

PROCEEDINGS OF THE MERCHANT MARINE COUNCIL

UNITED STATES COAST GUARD



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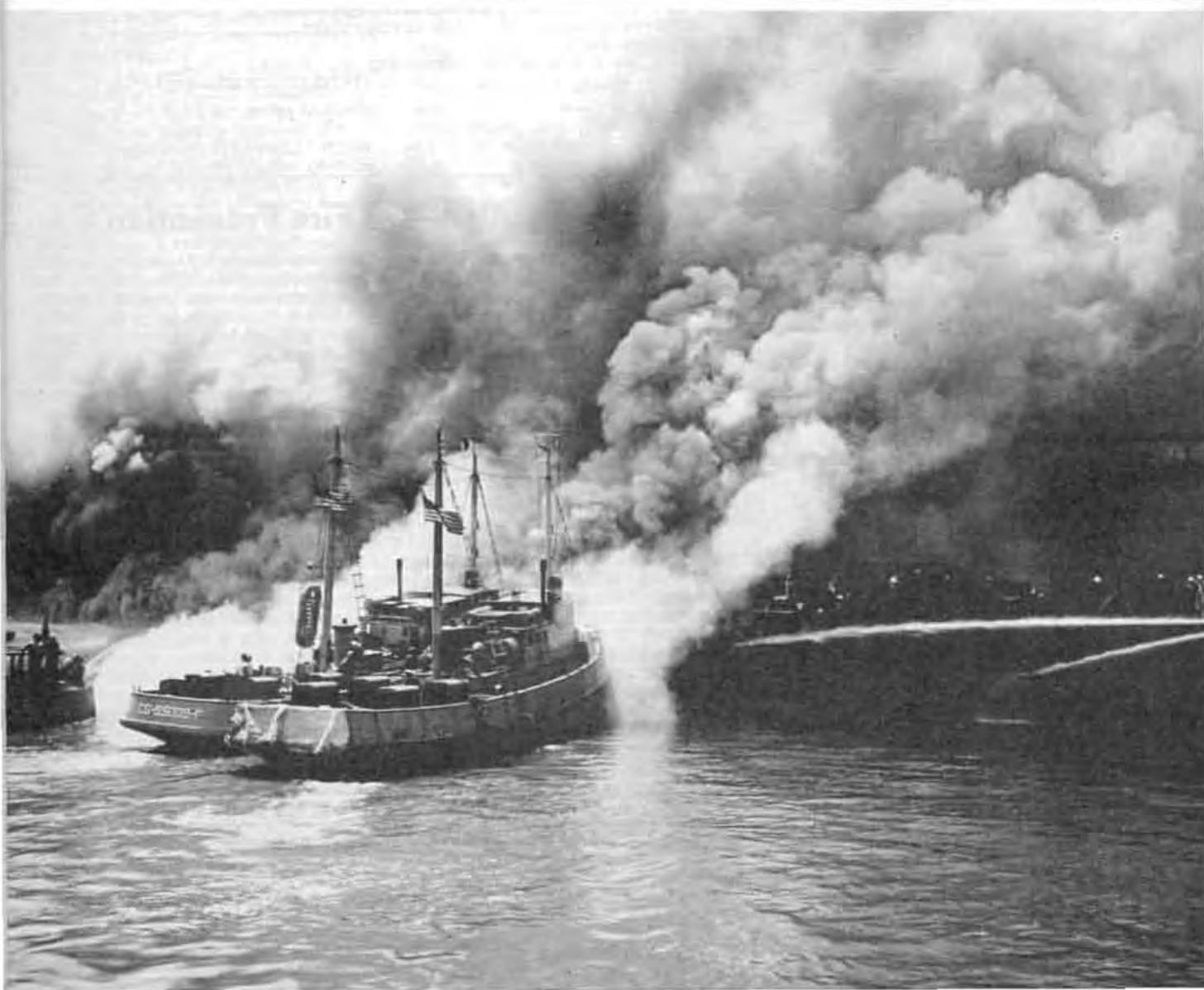
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not less than
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PASS IT ALONG

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MERCHANT MARINE COUNCIL

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For each meeting two District Commanders
and three Marine Inspection Officers are
designated as members by the Commandant.

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Fire Fighting and Fire Prevention

The fires that never start are the ones that do no damage and kill no people. The job of keeping fires from starting is one job that should be the business of each and every man on all ships. *Cleanliness and carefulness* is a team which can prevent most fires. When you see any condition which may cause a fire, it is your duty to report it at once. You should remember that the fire you prevent may save your life. If and when a fire starts, and they do, the job of fighting it must start at once.

Fire fighting anywhere and anytime is a highly specialized job, and for this reason it is necessary for the person who is to fight the fire to know his job. To know his job the fire fighter must understand what fire is and must be able to put the equipment at hand to correct use. The operation, use, care and maintenance of fire-fighting apparatus, or equipment, is discussed and should be carefully studied by every man aboard ship.

It may be generally said that a fire starts when anything that will burn is made hot enough and oxygen is present. (The air around us normally contains about 21 percent oxygen.)

