made reference to carbon monoxide monitoring procedures but did not address specific procedures concerning carbon monoxide monitoring.

c. It was brought out during the public hearing held in 1969 that there was a question with respect to what CO monitoring procedures were to be used. It became apparent at this time that the development of suitable CO monitoring procedures which could be used by personnel to determine the level of CO in the cargo spaces would require extensive consultations with industrial hygienists and other experts. In view of the delay involved in this undertaking, the Marine Safety Council of the Coast Guard recommended that the amendments as proposed, without the monitoring procedures, be promulgated without delay. It was also decided at this time that the Coast Guard would develop suitable monitoring procedures.

d. The regulations noted above (ref (a)) include the following:

"The senior deck officer shall see that tests of the carbon monoxide content of the atmosphere are made as frequently as conditions require to insure that dangerous concentrations do not develop."

This circular presents *suggested guidelines* to be used by personnel involved in the carbon monoxide monitoring procedure.

DISCUSSION

a. The regulations require that the holds and intermediate decks where persons are working shall be maintained at not more than 50 parts per million (0.005%) carbon monoxide as a time-weighted average, and that persons shall be removed from these areas when the carbon monoxide concentration exceeds a concentration of 75 parts per million (0.0075%).

b. Excursions above 50 ppm but less than 75 ppm would be acceptable provided there are equivalent excursions below the value of 50 ppm.

c. An integrating CO monitoring system yields a time-weighted average and will show a reading of 50 ppm CO even though there are temporary excursions above 50 ppm CO providing that there are equal excursions below

50 ppm CO. The CO monitoring system which will be discussed in this NVC is an integrating system which meets the intent of the regulations.

CO MONITORING SYSTEM

a. The CO monitoring system consists of a CO detector tube, tube holder, sampling probe and vacuum pump which form a portable unit (see Figure 1).

b. Assembly of the CO monitoring system is as follows: The sampling probe (1) is connected to one end of the detector tube (2), the other end of the detector tube is in turn connected to the vacuum pump (3). The detector tube should be firmly supported by the tube holder (4).

c. The sampling probe should be of material that would not alter the carbon monoxide concentration in the air being sampled, should fit the detector tube snugly so as to prevent leakage, and should be free of cracks or other potential leaks.

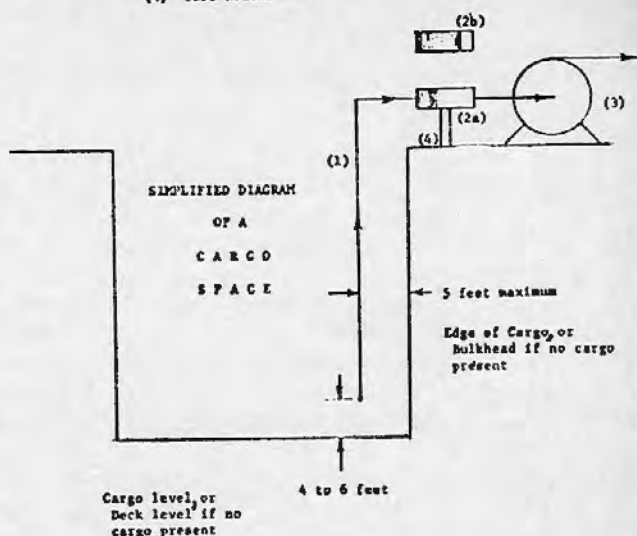
d. The CO detector tube should be a "length of stain" type. Such tubes are manufactured by industrial instrument companies.

e. The vacuum pump should be capable of drawing air through the sampling probe and the detector tube at the flow rate specified by the manufacturer of the detector tube. The detector tube and pump should be located on the deck above the working area (in order to prevent mechanical damage and make it more accessible to the observer) with the sampling probe extending down to the work area. The sampling probe should be located so that the open end of the probe is drawing in air at the breathing-zone level no farther than five feet from the cargo, or bulkhead if no cargo is present. The probe's location should be representative of the air breathed by the personnel in the space.

