

PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL



UNITED STATES COAST GUARD

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OF THE MERCHANT MARINE COUNCIL

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The Merchant Marine Council of
The United States Coast Guard

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FRONT COVER

Let go the port anchor—*Courtesy Newport News Shipbuilding Corp.*

BACK COVER

Chart showing a portion of Sandy Hook, N.J., and the areas covered by the Coast Guard's RATAN installation.

COMMENDATION



OFFICERS AND CREW of the S.S. Mallory Lykes were presented a safety commendation for 1961 aboard the vessel while in New Orleans recently. Present at the ceremonies were, front row, from left, Harold Kvisvik, AB; John R. Tavares, Jr., boatswain; C. H. Paul, 2d assistant engineer; W. F. Derry, 3d mate, and Carlos Tauther, steward. In the second row, same order, are Walter C. Weinig, 3d assistant engineer; Capt. J. B. Rucker, manager, accident prevention division; J. H. Nelson, utility; Capt. E. G. Denys, manager, marine division; R. J. Bodden, seaman; Capt. H. Mason, master; Edward L. Wade, AB; Tommy Whichard, chief mate, and L. F. Lorah, assistant manager, maintenance and repair.

DIST. (SDL NO. 75)

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SCANNING LOWER NEW YORK BAY from the tip of Sandy Hook, N.J., this 25-foot-long, boomerang-shaped antenna of a special Raytheon radar sends out electronic signals that come back as high definition echoes. The radar surveys busy area from The Narrows to Ambrose Lightship.



MOVING VESSELS APPEAR with wake-like trails on the converted radar picture so that each ship's course and speed can be estimated at a glance. This is made possible by Raytheon storage tube that remembers positions of targets as they were previously reported by radar. A Coastguardsman checks the transmitted TV picture as it goes "on the air" over Channel 47 from the Coast Guard's experimental RATAN station at Sandy Hook, N.J.

THE RATAN SYSTEM EVALUATION

By Captain Ralph D. Dean, USCG
Chief, Testing and Development Division, Headquarters

RATAN (Radar Television Aid to Navigation) is an experimental project designed to assist the mariner with the problems of harbor navigation. It represents a new use of basic television and radar principles. The Coast Guard has established a test RATAN station which has been in operation since December 1961.

The usual guidance and surveillance systems for harbors require analysis of the radar information by the shore station which then transmits this information to individual ships. RATAN, however, makes the entire radar picture and complementary information available to each vessel's navigator for his own interpretation. Use of RATAN is thus completely at the discretion of the vessel, with no control or orders from the shore station. This is in conformance with the basic policy of the Coast Guard of employing "passive" aids to navigation.

The system consists of (1) a high definition shore-based radar located so as to obtain good surveillance of a high density marine traffic area; (2) a scan-converter to convert the radar polar PPI presentation to the U.S. Standard television rectangular sweep system; and (3) a conventional television transmitter for broadcasting the radar picture for navigational use in the area. The navigator thus has the use of a high quality radar plus other fringe benefits at a negligible cost.

The Coast Guard has found the site at Sandy Hook to be an excellent choice for the RATAN evaluation. It has high marine traffic density of all types. The area covered from the Narrows to Ambrose Light requires a 10 by 14 mile presentation, a real test of the long range target resolution of the radar and large area target resolution of the scan-converter and television system.

INSTALLATION DATA

The radar originally installed at Sandy Hook had a 0.1-microsecond pulse length and a 12-foot aperture antenna, providing reasonable target resolution out to 5 miles. Beyond this range, the arc subtended by the 0.75-degree horizontal beamwidth of the antenna became too broad to provide good target resolution for a large area RATAN system. With the 12-foot antenna a point target at 10 miles had an apparent width of 750 feet and at 5 miles about 375 feet. When it was determined, early in the tests, that the general concept of the system was valid and problems of both radar and television "ghosting" were negligible, a new, high-resolution radar antenna was procured. This presented the entire area of interest from the Narrows to Ambrose Light with reasonably good target resolution. In comparison, the new antenna horizontal beamwidth is 0.28 degree and the ver-

tical beamwidth 8 degrees as opposed to the previous 20-degree vertical beamwidth. This will provide an apparent point-target width of 250 feet at 9 miles, the range to both the Narrows and Ambrose Lightship. The radar is capable of a minimum transmitted pulse length of 0.05 microsecond which will provide a range resolution of 25 feet. This resolution is too good for the target resolution of the 525-line television system so that a pulse length of about 0.1 microsecond providing a radar range resolution of 50 feet will be adopted.

Equipment installed at Sandy Hook other than that previously mentioned are studio-type monitors, a studio television camera for dubbing in announcements and display, mixing equipment for accomplishing the usual TV display tricks, video mapping equipment for superimposing permanent background material and TV receiver accurate range and bearing readout equipment.

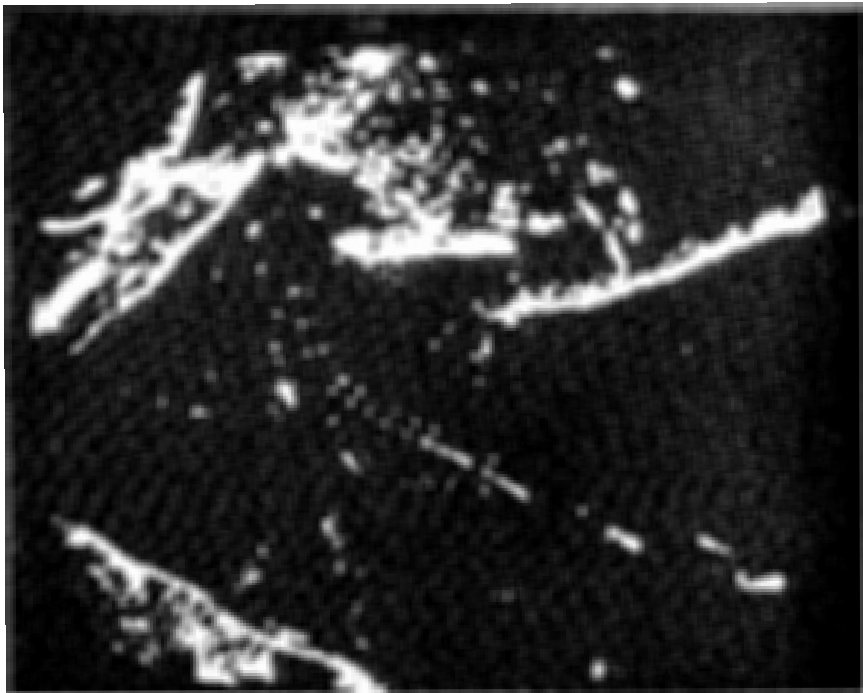
The television transmitter is a standard 1 KW UHF (Channel 47—670 mc) with 180' high antenna having a power gain of 20. The range capability of the television installation is 15 to 20 miles, assuming a field strength of 5,000 microvolts per meter at the receiving location. This excessive range capability is not wasted, as it would be of value to vessels approaching the harbor, providing harbor traffic display and other information included in the presentation such as visibility, NOTAMS, warnings and other items of interest. The usual inner harbor requirements for RATAN, for a 3- to 5-mile radar range, is envisioned as a relatively simple installation; a 12-foot radar antenna aperture and 150-watt television transmitter, with both television and