The two things that the fire fighter is most concerned with are the *heat* (temperature) and the *oxygen* when it comes to putting out a fire. When one, or when both of these things are removed, the fire will go out. The fire fighter's job is to *cool the fire* by lowering its temperature or to *smother* the fire by shutting off its oxygen supply or by doing both and with the greatest possible speed.

Speed is the most important item because it is a known fact that in most cases the longer a fire burns the "hotter" it gets. If you can keep a fire from spreading or "get it under control," you are keeping it from getting "hotter." Getting a fire under control may be done by moving other things that will burn away from the fire, but this is not always possible. The next best thing would be to keep these things from catching fire. To do this you must remember that a flame or spark is not always necessary to start something burning. It may get hot enough to burn because it is too close to the fire or because it is against a bulkhead that is heated by the fire or by hot air or other gases given off by the fire. If you do not take these things into account, you

may have two or three fires to fight instead of one. When any fire is under control, it is much easier and simpler to cool it or smother it and thereby put it out.

It is also important for a fire fighter to protect himself if he is to do a good job. It is common knowledge that fire will burn you, but there are other factors that must be thought of. A fire in a closed or unventilated compartment may have used up so much of the oxygen from the air that you could not live by breathing it. If this is thought to be the case no one should enter without wearing an oxygen breathing apparatus. *You can snuff out a life as well as a fire by cutting off the supply of oxygen.* Also, an explosion may occur if air is admitted suddenly to a closed compartment in which there is a fire. The fire fighter must be careful—he must think as he works.

Fire Apparatus

All inspected vessels are required to have on board fire axes, fire pumps, fire hydrants, fire hose, and portable extinguishers.

Fire axes must be kept in places where they are readily accessible, and must not be used for other purposes.

Fire hose must be kept on reels or racks close to fire-hydrant connections and should be reeled or faked with the nozzle on top, so that it can be immediately led out ready for use. At least one length of hose must be kept connected to each fire hydrant so as to be ready for instant use. Each hydrant connection is supplied with a suitable spanner connected to it by a length of chain.

All purpose nozzles, sometimes called "fog nozzles," are a combination fitting used in lieu of the ordinary fire hose nozzle and can project either a solid stream of water or a fog spray or can be shut off. Besides the regular high velocity fog spray tip, an applicator for projecting a low velocity fog spray and some form of self-cleaning strainer should be supplied. The self-cleaning strainer is made necessary by the small diameter of the water passages of the two types of fog spray tips. It may be attached to the fire hydrant either directly or by means of a short length of hose or may be contained within the all-purpose nozzle itself. One of the main uses of the low velocity fog spray tip is to provide a screen for persons engaged in fighting a fire. Even though it may be advisable to extinguish the fire by means of foam or CO₂, the use of a low velocity fog spray between the persons extinguishing the fire and the actual blaze will enable them to approach the fire much more closely

Alibis don't excuse accidents:

- It was the handiest tool
- It looked safe enough
- I was in a hurry
- Nobody told me to watch out
- It was too much trouble
- I did it that way for years
- It was just a temporary set-up
- It wasn't my fault

DANGERS LURK
ALONG THE WAY
OF THOSE WHO
NO ATTENTION PAY



**THE CHANCES
SOME PEOPLE TAKE!**

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NATIONAL SAFETY COUNCIL

thus adding to the effectiveness of the actual extinguishing agent.

All vessels carrying combustible cargo in the holds, tween decks, or other closed cargo compartments, are equipped with means for extinguishing fire in such compartments by the use of a steam or carbon-dioxide fire-extinguishing system. The manifolds or valves controlling the system are enclosed in cabinets or boxes marked "Steam Fire Apparatus" or "CO₂ Fire Apparatus," as the case may be. Many cargo vessels are also equipped with a smoke-pipe fire-detecting and alarm system in all cargo spaces, the detecting cabinet being located in the wheelhouse. Passenger vessels are fitted with various fire-detecting, alarm, and automatic sprinkler systems and also maintain a supervised fire patrol.

Fire Extinguishers

Do you know which is the best type of fire extinguisher? If you do, the world offers you a great opportunity because you are one of the few who possess such knowledge.

The point being made is of the utmost importance. It is realized that there is no best type of fire extinguisher. Extinguishers must be chosen for each particular job; each extinguisher has a specific use for which it was designed. No type is universally applicable to any fire which might occur. That is why standardization of first-aid fire-fighting equipment is impossible in any area. Before choosing an extinguisher for a certain location a survey is essential

to determine the fire hazards which exist and the type of fire likely to be encountered.

CLASSES OF FIRES

In a discussion of fire extinguishers, fires must be classed in order to describe the type of fire for which given extinguishers are suitable. Fires are divided in groups based on the type of fuel involved because extinguishing methods vary for different combustible substances.

Class A fires are deep seated fires in rubbish, wood, mattresses, paper, textiles and similar solid combustibles. Quenching and cooling action is usually necessary for extinguishing such fires.

Class B fires are those in which oil, gas, paint, and greasy or flammable solvents not miscible with water are the fuel. They are surface fires and require blanketing action.

