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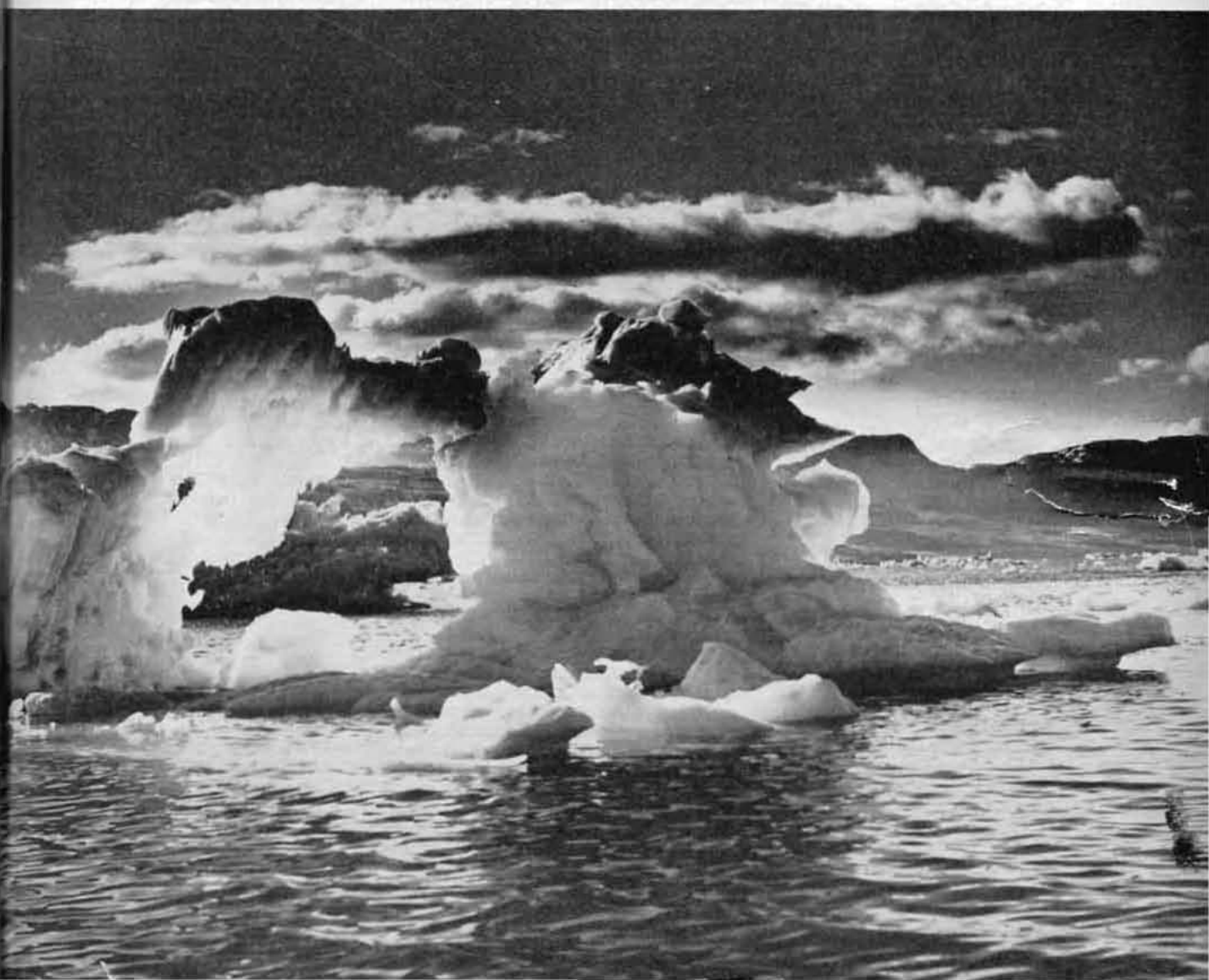


Proceedings of the

MERCHANT MARINE COUNCIL

Published monthly at Coast Guard Headquarters, under the auspices of the Merchant Marine Council, in the interest of safety at sea.

CONTENTS

The Cover: The Last of an Iceberg. With the end of hostilities the resumption of Ice Patrol will be a Coast Guard duty.

COUNCIL ACTIVITIES

THE authority of the Commandant of the Coast Guard to waive compliance with navigation laws, where such waiver is necessary in the war effort, stems from a grant of power by Congress which is presently limited to the period which expires on December 31, 1945. Unless this period is extended, the Coast Guard will have no authority after its expiration to waive strict compliance with existing law. Regulations established by the Coast Guard can be modified if requisite but no such authority extends to the statutes.