ABOUT THE AUTHOR

AN ALUMNUS of the Coast Guard Academy and of the Massachusetts Institute of Technology graduate school of naval electronics, Captain Ralph D. Dean has a lifelong interest in and association with electronics engineering.

His seagoing career has been extensive and varied. During World War II Captain Dean commanded the USCGC *Galatea*, the USS *Action*, the USS *Paole* and the USS *Charlotte*. These vessels were basically concerned with Atlantic convoy and patrol duties. More recently he commanded the USCGC *Matagorda* on duty in the 14th Coast Guard district.

Captain Dean has been assigned as Chief, Electronics Engineering Section in several Coast Guard District Offices. In July 1961 he was assigned as Chief, Testing and Development Division, Office of Engineering, at Coast Guard Headquarters. He is presently assigned as Chief, Electronics Engineering Division at Coast Guard Headquarters.



SCOPE DISPLAY of large area RATAN coverage. Elongated targets in channels are moving. This display is with old type radar antenna.

radar antennas installed on the same 50- to 75-foot tower. This would considerably reduce the cost of a system for most harbor areas in the United States.

SCAN CONVERTER

The scan-converter tube is a two electron-gun, cathode-ray memory device. The writing gun prints the PPI radar picture on a variable persistence electrostatic screen. A read gun takes the picture off with a United States Television Standard 525-line, 30-frame/sec sweep. The variable memory of the tube allows generation of "trails" on moving targets which serve as an approximate indication of heading and speed. The long persistence of the tube by integration also assists in detecting small targets and conversely discriminating against transitory targets such as sea return.

The use of the United States standard television display to transmit the entire radar picture directly to the user has several advantages, particularly for the small boat user. Primarily, it provides him with a high quality radar picture at the very reasonable cost of a television receiver. Because the radar is shore based, display orientation can be made easy by adding mapping information to the background. Moving targets are in true motion as opposed to relative motion obtained with usual shipboard

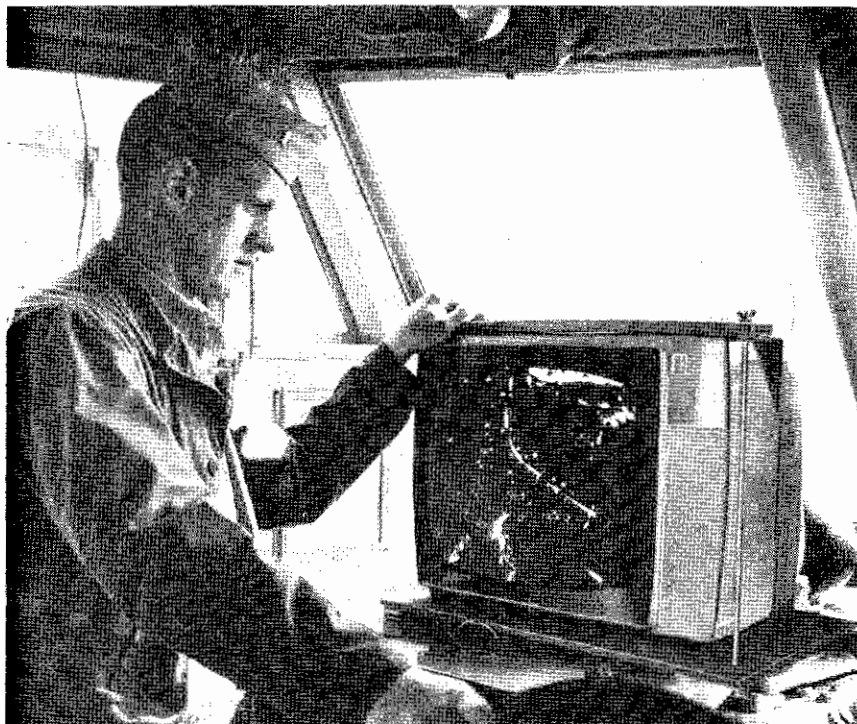
radar installations. This aids the novice navigator greatly in recognition of collision situations and in interpretation of the radar picture. The bright presentation of the television screen allows the picture to be observed in daylight without the use of hoods or a need for a dark viewing area normally required for radar.

ANALYSIS OF PROBLEMS

Analysis of the various factors which control RATAN picture quality shows that compromises will be necessary in order to obtain large area coverage and at the same time to keep the advantages of the standard television sweep system. Resolution of the scan-converter and TV system deteriorates with increase of presentation area. The TV deterioration is the same over the entire area of the display as opposed to that with the radar which is proportional to the range. It is felt that the system at Sandy Hook has component specifications which reasonably well complement each other for this location. While a considerable improvement in display quality would result from a 900-line TV system, this advantage would be more than lost in the requirement for nonstandard equipment.

