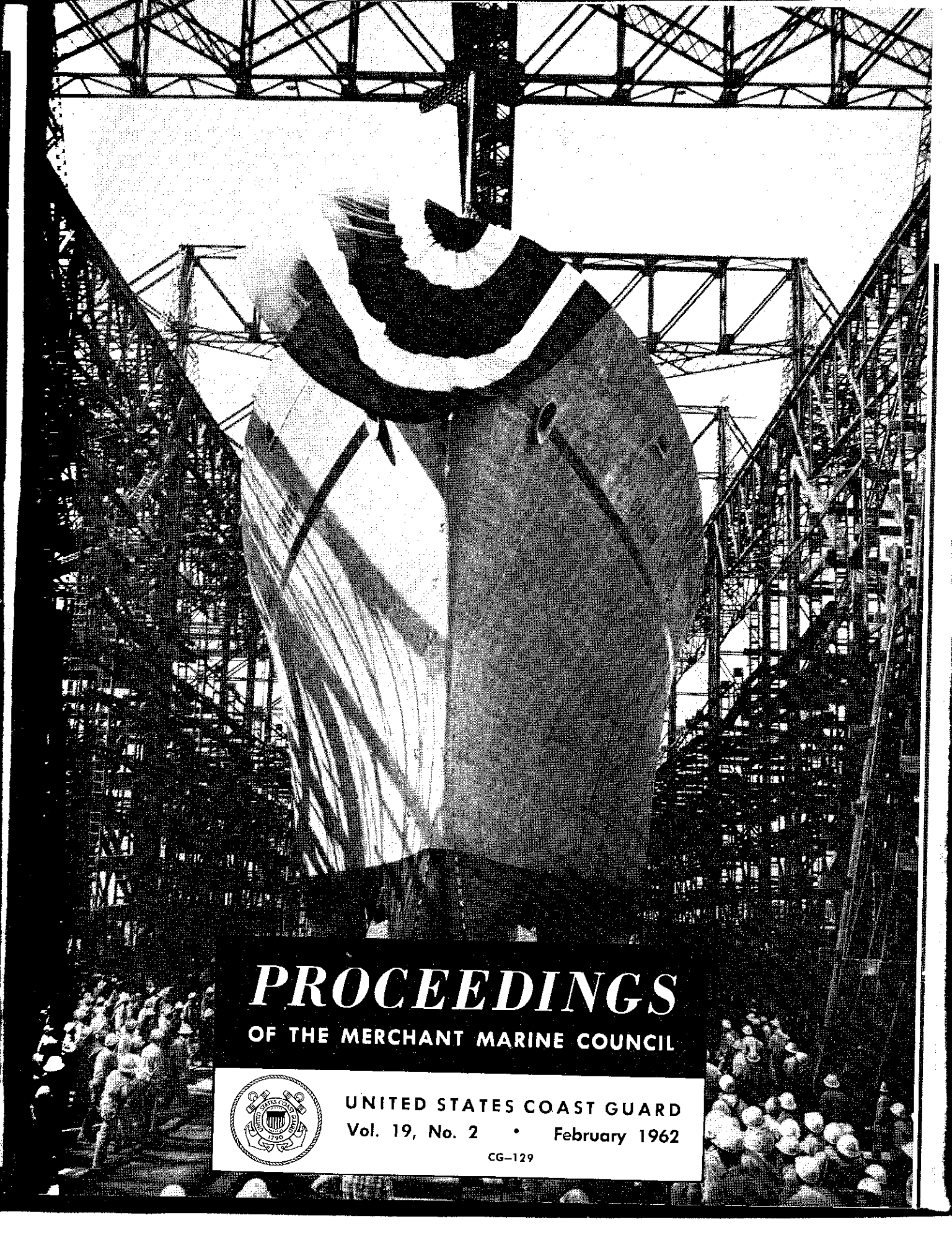


PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

UNITED STATES COAST GUARD

Vol. 19, No. 2 • February 1962

CG–129

PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

Published monthly at Coast Guard Headquarters, Washington 25, D.C., under the auspices of the Merchant Marine Council, in the interest of safety at sea. Special permission for republication, either in whole or in part, with the exception of copyrighted articles or pictures, is not required provided credit is given to the Proceedings of the Merchant Marine Council. Use of funds for printing this publication has been approved by the Bureau of the Budget October 3, 1957.

CONTENTS

FEATURES

FRONT COVER

The SS *Oregon* slides down the ways at Newport News Shipbuilding & Drydock Co. Built for States Steamship Company's transpacific cargo trade, the *Oregon* is 565 feet overall length, can carry dry, refrigerated and liquid cargo, and has a design speed of 20 knots.

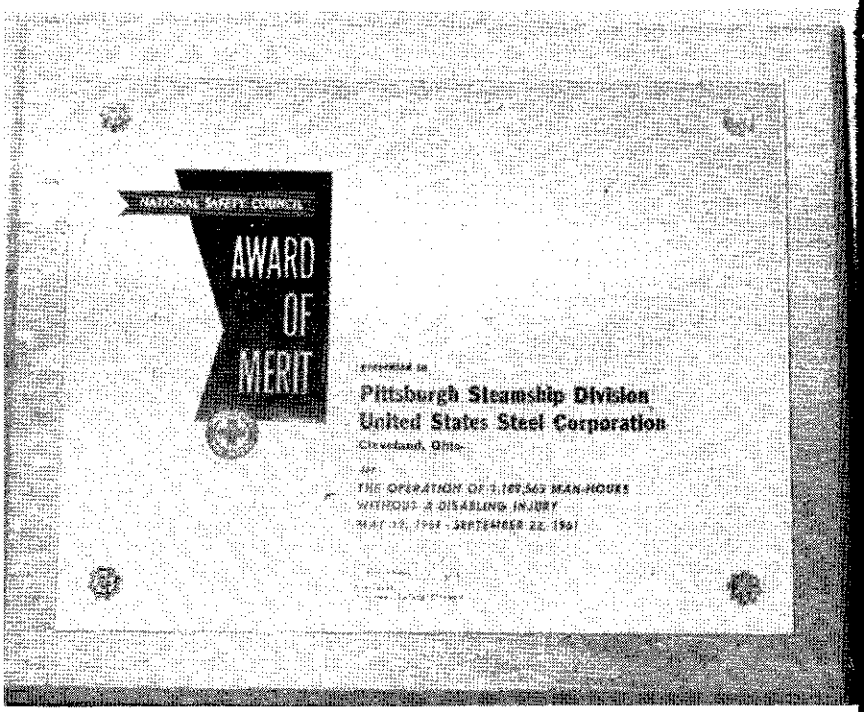
BACK COVER

A "hard-hitting" portrayal by George Green of how not to comply with the Safety Rules and Procedures established by *Pittsburgh Steamship* for their fleet personnel.

DIST. (SDL NO. 74)

A: a aa b c d (2); remainder (1)
Bn: n (35); c (16); e (5); f (4); h (3); g (2); remainder (1)
C: a b (less Quonset Pt.) c d e f g i k (p only) m o u (1)
D: i (5); a b c d e f g h j k l q (1)
E: o (New London only) (1)
List 141M
List 111

SAFETY AWARD



PITTSBURGH STEAMSHIP has received the National Safety Council Award of Merit for operating their vessels a total of over one million man-hours without a disabling injury. The company's personnel are to be congratulated for this significant achievement in marine safety.

COUNCIL ACTIVITIES

1962 MERCHANT MARINE COUNCIL AGENDA

THE MERCHANT MARINE COUNCIL will hold a Public Hearing on Monday, 12 March 1962, commencing at 9:30 a.m., in the Departmental Auditorium, between 12th and 14th Streets on Constitution Avenue NW, Washington, D.C., for the purpose of receiving comments, views, and data on the proposed changes in the vessel inspection rules and regulations as set forth in Items I to IX, inclusive, of the Merchant Marine Council Public Hearing Agenda, CG–249, dated 12 March 1962. The Agenda contains the specific changes proposed, and for certain items the present and proposed regulations are set forth in comparison form, together with the reasons for the changes, where necessary.

Copies of the Merchant Marine Council Public Hearing Agenda (CG–249) are mailed to persons and organizations who have expressed a continued interest in the subjects under consideration and have requested that copies be furnished them. Copies of the Agenda will be furnished, upon request to the Commandant (CMC), U.S. Coast Guard, Washington 25, D.C., so long as they are available. After the supply of extra copies is exhausted, copies will be available for reading purposes only in Room 4104, Coast Guard Headquarters, or at the offices of the various Coast Guard District Commanders.

Comments on the proposed regulations are invited. Written comments containing constructive criticism, suggestions, or views are welcomed. However, acknowledgment of the comments received or reasons why the suggested changes were or were not adopted cannot be furnished since personnel are not available to handle the necessary correspondence involved. Each oral or written comment is considered and evaluated. If it is believed the comment, view, or suggestion clarifies or improves the proposed regulation or amendment, it is changed accordingly and, after adoption by the Commandant, the revised regulation is published in the Federal Register. Each person who desires to submit written comments, data, or views in connection with the proposed regulations set forth in the Agenda should submit them so that they will be received prior to 9 March 1962 by the Commandant (CMC), U.S. Coast Guard Headquarters, Washington 25, D.C. Comments, data, or views may be presented orally or in writing at the hearing before the Merchant Marine Council on 12 March 1962. In order to insure consideration of comments and to facilitate checking and recording, *it is essential that each comment regarding a section or paragraph of the proposed regulations shall be submitted on Form CG–3287,* showing the section number (if any), the proposed change, the reason or basis, and the name, business firm or organization (if any), and the address of the submitter. A small quantity of Form CG–3287 is attached to the agenda. Additional copies may be obtained upon request from any Coast Guard District Commander, or may be reproduced by typewriter or otherwise.

Each item in the Agenda has been given a general title, intended to encompass the specific proposals presented. It is urged that each item be read completely because the application of proposals to specific employment or types of vessels may be found in more than one item. For example, Item V contains proposals applicable only to tank vessels, yet Items III, IV, VI, and VII also contain proposals affecting tank vessels.

The items in the Agenda are:

Item No. — *Title*

I. RULES AND REGULATIONS FOR MILITARY EXPLOSIVES AND HAZARDOUS MUNITIONS
- Revision of pamphlet CG–108 (46 CFR 146.29)

II. DANGEROUS CARGOES
- Miscellaneous changes
- Explosives
- Inflammable solids and oxidizing materials
- Compressed gases
- Poisonous articles (radioactive materials)
- Combustible liquids
- Hazardous articles
- Ships' stores and supplies

III. VESSEL OPERATIONS AND INSPECTION
- Immediate reporting of spillages, etc., of dangerous materials or liquids
- Marine casualty investigations
- Prevention of oil pollution
- Portable containers for combustible liquid cargoes
- Inspection of foreign vessels of unusual design or construction
- Vessel plan approval; ventilation and hull opening closures
- Drydocking or hauling out vessels; authorizing administrative extensions of time
- Gas freeing, inspection and testing required when making alterations, repairs, etc., involving hot work
- Inspection and certification of seagoing barges
- Inspection and certification of manned seagoing barges
- Oxygen type breathing apparatus (liquid chlorine and anhydrous ammonia)
- Automatic lift toilet seats

Item No. — *Title*

IV. LIFESAVING AND FIRE PROTECTION
- Painting of lifeboat interiors
- Distress signals on passenger vessels under 100 gross tons
- Specification for unicellular plastic ring lifebuoy
- Specifications for distress signals and shoulder gun type line-throwing appliance
- Fire protection equipment
- Portable fire extinguishers

V. TANK VESSELS
- Venting of cofferdams
- Fire retardant construction
- Pumproom ventilation
- Emergency lighting and power systems
- Freeboard for tankers above 600 feet in length

VI. MARINE ENGINEERING
- Materials—maximum allowable stresses, unfired pressure vessels, valves, fittings, welding and stress relieving
- Pressure vessels, dished heads, malleable iron, piping, bilge pumps and valves
- Use of flexible hose
- Vent opening closures
- Unfired pressure vessels; shop inspections and inspections on vessels
- Boiler mountings and attachments

VII. ELECTRICAL ENGINEERING
- Miscellaneous amendments

VIII. UNINSPECTED VESSELS
- Measuring length of motorboat
- Portable fire extinguishers for all motorboats

IX. ARTIFICIAL ISLANDS AND FIXED STRUCTURES ON THE OUTER CONTINENTAL SHELF
- Emergency means of escape

HAZARDS CONNECTED WITH THE USE OF CLEANING MATERIALS ON BOARD SHIP

By Thomas F. Dalton

THE FIRE HAZARDS on board ship, in connection with the use and sometimes misuse of cleaning compounds, have long been a subject of much discussion. This paper will attempt to identify and describe some of these products and to discuss their hazards, particularly the fire hazard.