It is obvious that within the time available many vessels cannot physically be brought into full compliance with law. The problem of returning personnel on cargo vessels will become insurmountable if such vessels are either obliged to comply with passenger ship requirements or are limited to the carriage of 12 persons outside of the crew. Because of the seriousness of this situation the Coast Guard held public hearings on October 4 in New York City and in San Francisco which all interested organizations were invited to attend. The situation was outlined at these hearings for the purpose of setting forth the difficulty and in the hope that action might be initiated to cope with the problem.

On October 18 the Council appeared before the American Merchant Marine Conference in New York with a program intended to inform the maritime industry of the possible improvements in safety and in accuracy of navigation which might be expected to flow from the commercial use of certain wartime developments. Chief among these were radar, loran, and long range direction finders. A short movie showing the navigation of a vessel into New York Harbor by radar was exhibited. At the conclusion of the meeting specifications of recommended radar equipment were distributed and those interested were advised that a further discussion of the subject would be held at Coast Guard Headquarters on October 29 and 30. There is no thought at this time of making any such equipment mandatory on board vessels as it is felt that such a step should await a further development and commercial production of the necessary equipment.

At the request of the Western Rivers Panel the prohibition of unauthorized persons from being in the pilot houses on river vessels, previously applying only to passenger vessels, was extended to apply to other river craft.

As the result of considerable study by the Merchant Marine Technical, Research and Development, Naval Engineering, and Merchant Marine Inspection Divisions, regulations covering the installation of gasoline motors in motorboats and motor vessels over 15 gross tons carrying passengers for hire were adopted. These regulations prescribe the conditions which must be met before a certificate of inspection will be issued and appear in the Appendix of this issue of the *Proceedings*.

On October 23, 1945, there was published in the Federal Register amendments to the Great Lakes; Lakes, Bays and Sounds; Rivers; and Motorboat Regulations providing that passenger barges in tow of motorboats and

motor vessels shall carry the same number of life preservers and fire extinguishers as are required for passenger vessels of the same lengths.

A Navigation and Vessel Inspection Circular declaring that 7 ounces each of the emergency provisions required to be carried during the war in the lifeboats and life rafts of ocean and coastwise vessels shall be considered as being equivalent to the 2 pounds of hard bread required by the peacetime regulations was issued. These instructions will make it unnecessary to replace the type C biscuits, pemmican, chocolate tablets, and milk tablets now carried in the lifeboats of ocean and coastwise vessels.

Discussion on Merchant Ship Radar

A general conference on the question of radar for merchant vessels was held at Coast Guard Headquarters on October 29, 1945. A large group of representatives of Army, Navy, Coast Guard, other Government agencies, commercial ship operators and electronic manufacturers was present. Commodore E. M. Webster opened the conference with a general discussion of radar, explaining that the conference was held solely on a voluntary basis and that any agreement reached at the conference would not be binding in any way. He further explained that the Coast Guard was primarily interested in assisting commercial operators to obtain information and to crystallize the question as to what a commercial radar should be in order that both manufacturers and ship operators might proceed with the program.

A set of minimum specification briefs was presented as a basis for opening the discussion. In general all parties agreed with the specifications with a few specific exceptions. The tendency was to lower the requirements of a class A radar and to increase the requirements of a class B. Most parties believed that the specifications for a class C, particularly as regard to range requirements, were too high and there was a general feeling that specifications for a class D, to be used on yachts and fishing vessels, should be prepared. Manufacturers challenged the requirement for a 50-mile maximum range sweep recommending that it be lowered to 30 on the grounds that there were manufacturing difficulties in obtaining both a 2-mile and a 50-mile sweep. A large group favored the suggestion that the range scales be adjustable so that at the time of installation they might be set to the tastes of the navigator and to match as closely as possible the charts, scales, and conditions prevalent in the area where the ship will operate.

It was unanimously agreed that a target alarm would be more hazardous than useful. There was considerable discussion as to specifying methods used to accomplish desired features. The general feeling seemed to be that a standard target should be evolved with a definite set of test requirements specified, leaving the way that the requirements are met to the individual manufacturer. This is desirable but at the present stage of the art such a method is not reliable. It is, however, definitely known that if a specific set of building blocks is used and interconnected by standard means, then a reliable radar will result. There is no doubt but that at some future date test requirements on a standard target rather than specific method requirements will be accepted.

Manufacturers were particularly free in giving technical information as were ship operators in stating their requirements. In some cases actual cost estimates and estimated times of delivery were given. It is believed that the conference was a complete success and that all attending representatives derived considerable benefit from the discussions.