RESOLUTION vs. AREA COVERAGE

In any RATAN system it is generally desirable to have the individual



COAST GUARD PATROL BOAT proceeds through Ambrose Channel while using a RATAN television presentation. The televised picture is clearly visible even in bright sunlight. The experimental system employs a Raytheon radar and scan converter.

radar area coverage maximum in order to keep down the total cost of complex harbor coverage. In the present system at Sandy Hook it was desired to cover the entire area from the Narrows to Ambrose Light. This means that the radar must operate at a maximum range of 9 miles and the television must have a display width of 14 miles, conditions which result in poor target resolution. Another consideration in area coverage is the indication of heading and speed on moving targets. The smaller scale (larger area) presentation reduces the relative size of the "trails" on these targets such that the visual sensation of motion, obtained from this feature is almost lost unless excessive memory time is provided for in the scan conversion process.

I have pointed out that high-resolution and optimum-display are not compatible with large area coverage. Fortunately most harbors and congested areas will allow smaller area coverage so that good quality of picture presentation can be monitored with the present 525-line TV system.

SUMMARY

No two harbor conditions are sufficiently alike to allow extensive standardization in RATAN systems. A

large general area, such as New York Harbor, would require a minimum of two radar installations and a maximum of four or five, depending on how extensive a coverage is desired. There are equipment-saving schemes, e.g., using multiple radars for a single television transmitter on a presentation time-sharing or space-sharing basis and conversely, using two or three segments of one radar scan on multiple television transmitters. These schemes are dependent upon special harbor configurations and in all cases tend to degrade the quality of the presentation for a number of obvious reasons. Operational considerations such as how much background mapping should be included in the television picture will be dependent upon the needs of the predominant user. A relatively unsophisticated user, unacquainted with radar techniques will require a maximum of mapping and notation in order to keep him easily oriented in the radar picture, whereas the large vessel operator, with shipboard radar experience, will need practically no information other than the radar picture itself. It is hoped that by the conclusion of the evaluation, December 1962, these and other parameters governing individual installations and modes of operation will be resolved.

LIFTING PROPERLY

Year after year about one out of every six disabling injuries to long-shoremen and warehousemen is a strain or sprain of the back. A few of these are the result of a natural weakness in the back itself and others are spasms that have no readily apparent detectable cause. Let us discuss those injuries that we can prevent by basic preventive action.

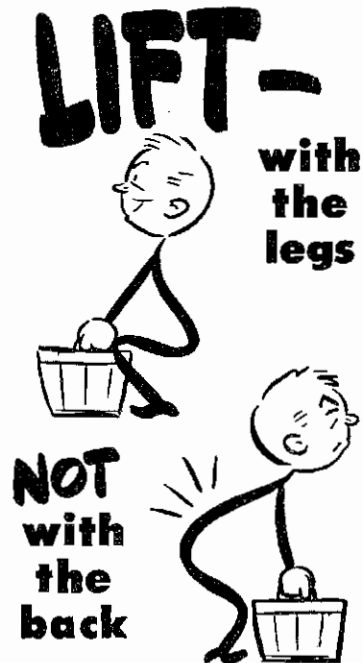
It has been found by all organizations that have tried it, including some on the waterfront, that a very marked reduction in back injuries can be obtained by teaching and insisting upon the use of proper lifting methods.

Proper lifting includes the following:

1. Face the object squarely
2. Feet slightly apart
3. Knees bent
4. Arms straight
5. Back vertical as possible
6. Use your leg muscles

Supervisors should realize that men are much less likely to learn from reading than they are from personal instruction.

Every opportunity must be taken to show men how to lift properly and to check continually to see that they are practicing the correct method if any appreciable reduction in sprains and strains is to be achieved.





MARITIME SIDELIGHTS

The Old Bay Line, one of the Nation's oldest coastwise shipping lines, recently decided to terminate its operations. The line, operating between Norfolk and Baltimore, has a history which dates prior to its charter in 1840.

✂ ✂ ✂

The first of 12 Indonesian Merchant Marine Academy cadets receiving training on American flag freighters arrived recently in New York on the cargo ship *Steel Flyer*.

The cadet, Memed Muljana, is working on the *Steel Flyer* under the U.S.-Indonesian Governments program for International Development.

✂ ✂ ✂

There were 886 vessels of 1,000 gross tons and over in the active ocean-going U.S. merchant fleet on April 1, 1962, 41 less than the number active on March 1, 1962, according to data released by the Maritime Administration, U.S. Department of Commerce.

There were 29 Government-owned and 857 privately owned ships in active service. These figures did not include privately owned vessels temporarily inactive, or Government-owned vessels employed in loading storage grain. They also exclude 24 vessels in the custody of the Departments of Defense, State, and Interior, and the Panama Canal Co.

✂ ✂ ✂

The delivery of new tankers and the scrapping of old declined throughout the world during the second half of last year, compared with the first 6 months, according to Lloyd's List February 24. With these two situations partly offsetting one another, there resulted a net increase, allowing for minor adjustments, of 1,432,103 deadweight tons in the size of the world tanker fleet during the period. The rise was not as large as was seen in the previous half-yearly period, when the fleet increased by nearly 1,672,000 deadweight tons.

✂ ✂ ✂

Southern Illinois University's first school for towboat masters, one of a

COMMENDATION FOR SS "AFRICAN PILOT"



CAPT. J. D. CRAIK, USCG, is shown presenting letters of commendation to crewmembers Edward Montley and Clyde G. Clark (right), while CAPT. A. M. KNIGHT, master of the *African Pilot*, looks on.

Capt. Arthur M. Knight, master of the Farrell Lines' cargo ship *African Pilot*, and members of his crew were presented letters of commendation from Capt. James D. Craik, USCG, Acting Commander, Eastern Area, Search and Rescue Coordinator of the U.S. Maritime Region, for their rescue on 23d of September of three naval aviators who were downed in the Atlantic Ocean north of Bermuda.

Captain Knight maneuvered his ship in waves 20 to 30 feet high while crewmembers were lowered into the stormy seas to pick up two of the men. The third, who had drifted off, was rescued by a lifeboat launched despite the high seas.

In the letter congratulating the men, Captain Craik said, "The performance of *African Pilot* in this operation is an outstanding demonstration of the spirit and skill of men. It reflects great credit on the entire crew, the master, and on Farrell Lines for company policy which fosters this high degree of initiative and readiness. Such humanitarian spirit is most commendable and is in keeping with the highest traditions of the sea."

series of adult education short courses for employees of barge lines operating on the Nation's inland waterways, was held on the SIU campus at Carbondale, Ill., on May 14-18.