Some of the main types of cleaning operations in which a cleaning product might be used are as follows:

TANK CLEANERS

The recent use of tank cleaning chemicals has come into great prominence, especially within the past 10 years. Much technological advancement along these lines was possible due to the development of new chemical agents which can be used for cleaning tanks, both in port and underway. Normally, the tank cleaners fall into four types:

1. A concentrated solvent-emulsion type to be used on double bottoms for rolling action type of cleaning or injection via high pressure jet machines in cargo tanks.

2. Direct spray-emulsion cleaner, sprayed directly over the tank area, followed by a high-pressure water rinse.

3. Powdered type, usually an alkaline material, which is dumped into one tank, mixed and pumped through high pressure nozzles with continuous stripping back to the mixing tank or sprayed as a direct wash in the same tank.

4. Special products, such as derusting compounds which may be either alkaline or acid in nature, as well as odor removing agents, antirusting compounds, protective oil sprays, steam injection cleaners, etc.

Normally, a solvent-emulsion cleaner is mixed with sea water by injection into the suction side of the jet wash pump. The resulting solution is then heated to 150° to 175° F. and discharged through rotating high-pressure nozzles which are lowered into the tank. The discharge pressure at the nozzle ranges from 125 to 175 psi. In cleaning double bottoms, the cleaner is introduced into the tank by means of the sounding line. The tank is then filled to 95 percent capacity and allowed to slosh back and forth through the normal rolling action of the ship. As the tanks are pumped down, they should be rinsed with water and ventilated.

Mr. Dalton is Technical Director, Marine & Power Plant Division, Magnus Chemical Company, Inc. This article is reprinted from the November 1961 issue of the Marine News.—ED.

The spray-on type of cleaner is of the solvent-emulsion variety and is designed to spray over the tank areas for removal of fresh oil deposits, as well as spotting cargo tanks after they have been jet washed. These products should have a high flash-point since a certain amount will be sprayed into the atmosphere. Once in the atmosphere, we could have a highly dangerous situation due to the intimate mixing of the solvent with oxygen from the atmosphere. Moreover, these products should contain no harmful or deleterious compounds which may be harmful to ships' personnel. After the product has been sprayed over the surfaces and has penetrated the soil to wet the metal, a high-pressure water rinse should follow. This rinse will supply the physical scrubbing action necessary to form an emulsion which can be pumped over the side.

Powdered cleaners are designed to be mixed with water and, as such, do not present a fire hazard. The solution is sprayed over the surfaces of the tank and allowed to run off in such a way that it is reused. In other instances, it can be mixed in one tank and pumped through lines into spray wash machines in another tank. These products can be dangerous, however, if they contain caustic soda (Sodium Hydroxide) which causes severe chemical burns if handled indiscriminately.

After the tank has been cleaned with these products, the tank areas should be rinsed with copious amounts of water and ventilated by means of a steam driven fan or a wind sail. After the tank has cooled and has been well ventilated, a certified marine chemist will examine the tanks and issue the appropriate gas-free certificate. The certificates will carry the following designations which will indicate the condition of the tank.

I. Safe for Men—Safe for Fire
II. Safe for Men—Not Safe for Fire
III. Not Safe for Men—Not Safe for Fire
IV. Inerted
V. Inerted for Flammable Compressed Gas

MOTOR CLEANERS

Cleaning compounds used for cleaning electric motors, switches, contacts, etc., are generally known as solvent type cleaners. They generally consist of a blend of aromatic petroleum solvents and an aliphatic, chlorinated solvent. Care must be taken when they are used since these products are toxic, not only from the inhalation point of view, but also because they can be absorbed directly through the skin. In addition, when they are brought into contact with open flames, there is a tendency for dangerous phosgene gas to be formed.

These motor cleaners are rated on a MAC basic (Maximum Allowable Concentration). MAC is the maximum amount of chemical contaminates in the air to which a worker can be exposed during an eight-hour working day. Carbon tetrachloride has a MAC rating of 25 parts per million. This would correspond to a half teaspoon of carbon tetrachloride in a room measuring 10 ft. x 10 ft. x 10 ft. A list of other MAC ratings of common solvents can be found in Table 1.

Table I. MAC Ratings of Some Common Solvents

Solvent Name	MAC Rating
Carbon Tetrachloride	25 ppm
Perchloraethylene	200 ppm
Gasoline	500 ppm
Naphtha, Petroleum	500 ppm
Xylol	200 ppm
Chloroform	100 ppm
Orthodichlobenzene	50 ppm
Ethyl Ether	400 ppm
Ethyl Alcohol	1000 ppm

An ideal safe type of solvent cleaner is one which would remove all types of grease and soils. It should be able to evaporate readily without leaving a residue. It should have no flash point and a high MAC rating, together with a high dielectric value. The product should also be cheap and should, in no way, be hazardous by itself. To find a product filling all of these qualifications would, naturally, be quite difficult. They are available, but generally they are not cheap. Remember, you can bargain for price but not for safety.

GENERAL DEGREASING COMPOUNDS

These can be products of a wide description. Some are solvent-emulsion cleaners in liquid form, others are water solutions of various wetting

gents and detergents and lastly, we ve a group of powdered cleaners hich must be dissolved in water ior to use.

Care must be taken in selecting hese cleaners. Generally, reading e manufacturers' literature and bels on the drum is sufficient to in- cate flashpoint as well as other haracteristics. In other cases, U.S. oast Guard Certification against zards will be sufficient to warrant ainst dangerous materials.

DERUSTING AND PAINT STRIPPING

Products in these categories do not ve great fire hazards. They are ngerous, strictly speaking, but from her sources. The derusting prod- ct can be either alkaline or acidic in ture. Most of the time, a product ntaining phosphoric or some or- nic acid will be used to derust the tal surfaces. The hazard here lies the strongly acidic nature of the oduct which can be quite irritating the skin, as well as dangerous to e eyes. In some cases, small ounts of Hydrogen Gas and Car- on Dioxide Gas are evolved when ing these acidic compounds, but ver in proportions to constitute a ajor hazard.

ble II. Flash Points of Some Common Solvents

Solvent Name	Flash-point (° F.)
yl Ether	—49
rbon Disulfide	—22
tone	0
thyl Ethyl Ketone	30
&P Naphtha	38
propyl Alcohol	53
ol	73
ddard Solvent	100
rosene	115
eral Spirits	130
yl Cellosolve	165
avy Aromatic Naphtha	185

Courtesy Standard Oil Co.

Paint strippers are generally solvent products or alkaline-solvent mixtures which have been thickened to give them high viscosity characteristics. Again, the problem here is due to possible injury of the person by the chemical activating agent in the product, either a solvent or caustic soda. In one case, the solvent will "defat" the skin, whereas the caustic soda can produce strong chemical burns on the skin.

In all cases, it is well to follow the manufacturers' instructions and handle the product only in the manner recommended. Be sure to protect the eyes and other exposed areas by suitable protective covering.

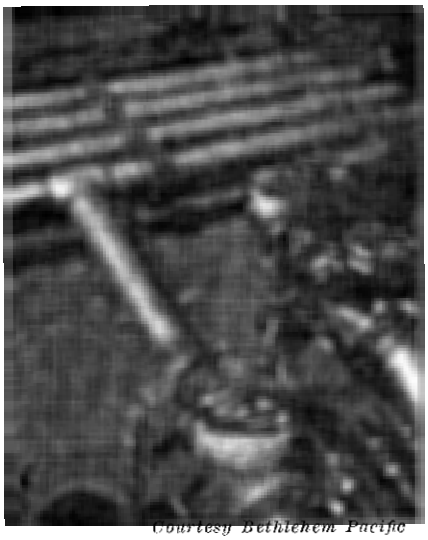
OIL SPILLS

Oil spills in the marine trade can be routine or catastrophic, depending on the circumstances of the spill. A small amount of oil, leaking from the flanged end of a cargo manifold, can be readily handled by spraying the soiled area with a spray of solvent-emulsion cleaner and rinsing it off with water. However, a 5,000 barrel spill of oil, leaking from the cargo tanks of a tanker, is entirely different. This problem must be handled quickly by experts since an oil fire on the water front or about a ship can be disastrous.

To clean the spill on board ship, whether it be on deck, in the pump room, boiler room or elsewhere, requires prompt action. This is due primarily to the fire hazard of fresh oil on the metal decks which, if hot, would tend to heat the oil and help to lower its ignition point. Another reason for prompt action is to prevent oxidation of the oil, causing it to solidify, thus making it more difficult to remove.

A solvent-emulsion cleaner, containing wetting agents, is generally the best type of product to use. The product should be soluble in the oil and have enough solvency to cut through the oil. Scrubbing the area with a broom or coco brush will help the product penetrate into the spill and aid the cleaning. Again, the product should be of a high flash nature, nontoxic, and capable of being water rinsed. Cleaning up oil spills around harbors, decks, and along the sides of ships requires immediate action. First of all, it is necessary to prevent the spread of the oil, and, secondly, to reduce the fire hazard and, lastly, to clean the oil from any contaminated areas.

Immediately after an oil spill from a ship or tank adjacent to the waterfront, the first thought should be to contain the spill in and around the dock area to prevent the oil from being carried downstream by tidal action. Many methods are used, such as floating booms of cork, rubber, hemp, and even telephone poles. The primary consideration is to act quickly and, if possible, contain the oil.



Courtesy Bethlehem Pacific

When a suitable chemical-oil dispersing agent is employed, it is generally applied by a heavy droplet spray directly into the oil spill. The spray apparatus can be set up on the dock or in a small flat bottom launch. After the dispersing agent has been applied, a high velocity stream of water is applied tangentially to the surface of the water, causing a turbulence which emulsifies and disperses the oil. Due to the large volume of water in the river, this dispersion of oil is diluted rapidly and hence disappears. Due to the nature of the dispersing agent, this emulsion is permanent with no reversion or tendency to recoalesce.

After the floating oil has been broken up and thoroughly dispersed, the danger of a serious oil on water fire is eliminated. We then have to mitigate the hazard of fire on all docks, pilings, and various installations that have become contaminated with the oil. Again, this should be done as soon as possible to prevent the oil from setting up and becoming oxidized. The dock areas, pilings, and sea walls can be cleaned with appropriate cleaners, as well as special application techniques.

Oil spills can occur every time there is a grounding or collision involving ships. In other instances, the spillage occurs during loading and unloading operations. During the winter months, the cold water and low air temperature cause the oil to clump up in heavy sheets, similar to ice. In the hot summer months, the oil thins

out rapidly due to the warm water and warm air. The oil also takes up a great deal of heat from the sunlight, thus causing a situation which could be very dangerous due to the evolution of volatile vapors. Normally, the flashpoint of the fuel oil is sufficiently high so that only an electrical spark or welder's torch will ignite the oil. Once burning, the oil can float under dock areas and surround boats and other craft to cause considerable damage.

A detailed report on the number of marine accidents in 1960 (especially groundings or collisions) along the U.S. coastal and inland waters showed the following:

473 Grounding
195 Sinkings
379 Collisions with other vessels
475 Collisions with objects other than vessels
227 Fires and explosions
20 Due to heavy weather
195 Material failures
22 Miscellaneous mishaps

SUMMARY

In general, the elimination of fire hazards in the use of cleaning compounds on board ship is a long-term problem that requires everyone's attention, especially those in a supervisory and purchasing function. Some of the recommended procedures to follow can be listed below:

1. Purchase only those chemicals known to be safe, having the approval of your company, the U.S. Coast Guard or other safety organization. The only protection a buyer has is the reputation of the company from which he is buying.

2. Read the labels and literature available on all cleaning products to ascertain flashpoints, toxicity data, and any other information on hazards. Labels should conform to the recommendations of the Manufacturing Chemists Association and State labeling laws.

3. Don't try to use one product as a universal cleaner. Many products are designed or intended for one specific purpose or cleaning application and should not be used in another unless this new application has been approved by the manufacturer or his service representative.

4. Never leave oil-soaked rags about to collect. Handle the drums of chemicals with care and store in a safe place. Make sure the drums are vented, if necessary, and are held securely in place with all bungs and covers closed. Treat all oil spills promptly to eliminate any fire hazards and dangers to personnel.

5. Obey the safety rules and regulations of your ship, the U.S. Coast Guard, and any other maritime agency that is authorized to recommend safety procedures. Know the location of all firefighting apparatus and methods of operating same.