The specification briefs as submitted at New York are given below. These are being rewritten in the light of the discussion and the suggestions made. New briefs, together with a summary of the conference, will be issued to those interested, in the near future.

DESIGNATION

Class A—Surface Search and Navigating Radar.

GENERAL DESCRIPTION

This is to be a 3-cm. surface search radar primarily designed for ocean-going vessels to provide early warning of approaching vessels and navigational dangers in the open sea as well as high resolution for navigation in restricted waters.

OPERATIONAL REQUIREMENTS

Designed for operation by bridge personnel with little or no technical training. The equipment is to take power from a source of 115-volt, 60 c. p. s., single phase, with a regulation of ± 10 volts and ± 2 c. p. s.

PERFORMANCE

Range:
Maximum, 50 miles.
Minimum, 100 yards.
Resolution:
Range, 100 yards.
Bearing, 3°.

INDICATION AND DATA OUTPUT

Range—at least 7" PPI scope. Range scales 2–10–50 miles; variable range marker with range of 500 yards to 10 miles and accuracy of 2% or ± 50 yards whichever is greater.

Bearing—True bearing display; bearing cursor and variable asimuth illumination; ships head indicator. Bearing accuracy to be $\pm 1°$.

Alarm—Flashing light target alarm.

ANTENNA

Reflector—Truncated parabola.
Feed—Wave guide.
Beam width:
Horizontal 2° maximum.
Vertical 15° minimum.
Mounting—Navy standard flange; 360° clearance to horizon.
Polarization—Horizontal.
Scan—Continuous, 360° in azimuth, speed of rotation 6 to 15 r. p. m., push-button control on main on-off switch.
Side lobes—25 db. down.
Elevation—0°.

TRANSMITTER

Frequency—9,320 to 9,430 recommended.
R. F. source—Magnetron.
Modulator—Hydrogen thyratron or equivalent.
Main transmission line—Wave guide.
Peak power—15-kw. minimum.
Pulse repetition rate—800 to 1,500 c. p. s.
Pulse lengths (microseconds)—0.25 to 0.5.
Trigger—Positive 10 to 50 volts.

RECEIVER

Intermediate frequency—30 mc. requested.
R. F. band pass—Optimum for pulse length chosen.
Video output—positive 2.5 volts and optimum band width.
Noise, db. above kt $\triangle$ f—15.
Features—AFC, FTC, and STC.

OPERATOR CONTROLS

1. On-off pushbutton control (all power).
2. Bearing cursor knob.
3. Range marker knob.
4. Continuous gain control.
5. Limited intensity control; intensity to be absolutely independent of focus.
6. Range selector.
7. STC and FTC selector switch for varying degrees of either or both.
8. Azimuth scale light control.

CONSTRUCTION FEATURES

Replaceable units with chassis type assembly.
Fuse alarms.
Shock and vibration mounting of all electronic assemblies.
Transmitter to be separate assembly to facilitate flexibility of installation.
Weather proof.

SPECIAL PROVISION FOR FUTURE MODIFICATION

Sufficient space is to be allowed in the modulator unit to permit modification for shifting to a 2 miscrosecond pulse to provide a signal for future use with navigational beacon. Likewise sufficient space is to be provided in the oscillator unit to permit the installation of a separate tunable oscillator for shifting frequency to receive such beacon signals. The operation of this radar must not cause interference with other aids to navigation.

REMARKS

Standard Navy flange for antenna mounting, standard trigger output and standard video output are specified to facilitate ease of conversion for military use. For the same reason, 30-mc. intermediate frequency is requested. This should not work as a hardship on any manufacturer.

DESIGNATION

Class B—Surface Search and Navigation Radar.

GENERAL DESCRIPTION

This is to be a 3- or 10-cm, surface search radar primarily designed for oceangoing vessels to provide early warning of approaching vessels and navigational dangers in the open sea as well as fair resolution for navigation in restricted waters.

OPERATIONAL REQUIREMENTS

Designed for operation by bridge personnel with little or no technical training but with some training in scope interpretation. The equipment is to take power from a source of 11 volts, 60 c. p. s., single phase, with a regulation of ± 10 volts and ± 2 c. p. s.

PERFORMANCE

Range:
Maximum—50 miles.
Minimum—400 yards.
Resolution:
Range—200 yards.
Bearing—6°.

INDICATION AND DATA OUTPUT

Range—at least 7" PPI scope. Range scales 5–25–50 miles with 1–5–10 mile markers; accuracy of 2% or ±100 yards whichever is greater.

Bearing—True or relative bearings on azimuth scale. Bearing accuracy ±2°.