Class C fires are electrical fires, which need blanketing by a non-conducting agent.

CLASS A FIRES

Class A fires usually occur in materials like wood, paper, textiles, animal and vegetable fibers, coal, coke, starch, sugars, cereals, rubbish, asphalts, waxes, etc. Fires in materials containing nitrocellulose, such as photographic, X-ray and motion picture film and pyroxylin, generally are also considered as Class A fires.

Water is well adapted for the extinguishment of Class A fires. After a fire in freely exposed materials is

beyond the initial stage extinguishment with water is in general the only practical method. The limitations of water as an extinguishing medium include its relatively high freezing point which requires special precautions to be taken where temperatures may be below 32° Fahrenheit. The application of water to hot fires may result in the water vaporizing before it reaches the burning material. If necessary to prevent this vaporizing, the water should be applied progressively, in large volume, to relatively small areas.

For fires in materials containing part or all of the oxygen needed for combustion, such as coal, nitrocellulose, etc., the extinguishing action of water is largely one of cooling such materials below the ignition temperature. This will require larger amounts of water than for extinguishing fires in ordinary combustible materials.

For small Class A fires a water, or water base and antifreeze, extinguisher is normally necessary. The simplest of these is the water pump type. The soda-acid and the water tank which expels the water through pressure generated by a small carbon dioxide cartridge are other extinguishers of this type.

CLASS B FIRES

Class B fires usually occur in mineral, vegetable, or animal oils. The mineral oils include various products of petroleum, such as crude oil, gasoline, kerosene, fuel oil, lubricating oils or grease, etc., and coal-tar oils, such as benzol. The vegetable oils include the various alcohols, acetone, turpentine, linseed oil, coconut oil, palm oil, olive oil, etc. These vegetable oils often are contained in paints, varnishes, and lacquers. The animal oils include lard oil, oleo oil, red oil, whole oil, etc.

Class B fires are extinguished chiefly by smothering and secondly by the cooling effect of the extinguishing agents. This is so, because when class B combustibles are ignited, vapor is given off at the surface and, as in all fires, it is the vapor that burns. In other words, the fire is all on top, and when the supply of oxygen is cut off over the surface, the fire goes out. It may be that while fire is burning over the surface only a shallow layer of oil is heated to its ignition temperature. In fact the rate of heat penetration in fuel and lubricating oils is slow. Fuel oil burning for 10 to 15 minutes, for instance, may have only an inch-deep layer of oil heated to its ignition temperature. Extinguishing such a fire is, therefore, like all other fires, less difficult in its early stages.

The blanketing action required for class B fires is obtained from foam, carbon dioxide, dry chemical, or carbon tetrachloride extinguishers. Air is excluded by the foam extinguisher by means of the tiny bubbles which cover and adhere to the burning surface. Carbon dioxide is, of course, a heavy gas, and both the carbon tetrachloride and dry chemical types generate a covering gas.

Class B fires cannot usually be extinguished with water. As everyone knows oil floats on top of water and continues to burn while being spread by the water stream. However, water can be used to good advantage for a class B fire with the proper equipment. For a bad oil fire a water fog is one of the most efficient methods. The atomized water particles keep the air necessary for combustion away from the burning surface and they cool the fire by removing heat when the droplets are converted to steam and also they cool to some extent by contact.

A solid stream of water would be ineffectual on class B combustibles, except in a few situations. A so-called spill fire, one in which burning oil has spilled over a deck in a thin covering, can be extinguished with a solid stream, if the area is not too large. Should a solid stream be used in this way, care must be exercised not to spread the fire. When oil is on fire in a compartment, a solid stream of water would not cool the entire surface quickly enough, nor would the water be turned to steam in sufficient quantity to form a smothering blanket. In addition, water in quantity would float the burning oil to a higher level, and increase the hazard of spreading.

When fog is used on class B fires, extinguishment is brought about because the finely diffused fog particles offer in sum a very large area for the absorption of heat. As the cooling takes place, the fog particles, since they are very small, turn immediately to steam. The steam then smothers the fire, since it displaces the oxygen of the air. Steam applied in the first instance would smother the fire; it does not, however, have any appreciable cooling effect, and it renders compartments untenable.

Another advantage of fog as compared to steam on class B fires is the fact that fog causes an emulsification, or frothing, on the surface of viscous oils such as fuel and lubricating oils. (It does not have this effect on gasoline.) Froth produced by the action of fog has in some de-

gree the blanketing quality of foam and it, therefore, contributes to the extinguishment of fire. Steam causes only slight emulsification.

Foam applied to class B fires forms a stout, smothering blanket, the thickness of which is to be determined by the character and the temperature of the mass of oil beneath it. Oil burning for some time may become heated throughout, and when this stage is reached the foam has a greater tendency to break down; a larger quantity of foam must then be applied. When foam is applied to a class B fire, the speed of application is of paramount importance. Exposure to flame "fries off" part of the foam, and this part serves little purpose. A quick complete coverage smothers the flame, snuffs it out; and the foam will then remain intact, thus preventing flashback or reignition over the area.