The program is a joint project of SIU and the river industry. The session is the first of two 5-day parts of an educational program for towboat

masters during a 12-month period.

The course is designed to bring the latest information and procedures to the men to help them do a better job and to advance in their fields of work. Similar short courses are contemplated for other employees in the barge towing industry, according to officials of the University.



nautical queries

DECK

- Q. Define: (a) Aphelion
(b) Perihelion
(c) Apogee
(d) Perigee

A. (a) Aphelion is that orbital point farthest from the sun when the sun is the center of attraction.

(b) Perihelion is that orbital point nearest the sun when the sun is the center of attraction.

(c) Apogee is that orbital point farthest from the earth when the earth is the center of attraction.

(d) Perigee is that orbital point nearest the earth when the earth is the center of attraction.

Q. What is Greenwich sidereal time?

A. Greenwich sidereal time is local sidereal time at the Greenwich meridian; the arc of the celestial equator or the angle at the celestial pole, between the upper branch of the Greenwich celestial meridian and the hour circle of the vernal equinox, measured westward from the upper branch of the Greenwich celestial meridian through 24 hours; Greenwich hour angle of the vernal equinox, expressed in time units.

Q. A squall line, a line of sharp changes of wind is frequently associated with a(n):

- (a) Warm front
(b) Cold front
(c) Occluded front
(d) Warm sector

A. (b) Cold front

Q. At sea in the northern hemisphere the earliest indication of an approaching tropical cyclone is generally:

- (a) Cirrus clouds increasing
(b) Continuous rain
(c) A change in wind direction and/or velocity
(d) A steadily falling barometer

(e) A long swell

A. (e) A long swell

Q. The usual sequence of directions in which a tropical cyclone moves in the northern hemisphere is:

- (a) Northwest, north, northeast
(b) East, west, north
(c) West, east, north
(d) Southwest, northwest, east
(e) North, east, northeast

A. (a) Northwest, north, northeast

ENGINE

Q. Describe the emergency bilge suction valve, and explain how dangerously high bilge water in the engine room is disposed of.

A. For this purpose a connection is made from the bilges to the circulating pump through a valve box. This valve box has a non-return valve in it and a spindle to regulate the lift. To use the bilge water for circulating through the condenser, in case it is rising too high in the bilges, the main injection valve is closed, and the bilge injection valve opened; the circulating pump then draws from the bilges instead of from the sea. The valve is made separate from the spindle, so that no one could accidentally leave it open, and allow the bilges to get full of water coming through the main injection on the ship's side.

Q. Describe the operation of the disc-type centrifugal oil separator.

A. The bowl of the separator is the essential working part of the unit.

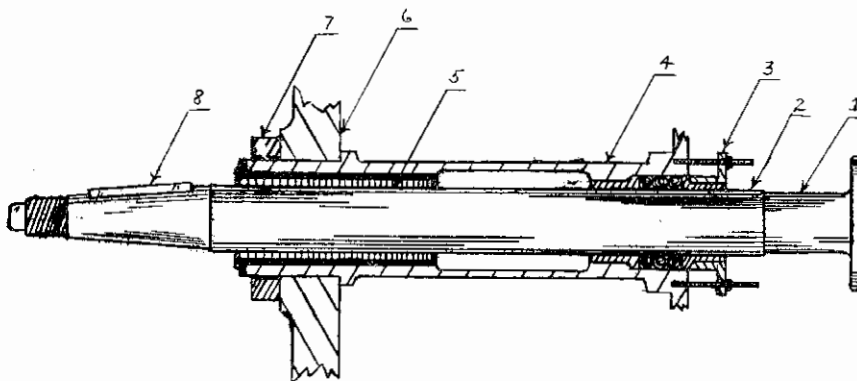
The oil is fed into the top of the bowl and passes down to bottom center, where it flows out and up through holes in the discs, being distributed in thin layers between the discs.

Separation takes place under centrifugal force. The material which is heavier than water, such as sand or metal particles, is thrown outward to the periphery of the bowl and held there in a sediment pocket by centrifugal force. The water, being heavier than oil, also passes upward and outward along the outer edge of the discs, and from there to the discharge outlet.

The oil passes inward between the discs where the thin layers are subjected to tremendous centrifugal force, which throws out the remaining impurities and water. These impurities are forced along the lower surface of each disc toward the sediment pocket and the pure oil is directed to the center of the bowl and the oil outlet.

PROPELLER SHAFTING

Q. Name the numbered parts on the following drawing.



- A. (1) Tailshaft
(2) Bronze shaft liner
(3) Stern tube gland
(4) Stern tube
(5) Bearing
(6) Stern frame
(7) Stern tube nut
(8) Propeller key

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 6-62

Subj: Merchant Vessel Plan Submittal Procedure; Modification of in the First, Third and Fifth Coast Guard Districts

MAY 7, 1962

PURPOSE

The purpose of this circular is to advise the marine industry of the establishment of a Merchant Marine Technical Branch under the Commander, Third Coast Guard District. This Technical Branch will act as an Eastern field technical office and will handle plan approval for all new marine construction, conversion and alteration on vessels subject to inspection within the First, Third and Fifth Coast Guard Districts.

BACKGROUND

Because of the distance of Headquarters from the marine industry in various parts of the country, it has been difficult for owners of small vessels and representatives of the smaller shipyards in these areas to discuss their problems with the Technical Division. Establishment of the field technical branch is an effort to satisfy the increasing demands of the marine industry and to bring the technical staff closer to the inspection area. It is intended, by this change, to speed up and improve plan approval procedures and to facilitate discussion between industry and the Coast Guard with regard to problems of merchant marine safety and application of vessel regulation. One field technical branch has been established in the Eighth Coast Guard District to service the Second, Seventh and Eighth Coast Guard Districts as set forth in Navigation and Vessel Inspection Circular No.

3-58. Another field technical branch has been established in the Twelfth Coast Guard District to service the Eleventh, Twelfth, Thirteenth, Fourteenth and Seventeenth Coast Guard Districts as set forth in Navigation and Vessel Inspection Circular No. 5-60.