Alarm—Flashing light target alarm.

ANTENNA

Reflector—Truncated parabola.

Feed—Wave guide or coaxial line.

Beam width:

Horizontal 4° maximum.

Vertical 15° minimum.

Mounting—Navy standard flange; 360° clearance to horizon.

Polarization—Horizontal.

Scan—Continuous, 360° in azimuth, speed of rotation 6 to 15 r. p. m.; push-button control on main on-off switch.

Side lobes—20 db. down.

Elevation—0°.

TRANSMITTER

Frequency—Recommended 2,900 to 3,246 mcs. or 9,320 to 9,600 mcs.

R. F. source—Magnetron.

Modulator—Hydrogen thyratron or equivalent.

Main transmission line—Wave guide or coaxial.

Peak power—15-kw. minimum.

Pulse repetition rate—800 to 1,500 c. p. s.

Pulse Length—1 microsecond maximum.

Trigger—Positive 10 to 50 volts.

RECEIVER

Intermediate frequency—30-mc. requested.

Band pass—Optimum for pulse length chosen.

Video output—positive 2.5 volts and optimum band width.

Noise, db. above kt△f—15.

Features—AFC required; STC and FTC optional.

OPERATOR CONTROLS

1. On-off pushbutton control (all power).
2. Continuous gain control.
3. Limited intensity control, intensity to be independent of focus.
4. Range selector.

CONSTRUCTION FEATURES

Replaceable units with chassis type assembly.

Fuse alarms.

Shock and vibration mounting of all electronic assemblies.

Weather proof.

SPECIAL PROVISION FOR FUTURE MODIFICATION

a. Required.—Sufficient space is to be provided in the oscillator unit to permit modification for shifting frequency to receive microwave beacon signals. The operation of this radar must not cause interference with other aids to navigation.

b. Optional (for use when radar operates on 9,320 to 9,430 mcs. only).—Sufficient space is to be allowed in the modulator unit to permit modification for shifting to a 2-microsecond pulse to provide a signal for future use with navigational beacon. Likewise sufficient space is to be provided in the oscillator unit to permit the installation of a separate tunable oscillator for shifting frequency to receive such beacon signals. The operation of this radar must not cause interference with other aids to navigation. If this feature is provided, (*a*) above not required.

REMARKS

Standard Navy flange for antenna mounting, standard trigger output and standard video output are specified to facilitate ease of conversion for military use. For the same reason, 30 mc. intermediate frequency is requested. This should not work as a hardship on any manufacturer.

DESIGNATION

Class C—Anticollision radar.

GENERAL DESCRIPTION

This is to be a surface search radar primarily designed as an anticollision device.

OPERATIONAL REQUIREMENTS

Designed for operation by pilot house personnel with little or no technical training but with specialized operational training in the interpretation of equipment data.

PERFORMANCE

Range:

Maximum—Equipment must be capable of absolute indication of the presence of a C2 type cargo vessel or equivalent at a distance of 10 miles.

Minimum—500 yards.

Accuracy—±5% or ±500 yards whichever is greater.

Bearing—Equipment must be capable of giving a bearing accuracy of ±5° using as a target a C2 type of cargo vessel or equivalent at a distance of 10 miles.

INDICATION AND DATA OUTPUT

Range—"A" scope or equivalent.

Bearing—Mechanical dial or equivalent.

ANTENNA

The antenna must provide for continuous and complete search of the horizon through 360°. A motor driven train is to be provided with arrangements for shifting to manual train for bearing determination. Maximum speed of rotation 5 r. p. m. Should a PPI scope be used, the provision for hand train may be eliminated and the speed of rotation may be increased to 15 r. p. m. The beam width in the vertical must be at least 20°.

TRANSMITTER

Frequency—Any channel authorized by FCC for use of commercial radar. If operated within the frequency range of radar beacon stations, the pulse length must be such that it will not continuously trigger such stations. The operation of this radar must not cause interference with other aids to navigation.

REMARKS

This brief is intended to cover the minimum requirements of all types of seagoing anticollision devices, exclusive of class A and B radar, operating on the principle of pulsed electromagnetic waves using directional antennas.

Necessity for Fire and Boat Drills on Coastwise and Inland Vessels

THE rules and regulations for vessel inspection require that fire and boat drills be held weekly on all passenger vessels, on all self-propelled tank vessels, and on all other vessels of over 500 gross tons. The records show that this regulation is complied with quite consistently on ocean-going vessels, although even here there is considerable room for improvement. However, there is a very strong tendency on the part of vessels navigating coastwise and inland waters to neglect this rule, possibly with the idea that as the vessels concerned are close to shore it would be comparatively easy to abandon the ship without any great difficulty in the case of necessity.