The regular chemical and mechanical foams are not suitable for the protection of tanks containing alcohols, acetones, and similar flammable liquids which mix readily with water. Neither are they suitable for dealing with fires in tanks of carbon disulfide, diethyl ether or other similar flammable liquids which are more volatile than gasoline, as the vapors from these liquids tend to penetrate the foam blanket and burn above it. There are, however, special chemical foam powders suitable for use in fighting fires in such liquids. These special powders may be used for extinguishing fires in petroleum products also.

Carbon dioxide, when applied to class B fires, smothers the blaze by displacing the air from the surface of the burning liquid. It also has some cooling effect which helps to reduce the temperature of the surrounding structure. Its disadvantage is that it may be blown away from the area protected before the temperature of the surroundings is low enough to prevent reignition.

CLASS C FIRES

Class C fires are fires in electrical equipment. The extinguishing medium used should therefore be a non-conductor of electricity if applied before the equipment is disconnected from the source of energy supply. Fires of this type usually occur in insulation of motors, generators, transformers, switchboards, and electrical wiring. Fires in oil of oil-cooled electrical equipment should be considered as class C fires so long as the equipment is energized, but after the source of energy is disconnected, they should be regarded as class B fires.

LEARN FIRE PREVENTION BEFORE YOU GO TO BLAZES

Class C fires may be extinguished by carbon tetrachloride, carbon dioxide or in most cases the dry chemical extinguisher.

Neither water nor foam should be used on an electrical fire because of the danger to the operator from electrocution. The dry chemical extinguisher requires heat to break the chemical (ordinary baking soda) down, forming carbon dioxide gas. Hence the heat generated by an electrical fire in some locations might not be adequate for best results. Further, the dry chemical could possibly cause bearing trouble in a main turbine, for example. Carbon dioxide may not prove completely effective for a large area aflame in the overhead since the gas settles rapidly. Probably the best extinguisher for a class C fire is the carbon tetrachloride type; a stream of liquid accurately directed at the source can be expected to give best results. Difficulties experienced with this type result from improper maintenance. Undetected leaks of the rapidly evaporating liquid may leave an empty extinguisher, or the corrosive action of the chemical may cause sticking of the internal valves or of the actuating handle. When using the extinguisher remember that heated carbon tet generates a deadly gas.

Carbon dioxide is particularly effective for fires in electrical equipment. As the gas is a nonconductor of electricity there is no danger to the fire fighter from electric shock, a danger which is present when foam or water are used on electrical fires.

EXTINGUISHING AGENTS

FOAM

Foam for fire extinguishing purposes on board inspected vessels is of two types, chemical and mechanical. The characteristic difference in the equipment for producing the two kinds of foam is that the nozzle used for mechanical foam adds air to the chemical bearing stream after the chemicals have been dissolved in it. The equipment for chemical foam does not add air to the chemical-bearing stream.

Notwithstanding the apparent classification implied in the names of the two kinds of foam, both are made with chemicals, and at the time of the fire. Mechanical foam, which was developed more recently than the other has qualities that derive from the mechanical effects of the entrainment of air at the nozzle referred to above. It is produced with a foam-chemical solution; chemical foam is produced with dry chemicals (except

in the two solution tank system). Both kinds have individual advantages and both have limitations. Their relative qualities are discussed later.

The chemical-foam blanket is composed of water film globules filled with carbon dioxide. The mechanical foam blanket is composed of water film globules filled with air. In both, the film is strengthened with so-called "foam stabilizer." The chemicals used for producing chemical foam are: Bicarbonate of soda, aluminum sulfate, and a "foam stabilizer." Ferric sulfate is sometimes substituted for aluminum sulfate. Mechanical foam is produced from a protein base liquid mixed with the water in the fire line usually in the proportion of 6 percent foam liquid and 94 percent water. Either salt or fresh water may be used in the fire line for either chemical or mechanical foam.

When mechanical foam was first being developed it was regarded with some suspicion because of the fact that its bubbles were filled with air instead of the carbon dioxide present in the chemical foam bubbles. It was demonstrated, however, that the mass of bubbles themselves form the extinguishing medium and not the contents of the bubbles. It was soon established that the sufficiency of the foam blanket did not depend upon the nature of the gas within the bubbles. A rather startling early test along these lines was one in which pure oxygen was used in the formation of mechanical foam and this oxygen containing blanket of foam was found to be an entirely satisfactory extinguishing agent. It is now generally accepted that the contents of the bubbles in the foam blanket make very little difference in its smothering effect.

The differences in the qualities of the two kinds of foam referred to in a preceding paragraph may be summarized as follows:

Chemical foam has more body than mechanical foam, and, consequently, builds up a stouter cover over a fire. Since it will pile up against and cling to vertical structures it will reach and cover, on occasions, combustibles burning a foot or two above the deck. It will not, however, pass freely around obstructions.

Mechanical foam makes an effective cover but one that generally is not so stout as that made by chemical foam. It is more fluid than chemical foam, and, consequently, more free flowing. It will, therefore, pass readily around obstructions and is, therefore, particularly suitable for engine- and boiler-room spaces. Mechanical foam "sets up" rapidly after

application to form a fairly stiff blanket.