Some manufacturers of cleaning products do not use warning labels or safety labels on their drums. This should not be construed as meaning their products are free from hazards. In many cases, it indicates that the manufacturer is negligent or unfamiliar with the State safety and labeling laws. Check back with your company safety department to get authorization or approval before using a new product. Above all, talk, think, and act SAFETY.

REFERENCES

"STANDARDS FOR THE CONTROL OF GAS HAZARDS ON VESSELS TO BE REPAIRED," *National Fire Protective Association, Boston, Massachusetts, N.F.–P.A. No. 306 (1951). Pages 7–8.*

"THRESHOLD LIMIT VALUES FOR 1957," *American Medical Association Archives of Industrial Health, September 1957, Volume 16, Pages 261–265.*

U.S. Naval Institute Proceedings, Volume 87, No. 1 (January 1961), Page 149.

"OIL POLLUTION MANUAL," *American Merchant Marine Institute, American Petroleum Institute (April 1955).*

"PROCEEDINGS OF THE MERCHANT MARINE COUNCIL," *U.S. Coast Guard (June 1960), Volume 17, No. 6, Pages 94–97.*

"OIL POLLUTION SURVEY OF U.S. ATLANTIC COAST," *by J. Dennis, American Petroleum Institute (May 1959).*

NEW BOAT DAVIT

Figure 1. Hydraulic davit wire ship installation.

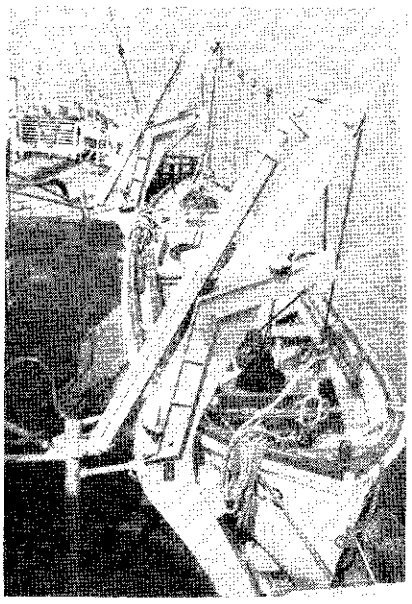


Figure 2. Close-up of the hydraulic ram davits.

The hydraulic crescent davit installation shown in Figures 1 and 2 was developed by the U.S. Coast Guard Naval Engineering Division in cooperation with Welin Davit Company. It was designed specifically for the new 210-foot Patrol Cutter, *Medium,* to be built at Todd Shipyards Corporation, Houston Division, Texas. The pilot installation shown was recently completed aboard the CGC *McCulloch* for service evaluation. The new davit is equipped with a tripping device as a keel rest, quick-release gripes, and the new electric high-speed wire whip hoister. Breasting out time is reduced to 10 seconds and a well trained crew can launch a 25-foot motor surfboat in approximately 1 minute.

The davit power plant consists of a 20-horsepower hydraulic unit with flow control orifices to each cylinder to provide synchronous davit arm movement at high speed. Individual controls provide infinite control at low speeds.

The davit features stainless steel fittings (pins, rods, bolts, etc.) and a tensioning device to partially retrieve the hoisting line after the boat is released.

MARITIME SIDELIGHTS

The size of tank ships participating in the Black Sea oil trades is likely to increase appreciably during the next few years as a result of oil terminal improvements at Black Sea ports.

A report by W. G. Weston, Ltd., London shipping consultant firm, indicates that shipping taking on cargoes at Novorossisk, Odessa, and Tuapse have loaded to 32-foot drafts in recent months, and include a number of ships of over 30,000 tons deadweight.

This is in contrast with previous limitations which restricted vessels using these ports to 30-foot drafts or less.

⚓ ⚓ ⚓

The St. Lawrence Seaway is heading toward its best year in history, but is still falling short of the traffic predicted by its officials.

During the first 2 years of operation, cargo shipped through the Seaway was substantially below expectations. So were the tolls collected. Tolls are based on the traffic estimates.

From April 15 through September 1961, the tonnage has been running at about 3,000,000 tons monthly, compared with the original estimate of more than 4,000,000 tons.

The Seaway corporation blames shallow channels between the Great Lakes and a lack of deep-draft ports for much of the trouble.

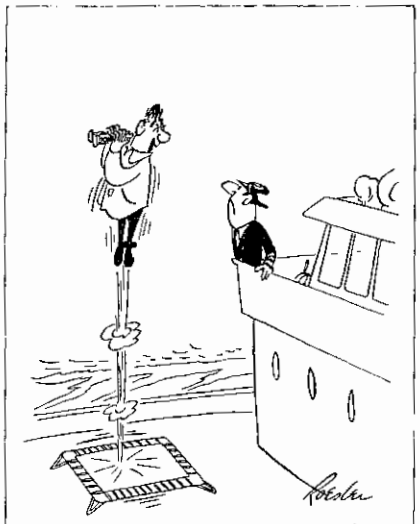
Ships with a draft of 24 to 25 feet when loaded can ply the Seaway, Lake Ontario, the Welland Canal, and Lake Erie. But they can go no further west because of shallower channels between Lakes Erie and Huron.

Deepening of these channels is expected to be completed by 1963, the corporation said, but the problem of deepening Great Lakes ports to 27 feet is a longer-range project.

⚓ ⚓ ⚓

The Panama Canal channel through 4 of the 8 miles that comprise the Gaillard Cut bottleneck has been widened to 500 feet.

Widening started several years ago on the biggest Isthmian earth-moving project since the waterway's construction.



Courtesy Maritime Reporter

Until digging began under the new program, the entire canal prism through the cut that bisected the rocky hills of the Continental Divide was only 300 feet wide.

It was in this cut—formerly known as Culebra—that the French received their worst discouragement in attempts to build a canal. Recurring slides there gave the Americans their worst setbacks.

The five separate reaches of the narrow cut have up to now made so tortuous a channel that large passenger liners and today's major bulk carriers require clear, single-lane headway for transit.

With widening completed on the three southern reaches, canal officials now expect fewer ships will be required to wait until all oncoming vessels have cleared. This should save transit time, and hence raise daily capacity. Safety will also benefit. The mile-long Empire Reach widening is now being speeded.

Bids will be sought this spring for excavation on the 3 final miles of the cut. Work will be performed along the west bank of the Bas Obispo-Las Cascadas Reach, which has its northern end at the town of Gamboa.

Some 14,000,000 cubic yards of rock and earth are to be moved. Completion is expected in the fiscal year of 1966.

⚓ ⚓ ⚓

The privately owned merchant fleet of the United States declined by four units and 25,800 deadweight tons during September 1961, it was reported here last week by the American Merchant Marine Institute.

The fleet on October 1, 1961 consisted of 980 vessels, aggregating 13,921,000 deadweight tons. It was composed of 35 passenger ships of 322,000 tons, 620 dry cargo ships of 6,910,105 tons, and 325 tankers of 6,689,825 tons.

⚓ ⚓ ⚓

Farrell Lines, Inc., has won a special citation from the Public Health Service for the fifth consecutive year for excellence in vessel sanitation.

In 1960 the 14 ships operated by Farrell Lines earned a rating of 95 or better on an official inspection covering 166 separate items of sanitary construction, maintenance, and operation.

⚓ ⚓ ⚓

The National Steel Corp. fleet of lake ore carriers has been increased to nine with the addition of the newly christened *Paul H. Carnahan* following ceremonies in Detroit.

The new ore carrier was converted from the former T-2 tanker *Atlantic Dealer* at the Lorain yard of American Shipbuilding Co.

⚓ ⚓ ⚓

Lykes Brothers Steamship Co. and Gulf & South American Steamship Co. have completed arrangements for construction of six cargo ships. Four of the new vessels will be operated by Lykes and the remainder by Gulf & South American. The vessels will be 470 feet long with a 69-foot beam and a speed of 18 knots.

nautical queries

DECK

Q. Under certain conditions in the Northern Hemisphere it may be assumed that the current sets 30° to the right of the direction in which it is driven by the wind and its velocity is 2 percent of the wind velocity.

(a) Basing your answer on the foregoing statment, estimate the direction and velocity of the current that may be expected if the wind is from the north at 25 knots.

(b) Using the direction and velocity of the current estimated in (a), find the course to steer to make good a course of 300° if the speed of your vessel is 15 knots. To solve this problem, consider current only, disregarding any other factors that may be involved.

A. (a) 210°–0.5 knots.

(b) 301°.9

Q. (a) How do you find the index error of your sextant by the sun?

(b) The readings being 32′ 50″ off the arc and 34′30″ on, what is the index error, and how do you apply it?

(c) What proof have you that these measurements or angles have been taken with tolerable accuracy?

A. (a) Clamp the index about 32′ on the arc and look at the sun, two suns will appear, bring their upper and lower limbs in exact contact and note the reading, then clamp at about 32′ off the arc, making an exact contact as before, note the reading, half the difference of the two readings will be the index error, to be added when the greater reading is off the arc and subtract when on.

(b) +32′50″ off
−34′30″ on
2)1′40″
(−)0′50″ to subtract (on the arc)

(c) The sum of the two readings divided by 4 should be equal to the sun's semidiameter that day.

Q. Describe what is meant by a "bore."

A. A "bore" is a very rapid rise of the tide in which the advancing water presents an abrupt front of considerable height. In shallow estuaries where the range of tide is large, the high water is propagated inward faster than the low water because of the greater depth at high water. If the high water overtakes the low water an abrupt front is presented with the high water crest finally falling forward as the tide continues to advance. Also called *eager, mascaret,* and *pororoca.*

Q. Describe how you would use a chart to determine the horizontal danger angle to which you would set your sextant.

A. From the point at which it is desired to pass clear of a danger, draw a line to each of the two prominent landmarks. Place a protractor with its center over the intersection of the two lines and its zero mark over one of the lines. The point where the other line intersects the scale will be the horizontal danger angle or, the bearing of each line can be determined, using parallel rules and the difference between the two bearings will be the horizontal danger angle.

Q. What is the ecliptic?

A. The ecliptic is the apparent annual path of the sun among the stars; the intersection of the plane of the earth's orbit with the celestial sphere. This is a great circle of the celestial sphere inclined at an angle of about 23°–27′ to the celestial equator.

Q. (a) If the true altitude of a celestial body is 87°–33′, what is the radius of the circle of equal altitudes upon which the observer is situated?

(b) If the body had a declination of 17°–25′ north, and GHA of 63°–46′ where would you place the center of the circle of equal altitude on a chart?

A. (a) 2°–27′ or 147 miles.

(b) The center of the circle of equal altitudes would be placed at latitude 17°–25′ north and longitude 63°–46′ west.

ENGINE

Q. What are the main causes of failures of marine steam turbines?

A. Most failures are due to some foreign material getting into the turbine and stripping the blades. This may enter from the piping or it may be left in the casing when installed or opened. Strainer baskets are usually fitted at the throttle to catch any material that may come over from the piping.

Blade failure also may be caused when considerable water is taken over with the steam. This may break the blading by shock or by reason of vibrations.

Sometimes blades made by forging have cracks which the stresses in service and the vibration encountered may enlarge till failure occurs.

Vibration caused by lack of balance in the rotor and vibration due to other causes such as misalignment, improper steam flow, etc., may act to cause excessive cyclic stresses on some of the blading and this in time may cause fracture due to corrosion fatigue. The use of blading materials specially resistant to fatigue action, and the design and operation of the turbine so as to avoid vibration will guard against this failure. The moving parts, disk wheels, etc., also should be designed so that synchronous vibration is avoided. The stresses due to impact of steam and centrifugal force are usually allowed for adequately, but these may be augmented greatly by vibration of various kinds.

Sometimes steel blades become corroded to such an extent that they may be broken off. Blades also sometimes are cracked or weakened in the process of installing them in their grooves. Also, certain vibration stresses may be set up by improper fastening.

If the shrouding wire is inadequate or not properly fastened to each blade, this may crack or break loose or allow some of the blades to come loose or break off.

Touching of blade ends is also a common cause of turbine failure for reaction turbines. This is avoided by (a) having adequate tip clearance to allow for expansion under various conditions, (b) maintaining this by proper alignment of rotor, and (c) proper warming up to prevent distortion of rotor or casing.

Touching, due to failure to maintain proper float or thrust clearance for the rotor may also be experienced. In some cases where the rotor is too long between supports and not rigid enough there may be too much sag which not only may cause touching of the blade tips but may throw the rotor out of balance to such an extent as to cause destructive vibration.

Q. What are the two major adjustments of the main propelling turbine?

A. In all main propelling turbines installed in vessels, the two major adjustments are the fixing of the rotor in its proper radial and axial position. The radial position of the rotor is maintained by the main bearings and the axial position by the thrust bearing.