OPERATING PROCEDURE OF CO MONITORING SYSTEM

a. Operation of the carbon monoxide monitoring system should be continuous. Detector tubes should be changed at least every four hours, or more frequently if the length of the stain extends three quarters of the total length of the indicating material. The length of stain should be measured and recorded periodically to determine if the carbon monoxide concentration in the hold is within prescribed limits. The more often the readings are taken the more assurance there is of a timely detection of a concentration in excess of 75 ppm. The readings should therefore be taken at intervals not to exceed one hour, and when practicable to do so, at intervals not to exceed 15 minutes. Where there is reason to suspect that the concentration has risen above 75 ppm (e.g., from a sudden increase in the periodic sample stain lengths), the current concentration may be obtained by using a fresh detector tube with a standard hand sampler available from the same manufacturer.

- (1) Sampling Probe
- (2a) Detector Tube in Use
- (2b) Used Detector Tube
- (3) Vacuum Pump
- (4) Tube Holder



CO MONITORING SYSTEM

FIGURE 1

NOTE: This illustration is not drawn to scale. Relative size of CO monitoring equipment (vacuum pump and detector tube holder) is exaggerated in order to simplify presentation.

b. If workers are removed from the hold because of a carbon monoxide concentration excursion above the limit of 75 ppm, the monitoring system should be shut off and additional ventilation turned on. "Spot sampling", i.e., samples taken by hand-operated device, should be employed to confirm that the hold has been sufficiently ventilated so that the CO concentration is within prescribed limits.

c. The length of stain for each detector tube should be measured together with the duration of the tube's use. With this information the time-weighted CO concentration can be determined. As a convenience for this purpose, a chart should be provided that would indicate the CO concentration for various time increments and lengths of stain.

d. As noted in paragraph 3(b) excursions above 50 ppm but less than 75 ppm are acceptable provided there are equivalent excursions below 50 ppm. It will be necessary therefore to identify, cap and retain used detector tubes until the end of the workshift so that any time-weighted CO concentrations above 50 ppm can be compared with succeeding and following measurements to ensure the total time-weighted average is below 50 ppm.

COMMENTS

It is anticipated that as comments are received on this NVC improvements will be made concerning the CO monitoring system and appropriate changes will be promulgated.

What's Wrong

With Engineers ?

That's an easy one. They don't think they're as good as they really are. Any "rope choker" could gripe about engineers all day and hardly scratch the surface, yet it would be more in the form of good-natured banter. Fundamentally the two have a great deal of respect for each other and when the chips are down stick together come h --- or high water.

By and large, engineers are a dedicated group. They have an enormous amount of pride in their profession and in its individuality which reflects on them. They work hard and under conditions which would cause a stationary engineer to throw up his hands in horror. They are the original "make-do" boys. They have to be. That parts' supply shop may be a couple of thousand miles away while a lee shore can be only a few miles off. They show resourcefulness that would make the legendary "Glencannon" green with envy.

American engineers are proud of their technical qualifications and will not fault themselves in this area. They realize the responsibility of keeping their ship running, accept it, and over the years do a remarkable job.

During a recent collision and fire in the Mississippi River, the engineers remained at their posts; kept the plant operating; kept water pressure on the hoses and power throughout all areas of the ship when at times smoke in the engineroom was so thick the gauge glasses were not visible. Without this devotion to duty under the most hazardous of conditions, the ship would probably have been lost.

In another case despite the presence of explosive gases and the ever-present danger of rupturing steam lines, an engineer from an adjoining ship ran down into the engineroom and secured the plant after a boiler blowback had incapacitated the vessel's watch engineers.

These are not unusual or isolated

cases. The iron courage and skilled performance of engineers is legendary.

It is in the realm of executive leadership where engineers tend to fault themselves. They are more apt to consider themselves highly skilled technicians than leaders who must set the example; teach and inspire those under their direction.