DISCUSSION

The eastern field technical branch will handle plan approval for all new marine construction, conversion and alteration on vessels subject to inspection within the First, Third and Fifth Coast Guard Districts which geographically includes the eastern coast of the United States from North Carolina to Maine inclusively. Portions of vessel regulations relative to plan submittal procedures will be made obsolete by the establishment of this field technical branch. Interim procedure changes to the regulations will be promulgated at a later date.

ACTION REQUIRED

Effective 5 July 1962, all required plan submittals for new marine construction, conversion or alteration for vessels subject to inspection and under cognizance of the Commander of the First, Third, and Fifth Coast Guard Districts should be forwarded to:

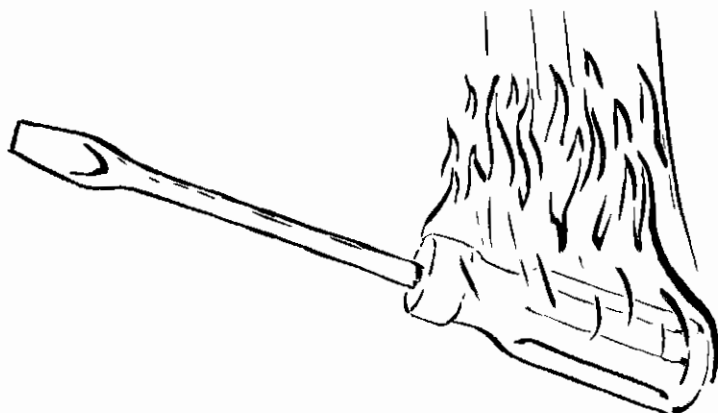
Commander, Third Coast Guard District (mmt)
Custom House
New York 4, N.Y.

ANY FLAMMABLE TOOLS ON YOUR SHIP?

Not long ago, an electrical equipment manufacturing plant in the east put in a stock of plastic-headed mallets. Within a short time, three of them caught fire, flashing up with sudden intensity. Two were ignited from small bench-type torches, and one from a soldering iron. Two of the mallet users were lucky, but a third suffered a badly burned hand.

A match was then experimentally touched to one of the mallets, and it immediately burst into flames and burned like a torch! The plant wasted no time in replacing the mallets with a type of nonflammable nylon plastic. Next, they consulted the local fire commissioner who found that a nitrocellulose base in the plastic made it highly inflammable. He also found that toxic fumes were produced when this material burned.

Plastic mallets are commonly used for electrical work, as they do not conduct electricity, and they are also popular because of their nonsparking quality. Other tools might contain this same dangerous material, as well as home utensils. If any plastic mallets or plastic-handled screwdrivers or



other tools are used on your vessel, find out if they're flammable!

Courtesy A.S.S.B. Newsletter.

FLAMMABLE SCREWDRIVER HANDLES

An employee of Knolls Atomic Power Laboratory noticed white smoke coming from a plastic handle of a screwdriver. He immediately picked it up and put the handle under running water but it continued to burn. There were no open flames or electrical devices near the tool; it had

ignited spontaneously.

Investigation concluded that certain plastic handles contain varying amounts of cellulose nitrate. It was found that certain brands of screwdrivers come in two different shades of amber color, the darker of which would support combustion.

It is advisable that samples of screwdrivers obtained on purchase orders be tested for combustion. Prevailing brands of screwdrivers in stock and in use should be sampled similarly.

Courtesy U.S. Navy Safety Review.

PUBLIC LAW 219 OFFICERS

(Revised Regulations concerning the Appointment of Licensed Officers of the United States Merchant Marine as Commissioned Officers in the U.S. Coast Guard)

THE FOLLOWING REGULATIONS published in the Federal Register of May 12, 1962 (27 FR 4554) are changes to 33 CFR 33.05. The purpose of this revision is to reflect the current operational requirements for the Coast Guard officer complement. The revisions are effective as of the date of publication in the Federal Register.

1. The title for Subpart 33.05 is amended to read "Appointments of Licensed Officers of the U.S. Merchant Marine as Commissioned Officers" as set forth above.

2. The regulations in Subpart 33.05, consisting of §§ 33.05-1 to 33.05-25, are revised in their entirety and read as follows:

- Sec.
33.05-1 Purpose.
33.05-3 General requirements.
33.05-6 Requirements for lieutenant, junior grade.
33.05-7 Requirements for lieutenant.
33.05-11 Application procedure.
33.05-13 Expenses.
33.05-15 Written examinations.
33.05-17 Interview.
33.05-19 Physical examinations.
33.05-21 Selections.
33.05-23 Appointments.
33.05-25 Precedence.

AUTHORITY: §§ 33.05-1 to 33.05-25 issued under secs. 92, 633, 63 Stat. 503, as amended, 545; 14 U.S.C. 92, 633; and Treasury Department Order 167-17 dated June 29, 1955 (20 F.R. 4976). Interpret or apply sec. 225, 63 Stat. 513, 14 U.S.C. 225; and Coast Guard General Order 4, dated February 11, 1956 (21 F.R. 995).

§ 33.05-1 Purpose.

(a) The regulations in this subpart govern the appointments of licensed officers of the U.S. merchant marine as commissioned officers in the U.S. Coast Guard.

§ 33.05-3 General requirements.

(a) Under this subpart, applicants must:

(1) Have served 4 or more years on board vessels of the United States in the capacity of licensed officers. Of this service, at least 3 years must have been served on board commercial merchant vessels of the United States.

(i) Sea service on board vessels of the Army Transportation Service, Military Sea Transportation Service, and Federal or State maritime academies, if such vessels, when underway, are manned by civilians, shall be considered as equivalent to service on board commercial merchant vessels. All other vessels of the U.S.



AERIAL VIEW of the Coast Guard Training Center at Yorktown, Va., which includes the Merchant Marine Safety Indoctrination School.

Army, Navy, Air Force, Coast Guard, Corps of Engineers, and Coast and Geodetic Survey are considered public vessels.

(ii) Service on board public vessels of the United States, if it meets the Coast Guard equivalency standards used to determine eligibility for a merchant marine license or a raise of grade, may be credited as specified under the requirements for each grade.

(2) Meet the specific requirements of the grade for which considered as prescribed in other sections in this subpart.

(3) Be male citizens of the United States. Citizens who have been naturalized less than 10 years may apply, but their appointments will depend upon determinations of eligibility to handle classified matter.