Various methods for producing chemical foam are outlined below:

(1) The continuous-type generator in its usual form consists of a hopper having a so-called "ejector" inside the bottom which serves as a means of dissolving dry-foam chemicals in the stream of water. After the water (at 75 to 100 pounds pressure) has been turned on, the dry chemical mixture is poured into the hopper. The chemicals are drawn into the water stream as it rushes across a gap in a pipe line in the ejector and into a hose line (100 feet long for ordinary conditions) which provides a channel long enough for thorough mixing and chemical action. This hose has a nozzle on the outlet end $1\frac{3}{4}$ inches in diameter—the diameter required for the most effective discharge. In the single hopper type of generator the chemicals necessary for producing the foam are mixed in the dry condition and are supplied in containers holding 50 pounds of the mixture. They should be stored in a cool, dry place. The containers must be kept sealed until used. The continuous-type generator is also made in a two hopper style which is, as its name implies, one in which the dry chemicals are dissolved separately in two streams of water which are brought together at the discharge outlet to produce foam.

(2) The pressure operated generator is a metal cylinder large enough to hold a 50-pound cartridge of dry-foam chemicals. After the cylinder has been loaded the lid is closed pressure tight. The water stream is played upon the chemicals through two comparatively small jets which are set inside the cylinder at the top. The outlet hose is ordinarily $1\frac{1}{2}$ inches in diameter and 50 feet long. The nozzle has an outlet $1\frac{1}{8}$ inches in diameter.

(3) In the twin-solution-type of foam generator, bicarbonate of soda and foam chemicals are held in solution in one cylinder and aluminum sulfate is held in solution in another. The contents of the two cylinders are pumped separately to discharge outlets in which the solutions mix to produce and discharge foam on the area being protected.

Mechanical foam depends upon the presence of a liquid foam agent in the water stream and the entrainment of air in the water-foaming agent mixture. This entrainment of air occurs in the mechanical foam nozzle. The nozzle is constructed in such a manner that the turbulence in the aspirating cage of the nozzle causes the water-foaming agent mixture to absorb large quantities of air. The ex-



To Risky Ricky—
Roses are red
some are pink
us safe workers
think you —

To save your life—
You can't beat safety

pansion of the foam takes place in the nozzle due to the volume of the air within the foam bubbles. The introduction of the foaming agent into the water stream is carried out in one of two ways:

(1). At the nozzle by means of a pick-up tube (siphon).

(2) At any point in the fire-main system by means of a permanently installed pressure proportioner. The term "pressure proportioner" means a cylinder for holding a mechanical foam solution, together with a siphoning arrangement for adding it in the proper proportion to a water stream at the time of the fire. Inasmuch as mechanical foam is not generated until the foaming agent mixture reaches the special aspirating nozzle used with this product, the pressure proportioner may be at any reasonable distance from the point of application of the foam.

Mechanical foam may also be applied in the form of the so-called "fog-foam." In this form the mixture of water and foam liquid is discharged through a special spray-type head instead of the regular foam play-pipe. It is, therefore, in a much more diffused cloud of foam which is more suitable for some applications than the more-or-less formed stream of foam discharged from the play-pipe.

CARBON DIOXIDE

Carbon dioxide for fire extinguishing is stored at high pressure in steel cylinders in liquid form. The cylinders are fitted with siphon tubes for the purpose of conveying the liquid carbon dioxide from the bottom of the cylinder to the release valve at the top. When discharged the liquid carbon dioxide immediately vaporizes to a gas and in so doing its temperature drops to 110° below zero Fahrenheit. Some of the liquid forms carbon-dioxide snow before it returns to the gaseous state. Notwithstanding the

low temperature of the expanding carbon dioxide and the snow just referred to, its cooling effect on fire is slight, due to the low latent heat of this material. Its usefulness as an extinguishing agent depends primarily on its smothering effect which is excellent.

It will not support combustion itself and by displacing the oxygen in the air it soon reduces the oxygen content to the point where combustion cannot be supported. As carbon dioxide is 1½ times heavier than air, it will flow down and over a fire and if not disturbed by air currents will hover long enough to extinguish it when the concentration is sufficient.

Carbon dioxide when applied promptly is effective on burning oil. As pointed out earlier, when oil in a cargo tank is on fire, the bulk of the oil is comparatively cool in the early stages of the fire and there is then less likelihood of rekindling the fire from glowing bulkheads or beams in the event that the CO₂ should drift away from the surface.

Carbon-dioxide extinguishers are most useful in an enclosed space. In a very large room the gas would spread out over the floor and might fail to extinguish other than a very minor blaze. Large warehouses, stacks of cargo, open docks and similar areas found along the water front could not be expected to experience fires which could be extinguished most efficiently with CO₂. For example, a fire within a large stack of baled cotton would probably not be affected by a carbon-dioxide extinguisher. It could conceivably be reached with dry chemical but after the heat had been removed from the surface the fire might continue to smoulder without causing the baking soda to develop gas. Plenty of water, from a fire hose preferably, would be most desirable in such a case.