This impression is very far from the truth. It is too late to teach effective fire fighting to a crew after the fire breaks out and it is generally much too late to teach correct abandon ship practices after an emergency arises. There is very little, if any, difference in degree of difficulty in extinguishing a ship fire whether the vessel is 1 mile from land or a thousand. It is true that in some instances fireboats are available to aid in extinguishing the blaze, but, on the other hand, a vessel may be in the middle of one of the Great Lakes or in a lonely stretch of one of the rivers where no outside aid whatsoever is available. Under these circumstances skill in fighting the fire and, if necessary, in abandoning ship is just as necessary as it would be in the middle of the Atlantic Ocean.

These remarks are emphasized by two recent casualties with which the Coast Guard had to deal. The first was described in detail in the April 1944 number of the Proceedings of the Merchant Marine Council. In this case a small tanker was rammed and one tank set on fire. The starboard lifeboat and life raft were consumed in the blaze and without hesitating an instant the master and the crew attempted to abandon the vessel. Just prior to the collision, the helm had been put hard right in an endeavor to avoid the other ship and with the rudder in this position and the engines proceeding full speed ahead the remaining lifeboat, which was located on the port side of the after house, was launched. By some miracle it was not swamped or smashed when it hit the water but was successfully cast off with all but five of the crew on board. Of these five, one man had jumped overboard in his panic and was drowned and the other four upon finding themselves marooned on the ship calmed down and attempted to fight the fire. Their efforts were unsuccessful but they remained on the vessel in comparative safety for a considerable length of time and were finally taken off by a Coast Guard boat. The fire was extinguished shortly thereafter by a Navy fireboat. The vessel concerned was a coastwise tanker and the incident described occurred in one of the large bays on the Atlantic Coast.

Upon investigation it was found that fire drills had not been held as required by the regulations and, as a consequence, when the emergency arose nobody on board was familiar with his first duty which should have been to trip the CO2 lever in order to discharge the smothering gas into the burning and adjacent tanks and the second duty which was to get the fire hoses into commission. All anyone could think about was to get away from the ship. Assuming the latter to be necessary, the crew attempted to launch a lifeboat located on the port side of the vessel when the ship was traveling full speed and under the influence of a right rudder. Under these circumstances it is, as stated above, a miracle that the boat was not smashed in the act. If these men had had a thorough training in fire drills it is probable that they could have extinguished the fire themselves without calling for help from anyone. Also if they had been well trained under oars and in handling small boats and it became necessary to abandon they would have put the helm amidship and slowed or stopped the vessel so that an orderly abandonment could have been carried out.

The second case represents an almost equally futile tragi-comedy and an even greater neglect in the matter of fire drills. The vessel in question was loaded with benzol and had returned to port on a freezing winter night because of heavy weather. About midnight the weather moderated and the voyage was resumed. The ship was just getting under way when there was a dull thud and simultaneously fire was seen on deck and on the water in way of the after starboard tanks, indicating that one of those tanks was ruptured. A subsequent investigation did not disclose the cause of the explosion. As the anchor had just been secured an attempt was made to re-anchor the vessel. During the short time since getting under way the hawse pipes had frozen over and it was impossible to drop the anchors. The engines were being maneuvered under various signals, the final bell being a full speed astern signal.

On this vessel, as well as on the former one, no effort was made to fight the fire. Steam was not turned into the cargo tanks nor were the fire hoses used. No formal orders were given to abandon ship. However, as soon as it was seen to be impossible to drop the anchors, the men on deck launched the port life raft and a donut raft. Two of the ship's officers leaped overboard and swam to the life raft. About this time the burning oil from No. 8 tank, influenced by the astern motion of the ship, had drifted forward and surrounded the bow of the vessel. The blazing oil in the water heated the forward tanks so that they exploded also. After this, various members of the crew jumped overboard. At this time the master and several crew members were still on board and were attempting to launch the port lifeboat. No one had a jackknife or any other means of cutting the lashings which held the canvas cover of the boat. Finally the boat was launched with the cover in place. The master and four others jumped on board the canvas cover of the boat and all of these except one man were washed overboard.

In all this confusion it apparently occurred to no one to stop the engines or to notify the chief engineer who was handling the engines that the ship was being abandoned. He finally came up on deck and saw that he and the 1st assistant engineer were the only persons left on board and also that the blazing vessel was backing straight for an ammunition loading pier. At about this time a Navy tug rammed the stern of the vessel, sheered it away from the dock and then returned and picked off the two engineers. Out of the 16 men on board this vessel 10 were drowned.