(b) The Commandant of the Coast Guard shall ascertain and be satisfied that applicants are of good moral character. No persons who have been convicted of a felony are eligible for appointment as commissioned officers.

§ 33.05-6 Requirements for lieutenant, junior grade.

(a) Age. Applicants must not reach their 32d birthday in the calendar

year in which application is accepted. No applicant who has reached his 32d birthday will be tendered a commission in this grade.

(b) License. Applicants must hold one of the following licenses: Second Mate (unlimited)—Oceans or Coastwise; First Class Pilot (unlimited)—Great Lakes, Western Rivers, or other inland waters; Second Assistant Engineer (5,000 or more horsepower); First Assistant Engineer (2,000 or more horsepower); or higher.

(c) Experience. Applicants must have served 4 or more years on board vessels of the United States in the capacity of licensed officers. Credit for up to 1 year may be given for service on board public vessels of the United States, in addition to service on such vessels considered as equivalent to commercial merchant vessels.

§ 33.05-7 Requirements for lieutenant.

(a) Age. Applicants must not reach their 38th birthday in the calendar year in which application is accepted. No applicant who has reached his 38th birthday will be tendered a commission in this grade.

(b) License. Applicants must hold one of the following licenses: Chief Mate (unlimited)—Oceans or Coast-

wise; Master and First Class Pilot (unlimited)—Great Lakes; First Assistant Engineer (5,000 or more horsepower); Chief Engineer (2,000 or more horsepower); or higher.

(c) *Experience.* (1) Applicants must have served 6 or more years on board vessels of the United States in the capacity of licensed officers, of which not less than 1 year must have been served as Chief Mate or First Assistant Engineer or higher. Credit for up to 2 years of the required 6 may be given for service on board public vessels of the United States, in addition to service on such vessels considered as equivalent to commercial merchant vessels.

(2) Applicants who hold a degree from an accredited college, or who are graduates of a Federal or State maritime academy, may substitute such degree, diploma, or certificate of completion for 1 year of the required 6. Experience ashore as assistant port captain, assistant port engineer, marine surveyor, or higher, or comparable position may be substituted equally for up to 2 years of the required 6.

(3) A combination of substitutions of educational credit and experience ashore cannot serve to reduce actual sea service below the 4 years required by law. Credit for service on board public vessels not considered equivalent to commercial merchant vessels cannot reduce the required sea service on board commercial merchant vessels below 3 years. Substitution cannot be made for the required 1 year of service as Chief Mate or First Assistant Engineer, or higher.

§ 33.05-11 Application procedure.

(a) Persons who consider themselves eligible under the regulations in this subpart and desire to apply for appointment as commissioned officers in the U.S. Coast Guard should request application forms from the Commandant, U.S. Coast Guard, Washington 25, D.C. Requests should be in letter form and should include the applicant's name, address, date of birth, and a complete resume of background and experience. Applicants who meet the basic requirements will be furnished a set of application forms, including a list of the established examination centers.

(b) Completed applications should be mailed to the Commandant, U.S. Coast Guard, Washington 25, D.C. Each applicant should state on the application form the desired place and dates for the examinations and interview. Examinations cannot be authorized within 30 days of the date of receipt of the completed application forms.

(c) Upon receipt of the completed application at Coast Guard Headquarters, a determination will be made as to whether the applicant is eligible to participate in the entrance examinations. Eligible applicants will be administered the required preliminary physical and written examinations and will be interviewed on any 3 successive week days, exclusive of holidays, at such examination centers as shall be designated by the Commandant. In each case, applicants will be advised by the Commandant of the specific time and place for the examinations and interview. Sufficient notice will be given to arrange personal affairs for the time required for the examinations and interview.

§ 33.05-13 Expenses.

(a) All expenses in connection with the application including appearance for the examinations and interview, must be borne by the applicant.

§ 33.05-15 Written examinations.

(a) All eligible applicants shall be administered the following examinations:

(1) English: Principles of grammar, composition, spelling, and punctuation. These shall be demonstrated by writing an essay of approximately 500 words on either a work of literature or a current event selected from a list of approximately 10 works of literature and 10 current events offered at the time of examination.

(2) Personality: Aptitude, emotional stability, and background characteristic tests as may be administered.

(b) Eligible applicants who are licensed deck officers shall be administered a written examination in each of the following additional subjects:

(1) Navigation: Use and care of navigational instruments; definitions of nautical astronomy; buoyage systems of the United States; piloting; principles of compass compensation; practical problems in determining latitude, longitude, azimuths, compass error, times of sunrise and sunset, and tides and currents.

(2) Seamanship: Types and characteristics of ships and boats; marlinespike seamanship; standing and running rigging; ground tackle; deck seamanship; signals; rules of the road; weather; ship handling; cargo handling and storage.

(3) Ship construction: Hull structure; fittings and equipment; stability; ship maintenance, preservation and repair; subdivision; damage control.

(4) Laws and regulations: Life-saving apparatus; safety equipment; safety and comfort of passengers and crews; annual and special inspec-

tions; notices to be posted; drills; procedures in disputes and casualties.

(c) Eligible applicants who are licensed engineer officers shall be administered a written examination in each of the following additional subjects:

(1) Fire prevention and safety: Principles of use, operation, and construction of masks, lamps, and fire equipment; methods of firefighting and fire prevention; required equipment for merchant vessels.

(2) Steam engines: Construction, operation, and maintenance of reciprocating and turbine engines and their auxiliaries.

(3) Boilers: Construction, operation, and maintenance of fire tube and water tube boilers and their auxiliaries.

(4) Diesel engines: Construction, operation, and maintenance of diesel engines and their auxiliaries.

(5) Refrigeration: Construction, operation, and maintenance of refrigerating units and equipment.

(6) Electricity: Construction, operation, and maintenance on direct current systems, alternating current systems, and electrical equipment; basic electrical formulas and problems.

(7) Laws and regulations: Drills; tests of pressure vessels and inspection procedures; penalties for violations of required engineering reports, tests, and inspections.

(8) Mathematics: Engineering principles; solution of formulas used in piping, boiler, and pressure vessel calculations; problems in mensuration.

§ 33.05-17 Interview.

(a) Eligible applicants shall be interviewed by a board of Coast Guard officers at the time of the written examination.