CARGO GEAR REGULATIONS

In connection with the revision of requirements for shipboard cargo gear, the acceptances of certificates and/or registers issued by the American Bureau of Shipping, National Cargo Bureau, Inc., The International Cargo Gear Bureau, Inc., and the Universal Cargo Gear Survey and Certification Bureau, Inc., are continued in effect, and the notices of acceptance shall be amended to show references to 46 CFR 31.10–16, 71.25–25, and 91.25–25. Such certificates and/or registers currently in effect as of the date of publication of this document in the FEDERAL REGISTER shall be accepted as prima facie evidence of the condition and suitability of such gear by the Coast Guard when performing inspections of vessels as further provided in 46 CFR Parts 31, 71, and 91. When these non-profit organizations or associations renew or reevaluate conditions with respect to shipboard cargo gear as evidenced by certificates and/or registers, the standards followed for such shipboard cargo gear shall be reflected in the certificates by also indicating compliance with the standards for shipboard cargo gear as set forth in the "Convention Concerning the Protection Against Accidents of Workers Employed in Loading or Unloading Ships" (revised) (International Labor Organization Convention No. 32).

By virtue of the authority vested in me as Commandant, United States Coast Guard, the following actions are ordered:

1. The vessel inspection regulations shall be amended in accordance with the changes in this document.

2. The regulations in this document shall become effective on and after the date of publication in the FEDERAL REGISTER and may be complied with in lieu of existing requirements, and compliance therewith shall be in accordance with the conditions in paragraph 3 for shipboard cargo gear and the conditions in paragraph 4 for power-operated industrial trucks and their use on board vessels.

3. There shall be full compliance with the shipboard cargo gear requirements in this document as follows:

a. For new vessels at the completion of the first Coast Guard inspection for certification on or after January 1, 1962.

b. For existing vessels at the completion of the Coast Guard inspection for certification at the first annual or biennial inspection for certification made on or after January 1, 1963 (all inspected and certificated U.S. flag passenger vessels will be in full compliance by December 31, 1963 and all U.S. flag tank vessels and dry cargo vessels will be in full compliance by December 31, 1964): *Provided,* That on an individual vessel basis the owner, master or agent may apply in writing for an extension of time to the Commandant who may authorize an extension upon such terms and conditions as he deems necessary.

The following excerpts are from regulation amendments concerning Shipboard Cargo Gear published in the Federal Register of November 23, 1961 [CGFR 61–44], and are a continuation of the initial notice to this effect published in the January 1962 Proceedings.

The changes in cargo gear requirements affect Tank, Passenger, and Dry Cargo vessels. Due to space limitations only pertinent portions from the "Cargo and Miscellaneous Vessel" and "Tank Vessel" regulations are reprinted here. Persons desiring the complete authoritative document are advised that they may obtain a copy from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., at a cost of 15 cents per copy as long as supplies are available.—ED.

SUBCHAPTER 1—CARGO AND MISCELLANEOUS VESSELS

PART 91—INSPECTION AND CERTIFICATION

Subpart 91.25—Inspection for Certification

1. Section 91.25–25 is amended by revising paragraph (a)(3) and by adding new paragraphs (b), (c), (d) and (e), reading as follows:

§ 91.25–25 Hull equipment.

(a) * * *

(3) An inspection of the cargo gear shall be required. The inspection may consist of tests and examinations to determine the condition and suitability of the cargo gear. Current valid certificates and registers of cargo gear, issued by recognized nonprofit organizations or associations approved by the Commandaut, may be accepted as prima facie evidence of the condition and suitability of the cargo gear. Cargo gear certificates and registers will not be issued by the Coast Guard.

(b) Every acceptable cargo gear certificate and/or register shall be properly executed by a person authorized to do so and shall:

(1) Certify as to the tests and examinations conducted;

(2) Show the dates on which the tests and examinations were conducted; and

(3) Indicate that the cargo gear therein described complies with standards equal to or exceeding those set forth in Subpart 91.37.

(c) Competent persons for the purposes of this section and Subpart 91.37 are:

(1) Coast Guard marine inspectors;

(2) Surveyors of the organizations or associations approved by the Commandant;

(3) Such other persons as are authorized by the regulations in Subpart 91.37 as may be required; and,

(4) Responsible officials or employees of the testing laboratories, companies, or organizations who conduct tests of pieces of loose cargo gear, wire rope, or the annealing of gear as may be required.

(d) The registers issued in connection with cargo gear certification must have all required entries fully completed as of the dates indicated, shall be kept current, and shall include the following:

(1) A register of the cargo handling machinery and the gear accessory thereto carried on the vessel named therein;

(2) Certification of the testing and examination of winches, derricks, and their accessory gear;

(3) Certification of the testing and examination of cranes, hoists, and their accessory gear;

(4) Certification of the testing and examination of chains, rings, hooks, shackles, swivels, and blocks;

(5) Certification of the testing and examination of wire rope;

(6) Certification of the heat treatment of chains, rings, hooks, shackles, and swivels which require such treatment; and,

(7) Certification of the annual thorough examinations of gear not required to be periodically heat treated.

(e) It is the responsibility of the master to have a ship's officer inspect cargo gear when required by Subpart 91.37. For those inspected vessels which do not have valid cargo gear certificates and registers as provided by this section, such vessels will be required to have their shipboard cargo gear undergo tests and examinations in accordance with the provisions of Subpart 91.37.

§ 91.37–1 When made.

(a) The specific tests and examina-

tions shall be made at the intervals stated in the regulations in this subpart.

(b) A thorough examination of the assembled gear shall be made at least once in every year.

(c) An inspection to determine the condition and suitability of shipboard cargo gear will be made by a marine inspector at each inspection for certification. Inspections may be made at such other times as considered necessary by the Officer in Charge, Marine Inspection.

(d) For vessels fitted with cargo gear, an initial test of the assembled units under proof loads shall be conducted, followed by a complete dismantling or disassembling of such gear and a thorough examination of the parts to ascertain its condition. Subsequent tests of the assembled units under proof loads, followed by a dismantling or disassembling of such gear and a thorough examination shall be made once every 4 years, or oftener if necessary.

§ 91.37–3 Definitions of terms and words used in this subpart.

(a) *Cargo gear.* The term "cargo gear" includes masts, stays, booms, winches, cranes, elevators, conveyors, standing and running gear forming that part of the shipboard cargo gear used in connection with the loading or unloading of a vessel. This term does not include material handling gear and rigging of special design vessels used solely in dredging, pile driving, drilling for mineral deposits, and construction work.

(b) *Dismantling or disassembling of gear.* The "dismantling" or "disassembling" of gear contemplated is the taking apart of units of gear to the extent necessary to determine the suitability of such gear for continued service and as may be specifically required to carry out the intent of a particular regulation in this subpart. After proof load tests the disassembling need not include the sheaves and pins of the blocks included in the test unless there appears to be evidence of deformation or failure.

(c) *Thorough examination.* The "thorough examination" contemplated is a visual examination, supplemented if necessary by other means such as by a hammer test or by a test with electronic or ultrasonic devices.

(d) *Ton.* The word "ton" means a ton of 2,240 pounds.

(e) *Safe working load.* The "safe working load" (SWL) contemplated is the load the gear is approved to lift, excluding the weight of the gear itself.

§ 91.37–5 Tests and examinations of shipboard cargo gear.

(a) For vessels fitted with cargo gear and without valid cargo gear certificates and registers issued by organizations or associations recognized by the Coast Guard, inspections shall be made by competent persons described in § 91.25–25 (c) (1) and (2) to determine the condition and suitability of the shipboard cargo gear. For the initial and subsequent quadrennial inspections, all the cranes, winches, hoists, derrick booms, derrick and mast bands, and all parts used in loading or unloading cargo shall be assembled in units and such assembled units shall then be tested under proof loads. The proof loads shall be handled for various types of units as required by specific regulations in this subpart. After the proof load tests of the assembled units of gear have been made, such gear shall be disassembled or dismantled so as to permit them to be thoroughly examined. The sheaves and pins of the blocks included in these proof load tests need not be removed unless there appears to be evidence of deformation or failure.

(b) For vessels fitted with cargo gear and holding valid cargo gear certificates and registers issued by organizations or associations recognized by the Coast Guard, the marine inspectors may accept such certificates as prima facie evidence of compliance with the requirements in this subpart. If an Officer in Charge, Marine Inspection, is in doubt as to the condition and suitability of shipboard cargo gear for such a vessel, the tests and examinations, or such portions thereof as deemed necessary, provided for in this subpart will be required.

(c) If any part or portion of the gear fails or becomes defective during such tests, such defective equipment shall be satisfactorily repaired or replaced.

§ 91.37–10 Cargo gear of special design and limited use.

(a) The regulations in this subpart shall apply to cargo gear of special design and limited use (derrick barges rigged for heavy lifts, cargo booms on self unloaders, etc.) only to the extent that it is practicable to do so. These requirements may be modified by the Officer in Charge, Marine Inspection, where the inspection is performed according to the design characteristics of such cargo gear.

(b) Nondestructive tests, such as radiography, ultrasonic, electronic or other methods, may be utilized to determine the conditions of heavy lift gear after it has been unit tested, provided such methods are acceptable to the Officer in Charge, Marine Inspection, having cognizance of the tests. However, no deviations or modifications shall be permitted to lessen the requirements for cargo gear inspection as set forth in § 91.37–70 and the maintenance of the applicable cargo gear records as set forth in § 91.37–75.

§ 91.37–15 Cargo gear plans required when plans are not approved by a classification society.

(a) For a new vessel or a vessel applying for initial inspection, the following plans of cargo gear shall be submitted in triplicate to the Officer in Charge, Marine Inspection, having jurisdiction for approval:

(1) Plans showing a stress diagram with the principal details of the gear.

(2) Plans containing a diagram showing the arrangement of the assembled gear and indicating the safe working load for each component part.

(b) The safe working load on which the design of any component part of the cargo gear is to be based, shall be taken as the maximum resultant load upon the component part in the design conditions assumed. The safe working load of the assembly is the load the gear is approved to lift, excluding the weight of the gear itself.

(c) One approved copy of each set of cargo gear plans shall be retained on the vessel.

§ 91.37–20 Cargo gear plans approved by a classification society.

(a) The plans required by § 91.37–15(a) need not be submitted to the Officer in Charge, Marine Inspection, for approval if such plans are or have been approved by the American Bureau of Shipping or similar classification society recognized by the Commandant.

(b) One approved copy of each set of cargo gear plans shall be retained on the vessel.

§ 91.37–25 Factors of safety.

(a) In the design of the cargo gear, the safety factors in Table 91.37–25 (a), taken in association with suitable design assumptions for actual loading conditions, shall be used and regarded as minima.

(b) The Commandant will give consideration to the use of factors of safety differing from those given in Table 91.37–25(a) where special materials or cargo gear of special design are to be used.

§ 91.37–30 Loose gear certificates and tests.

(a)(1) Evidence of compliance with the proof load test requirements in this section for all chains, rings, hooks, links, shackles, swivels, blocks, and any other loose gear whether accessory to a machine or not, but which is used as ship's cargo gear shall be listed on an appropriate certificate.

TABLE 91.37-25(a)

Safe working loads for component parts	Safety factors based on—		
	Ultimate strength	Yield point	Breaking test load
All metal structural parts, except steel booms:			
When the working load of the assembled gear is 10 tons or less	[1] 5		
When the working load of the assembled gear is 13 tons or over	[1] 4		
Steel booms:			
When the working load of the assembled gear is 10 tons or less		[1] 3	
When the working load of the assembled gear is 13 tons or over		[1] 2½	
Wooden structural parts	8		
Chains	4½		
Wire rope:			
For working loads 10 tons or under			5
For working loads over 10 tons			4
Fiber rope:			
When intended for running rigging	7		
When intended for fixed gear and vangs	5		

[1] For working loads between 10 and 13 tons, intermediate values of safety factors may be used.

(2) This evidence of test and the recording thereof is required only once with respect to each article of gear so long as each article is identified and the certificates required are available on the vessel.

(3) Proof loads applied to the articles of loose gear shall be as shown in Table 91.37-30(a)(3).

(b) All chains, rings, hooks, links, shackles, swivels, blocks and any other loose gear whether accessory to a machine or not, but which is used or intended for use as ship's cargo gear, shall bear a mark or number by which each piece can be identified and shall be listed on a loose gear certificate. The safe working load "SWL" shall be marked on all blocks.

(c) The certificate shall show the distinguishing number or mark applied to the articles of gear; a description of the articles of gear; the date when the test proof load was applied; and the safe working load. The forms for loose gear certificates shall be prescribed by and acceptable to associations or organizations approved by the Commandant and shall be suitable for the purposes of this section.