None of these men received fatal or even serious injuries from the fire. They were all of them either drowned or frozen to death and it is a sad commentary on the state of affairs aboard this vessel to realize that a moderate amount of skill in handling the lifesaving equipment would probably have saved every man on board.

As stated previously no organized effort was made to fight the fire. After the abortive attempt to reanchor the vessel, the men on deck apparently oblivious of the engineers below and the fact that the vessel was going astern and aiming toward a dock crammed with high explosives, launched a lifeboat and a life raft in such a manner that they were practically useless from a lifesaving standpoint. As a probable explanation of this fiasco it was found that no fire drills had been held on this vessel for over 3 months instead of the once a week required by the rules and regulations.

A fire on shipboard is a terrifying experience whether the vessel is an oil tanker or a dry cargo vessel and unless officers and men have been trained in the proper procedure to the extent that they react in the correct way, automatically, a panic as in these two cases is quite likely to occur. The officers as well as the men need instruction and practice in all lifesaving procedures and they should, by virtue of their position, act as leaders and set an example for the crew in diligent and enthusiastic participation in these exercises.

Fire drills should be held at least weekly on all inspected vessels and they should be made as realistic as possible. The old-fashioned fire drill where an announcement was made that the drill would be held at one bell in the afternoon and the boatswain and his gang went around ahead of time laying out the hoses is practically useless. About all this type of exercise teaches is where each man's station is.

The fire drill should be held unexpectedly and instead of leading each fire hose out and turning the water on for a few minutes and then securing, a specific location for the fire should be specified as, for instance, the after quarters, No. 1 hold or the galley. The exercise should consist of bringing as many streams as possible to bear in this location. The men should be instructed in the use of the fire extinguishing systems (CO_2, foam, etc.).

On large vessels, a special firefighting detachment under the boatswain or one of the ship's officers should be organized. This group should be equipped with axes, special fog spray nozzles, fire extinguishers, oxygen-breathing apparatus and any other special fire-fighting equipment on board. This group should take the lead in fighting the fire. Fire drills should be held occasionally at night as well as in the daytime, particularly after the crew becomes adept.

Boat drills should be held by lowering the boats into the water and exercising the crews under oars. The occasional fatalities which occurred during the war when boat crews actuated the releasing gear prematurely, let go of boat falls on the run and did other dangerous things demonstrate that a great improvement is possible and necessary in the ability of many seamen to handle lifeboats. Complaints have justly been made that inspectors will show up to conduct a boat drill to find most of the officers and crew absent. Remember you can not learn to fight a fire or handle a boat while ashore. If the foregoing program seems too stiff to you, you should remember that when you shirk fire and boat drills you are endangering your own life and those of your shipmates just as surely as if you paid no attention to traffic lights on a busy city street.

Undesirable Lubricating System Features

Many vessels now plying the seas have lubricating systems containing features which experience shows are unsatisfactory. This was found true in a recent casualty where certain of these features caused failure of the lubricating system and considerable damage to a Kingsbury-type thrust bearing. In this particular case, the thrust was lubricated through a ½-inch oil line from a gravity tank. This oil line was fitted immediately above the bearing with a sight glass, which was installed horizontally and in such manner that when the oil flow was interrupted, sufficient oil remained within the glass to cover the entrance spigot of the sight glass. This system was such that lubricating oil was dropped onto the thrust collar which was fitted with an oil distributor and was then carried by the thrust collar and the oil distributor to the shoes, falling into the base of the thrust and then returning to the main sump tank through a return line connected at the bottom of the thrust. Prior to the installation of this system, the thrust bearing had been lubricated by a self-contained system in which the oil was maintained at a sufficient level in the thrust so that the thrust collar was immersed in the oil and, as it revolved, carried over sufficient oil for lubrication. The excess heat developed was removed by means of a cooling coil served by salt water which was immersed in the oil in the base of the thrust. This system had been removed because serious trouble had developed from electrolysis in the cooling coil.

In this particular casualty it was found, upon investigation, that the engineering personnel had been lax in not testing the thrust bearings by hand at the time of taking over the watch, and that the oiler, who admitted that he did not understand the functioning of the sight glass, had incorrectly assumed that the maintenance of oil level in the glass indicated that the oil system was functioning.