Since carbon dioxide is a nonconductor of electricity, it is particularly

effective for fires in electrical equipment.

Spaces that have been flooded with carbon-dioxide gas need to be ventilated before people are allowed to enter without proper oxygen breathing apparatus or air masks. When the oxygen content of the air is reduced to 10 percent or below by carbon dioxide, a person entering such a compartment will suffocate. If carbon monoxide is present in the inert gas, an even greater amount of ventilation is required.

WATER

Water is one of the most common materials used for extinguishing fires on board inspected vessels. The effect of water on fire consists mainly in cooling the burning material to a temperature at which it will no longer support combustion or reignite. The wetting effect of water reduces the rate of combustion and spread of fire by exclusion of oxygen and when applied to some inflammable liquids will dilute such liquids to a point where combustion is impossible. For example, in extinguishing fires in alcohol or acetone the water will mix readily with such materials. Water-alcohol mixtures containing less than 25 percent alcohol will not burn. The application of water in a fine spray covering the whole surface is particularly effective in extinguishing fires. In certain types of class B fires where the water spray is turned to steam, such action removes oxygen and heat from the burning substances.

While pure water is a poor conductor of electricity the impurities normally present materially affect its electrical insulation properties, therefore water should be applied to class C fires only after the equipment is disconnected from the power source. Water as a fine spray has much lower electrical conductivity than as a solid stream or coarse spray.

It must be remembered that water in ample quantities has put out more fires than any other extinguishing agent.

STEAM

Many inspected vessels are equipped with steam smothering systems in cargo holds. Steam can be used in extinguishing fire only where the space surrounding or above the combustible material is inclosed or partly inclosed. To extinguish the fire an amount of steam must be supplied which is sufficient to reduce the oxygen content by the displacement of air, to below the ignition point of the combustible material. One of the major limitations in the use of steam is that it does not lower the heat generated by the fire in the

combustible material. Steam usually raises the air temperature in the inclosed or partly inclosed space and forms a water vapor concentration in the air and in so doing the oxygen concentration in such air is reduced to a point where combustion is reduced or stopped. Steam must be higher and maintained for a longer period if glowing material is to be extinguished. Steam may also extinguish a fire, both by smothering and by wetting the burning material. Because of the heat required to raise the temperature within the inclosure, a liberal margin over the computed quantity required should be provided. It is generally advantageous to use steam for fire extinguishment only where a sufficient quantity can be obtained from heating, power or other boilers not supplying steam for equipment necessary in fire operations.

Precautions must be taken to avoid accidental discharge of steam into areas which may be occupied by people.

DRY POWDERED MATERIAL

On certain inspected vessels, dry sand, or other incombustible material in fine particles or powder form is required. This material is moderately effective on small class B fires, such as oil burning on the engine room deck. Heavy material like sand is not effective generally in fires in liquid tanks where it is necessary to have a smothering effect since it will sink into the liquid.

DRY CHEMICALS

There is more variety in the appearance and method of operation of the various makes of dry-chemical extinguishers than in the CO₂ or foam types. However, the principle is the same in each case. The dry chemical consists largely of sodium bicarbonate mixed with small amounts of other chemicals which tend to promote flowability and prevent caking of the sodium bicarbonate. The chemical is contained in a metallic shell somewhat similar in appearance to the standard 2½-gallon foam extinguisher. A carbon-dioxide cartridge is connected with the dry-chemical container. To operate, the gas is turned into the cylinder of dry chemical and the latter is blown out in a cloud which is directed at the base of the flame, in the case of oil fires, to the surface of the burning liquid.

CARBON TETRACHLORIDE

Carbon tetrachloride is a heavy volatile liquid with a boiling point near 170° F. and a freezing point near -9° F. The vapor from this material is heavier than air and there-

fore assists in smothering a fire within closed spaces.

Carbon tetrachloride is a poor conductor of electricity and is therefore adaptable for fighting class C fires. This material can break an electric arc. Because of its solvent properties, carbon tetrachloride will damage some electrical insulations and the condensed fumes may corrode certain metals.

The carbon tetrachloride gives off a gas that is irritating and toxic. On application to fires the decomposition products contain hydrochloric acid gas, carbon monoxide, chlorine, and under some conditions small amounts of phosgene, a highly toxic gas.



NATIONAL SAFETY COUNCIL

The 1-quart carbon tetrachloride extinguisher is useful for small hot fires in oil or other materials. Its use on oil is, however, limited since it partly dissolves in the oil. Any undissolved or evaporated portion does not float on the surface because carbon tetrachloride liquid is heavier than oil. Its effectiveness depends on the immediate vaporization of the liquid by the heat of the fire, forming an extinguishing blanket of gas. If used in enclosed spaces, the operator should remain near to the outside air after the contents of the extinguisher have been discharged. Such spaces should be well ventilated before being reentered.