(d) After being tested all of the gear shall be examined to ascertain whether any part has been damaged, permanently deformed by the test or has other visible defects. The pins and sheaves of all tested blocks shall be removed for this purpose. If damaged during these tests, such gear shall be satisfactorily repaired or replaced.

(e) The required examinations as set forth in paragraph (d) of this section may be accomplished by mechanical, electrical or other means provided the method employed is equal in efficiency to the visual examination of disassembled gear.

§ 91.37-35 Test and certification of wire rope.

(a) All wire rope used as shipboard cargo gear shall be able to withstand a breaking test load of at least five times the safe working load. In the case of gear with a lifting capacity of over 10 tons, the breaking test load of wire rope shall be at least four times the safe working load. All wire rope shall be identified and described in a wire rope certificate. Such certificate shall be furnished and attested to by the manufacturer or a testing agency and shall certify:

(1) The breaking test load of a sample of the wire rope, which should be at least five times the safe working load or at least four times the safe working load if part of gear with a lifting capacity of over 10 tons;

(2) The name and address of the manufacturer;

(3) The diameter of the rope in inches and/or fractions thereof;

(4) The number of strands and the number of wires in each strand;

(5) The quality of the wire (e.g. improved plow steel);

(6) The date of the test; and

(7) The load at which the sample broke.

(b) The forms for the wire rope certificates shall be prescribed by and acceptable to associations or organizations approved by the Commandant and shall be suitable for the purposes described in this section.

(c) In addition to the manufacturers' or testing agencies' attestations, a sample of the wire rope may be tested to destruction if required by the marine inspector when a visual inspection indicates an apparent defective condition.

§ 91.37-40 Proof test of cargo gear as a unit.

(a) Winches with their accessory gear, including the derricks and attachments, at least once in each four years, shall be tested as a unit with proof loads exceeding the safe working load as set forth in Table 91.37-40(a).

TABLE 91.37-40(a)

Safe working load of assembled gear	*Proof load*
Not exceeding 20 tons	25 percent in excess.
Over 20 tons but not exceeding 50 tons.	5 tons in excess.
Over 50 tons	10 percent in excess.

(b) The proof load applied to winches and their gear shall be lifted with the ship's normal tackle including the winches and with the boom at an angle which should not be greater than 15 degrees to the horizontal or to the lowest angle approved in association with the design, or when these angles are impracticable to the lowest practicable angle. When the load has been lifted, it shall be swung as far as possible in both directions.

(1) Where electrical winches are fitted with electromagnetic or hydraulic brakes at the winch, mechanical brakes for manual operation will not be required, but if so fitted shall be in satisfactory operating condition.

(2) Current for electric winch operation during the test shall be taken from the ship's circuits. Shore

TABLE 91.37-30(a)(3)

Articles of gear	*Proof load*
Chains, rings, hooks, links, shackles, swivels	Twice the safe working load.
Single sheave block	Four times the safe working load.[1]
Multiple sheave block with safe working load up to and including 20 tons.	Twice the safe working load.
Multiple sheave block with safe working load over 20 tons up to and including 40 tons.	20 tons in excess of the safe working load.
Multiple sheave block over 40 tons	One and a half times the safe working load.
Roller chains (pitched chains) used with hand operated chain falls, and rings, hooks, shackles, or swivels permanently attached thereto.	Do.
Chain fall blocks used with roller chains (pitched chains), and rings, hooks, shackles, or swivels permanently attached thereto.	Do.

[1] The proof load applied to the block is equivalent to twice the maximum resultant load on the eye or pin when lifting the safe working load attached to a rope which passes around the sheave of the block. The proof load is, therefore, equal to four times the safe working load or twice the safe working load when the load is attached directly to the block instead of a rope passing around the sheave.

current may be used if it passes through the ship's switchboard.

(c) Cranes and other hoisting machines with their accessory gear, at least once in each four years, shall be tested with a proof load which shall exceed the safe working load as set forth in Table 91.37–40(a).

(d) The proof load applied to cranes and hoists shall be lifted, topped and swung (slewed) as far as possible in each direction. If the boom of the crane has a movable radius, it shall be tested with a proof load as set forth in this section at the maximum and minimum radii of the boom. In the case of hydraulic cranes whose capacity is limited by pressure, and with which it is not possible to lift a load 25 percent in excess of the safe working load, the greatest possible load in excess of the safe working load shall be used. These tests and the amounts of the loads shall be recorded.

(e) After satisfactory completion of the proof load testing of the cargo gear in accordance with paragraphs (a), (b), (c) and (d) of this section, the cargo gear and all component parts shall be given a thorough visual examination, supplemented as necessary by other means such as a hammer test or with electronic or ultrasonic devices, to determine if any of the parts were damaged, deformed, or otherwise rendered unsafe for further use. If found defective, such gear shall be replaced.

(1) When the test is being conducted for the first time on a vessel, accessory gear shall be dismantled or disassembled for examination after the test. The sheaves and pins of the blocks included in this test need not be removed unless there appears to be evidence of deformation or failure.

(2) For subsequent tests such parts of the machinery and gear shall be dismantled and/or disassembled after the test as necessary to determine its suitability for continued service.

(f) Appropriate means shall be provided to prevent the foot of the boom from being accidentally lifted from the socket during the test.

(g) Vessels whose cargo gear has been in use but are without the valid registers and certificates described in § 91.25–25 shall be inspected for defective cargo gear. The gear shall then be tested and examined as prescribed in this section. If the movable weights for proof testing are not reasonably available, a spring or hydraulic scale certified for accuracy may be used. Whenever such scales are used, the proof load shall be applied with the boom swung out as far as possible in one direction and then in the other direction and at such intermediate positions as may be indicated. At any position, the indicator of the scale must maintain a constant reading under the proof load for a period of five minutes.

(h) On all types of winches and cranes efficient means shall be provided to stop and hold the proof load in any position, and the efficiency of such means shall be demonstrated.

(i) Electric winches, electrohydraulic winches fitted with electromagnetic or hydraulic brakes at the winch, or cranes shall be equipped so that a failure of the electric power shall stop the motion and set the brakes without any action on the part of the operator.

(2) Current for electric winches and crane operation during the tests shall be taken from the ship's circuits. Shore current may be used if it passes through the ship's switchboard.

§ 91.37–45 Marking of booms and cranes.

(a) The safe working load (abbreviated "SWL") for the assembled gear shall be marked on the heel of each boom with the minimum angle to the horizontal for which the gear is designed. These letters and figures shall be in contrasting colors to the background and at least one inch in height.

(b) Where the boom is rated at varying capacities depending on the radius, tables indicating the maximum safe working loads for the various working angles of the boom and the maximum and minimum radii at which the boom may be safely used shall be conspicuously posted near the controls and visible to the operator when working the gear.

§ 91.37–50 Use of wire rope and chains.

(a) An eye splice made in any wire rope used as cargo gear, with or without a thimble, shall have at least three tucks with whole strands and two tucks with one-half the wire cut from the tucking stand: *Provided*, That this requirement shall not preclude the use of any other form of splice or connection if it is as efficient as the splice specified.

(b) Single wire rope cargo falls, wire rope pendants, topping lifts and preventers shall consist of clear lengths without splices except at the working ends. Wire rope clips shall not be used to form eyes in the working ends of single wire rope cargo falls.

(c) Wire rope shall not be used for shipboard cargo gear if in any length of 8 diameters, the number of visible broken wires exceeds ten percent of the total number of wires in the rope, or if the rope shows other signs of excessive wear, corrosion, kinking, or defect.

(d) Hoisting or sling chains used for shipboard cargo gear shall not be used if a length of chain has been stretched more than five percent of the original length, or the chain has become unsafe through overloading or faulty heat treatment, or whenever other external defects are evident.

(e) Chains used for shipboard cargo gear shall not be shortened by knotting, bolting, or wiring the links. The use of chains having a knot or kink as shipboard cargo gear is prohibited.

§ 91.37–55 Annealing.

(a) Chains, hooks, rings, links, shackles, and swivels of wrought iron used as cargo gear shall be annealed at the following intervals:

(1) Wrought iron chains and gear in general use and of one-half inch or less, at least once in every six months.

(2) All other wrought iron chains and gear, including topping lift chains, in general use, at least once in every twelve months.

(b) The annealing shall be done in a suitable closed oven and not over an open fire. Wrought iron shall be annealed at a temperature of between 1100° and 1200° Fahrenheit for a period of between 30 and 60 minutes. After being annealed, the article shall be allowed to cool slowly and shall be then tested completely for defects.

(c) The heat treatment of the cargo gear shall be done only by reputable firms having suitable equipment and personnel trained for this purpose. A certificate attesting to the annealing of all gear heat treated shall be furnished to the vessel.

(d) The heat treatment of chains, hooks, rings, links, shackles, and swivels of materials other than wrought iron used as cargo gear, if required, shall be effected in accordance with the manufacturers' instructions.

§ 91.37–60 Additions to gear.

(a) When articles of loose gear and/or wire rope conforming with the requirements in this subpart are added to installed gear, or used as replacements in such gear from time to time, a record shall be maintained on the vessel which shall identify each article and the certificate accompanying it.

§ 91.37–65 Alterations, renewals, or repairs of cargo gear.

(a) Whenever important repairs, renewals, or alterations are indicated or intended for the masts, booms, and permanent fittings of the cargo gear, such repairs, renewals, or alterations shall be undertaken only after compliance with the applicable provisions of § 91.45–1.

(b) Tests and examinations of the

repairs, renewals, or alterations shall be in accordance with the provisions of § 91.37–40.

(c) When welding is used to lengthen, alter, or repair chains, rings, hooks, links, shackles, or swivels, they shall be properly heat treated and shall before being again put into use, be tested and examined in accordance with the provisions of § 91.37–30.

§ 91.37–70 Responsibility of ship's officer for inspection of cargo gear.

(a) All wire rope, chains other than bridle chains attached to booms or masts, and all rings, hooks, links, shackles, swivels and blocks used in loading or unloading shall be visually inspected by a ship's officer designated for that purpose by the master.

(b) These inspections by a ship's officer shall be made at frequent intervals, and in any event not less than once in each month.

(c) Immediately after such an inspection by a ship's officer notations of such an inspection shall be made in record form which shall be in or kept with the cargo gear register if carried. In addition, the same notations of inspections together with the date shall be entered in the Official Logbook for those vessels required to carry this record, or such information shall be kept with the log records maintained on vessels not required to carry the Official Logbook. (See § 91.37–75 for entries required to be kept.)

§ 91.37–75 Records regarding cargo gear.

(a) The cargo gear records described in this subpart shall be maintained on the vessel and shall be made available to Coast Guard officials upon request. These records shall be kept for the periods of time they are valid and, in addition, until the next Coast Guard inspection for certification of the vessel. The certificates of manufacturers and/or testing laboratories, companies, or organizations shall be maintained on the vessel so long as the gear described in such certificates is on board the vessel.

(b) The records of all the inspections of cargo gear made by the ship's officers in accordance with § 91.37–70 shall be maintained on the vessel for periods of time which agree with those periods as covered by the current Coast Guard certificate of inspection issued to the vessel. These records show the dates of inspections, identify articles inspected, the conditions observed, and the name of the officer performing the inspection.

(c) The records of all tests and examinations conducted by or under the supervision of surveyors of the organizations or associations approved by the Commandant shall be maintained on the vessel.

(d) The Coast Guard will not issue cargo gear certificates and/or registers. The Coast Guard's records of inspections, tests, and examinations of a particular vessel's cargo gear made by a marine inspector or conducted under the supervision of the Coast Guard will be maintained in the office of the Officer in Charge, Marine Inspection, having jurisdiction over the vessel at the time such work was performed. The original certificates or certified copies of certificates of manufacturers and/or testing laboratories, companies, or organizations for loose cargo gear, wire rope, or the annealing of gear shall be maintained on the vessel.

§ 91.37–80 Advance notice that cargo gear testing is desired.

(a) The owner, agent, or master of a vessel shall give an advance notice when it is desired that the tests and examinations of cargo gear be made by or under the supervision of the marine inspector. This advance notice shall be given to the Officer in Charge, Marine Ispection, in whose marine inspection zone the vessel is available for such inspection and examination.

(b) For the initial inspection and examination of cargo gear by the Coast Guard, the advance notice shall be to the cognizant Officer in Charge, Marine Inspection, as early as possible and shall include sketches and/or drawings showing each unit of cargo gear, the identification of component parts and the safe working loads. Copies of original certificates of manufacturers and/or testing laboratories, companies, or organizations maintained on the vessel may be accepted by the cognizant Officer in Charge, Marine Inspection, when satisfied such certificates properly describe the qualities of the component parts of the gear in question.