(b) The Board of Interview shall consist of a least three Coast Guard officers of the rank of lieutenant or above.

§ 33.05-19 Physical examinations.

(a) Eligible applicants shall be administered a preliminary physical examination at a public Health Service facility at the time of the written examination.

(b) Applicants who are recommended for appointment also shall be administered a preappointment physical examination within 30 days of actual acceptance of appointment.

(c) Applicants must meet the physical standards prescribed for original entry into the U.S. Coast Guard as prescribed in Subpart 33.10 of this part.

§ 33.05-21 Selections.

(a) Completed application files, including the results of the written examinations and the report of the Board of Interview, shall be evaluated by the Permanent Examining Board at Coast Guard Headquarters. The findings and recommendations of the Permanent Examining Board, when approved by the Commandant, shall be final.

(b) Applicants who are recommended for appointment will be so notified in writing. Each applicant will be requested to advise the Commandant as to the date and place where he desires to receive the pre-appointment physical examination

and to accept appointment.

(c) Applicants who are not recommended for appointment will be so notified in writing.

§ 33.05-23 Appointments.

(a) Appointments will be made by the President, by and with the advice and consent of the Senate, in the grades of lieutenant, junior grade, or lieutenant according to the qualifications and experience of the applicants. Such appointments shall be subject to a probationary period of 2 years; during this period commissions of those appointees whose services are unsatisfactory may be revoked. However, such officers shall be subject to the same rules of conduct and per-

formance of duty as are applicable to all other officers in the Coast Guard.

(b) Upon acceptance of the commission, appointees will be ordered immediately to active duty in the Coast Guard.

§ 33.05-25 Precedence.

(a) Officers appointed under this subpart shall take precedence in the grade in which appointed in accordance with the date of commission in such grade. Appointees whose dates of commission are the same shall take precedence with each other in the order recommended by the Permanent Examining Board as approved by the Commandant.

AMENDMENTS TO REGULATIONS

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

SUBCHAPTER C—UNINSPECTED VESSELS

[CGFR 62-10]

PART 24—GENERAL PROVISIONS

Subpart 24.10—Definition of Terms Used in This Subchapter

MEASURING LENGTH OF MOTORBOATS; INTERPRETATIVE RULING

Pursuant to the notice of proposed rule making published in the *FEDERAL REGISTER* on January 23, 1962 (27 F.R. 657-665), and the Merchant Marine Council Public Hearing Agenda, dated March 12, 1962 (CG-249), the Merchant Marine Council held a Public Hearing on March 12, 1962 for the purpose of receiving comments, views and data. The proposals considered were identified as Items I to IX, inclusive, and the first proposal in Item VIII was "measuring length of motorboats." This document is the third of a series covering the regulations and actions considered at this Public Hearing and annual session of the Merchant Marine Council.

The amendment to 46 CFR 24.10-17 in this document is intended to standardize the method of measurement of motorboats, without regard to decks, by stating the measurement will be a straight line measurement of the overall length from the foremost part of the vessel to the aftermost of the vessel, measured parallel to the centerline; however, bow sprits, bumpkins, rudders, outboard motor brackets, and similar fittings or attachments are not to be included in

such measurement. The proposed interpretive ruling regarding "measuring length of motorboats" in Item VIII is accepted as proposed in the Agenda. It was also described in the notice published in the *FEDERAL REGISTER* on January 23, 1962 (27 F.R. 664). In addition, the informal interpretations and sketches in the Coast Guard pamphlet "Recreational Boating Guide," CG-340, pages 6 and 7 are hereby superseded. In the next edition this information will be appropriately revised.

The initial problem intended to be resolved by the interpretive ruling in this document was to have uniformity in the manner for taking the measurements, and to have the same guidelines followed by all concerned. It should be noted that the Customs rules followed in admeasuring vessels to obtain gross tonnage are different, and must necessarily be based on "inside" dimensions because a basic problem in admeasurement is to obtain the "volume" inside capacity of the vessel. In view of the fact that many existing vessels may have been measured to different guidelines than that described in the interpretive ruling, it is not contemplated that a major program will be undertaken to remeasure all existing vessels. Therefore, unless an existing motorboat is altered or required to be remeasured by some other action, the present measurement described in official Federal or State document will be accepted as the length of the motorboat for determining required equipment, etc.

By virtue of the authority vested in me as Commandant, United States Coast Guard by Treasury Department Orders 120, dated July 31, 1950 (15 F.R. 6521), and 167-32, dated Sep-

tember 23, 1958 (23 F.R. 7605), to promulgate rules and regulations in accordance with the statutes cited with the rule below, the following amendment to § 24.10-17 is prescribed and shall become effective on and after the date of publication of this document in the *Federal Register*:

§ 24.10-17 Motorboat.

(a) This term means any vessel indicated in column 6 of Table 24.05-1 (a), 65 feet in length or less which is propelled by machinery (including steam). The length shall be measured from end to end over the deck excluding sheer. This term includes a boat temporarily or permanently equipped with a detachable motor and any such boat when so propelled is subject to the applicable provisions of the act of April 25, 1940, as amended (46 U.S.C. 526-526u), and the regulations promulgated thereunder. For the purpose of this subchapter, motorboats are included under the term "vessel" unless specifically noted otherwise. The various classes of motorboats are as follows:

Class A—Any motorboat less than 16 feet in length.

Class 1—Any motorboat 16 feet or over and less than 26 feet in length.

Class 2—Any motorboat 26 feet or over and less than 40 feet in length.

Class 3—Any motorboat 40 feet or over and not more than 65 feet in length.

(b) The expression "length shall be measured from end to end over the deck excluding sheer." It means a straight line measurement of the overall length from the foremost part of the vessel to the aftermost part of the vessel, measured parallel to the centerline. Bow sprits, bumpkins, rudders, outboard motor brackets, and similar fittings or attachments, are not to be included in the measure-

ment. Length shall be stated in feet and inches.

(R.S. 4405, as amended, 4462, as amended, sec. 17, 54 Stat. 166, as amended; 46 U.S.C. 375, 416, 526p)

Dated: April 24, 1962.

[SEAL] A. C. RICHMOND,
Admiral, U.S. Coast Guard,
Commandant.