SODA-ACID

A solution of sodium bicarbonate is used so that, in the operation of the equipment to extinguish fire, it is mixed with sulfuric acid. This mixture results in the formation of sodium sulfate, water, and carbon dioxide gas. Generally these chemicals are proportioned to give an acid-free discharge. Since the mixture is contained within a closed con-

tainer, the gas generated serves to expel the liquid solution under pressure.

The extinguishing effect of soda-acid is mainly derived from the water in the solution applied in a stream that can be directed at the seat of the fire. This type of extinguishing medium is best adapted for extinguishing class A fires. Since it is a good conductor for electricity it should not be used in fighting class C fires.

What a Fire Fighter Must Know

The most important information for the potential fire fighter is:

- Know which type of extinguisher to use when.
- Know how to use extinguishers, both from the standpoint of proper employment and the actual mechanics of operation.
- Realize that portable fire extinguishers are strictly first-aid measures, that 2½ gallons of foam or water or 15 pounds of carbon dioxide or 20 pounds of dry chemical cannot extinguish a large fire.
- Wholeheartedly accept the fundamental principle that the first few minutes of almost every fire is worth any number of subsequent hours.

Other basic knowledge required for effectively fighting a fire:

- The base of the fire should be surrounded by the extinguishing agent.
- The agent must be placed at the seat of the flame.
- The operator must work from the outside toward the center of the fire.
- He must get as close as prudent before discharging the extinguisher.
- He must use care in class B fires that the stream of the extinguishing agent is not directed into the liquid so as to cause splashing and spreading the fire.
- Never use extinguishers containing water on an electrical fire.
- Portable extinguishers are rapidly exhausted; a properly filled soda-acid extinguisher is discharged in a very few minutes and a 15-pound CO₂ lasts less than a minute.
- It is essential to become thoroughly familiar with the location of every extinguisher and fire hydrant.

Now that we have considered fire protection, the first-aid methods and means of combating the blaze already underway, let us turn to fire prevention. As you probably know fire destroyed more than 688 million dollars of American property last year. The effect of these fires would have been minimized and in most cases the fire would never have occurred if proper maintenance and careful inspection had eliminated fire hazards. A check-off list is given to aid you in preventive efforts which are expected to be made during Fire Prevention Week and followed as practicable throughout the year.

These questions (except the last two) are listed in general according to the leading causes of fires.

1. Have you prescribed and marked areas where smoking and the use of matches or flame is prohibited, and permitted?
2. Does good housekeeping prevent the accumulation of refuse and combustibles in unsafe locations, and prevent disorderly arrangements, the cluttering of fire aisles, the blocking of exits, extinguishers, or hydrants, and other practices which would render it difficult to attack the blaze?
3. Does inspection insure that overheated surfaces—engine exhausts, chimneys, stove pipes, ovens, bearings—cannot cause a fire?
4. Does maintenance and inspection of electric wiring and electrical systems remove this fire cause?
5. Are sources of spontaneous combustion eliminated? The most common source is a rag saturated with an oxidizing oil which is thrown under a pile of gear, in a corner, or drawer. Oxidizing oils are animal and vegetable oils like linseed oil or turpentine.
6. Are flammable liquids stored, transferred, and handled in a safe manner and are containers and areas connected with their employment properly marked?
7. Does good housekeeping, safety consciousness, and ventilation prevent the accumulation of combustible dusts and explosive vapors?
8. Are sparks from welding, grinding, etc., guarded against?
9. Are hazardous materials and chemicals such as unslacked lime, sulphur, magnesium and

zinc handled and stored so they do not create fire hazards?

10. In machine shops or industrial operations can static electricity generated by moving belts, flooring materials or the human body cause ignition?

11. Are suitable fire extinguishers properly located in adequate numbers? They should be readily accessible, plainly visible, protected from damage and the possibility of freezing, and convenient to the likely location of a fire but yet not