In the area of safety we wish more engineers would spring loose with their vast reservoir of experience and knowledge and pass it on. These men have learned their safety from experience, frequently bitter experience, and the passing on of this knowledge to their subordinates is a responsibility of leadership, the mark of a good executive, and will gain for them the respect, loyalty, and cooperation of their men as nothing else can. **HIDE NOT THY CANDLE!** ‡

Robert H. Smith, USP&I Agency.

ABUSED HANDTOOLS CAN EVEN THE SCORE

When primitive man crawled across the threshold into civilization, one of the first marks of his progress was the extension of his own hands—through tools.

Beginning with sticks and stones, bones and shells, he learned to perfect handtools. Even today, the first thing a person learns, after sucking his thumb, is to use simple handtools.

But when we look at the record of injuries caused by handtools, we wonder whether man does not still find them strange and forbidding. Simple as some tools are, man insists on hurting himself with them.

All of us use handtools—hammers, screwdrivers, pliers—and we take them for granted. Is this the reason for so many injuries?

The causes of handtool accidents boil down to:

1. Inattention
2. Using wrong tools for the job
3. Using tools in poor condition
4. Using tools improperly
5. Leaving tools where they may contribute to an accident

Because tools multiply a man's strength, a good bit of force is involved. So, if you don't watch what you're doing, you'll get hurt.

Consider wrenches. The majority of handtool accidents are caused by the improper use of wrenches. There are many different types of wrenches and although more than one type can be used for any one job, there generally is a wrench for every job. Select the proper type and size wrench for the job to be done, making sure first that the wrench handle and your hands are free from oil and grease.

Despite the large selection of wrenches, all too frequently the wrong one is used and someone winds up with skinned knuckles, sprains, bruises, or worse. Here are a few simple rules for the safe and correct use of wrenches and for each type in particular:

1. In using an open-end wrench be sure that the wrench fits the nut or bolt head. Never shim the jaw of such a wrench to fit a smaller nut as it may slip, or strip the threads. The length of the wrench handle is in proportion to the opening in the wrench. When you use too big a wrench you also are applying too much strain on the nut or bolt head.

2. Always pull on the wrench, do not push; always see that the wrench fits snugly over the nut or bolt head before giving it the works. If the nut should loosen without warning and you are pushing, you may severely bark your knuckles. If you are in a position where you must push, keep your hand open.

3. When you need a hammer, use a hammer not a wrench. Using a wrench as a hammer damages it and it could cause an accident. Also, speaking of hammering, do not hammer on an open-end wrench. It is not built for it.

4. Do not use an adjustable or crescent wrench as a substitute for an open-end box, or socket-type wrench. They are to be used for odd size nuts and bolts. Furthermore, they are not designed for hard service. It is much

easier to snap a bolt to stud with a crescent wrench because you do not have the same balance between size of opening and length of handle. Develop the "feel" of the wrench on the nut so that the pulling force or bolt is tight enough without snapping the bolts or stripping threads.

5. Whenever you must exert any amount of force on a crescent wrench to "break loose" or "snug down" a nut, place the wrench on the nut so that the pulling force is applied to the stationary jaw side of the handle. After placing the wrench, tighten by adjusting knurl so the wrench fits the nut snugly.

6. The same precautions that apply to the adjustable wrench also apply to the monkey wrench.

7. The pipe wrench is designed to work only on round stuff and never on a bolt or nut. No instructions are necessary on which way to pull on this wrench, as it only works in one direction. It works best, however, when the "bite" is taken at about the center of the jaws. Under no circumstances should a pipe be placed over the handle of a pipe wrench to increase leverage. This is a sure way to break the wrench and bruise your knuckles.

8. When using a wrench, balance your body so that if the wrench slips or the nut comes free, your hand and body will still be under control. This is especially important when working above deck, on platforms, staging, etc., or between hot steam lines where secure support is necessary for all wrench work.