[F.R. Doc. 62-4249; Filed, May 1, 1962;
8:50 a.m.]

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 May 17, 1962 (CGFR 62-15), and Federal Register dated May 25, 1962 (CGFR 62-16). Copies of these documents may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.]

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from 1 May to 31 May 1962, 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

Purex Corp., Ltd., P.O. Box 9686, Philadelphia 31, Pa.:

Certificate No. 451, dated 3 May 1962, PUREX SPECIAL ANTI-SLIP FLOOR WAX.

Certificate No. 452, dated 3 May 1962, PUREX BRYTENE NON-SCUFF POLYMER FLOOR POLISH.

Certificate No. 453, dated 3 May 1962, PUREX SPOTLIGHT SELF-POLISHING FLOOR WAX.

Nalco Chemical Co., 6216 West 66th Place, Chicago 38, Ill., Certificate No. 363, dated 16 May 1962, NALCO 155.

Dearborn Chemical Co., Merchandise Mart Plaza, Chicago 54, Ill., Certificate No. 467, dated 16 May 1962, DEARSOL 92.

RECERTIFIED

Chartres Co., Inc., 2121 Chartres St., New Orleans, La., Certificate No. 404, dated 16 May 1962, MIRA-KIL.

AFFIDAVITS

The following affidavits were accepted during the period from 15 April 1962 to 15 May 1962:

Milwaukee Valve Co., Inc., 2355-75

South Burrell St., Milwaukee 7, Wis., VALVES.

Colonial Plastic Manufacturing Co., 2685 East 97th St., Cleveland 4, Ohio, PIPE & TUBING (Nonferrous) VALVES, FITTINGS, FLANGES.

Drilling Equipment Manufacturing Co., 833-845 Southeast 29th St., P.O. Box 4728, Oklahoma City 9, Okla., VALVES.

Fawick Corp., Hydraulic-Electronic Div. 9919 Clinton Rd., Cleveland 11, Ohio, VALVES.

Dumont Aviation Associates, 1401 Freeman Ave., Long Beach 4, Calif., FITTINGS.

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 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 April 1962 to 15 May 1962 is as follows:

The Lunkenheimer Co., Cincinnati 14, Ohio, HEAT NOS. 656, 657, 658, 659 and 660.

TITLE 19—CUSTOMS DUTIES

Chapter 1—Bureau of Customs, Department of the Treasury

[T.D. 55628]

PART 2—MEASUREMENT OF VESSELS

Exemption of Spaces From Inclusion in Gross Tonnages; Special Exempted Water Ballast Spaces

Section 2.43 of the Customs regulations, among other things, specifies the conditions under which any space adapted only for the carriage of water ballast and certified not to be available for the carriage of cargo (other than ballast water for use for underwater drilling, mining, and related purposes, including production), stores, supplies, or fuel shall be deducted from the gross tonnage as measured to get gross registered tonnage. In order further to insure that any such space will be allowed for exemption only when it is adapted and available for the declared purpose and to provide for review and approval by the Commissioner of Customs in any case in which the space claimed for exemption exceeds 30 percent of the gross tonnage, § 2.43(g) of the Customs regulations is amended by adding the following new subparagraph at the end thereof:

(3) No space will be deemed to be adapted only for water ballast unless the Bureau is satisfied that the primary purpose of the space is to afford a means of maintaining stability, trim, immersion, seakeeping¹ capabilities, or strength conditions under varying conditions and requirements of the vessel's operation and that the space claimed for exemption is necessary to and available at all times for any one of these purposes. An application for exemption of water-ballast spaces in excess of 30 percent of the vessel's gross tonnage, calculated without any allowance for water ballast, shall be submitted for approval to the Commissioner of Customs, accompanied by a statement in writing from the vessel owner or his representative as to the circumstances of use or construction of the vessel which make such an allowance necessary and proper and verifying that the conditions specified in this paragraph have been and are met. Any change in the facts on the basis of which a water-ballast exemption is granted under this section shall be promptly reported to the collector of customs for his determination as to whether there has been a change in the use of spaces requiring an adjustment of tonnage under § 2.64.

A new footnote is appended to § 2.43(g) to read as follows:

¹ The term "seakeeping" as used in this paragraph is defined as the ability of a vessel to maintain good behavior at its designed speed or at a speed as close as possible to its designed speed under all conditions of sea and weather which the vessel may encounter in its designated service.

(R.S. 161, secs. 2, 3, 23 Stat. 118, as amended, 119, as amended, R.S. 4153, as amended, sec. 4, 28 Stat. 743, as amended; 5 U.S.C. 22, 46 U.S.C. 2, 3, 77, 79)

Notice of the proposed issuance of the foregoing amendment was published in the FEDERAL REGISTER on February 2, 1962 (27 F.R. 984). Careful consideration was accorded to all data, views, and arguments received pertaining to the proposed amendment. As a result thereof certain changes have been incorporated in this final draft. This amendment shall be effective 30 days after the date of its publication in the FEDERAL REGISTER. It shall not be retroactive in effect.

[SEAL] PHILIP NICHOLS, JR.,
Commissioner of Customs.

Approved: May 23, 1962.

JAMES A. REED,
Assistant Secretary of the
Treasury.

[F.R. Doc. 62-5281; Filed, May 29, 1962;
8:49 a.m.]

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). F.R. 9-30-61.
123	Rules and Regulations for Tank Vessels (1-2-62). F.R. 5-2-62.
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, 4-4-62.
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 (9-1-61).
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, 2-9-62, 2-17-62, 3-15-62, 4-17-62, 4-25-62, 5-17-62, 5-25-62.
191	Rules and Regulations for Licensing and Certifying 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, 5-2-62.
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 (1-2-62). F.R. 5-2-62.
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, 5-2-62.
259	Electrical Engineering Regulations (12-1-60). F.R. 9-30-61, 9-23-61, 5-2-62.
266	Rules and Regulations for Bulk Grain Cargoes (5-1-62).
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, 5-2-62.
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. 10-25-60, 11-3-61, 4-10-62.
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 MAY 1962

The following have been modified by Federal Registers:

CG-123, CG-200, CG-256, CG-257, CG-259, and CG-269, Federal Register, May 2, 1962.
CG-190, Federal Registers, May 17 and May 25, 1962.