Following the casualty, it was found that the sight glass was stopped up. Due to the installation of this glass in a horizontal position, it was extremely difficult for any observer to ascertain whether oil was passing through the glass since the oil level covered the spigot by which the oil entered the sight chamber, and the detection of any flow depended upon the observance of turbulence or air bubbles in the oil. It was also found that the thrust bearing thermometer well was located in the oil reservoir of the thrust bearing, but at a point so high it was not in direct contact with the oil in normal operation and, therefore, its indication of the thrust temperature involved considerable time lag and was probably inaccurate. The examination further revealed that the oil drain line from the thrust to the main sump was connected at a point so low in the oil reservoir that when the oil was at the level of the connection, the thrust collar was insufficiently immersed in the lubricant.

As a result of this casualty, engineering officers are warned of the need for thoroughly instructing their personnel in the operation and care of lubricating systems. Thrust bearing lubricating systems should be examined to see that they do not contain any of the following undesirable installation features. There should be no valve between the source of oil supply and the thrust bearing which can be closed oil-tight. The oil line installation should have no orifice in it less than one-fourth inch in diameter. A sight glass should be properly installed with such provision for lighting that the personnel on watch can easily determine whether or not oil is flowing through the sight glass. In thrusts fitted with the particular type of lubricating system under discussion, care should be taken that the following features are incorporated therein. The provision for draining oil should be so arranged that if the oil supply to the thrust is interrupted or stopped, the oil drainage will cease

Marine Inspector checking propeller shaft liner.

when the oil level is such that a sufficient part of the collars will still be immersed in oil for the purpose of lubricating the shaft. The vent pipe in the thrust should be fitted with a gooseneck and proper wire screen so that there will be no possibility of any foreign matter being introduced into the thrust. And finally, the thermometer well should be so installed that it is immersed in the oil at all working levels.

By having the lubricating system to thrust bearings correctly installed, the possibility of burned-out bearings will be considerably reduced.

The Dangers of Ill-Conceived Repairs to Pressure Parts

Recently there came to the attention of the Coast Guard a casualty wherein one man lost his life and three men were badly burned due to a particularly poorly conceived repair made on the bottom blow valve of a boiler.

The blow valve in question was made of cast iron and the neck contained ample material for strength in accordance with the rules obtaining at the time it was made. The valve was rather peculiarly constructed in that the pressure of the boiler was on top of the disc and in order to open the valve the stem was screwed in.

Sometime in the past the seat had become corroded to a considerable extent and some person, not now identifiable, decided to insert a brass sleeve in the valve and form the seat on the inner edge of this sleeve. This was done by means of counterboring the whole valve and inserting a heavy sleeve which was pinned in place with a ¾-inch threaded brass stud. The seat of the valve was now on the sleeve instead of the flange. (See illustration.)

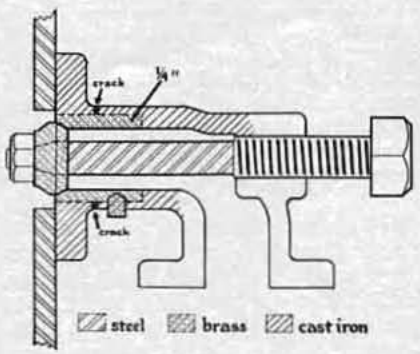
What apparently was not taken into account by the person making the repair was the fact that by counterboring the throat of the valve, the thickness and consequently the strength of the throat was reduced to below the required thickness at all points and in one spot was further weakened by the ¾-inch stud used to pin the sleeve in place.

In spite of the amateurish nature of the repair made on the valve no accident happened for a considerable period, long enough in fact for all record of the insertion of the bronze sleeve to be lost.

One morning, however, while getting the ship under way the frail neck of cast iron, which was all that held the valve together, cracked all the way around. The brass sleeve was instantly forced out of the base of the valve releasing the contents of the boiler into the fireroom. The two firemen on watch managed to escape as they left by separate routes, thus not hindering one another. The coalpasser, however, miscalculated and tried to leave the fireroom through the thickest part of the discharging steam and water. He was forced back and left the fireroom by another exit, in the meantime receiving fatal injuries. The engineer on watch received minor burns while attempting to secure the plant.

This accident illustrates the dangers of attempting to overhaul valves or any other pressure containing part of any steam plant without first ascertaining whether the proposed repair will weaken the part. In the case in question the person overhauling the valve evidently thought that by putting a heavy bronze sleeve in the old cast iron valve he was improving matters. If he had taken the trouble to look at the blue print of the valve, then draw in the proposed repair he would have seen instantly that the repair was not feasible.

In another instance of an attempted repair of a bronze globe valve with an integral seat the engineer on a merchant vessel was reseating the valve in a lathe. During the course of the operation he actually cut through the side wall of the valve. This, of course, ruined the valve. Luckily, this incident took place while the valve was under repair in the lathe. It needs little imagination to visualize what would have happened if the reseating operation had not gone entirely through the valve but had weakened it to the extent that when steam was turned on the valve burst.