9. Through such things as constant handling and repeated painting, bolt and stud heads become frozen and the edges become rounded. How are you going to free them without abusing the wrench or the nut? There are several methods. Penetrating oil helps sometimes. Where time is a factor, it may be best to split the nut. Sometimes you may have to cut it off with a hacksaw. Repeated painting may require that the surface of the nut be cleaned thoroughly before the wrench is applied to it.

10. Wrenches should be inspected often for worn or sprung jaws or other defects. Defective wrenches should be taken out of service.

11. Wrenches should be kept clean at all times and the teeth of wrenches should be kept clean and sharp. Apply a few drops of oil occasionally to the adjusting nut on pipe, monkey, and other adjusting wrenches to prevent rusting and making them easier to work.

The above rules emphasize the need to use the proper type and size wrenches to fit a stud or bolt, not to hammer on the wrench or use extensions on wrenches.

Whenever you finish an installation or repair job, what about the tools you've used? Are they left lying around the machine or in the aisles? If so, they are booby traps, since they can cause puncture wounds, tripping or scuffing. Tools should be kept in tool boxes or on a pegboard.

Remember even the safest tool is only as safe as its user. Thinking safety prevents accidents. ‡

—The Safety Valve
—National Safety Council

AMENDMENTS TO REGULATIONS

Title 46 Changes

DEPARTMENT OF TRANSPORTATION

Coast Guard

[46 CFR Part 137]

SUSPENSION AND REVOCATION PROCEEDINGS

Withdrawal of Notice of Proposed Rule Making

The purpose of this notice is to withdraw item PH 1e-71 of the Coast Guard's notice of proposed rulemaking 71-11 (36 F.R. 3426; Febru-

ary 24, 1971) wherein the Coast Guard solicited comments on amendments under consideration in Part 137 of Title 46 of the Code of Federal Regulations involving a number of procedural changes.

The reason for the withdrawal is the appointment of an Ad Hoc Committee to rewrite the entire Part 137, Suspension and Revocation Procedures. The scope of the present undertaking is broader and deeper. It supersedes as well as embraces the previous partial amendments.

The rulemaking action is thus postponed rather than terminated.

In consideration of the foregoing, the item PH 1e-71 of the notice of proposed rulemaking published in the Federal Register (36 F.R. 3426; February 24, 1971) and circulated as item 1e, entitled "Suspension and Revocation Procedure," is hereby withdrawn.

This withdrawal is issued under the authority of 46 U.S.C. 170, 375, 391a, 416; 49 U.S.C. 1655(b); 49 CFR 1.4((b), 1.46(b).

Dated: January 14, 1972.

W. F. REA III,
Rear Admiral, U.S. Coast
Guard, Chief, Office of
Merchant Marine Safety.

[FR Doc.72-845 Filed 1-19-72; 8:48 am]
(Federal Register of January 20, 1972.)

Chapter I—Coast Guard, Department of Transportation

SUBCHAPTER P—MANNING OF VESSELS

PART 157—MANNING REQUIREMENTS

Deck Officers' Service as Pilots of Certain Vessels

The purpose of this amendment to the special provisions of the Coast Guard's regulations for manning of vessels is to allow a person holding a license as master or mate who is employed as master or mate of a vessel of less than 1,000 gross tons to serve as pilot of that vessel. This amendment is based on a notice of proposed rulemaking (CGFR 71-11) pub-

lished in the Federal Register on February 24, 1971 (36 F.R. 3525). The proposed rule on which this amendment is based appeared as item PH 1a-71 of the Merchant Marine Council Public Hearing Agenda for the March 29, 1971, public hearing.

Interested persons were given the opportunity to submit written comments and to make oral comments at the public hearing concerning this amendment.

Item PH 1a-71 also contained proposed amendments to the Coast Guard's licensing requirements for masters and mates of freight and towing vessels of not more than 1,000 gross tons. These proposals will be the subject of a later Federal Register document.