§ 91.37–85 Responsibility for conducting required tests and examinations.

(a) The vessel's owners and/or operators shall furnish and pay the expenses required in conducting the tests and examinations prescribed by the regulations in this subpart, including the supplying of all instruments, other equipment, and personnel including personnel supervision for performance of all work required.

(b) The Coast Guard's participation in these required tests and examinations shall be confined to witnessing required tests and examinations with the view to determining whether or not the gear is satisfactory for the purpose intended. In the event it is determined that the gear is defective or unable to meet the standards set forth in this subpart, such gear, or portions thereof, shall be replaced to the satisfaction of the Officer in Charge, Marine Inspection, having jurisdiction over the vessel.

Subpart 91.55—Plan Approval

3. Section 91.55–5(b) is amended by adding a new subparagraph (13) reading as follows:

§ 91.55–5 Plans and specifications required for new construction.

* * * * *

(b) * * *

(13) * Arrangement of the cargo gear including a stress diagram. The principal details of the gear and the safe working load for each component part shall be shown.

Part 31—Inspection and Certification

Subpart 31.37—Inspection of Cargo Gear

* * * * *

§ 31.37–3 Definitions of terms and words used in this subpart—TB/ALL.

(a) *Cargo gear.* The term "cargo gear" includes masts, stays, booms, winches, cranes, elevators, conveyors, standing and running gear forming that part of the shipboard cargo gear used in connection with the loading or unloading of dry cargo. This term does not include the gear used for handling cargo hoses or ship stores' only.

(b) *Dismantling or disassembling of gear.* The "dismantling" or "disassembling" of gear contemplated is the taking apart of units of gear to the extent necessary to determine the suitability of such gear for continued service and as may be specifically required to carry out the intent of a particular provision in this subpart. After proof load tests, the disassembling need not include the sheaves and pins of the blocks included in the test unless there appears to be evidence of deformation or failure.

(c) *Thorough examination.* The "thorough examination" contemplated is a visual examination, supplemented if necessary by other means such as by a hammer test or by a test with electronic or ultrasonic devices.

(d) *Ton.* The word "ton" means a ton of 2,240 pounds.

(e) *Safe working load.* The "safe working load" (SWL) contemplated is the load the gear is approved to lift, excluding the weight of the gear itself.

* * * * *

UNITED STATES COAST GUARD

ADDRESS REPLY TO:
COMMANDANT
U.S. COAST GUARD
HEADQUARTERS
WASHINGTON 25, D.C.

MVI
26 June 1961

Commandant's Action
on
Marine Board of Investigation; collision between the SS *August Ziesing* and the SS *Standard Portland Cement*, Lake Huron, 20 May 1960

The record of the Marine Board of Investigation convened to investigate subject casualty together with its Findings of Fact, Opinions, and Recommendations has been reviewed.

At approximately 1133 EST, 20 May 1960, two United States Great Lakes bulk carriers, the SS *Standard Portland Cement* and the SS *August Ziesing*, collided in the Lake Huron Cut Channel in dense fog. There were no lives lost or known injuries as a result of the collision, but both vessels sustained structural damage, and the *Portland Cement* settled to the bottom in 22 feet of water with her weather decks still above water. Property damage was estimated at $217,000.

The 800-foot Lake Huron Cut Channel connects the upper end of the St. Clair River with Lake Huron. The channel runs in a generally north-south direction with the reach off Point Edward, Ontario, having an axis of 000½° T; the northern reach has an axis of 005° T and terminates at the Lake Huron Lightship in Lake Huron. On the day of the collision, dredging operations were in progress, and as a result the western 450 feet of the channel between buoys 3 and 4 to the south and buoys 5 and 6 to the north, a distance of about 1 mile, had been closed to navigation. Western channel marker buoys 3 and 5 had been temporarily relocated eastward opposite buoys 4 and 6, respectively, to mark the new western boundary of the remaining 350 feet of channel. Broadcast and Local Notices to Mariners announcing the change erroneously gave the positions of buoys 3 and 5 as 1,000 feet north and 1,000 feet south, respectively, of their actual positions.

The *August Ziesing*, en route from Conneaut, Ohio, to Two Harbors, Minn., in ballast, entered the southern end of the channel at about 1105. She was preceded by the SS *William E. Corey*, immediately ahead; the SS *Richard Reiss;* and the SS *Georgian Bay*, in that order. Two other vessels were behind the *Ziesing* and all were at approximately the same ¾-mile interval.

At 1124, the *Ziesing* entered the southern end of the narrowed channel passing between buoys 3 and 4. She was closer to the eastern channel marker buoy 4, on her starboard, than to buoy 3. The *Ziesing* was proceeding at half speed, on a course of 001° T, and sounding fog signals. At about the same time she passed between buoys 3 and 4, visibility decreased further and the *Corey*, about ¾ mile ahead, faded from sight. The *Ziesing* then changed course to 002° T. A downbound vessel, the *Portland Cement*, was first observed ahead on radar at a distance of about 1.2 miles. One-blast passing signals were heard exchanged ahead, and the *Corey* was observed on radar to pass the *Portland Cement* port to port north of buoys 5 and 6 at a distance of ¾ mile ahead. The downbound vessel bore 3° on the *Ziesing's* port bow at this time.

At a position about 3,100 feet north of buoys 3 and 4, the *Ziesing* blew a one-blast signal as an invitation to pass the *Portland Cement* port to port and a short time later sounded the underway fog signal of three blasts. A one-blast signal followed by a three-blast fog signal was heard ahead and it was assumed that this was the *Portland Cement's* assent. At this time the radar indicated the *Portland Cement* was 6° on the port bow at 0.5 mile. Within a minute, at about 1129, the *Ziesing* in accordance with the master's custom to assure himself blew a second one-blast and then sounded the fog signal. Again a ship ahead, believed to be the downbound *Portland Cement*, was heard to sound the one-blast signal followed by the fog signal of three blasts and finally a two-blast signal. Hearing the two-blast signal, the *Ziesing* sounded a danger signal of seven or eight blasts, repeated her third one-blast passing signal, and then a fog signal. Once again the *Ziesing* personnel testified that the *Portland Cement* answered with one blast, a fog signal of three, and then two. The *Ziesing* went full astern and a short time later rang a second full astern for emergency power. About the same time, she blew her second danger signal. At the time of reversing, the *Ziesing* was steering 002° T and was about 150 feet from the eastern side of the channel.

Immediately after reversing, the smokestack of the *Portland Cement* came into view, and very shortly thereafter, the entire vessel emerged from the fog about 1,200 feet on the port bow heading across the *Ziesing's* path at an angle of about 45°. Moments later the vessels came together at an angle of about 45°, with the *Zeising's* bow contacting the starboard side of the *Portland Cement* at the after end of No. 2 hatch.

The SS *Standard Portland Cement* was downbound, en route from Silver Bay, Minn., to Cleveland, Ohio, and loaded with 8,094 tons of iron ore pellets. She was preceded by a vessel about 6 miles ahead and followed by the SS *Edward J. Berwind* about 1¼ to 1½ miles astern.

The *Portland Cement* passed the Lake Huron Lightship on her starboard side at 1103 and passed between the most northern set of Lake Huron Cut Channel buoys about 6 minutes later. Visibility was about 1 mile, and the *Portland Cement* was traveling at half ahead at an estimated 5 or 6 MPH. Fog signals were being sounded and were continued up to the time of the collision. Passing between buoys 9 and 10 she was about in the center of the downbound channel on course 186° T. Faint fog signals were heard ahead, and shortly after passing buoys 9 and 10, the *Portland Cement* received a radio call from the upbound SS *Georgian Bay*. The *Georgian Bay* indicated that she had just cleared the dredging area and after requesting the *Portland Cement's* position, advised that conditions were poor around the dredging area.

Buoys 7 and 8 were observed visually from a distance of about ¾ mile, and the fog signals from ahead were gradually growing louder. As the *Portland Cement* passed between buoys 7 and 8, she was about 200 feet east of buoy 7, and at about this time course was altered to the left to 181° T to conform with the next reach of the channel. Just south of buoys 7 and 8, one-blast passing signals were exchanged with the upbound *Georgian Bay*. When abeam of the *Georgian Bay*, the *Portland Cement* blew a one-blast signal to the SS *Richard Reiss*, which was observed visually to be following about 700 feet astern of the *Georgian Bay*. The *Reiss* answered with one blast; and after passing, the *Portland Cement* blew for a port-to-port

passing with the SS *William E. Corey*. This was agreed to by the *Corey*, and they passed at a position between 2,000 and 2,500 feet north of buoys 5 and 6. Visibility decreased further at this last passing. The *Portland Cement*'s third mate was operating the radar and reported that the temporarily relocated buoy 5 was dead ahead and that the radar showed many objects to starboard, but no bearings or ranges were given.

According to the *Portland Cement* witnesses, when buoy 5 became visible dead ahead at a distance of approximately 1,000 feet, the vessel's course was altered to the left to 179° T. Moments later the *Ziesing* appeared as a big dark object on the starboard bow at a distance of about 1,000 feet. The *Portland Cement* was about 600 feet north of buoy 5 at this initial sighting, and believing the *Ziesing* to be west of buoy 5 she blew two blasts. Not hearing a reply to this passing signal, speed was reduced from half ahead to slow ahead and a danger signal was sounded. The *Ziesing* then became fully visible on the starboard bow and appeared to be heading across the *Portland Cement*'s bow from starboard to port and at an angle of about 45°. The *Portland Cement* then blew a second two-blast passing signal, and hearing no answer the master ordered the rudder left full and the engine full astern followed by emergency full astern. The helmsman returned his rudder to amidship when the engine was reversed. The *Portland Cement*'s general alarm was then rung and a second danger signal was sounded. A danger signal from the *Ziesing* was heard when the vessels were about 60 to 70 feet apart.

Realizing the collision could not be avoided and in order to prevent the *Ziesing* from striking the forward crew's quarters, the master of the *Portland Cement* rang full ahead and again ordered the rudder left full. It was estimated that the *Portland Cement*'s bow swung to the left on this last maneuver about the same amount that it had swung to the right during the full astern period. The two vessels then came together at an angle of about 45°. The point of collision was disputed by both sides, but it appears to have occurred near the eastern side of the available channel approximately 100 feet south of buoy 6 and about 100 feet west of the eastern channel line.

Immediately after the collision, the *Ziesing* pushed the sinking *Portland Cement* out of the channel to the east where she settled on the bottom in 22 feet of water with her weather decks still above water. The *Portland Cement* was holed on the starboard side at about No. 2 hatch, and the *Ziesing's* bow was holed at the stem.

The *Ziesing* remained in the side of the *Portland Cement* until about 2145 that evening when she backed out and went to anchor. She later proceeded to Lorain, Ohio, under her own power. The *Portland Cement*'s cargo had to be lightened, then she was patched and towed to River Rouge, Mich.

REMARKS

It is considered that the principal cause of this casualty was the failure of the SS *Standard Portland Cement* to navigate with caution upon approaching a restricted channel area in conditions of heavy traffic and reduced visibility.

Before the *Portland Cement* reached buoys 7 and 8, the information received by radio from the *Georgian Bay* that the visibility in the dredging area was poor imposed on her the burden of deciding whether it was better to anchor or proceed. What consideration, if any, was given to this question is not evident in the record; however, having decided not to anchor while still north of buoys 7 and 8, she was then committed to continue since there was no place to anchor outside of the channel below buoys 7 and 8. Recognizing that she would have to navigate so as to enter the right-hand side of the available channel in the face of oncoming traffic, poor visibility, and her own heavily laden condition, it is considered that, even aside from the requirements of Rule 15 of the Great Lakes Rules, prudence should have dictated that speed be reduced to bare steerageway in order to provide the greatest possible margin for error. Nevertheless, the record reflects that the *Portland Cement* continued at half ahead, an average speed of approximately 6.7 MPH, until after the *Ziesing* came into view 1,000 feet off.

The Board's conclusion that the *Portland Cement* must have permitted her heading to come considerably to the left of the 179° T she claimed she had steered in her maneuver to clear buoy 5 to starboard, and their conclusion that the collision occurred on the eastern side of the channel near buoy 6 rather than on the western side as claimed by the *Portland Cement* are adequately supported in the record and are concurred in.

Also contributing to this casualty was the *Portland Cement*'s failure to properly evaluate and adequately use information available from radar observations. The radar was on and operating properly, and although both the master and the mate glanced at the radar, there appears to have been little or no effort made to positively identify targets, to determine bearings, or to analyze the navigational situation as it appeared on the scope.