These two incidents point out the necessity for all engineers and other personnel on vessels responsible for the maintenance of equipment, such as valves and fittings, to make absolutely sure that repair operations which they propose to perform will not leave the valve in a worse and more dangerous condition than when they started.

Remote Control for Aids to Navigation

AS a wartime measure, it was found necessary to extinguish certain lighted aids to navigation except when absolutely necessary for friendly use, to prevent their being helpful to possible enemy craft. In the case of unattended aids, such as buoys, this involved a considerable effort and consumed time, so long as each buoy had to be attended to manually and individually. The solution was finally reached by devising a method in which the operation of the light, whether gas or electric, was controlled from shore by radio.

This system is now being extended to the control of foghorns, electric bell-strikers and other features of unattended aids, so that they operate only when necessary. Lights can be extinguished in daytime and controllable fog signals need only sound in thick weather. The advantages to be gained are economy in men and in power and the reduction in some measure of the annoyance of continuous sound signals to residents in the vicinity.

The system consists of a control station transmitting ultra high-frequency signals, and special receivers on buoys and other aids. The radio waves emanating from the control station transmitting antenna travel cut to the aid, where the receiving equipment converts the signal to direct current pulses which open or close electric relays or gas valves, to extinguish or relight lanterns, or control the other types of aids.

The Research and Development Division is actively working on a project to carry this remote radio control even further and through it to operate aids which otherwise would be manned, such as lightships on which the expense of the crew is an item of some magnitude.

Merchant Marine Personnel

THE shipping commissioner in New York reports that, because of the sudden influx of applicants for original seamen's papers since VJ-day, it has been necessary to establish a so-called priority system to insure the adequate manning of merchant vessels. A policy has been adopted whereby priorities are granted to applicants presenting immediate commitments of employment, letters from steamship companies, the WSA, and the various seamen's unions certifying that the applicant in question is needed immediately for employment. Honorably discharged servicemen are granted equivalent priority. Coast Guard Headquarters concurs in this policy.

Coast Guard Merchant Marine Hearing Units and Details investigated a total of 4,623 cases during the month of August 1945. From this number hearings resulted involving 142 officers and 928 unlicensed men. In the case of officers, 2 licenses were ordered revoked, 45 were suspended, 74 were suspended on probation, 33 were voluntarily surrendered, 3 hearings were closed with admonitions, and 14 cases were dismissed. Of the unlicensed personnel, 47 certificates were revoked, 373 were suspended, 465 were suspended on probation, 383 were voluntarily suspended, 13 hearings closed with admonitions and 61 cases were dismissed after hearing.

The new and the old: a helicopter flying over Boston Light—the oldest lighthouse in the United States.

APPENDIX

Amendments To Regulations

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter I—Coast Guard, Department of the Navy

PART 6—REGULATIONS FOR SECURITY OF PORTS AND THE CONTROL OF VESSELS IN THE NAVIGABLE WATERS OF THE UNITED STATES

INLAND WATERWAY FROM CAPE COD BAY TO BUZZARDS BAY, MASS., CAPE COD CANAL; PILOT REQUIREMENTS

Pursuant to the authority contained in section 1, Title II, of the Espionage Act, approved June 15, 1917, 40 Stat. 220, as amended by the Act of November 15, 1941, 55 Stat. 763 (50 U. S. C. 191, 191a) and by virtue of Proclamation 2412 dated June 27, 1940 (3 CFR Cum. Supp.) and Executive Order 8929, dated November 1, 1941 (3 CFR Cum. Supp.), the regulations relating to the control of vessels in the navigable waters of the United States, are amended as follows, effective upon publication in the FEDERAL REGISTER:

Section 6.1–23 *Inland Waterway from Cape Cod Bay to Buzzards Bay, Massachusetts, Cape Cod Canal; Pilot Requirements* (formerly § 7.21, 7 F. R. 4547), is hereby rescinded (10 F. R. 12560, 5 October 1945).

TITLE 46—SHIPPING

Chapter I—Coast Guard: Inspection and Navigation

AMENDMENTS TO REGULATIONS

Subchapter C—Motorboats, and Certain Vessels Propelled by Machinery Other Than by Steam More Than 65 Feet in Length

PART 24—GENERAL PROVISIONS

Part 24 is amended by adding a new § 24.2a to follow § 24.2 reading as follows:

§ 24.2a *Application of regulations relating to life preservers and fire extinguishers to barges carrying passengers towed by motorboats or motor*