Coastwise seagoing vessels when underway on waters other than the high seas are required by law to be under the direction of a federally licensed pilot (46 U.S.C. 364 and 404). Many seagoing vessels of 1,000 or less gross tons are presently subject to regulations that allow a master or mate to serve as pilot. This category of vessels of 1,000 or less gross tons includes about 3,800 vessels such as small freighters, tankers, towing, passenger, oil exploration, and support vessels. About 3,400 of these are small passenger vessels, under 100 gross tons, which are presently not required to have a person in control who holds a license as pilot. The remainder of the 3,800 vessels include about 200 freight and towing vessels on which, under present regulations, masters and mates may serve as pilots; therefore, less than 200 vessels in the 1,000 or less gross tons category are presently not covered by regulations allowing a master or mate to serve as pilot.

Most of the comments received in writing and at the public hearing supported the proposal to allow masters and mates to serve as pilots on vessels of not more than 1,000 gross tons. Comments in favor of the proposal point to the greatly improved aids to navigation, new navigation devices aboard vessels, improved

charts, and masters and mates possessing greater navigational expertise than masters and mates of a generation ago. The adoption of this amendment would relieve a shortage of masters with sufficient pilotage experience to qualify for licenses as pilots.

Two comments were received in opposition to the proposal. One commentator pointed out that the exam for a master or mate's license has no questions to ascertain the scope of a man's knowledge concerning any particular area and contended that in the restricted waters of inland rivers and other harbors, any skill as a shiphandler depends in large part upon the familiarity with the waters. The other comment in opposition to the proposal contended that any size vessel traveling on waters requiring pilotage knowledge should be under the guidance of a licensed pilot for the waters concerned and that with the advent of large, powerful motor-driven tugs pushing barges of a size comparable to larger ships, a capability exists for major disasters if knowledgeable, licensed pilots are not required.

An applicant for a pilot's license or a pilot endorsement on a master or mate's license is examined on, among other things, inland rules applicable to the route to which his pilot privileges are limited, local knowledge of winds, weather, tides, current, etc., and a chart sketch of the route and waters applied for, showing courses, distances, shoals, aids to navigation, depths of water, and other important features of the route. An applicant for a deck officer's license is examined on, among other things, piloting, aids to navigation, chart construction, tides, and current, and inland rules of the road. Although he is not examined on local knowledge of specific routes, a person licensed as master or mate under present regulations can safely navigate the small maneuverable, shallow draft vessels of 1,000 gross tons or less without the intimate and precise knowledge of a specific local area required of a pilot of large, deep draft vessels.

The Coast Guard, upon review of all the comments, believes that the professional knowledge and experience required for a license as master or mate of ocean and coastwise vessels exceeds the knowledge and experience necessary to safely operate and navigate vessels of 1,000 gross tons or less.

In consideration of the foregoing, Part 157 of Title 46 of the Code of Federal Regulations is amended by adding a new § 157.30-40 to read as follows:

§ 157.30-40 Vessels not more than 1,000 gross tons.

For the purposes of § 157.20-40, a person holding a license as master or mate is a licensed pilot of a vessel of not more than 1,000 gross tons, within the limitation and restriction of his license, on which he is employed as master or mate.

(46 U.S.C. 222, 224, 364, 367, 375, 404, and 416; 49 U.S.C. 1655(b)(1), 49 CFR 1.4(b), 1.46)

The effective date. This amendment is effective on March 18, 1972.

Dated: January 7, 1972.

C. R. BENDER,
Admiral, U.S. Coast Guard
Commandant.

[FR Doc.72-506 Filed 1-12-72; 8:47 am]
(Federal Register of January 13, 1972.)

Approved Equipment

Commandant Issues Equipment Approvals; Terminates Others

U.S. Coast Guard approval was granted to certain items of lifesaving, and other miscellaneous equipment and materials. At the same time the Coast Guard terminated certain items of lifesaving, and other miscellaneous equipment and materials.