The Board's opinion that the speed of the *Ziesing* was not immoderate under the circumstances is not supported in the record. The Board found that the *Ziesing*'s speed between buoy 4 and the time of collision averaged 6.7 MPH. Since the record also indicates that the *Ziesing* was backing for approximately 2 minutes before the collision, her speed prior to backing must have been in excess of 6.7 MPH. The *Ziesing* first became aware of the downbound *Portland Cement* by radar when she was 1.2 miles ahead. She initiated the first one-blast signal when the two vessels were 0.5 mile apart and continued without reduction of speed for at least another minute thereafter. The master indicated that bare steerageway for the *Ziesing* under the existing circumstances was 1 to 3 MPH. If the vessel had been proceeding at a more moderate speed from the outset and if she had reduced to bare steerageway as required by Rule 15 when the fog signal of the *Portland Cement* was heard ahead, the collision might have been avoided or at least the effect might have been minimized.

The Board expressed the opinion that the two vessels did not adequately use their radiotelephones, and had they done so, they might have avoided passing each other at the northern end of the restricted area of the channel. Recognizing the difficult navigational situation that faced her, it is agreed that the *Portland Cement* should have used her radiotelephone to obtain more information concerning the traffic ahead, and had she done so, she might have decided on a different course of action. The *Ziesing*, on the other hand, being fourth in a line of six ships, was even more limited in the alternatives open to her. In addition, she had timely notice of the *Portland Cement*'s approach and had reason to expect that the *Portland Cement* would keep to her own right-hand side of the channel without the necessity of verbal assurances.

The Board states that the master of the *Portland Cement* did not fully comprehend the extent to which the navigable channel was reduced by the relocation of buoys 3 and 5. The master testified that it was his understanding that the channel had been reduced to 400 feet. Because the channel was actually reduced to 350 feet, the Board is technically correct; however, this difference is not considered significant.

The Board's opinion that the *Ziesing* heard the *Portland Cement* exchange one-blast passing signals with the three vessels ahead and mistook them or some of them as answers to her own proposed one-blast passing signal is not concurred in. The *Ziesing* observed the vessel immediately preceding her pass the downbound *Portland Cement* ¾ of a mile ahead on radar, and the *Ziesing* blew her first passing signal at a distance of ½ mile. Considering the number of vessels that were present in the area, all blowing fog signals, the possibility of confusion of signals is understandable; however, there is no evidence that any such confusion contributed to the casualty in this instance.

To the extent that the record is considered to contain evidence of negligence on the part of the master of the SS *Portland Cement*, the Board's opinion is approved. It is considered that the responsibility for the failure of the *Portland Cement* to properly use and evaluate the information available from the radar rested with the master rather than the mate on watch. From the record it would appear that the mate was not specifically designated as the radar operator to the exclusion of other duties as mate on watch. He merely observed the radar from time to time, volunteering such information he thought the master desired. The master also checked the scope on occasion, and it appears that he was satisfied with the mate's performance and the type of information that was relayed. The opinion of the Board that the lookout was negligent for failing to distinguish the one-blast signal by the *Ziesing* from the signals of the three vessels that preceded her is not concurred in. The peculiarities of audibility of sound signals, particularly in fog, are well established, and recognizing the difficulties of distinguishing one vessel's signals from another, the inability of an individual to do so is not in itself considered to be improper performance or lack of vigilance.

Although the Broadcast and Local Notices to Mariners announcing the temporary relocation of buoys 3 and 5 contained erroneous positions of these two buoys, it is considered that this in no way contributed to the casualty. The navigation of the *Ziesing* was not affected, and as far as the *Portland Cement* was concerned, the master's understanding as to the position of buoy 5 was within 50 feet of its actual position.

The statement by the Board to the effect that a system of one-way traffic in temporarily restricted channels may be desirable, particularly under adverse conditions, is concurred in. A copy of the Board's report will be forwarded to the U.S. Army Corps of Engineers for their information in this regard. In this connection the Board took notice of the fact that following this casualty, the U.S. Army Corps of Engineers instituted one-way traffic control in the Lake Huron Cut for the duration of the dredging operations in that channel.

The Board's recommendation that Great Lakes masters be urged to make better use of the radiotelephone to assist in establishing successful meetings and passings is concurred in to the extent that masters should employ every means at their disposal to insure the safe navigation of their vessels. At the same time, however, it should be publicized that the greatest chance of avoiding collisions still lies in careful navigation and adherence to the Rules of the Road.

In addition to the Board's recommendation that further investigation under the Suspension and Revocation Proceedings be instituted in the case of the master of the SS *Standard Portland Cement*, the Commander, 9th Coast Guard District, is hereby directed to institute similar action in the case of the master of the SS *August Ziesing* for his part in the casualty.

Subject to the foregoing remarks the record of the Marine Board of Investigation is approved.

A. C. RICHMOND,
Admiral, U.S. Coast Guard,
Commandant.

MEDICO PROCEDURE IN COAST GUARD SAR ORGANIZATION

The United States Public Health Service maintains widely located hospitals and clinics where qualified physicians are on continuous duty and are available for free medical advice to ships at sea by radio. Ships may request medical advice by radio through cooperating commercial and U.S. Government radio stations. Included among the U.S. Government radio stations available for this medico traffic are the U.S. Coast Guard stations both fixed and mobile. Since some medico situations develop into rescue operations and since some search and rescue situations develop medical phases, the handling of medico situations has been integrated into the Coast Guard Search and Rescue organization. When medico traffic is passed via commercial radio stations, it will usually be referred to the Coast Guard by the commercial station or by the Public Health Service, whenever the medical situation appears urgent.

Coast Guard radio stations receiving a radio medico from a ship at sea pass the message to a Coast Guard Rescue Coordination Center. The officer on duty there makes direct contact with a duty physician usually by telephone. The means of communication are set up in standing procedures agreed upon by Public Health Service authority and the local Coast Guard Operations section. The duty physician has a set-up plan for consulting with other physicians who may have specialist qualifications appropriate for some situations. The Coast Guard duty officer drafts the message reply for the requesting ship, reading it back to the doctor for possible correction and approval. From the Rescue Coordination Center the message is passed to the radio station by teletype and from there a radio operator calls the ship and delivers the message by radio. At the Rescue Coordination Center appropriate details are recorded in a "case" folder into which is placed copies of all messages referring to the specific medico. This permits any later developments to be readily correlated, and relieving duty officers have a quick means of keeping up to date. In more serious cases the Rescue Coordination Center will use every means available to determine the quickest way of getting a doctor to the patient should the situation grow urgent. This entails a check of Coast Guard Cutter positions, the position of naval vessels, and the positions of doctor-carrying merchant vessels. If a suitable Coast Guard unit is available it will always be used. When the medico situation is already urgent, information on the possibility of direct doctor attendance is often included with the message containing the initial medical advice.

Each situation requires separate evaluation. There is no standard procedure which can apply automatically—the closest thing to this is a "check off" list which serves to prevent oversights. Here are some of the variable factors to be considered:

1. How critical is the patient's condition?

2. How much time is needed for the ship to reach the nearest port?

3. If medicine is needed, is it aboard and can it be given safely?

4. If medical supplies are urgently needed, where is the best source considering possible means of delivery?

5. If surgery is needed, what are the possibilities for getting the patient and a doctor together?

6. If patient must be removed, or a doctor transferred, will sea and wind conditions permit use of the means available? The means might be a Cutter's boat, a merchant vessel's boat, high line, amphibious aircraft, helicopter, or perhaps a rubber raft.

It should be clear that these are factors requiring judgment—the answers are seldom black or white. Decisions must be made despite the possibility of human errors. The action actually taken usually results from the collaboration of three "specialists": (1) the on-scene "specialist"—The vessel's master, (2) the assistance "specialist"—the Rescue Coordination Center, and (3) the medical "specialist"—the doctor. Records show that amazing results have been achieved by this "team."

It must be realized that the benefits to be gained from the services of the Rescue Coordination Center are based on its readiness for emergency situations and its doctrine born of extensive experience. Maintaining a high state of readiness requires work—much of it tedious, a lot of it dull, but none of it treated lightly. Part of the effort consists in keeping track of merchant vessels. In the Atlantic, the number of ships and the diversity of their routes made the use of a tracking system employing electronic computers a necessity. This has been accomplished by the establishment of the Coast Guard's AMVER (Atlantic Merchant Vessel Report) System which has been in operation for the past 3 years. For example, AMVER transmits information as to current positions of doctor-carrying merchant vessels to widely dispersed coordinating centers within minutes.

Some figures from the records at Coast Guard, New York, will show the scope of medico activity in SAR operations. In June 1961, the Rescue Coordination Center, New York, recorded 23 separate medico cases, and used 6 AMVER plots of current positions of nearby doctor-carrying vessels; 2 cases required a diversion by a merchant vessel and 12 others were handled by Coast Guard units. In July 1961, 23 medicos also were recorded, 15 AMVER plots were used in 9 cases; 1 merchant vessel was diverted, and 15 other cases were handled by Coast Guard units. In August, there were 26 medico cases, 21 AMVER plots supplied, 1 merchant vessel diversion, and 12 cases requiring Coast Guard unit assistance. These figures are typical although there is no pattern of occurrence.

ALARM SIGNALS ESTABLISHED

Recently the Coast Guard radio stations in New York and San Francisco started use of an internationally approved radiotelephone alarm signal preceding all actual distress "MAYDAY" situations on 2182 kc.

At this time there is no automatic receiving equipment for the alarm system aboard ships, and the purpose of the alarm signal is to obtain audio attention. The distinctive signal should cut through the interference on 2182 kc.

The program is an introduction and intended as an orderly expansion of this alarm signal, and as the great bulk of vessels are voluntarily equipped, an educational program is necessary. However, when fully implemented, most oceangoing vessels and public and government coast stations will be compulsorily fitted.

The distinctive sound of the alarm signal consists of two tones at 2200 and 1300 cycles per second. These correspond to C sharp three octaves above middle C, and E natural two octaves above middle C. The tones alternate four times each second.

Anyone hearing the alarm signal while listening to the radiotelephony distress frequency 2182 is requested to mail the following information to the Coast Guard District Office in San Francisco or New York:

(a) The listener's location
(b) Readability of the signal
(c) Time and date
(d) Whether the signal silenced other traffic on 2182 kcs
(e) Any other information which might help determine the usefulness of the equipment.

AMENDMENTS TO REGULATIONS

[EDITOR'S NOTE.—The following regulations have been promulgated or amended since the last issue of the PROCEEDINGS. A complete text of the regulations may be found in the Federal Register indicated at the end of each article. Copies of the Federal Register containing the material referred to may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.]

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter I—Coast Guard, Department of the Treasury

SUBCHAPTER L—SECURITY OF WATERFRONT FACILITIES

[CGFR 61-54]

PART 125—IDENTIFICATION CREDENTIALS FOR PERSONS REQUIRING ACCESS TO WATERFRONT FACILITIES OR VESSELS

U.S. Coast Guard Port Security Cards

It is hereby found that compliance with the notice of proposed rule making, public rule making procedures thereon, and effective date requirements of the Administrative Procedure Act is contrary to the public interest since this amendment of 33 CFR Part 125 is to give effect to Executive Order 10173, as amended, and in the public interest should be placed in effect as soon as possible.

By virtue of the authority vested in me as Commandant, U.S. Coast Guard, by Executive Order 10173, as amended, § 125.55 is amended to read as follows; and shall become effective upon date of publication in the FEDERAL REGISTER:

§ 125.55 Outstanding port security card applications.

A person who has filed an application for a Coast Guard Port Security Card and who did not receive such a document prior to May 1, 1956, shall submit a new application in accordance with the requirements of this part.

(Federal Register of December 12, 1961.)

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 61-52]

MISCELLANEOUS AMENDMENTS TO CHAPTER

Procedures regarding inspection and certification of vessels, margin lines for passenger vessels, fusible plug reports, portable radio apparatus on nautical school ships, and amendments to prior document.

SUBCHAPTER A—PROCEDURES APPLICABLE TO THE PUBLIC

PART 2—VESSEL INSPECTIONS

Courtesy Imperial Oil Limited

SUBCHAPTER D—TANK VESSELS

PART 34—FIRE-FIGHTING EQUIPMENT

Subpart 34.10—Fire Main System, Details

SUBCHAPTER H—PASSENGER VESSELS

PART 73—WATERTIGHT SUBDIVISION

Subpart 73.05—Definitions

PART 76—FIRE PROTECTION EQUIPMENT

Subpart 76.05—Fire Detecting and Extinguishing Equipment, Where Required

PART 78—OPERATIONS

Subpart 78.33—Reports of Accidents, Repairs, and Unsafe Equipment

EQUIPMENT APPROVED BY THE COMMANDANT

[EDITOR'S NOTE.—Due to space limitations, it is not possible to publish the documents regarding approvals and terminations of approvals of equipment published in the Federal Register dated December 12, 1961 (CGFR 61-49), and (CGFR 61-50). Copies of these documents may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.]