Those interested in these approvals and terminations should consult the Federal Registers of January 13, and 20, 1972, for detailed itemization and identification.

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 Sunday, Monday, and days following 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 \$2.50 per month or \$25 per year, payable in advance. The charge for individual copies is 20 cents for each issue, or 20 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. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated January 1, 1971 are now available from the Superintendent of Documents price: \$3.75.

CG No.	TITLE OF PUBLICATION
101	Specimen Examination for Merchant Marine Deck Officers (7-1-63).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (5-1-68). F.R. 6-7-68, 2-12-69, 10-29-69.
115	Marine Engineering Regulations (7-1-70). F.R. 12-30-70.
123	Rules and Regulations for Tank Vessels (5-1-69). F.R. 10-29-69, 2-25-70, 6-17-70, 10-31-70, 12-30-70.
129	Proceedings of the Marine Safety Council (Monthly).
169	Rules of the Road—International—Inland (9-1-65). F.R. 12-8-65, 12-22-65, 2-5-66, 3-15-66, 7-30-66, 8-2-66, 9-7-66, 10-22-66, 5-11-67, 12-23-67, 6-4-68, 10-29-69, 11-29-69, 4-3-71.
172	Rules of the Road—Great Lakes (9-1-66). F.R. 2-18-67, 7-4-69, 8-4-70.
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 (3-1-65).
176	Load Line Regulations (2-1-71) F.R. 10-1-71.
182	Specimen Examinations for Merchant Marine Engineer Licenses (7-1-63).
184	Rules of the Road—Western Rivers (9-1-66). F.R. 9-7-66, 2-18-67, 5-11-67, 12-23-67, 6-4-68, 11-29-69, 4-3-71.
190	Equipment Lists (8-1-70). F.R. 8-15-70, 9-29-70, 9-24-71, 9-30-71, 10-7-71, 10-14-71, 10-19-71, 10-30-71, 11-3-71, 11-6-71, 11-10-71, 11-23-71, 12-2-71.
191	Rules and Regulations for Licensing and Certifying of Merchant Marine Personnel (5-1-68). F.R. 11-28-68, 4-30-70, 6-17-70, 12-30-70, 6-17-71, 12-8-71.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (5-1-67). F.R. 3-30-68, 4-30-70, 10-20-70.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4-1-57).
227	Laws Governing Marine Inspection (3-1-65).
239	Security of Vessels and Waterfront Facilities (5-1-68). F.R. 10-29-69, 5-15-70, 9-11-70, 1-20-71, 4-1-71, 8-24-71.
249	Marine Safety Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (5-1-69). F.R. 10-29-69, 2-25-70, 4-30-70, 6-17-70, 10-31-70, 12-30-70.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (8-1-69). F.R. 10-29-69, 2-25-70, 4-22-70, 4-30-70, 6-17-70, 10-31-70, 12-30-70, 9-30-71.
258	Rules and Regulations for Uninspected Vessels (5-1-70).
259	Electrical Engineering Regulations (6-1-71).
266	Rules and Regulations for Bulk Grain Cargoes (5-1-68). F.R. 12-4-69.
268	Rules and Regulations for Manning of Vessels (10-1-71). F.R. 1-13-72.
293	Miscellaneous Electrical Equipment List (9-3-68).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (11-1-68). F.R. 12-17-68, 10-29-69, 1-20-71, 8-24-71, 10-7-71.
323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (7-1-69). F.R. 10-29-69, 2-25-70, 4-30-70, 10-31-70, 12-30-70.
329	Fire Fighting Manual for Tank Vessels (7-1-68).

CHANGES PUBLISHED DURING JANUARY 1972

The following have been modified by Federal Registers:

CG-190, Federal Registers January 13 and 20, 1972

CG-268, Federal Register January 13, 1972.