SUBCHAPTER I—CARGO AND MISCELLANEOUS VESSELS

PART 97—OPERATIONS

Subpart 97.30—Reports of Accidents, Repairs, and Unsafe Equipment

SUBCHAPTER R—NAUTICAL SCHOOLS

PART 167—PUBLIC NAUTICAL SCHOOL SHIPS

Subpart 167.35—Lifesaving Equipment

(Federal Register of December 13, 1961.)

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 61-57]

SUBCHAPTER N—EXPLOSIVES OR OTHER DANGEROUS ARTICLES OR SUBSTANCES AND COMBUSTIBLE LIQUIDS ON BOARD VESSELS

PART 146—TRANSPORTATION OR STORAGE OF EXPLOSIVES OR OTHER DANGEROUS ARTICLES OR SUBSTANCES, AND COMBUSTIBLE LIQUIDS ON BOARD VESSELS

SUBCHAPTER P—MANNING OF VESSELS

PART 157—MANNING REQUIREMENTS

Construction of Magazines, Manning of Inspected Vessels, and Able Seamen

The amendment to 46 CFR 146.09-2(c) regarding construction of magazines is to reinstate the requirements which were inadvertently canceled when the regulation was amended by Coast Guard document CGFR 61-11, Federal Register document 61-4077, which was published in the FEDERAL REGISTER of May 5, 1961 (26 F.R. 3924, 1st column). The intent of the amendment published in the FEDERAL REGISTER of May 5, 1961, was to amend the first sentence and to insert a new second sentence and to retain the balance of the text of the paragraph. The text of 46 CFR 146.09-2 as corrected is set forth in this document.

The purpose of the amendments to 46 CFR 157.01-10(b)(1) and 157.20-15(a)(1), is to include references to the exceptions set forth in the act of June 16, 1938 (46 U.S.C. 672b), which modified certain provisions with respect to unrigged vessels and able seamen on tugs and towboats operating on bays and sounds connected directly with the seas.

Because the amendments in this document are corrections to regulations and editorial in nature, it is hereby found that compliance with the Administrative Procedure Act (respecting notice of proposed rule making, public rule making procedure thereon, and effective date requirements thereof) is impracticable and unnecessary.

(Federal Register of December 16, 1961.)

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from 1 December to 31 December 1961, inclusive, for use on board vessels in accordance with the provisions of Part 147 of the regulations governing "Explosives or Other Dangerous Articles on Board Vessels" are as follows:

CERTIFIED

Pettit Paint Co., Inc., 507 Main St., Belleville 9, N.J., certificate No. 501, dated 1 December 1961, CLEAN-SWEET.

Hysan Products Co., 919 West 38th St., Chicago 9, Ill., certificate No. 502, dated 8 December 1961, HYSAN AEROSOL DEGREASER.

The Falcon Corp., 80 Middagh St., Brooklyn 1, N.Y., certificate No. 503, dated 8 December 1961, CALFONEX PRACTICAL CARBON AND BURNER TIP CLEANER.

AFFIDAVITS

The following affidavits were accepted during the period from 15 November 1961 to 15 December 1961:

John Perine Co., 524 First Ave., Seattle 4, Wash., BOLTING.

The Brewster Co., Inc., P.O. Drawer 1095, Shreveport, La., CASTINGS.

Imperial Eastman Corp., 6300 West Howard St., Chicago 48, Ill., VALVES & FITTINGS.

Todd Shipyards Corp., Houston Division, P.O. Box 9666, Houston 15, Texas, FITTINGS, FLANGES & BOLTING.

FUSIBLE PLUGS

The regulations prescribed in Subpart 162.014, Subchapter Q specifications, require that manufacturers submit samples from each heat of fusible plugs for test prior to plugs manufactured from the heat being used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from 15 November 1961 to 15 December 1961 is as follows:

The Lunkenheimer Co., Cincinnati 14, Ohio, HEAT NOS. 645 and 646.

MERCHANT MARINE SAFETY PUBLICATIONS

The following publications that are directly applicable to the Merchant Marine are available and may be obtained upon request from the nearest Marine Inspection Office of the United States Coast Guard. The date of each publication is indicated in parentheses following its title. The dates of the Federal Registers affecting each publication are noted after the date of each edition.

CG No.	TITLE OF PUBLICATION
101	Specimen Examination for Merchant Marine Deck Officers (7–1–58).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–58).
115	Marine Engineering Regulations and Material Specifications (2–1–61).
123	Rules and Regulations for Tank Vessels (12–1–59). F.R. 3–30–60, 10–25–60, 11–5–60, 12–8–60, 7–4–61, 9–30–61, 11–23–61, 12–13–61.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (5–1–59). F.R. 5–21–59, 6–6–59, 5–20–60, 9–21–60, 4–14–61, 4–25–61.
172	Rules of the Road—Great Lakes (5–1–59). F.R. 1–7–60, 3–17–60, 5–20–60, 9–21–60.
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (7–2–51).
175	Manual for Lifeboatman, Able Seamen, and Qualified Members of Engine Department (9–1–60).
176	Load Line Regulation (9–2–58). F.R. 9–5–59, 8–2–60, 11–17–60.
182	Specimen Examinations for Merchant Marine Engineer Licenses (12–1–59).
184	Rules of the Road—Western Rivers (5–1–59). F.R. 6–6–59, 5–20–60, 9–21–60, 10–8–60, 12–23–60, 4–14–61, 4–25–61.
190	Equipment Lists (4–1–60). F.R. 6–21–60, 8–16–60, 8–25–60, 8–31–60, 9–21–60, 9–28–60, 10–25–60, 11–17–60, 12–23–60, 12–24–60, 5–2–61, 6–2–61, 6–8–61, 7–21–61, 7–27–61, 8–16–61, 8–29–61, 8–31–61, 9–8–61, 9–9–61, 10–18–61, 11–3–61, 11–18–61, 12–12–61.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (11–1–60). F.R. 11–30–60, 1–4–61, 4–19–61, 10–25–61.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (7–1–58). F.R. 3–30–60, 5–6–60, 12–8–60, 7–4–61.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57).
227	Laws Governing Marine Inspection (7–3–50).
239	Security of Vessels and Waterfront Facilities (8–1–61). F.R. 12–12–61.
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (3–2–59). F.R. 4–25–59, 6–18–59, 6–20–59, 7–9–59, 7–21–59, 9–5–59, 1–8–60, 5–6–60, 8–18–60, 10–25–60, 11–5–60, 11–17–60, 12–8–60, 12–24–60, 12–29–60, 4–19–61, 7–4–61, 9–30–61, 11–23–61, 12–13–61.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (3–2–59). F.R. 4–25–59, 6–18–59, 6–20–59, 7–9–59, 7–21–59, 9–5–59, 5–6–60, 5–12–60, 10–25–60, 11–5–60, 11–17–60, 12–8–60, 12–24–60, 7–4–61, 9–30–61, 10–25–61, 12–13–61.
259	Electrical Engineering Regulations (12–1–60). F.R. 9–30–61.
266	Rules and Regulations for Bulk Grain Cargoes (5–1–59).
268	Rules and Regulations for Manning of Vessels (9–1–60). F.R. 5–5–61, 6–28–61, 12–16–61.
269	Rules and Regulations for Nautical Schools (3–1–60). F.R. 3–30–60, 8–18–60, 11–5–60, 7–4–61, 9–30–61, 12–13–61.
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60.
293	Miscellaneous Electrical Equipment List (3–7–60).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–61, 11–23–61.
323	Rules and Regulations for Small Passenger Vessels (Not More Than 65 Feet in Length) (7–1–61).
329	Fire Fighting Manual for Tank Vessels (4–1–58).

Official changes in rules and regulations are published in the Federal Register, which is printed daily except Sunday, Monday, and days following holidays. The Federal Register is a sales publication and may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C. It is furnished by mail to subscribers for $1.50 per month or $15 per year, payable in advance. Individual copies desired may be purchased as long as they are available. The charge for individual copies of the Federal Register varies in proportion to the size of the issue and will be 15 cents unless otherwise noted in the table of changes below.

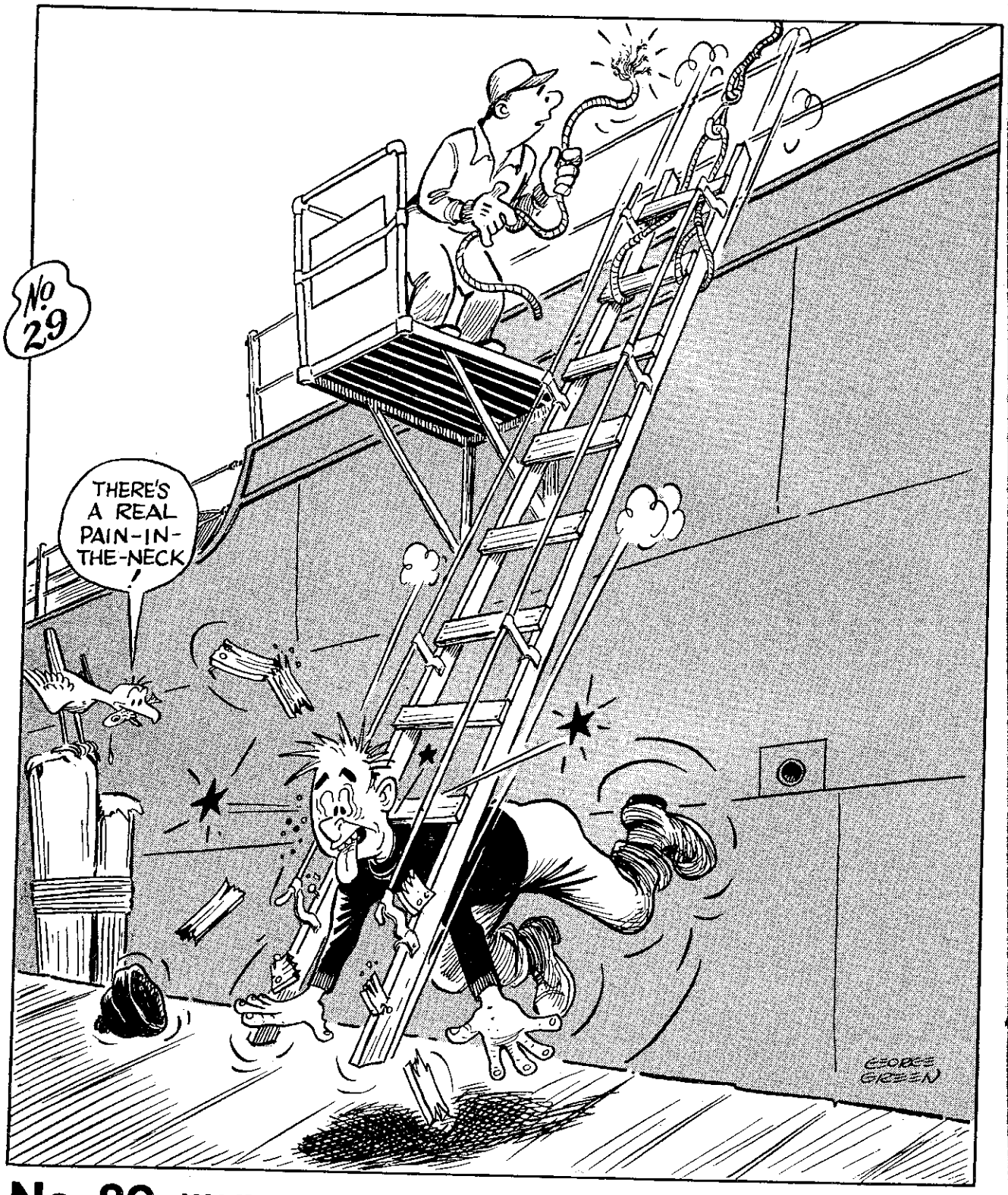
CHANGES PUBLISHED DURING DECEMBER 1961

The following have been modified by Federal Registers:
CG–190, Federal Register, December 12, 1961.
CG–123, CG–256, CG–257, and CG–269, Federal Register, December 13, 1961.
CG–268, Federal Register, December 16, 1961.

U.S. GOVERNMENT PRINTING OFFICE: 1962

ACCIDENT PREVENTION PROGRAM

Rule of the Month



No. 29 WAITING TO BOARD SHIP

When standing by to board ship, personnel shall keep clear of cables and ladders.