PORTABLE FIRE EXTINGUISHERS USED ABOARD

MERCHANT VESSELS

Type of extinguisher	Class of fire			How operated	Yearly maintenance
	A (ordinary combustibles, such as paper, rubbish, fabrics)	B (flammable liquids)	C (electrical fires)		
Soda-and-acid	Yes	No	No	Turn bottom side up. Direct stream at base of fire. Recharge immediately.	Discharge. Clean inside and hose thoroughly. Recharge.
Pump tank (water)	Yes	No	No	Hand pump. Direct stream at source of fire. Recharge immediately.	Discharge. Clean inside and hose thoroughly. Refill.
Pump tank (anti-freeze solution)	Yes	No	No	Hand pump. Direct stream at source of fire. Recharge immediately.	Discharge. Clean inside and hose thoroughly. Recharge.
Cartridge-operated (water)	Yes	No	No	Turn bottom side up and bump on deck. Direct stream at source of fire. Recharge immediately.	If pressure cartridge is punctured, or if it weighs $\frac{1}{2}$ ounce less than amount stamped on cartridge, it shall be replaced. Remove liquid. Clean inside and hose thoroughly. Recharge with clean water. Insert charged cartridge.
Cartridge-operated (antifreeze)	Yes	No	No	Turn bottom side up and bump on deck. Direct stream at source of fire. Recharge immediately.	If pressure cartridge is punctured, or if it weighs $\frac{1}{2}$ ounce less than amount stamped on cartridge, it shall be replaced. Remove liquid. Clean inside and hose thoroughly. Recharge with antifreeze. Insert charged cartridge.
Cartridge-operated (loaded stream)	Yes	Yes	No	Turn bottom side up and bump on deck. Direct stream at source of fire. Recharge immediately.	If pressure cartridge is punctured, or if it weighs $\frac{1}{2}$ ounce less than amount stamped on cartridge, it shall be replaced. Remove liquid. Clean inside and hose thoroughly. Recharge with new solution. Insert charged cartridge.
Foam	Yes	Yes	No	Turn bottom side up. Direct stream at base of flames. Recharge immediately.	Discharge. Clean inside and hose thoroughly. Recharge.
Vaporizing liquid (carbon tetrachloride base)	No	Yes	Yes	Turn handle to unlock and pump. Direct stream at base of flames. Recharge immediately.	Discharge a few strokes into a clean container. Recharge with new or discharged liquid. Keep water out of extinguisher. Ascertain that it is completely full of liquid.
Carbon dioxide	No	Yes	Yes	Open valve to release snow and gas. Direct discharge at base of flames in slow sweeping motion. Recharge immediately.	Weigh. Recharge if weight loss exceeds 10% of weight of charge. Inspect hose and nozzle to see they are clear.
Dry chemical	No	Yes	Yes	Operate pressure cartridge release and control discharge by valve as shown on instruction plate on extinguisher. Direct discharge at base of flames in sweeping motion. Recharge immediately.	If pressure cartridge is punctured, or if it weighs $\frac{1}{2}$ ounce less than amount stamped on cartridge, it shall be replaced. Inspect hose and nozzle to be sure they are clear. Insert charged cartridge. Ascertain that chamber contains full charge and that powder is not caked.

NOTE: In addition, the hand portable fire extinguishers shall be examined for excessive corrosion and general condition, and replaced if necessary.

near enough so that the fire will prevent reaching and using them.

12. Does a check-off list insure proper maintenance, checking, and refilling of extinguishers?

The prompt and intelligent use of portable fire extinguishers will in many cases avert a serious fire. The principal types of portable-type fire extinguishers suitable for fires are the foam, soda-acid, carbon-dioxide, and dry-chemical types. As usually supplied these extinguishers contain 2½ gallons of foam-producing liquid, 15 pounds liquid carbon-dioxide or 20 or more pounds of dry chemical. The 1-quart carbon tetrachloride pump-type extinguisher is also well suited for certain types of small oil fires.

FIRE PREVENTION WEEK, 1951

PROCLAMATION 2936

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS during the past year preventable fires have again brought death to at least ten thousand of our citizens and permanent disability or painful injury to scores of thousands more; and

WHEREAS each year natural and created resources worth nearly a billion dollars are destroyed in our country by fire; and

WHEREAS the present emergency especially requires that we conserve our manpower, our productive facilities, and our material resources:

NOW, THEREFORE, I, HARRY S. TRUMAN, President of the United States of America, do hereby designate the week beginning October 7, 1951, as Fire Prevention Week.

I urge that every man, woman, and child in this great land contribute to the national effort to make the United States strong by accepting individual responsibility in the year-round campaign against the needless waste of life and destruction of property by preventable fires. I request that State and local governments, the American National Red Cross, the National Fire Waste Council, the Chamber of Commerce of the United States, business, labor, and farm organizations, churches, schools, civic groups, and the agencies of public information, including newspapers, magazines, and the radio, television, and motion-picture industries, cooperate fully in the observance of Fire Prevention Week. I also direct the appropriate agencies of the Federal Government to assist in this crusade against the toll of life and property resulting from fires.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the City of Washington this 9th day of August in the year of our Lord nineteen hundred [SEAL] and fifty-one, and of the Independence of the United States of America the one hundred and seventy-sixth.

HARRY S. TRUMAN

By the President:

DEAN ACHESON,
Secretary of State.

[F. R. Doc. 51-9660; Filed, Aug. 10, 1951;
2:25 p. m.]

Fires Destroyed \$688,460,000 in American Property in 1950

Fires destroyed an estimated \$688.-460,000, in American property during 1950, it was announced by Lewis A. Vincent, general manager of the National Board of Fire Underwriters.

During Dec., 1950, fire losses totaled an estimated \$66,820,000. This represented a decrease of .7 percent below losses for Dec., 1949, and an increase of 19.8 percent over losses in Nov., 1950.

Estimated monthly fire losses for 1950 were:

January.....	\$58,823,000
February.....	58,340,000
March.....	72,468,000
April.....	61,605,000
May.....	58,765,000
June.....	57,116,000
July.....	52,980,000
August.....	49,878,000
September.....	45,922,000
October.....	49,953,000
November.....	55,790,000
December.....	66,820,000

Estimated fire losses for the previous years were:

1935.....	\$235,263,401
1945.....	484,274,000
1946.....	554,070,000
1947.....	647,860,000
1948.....	715,074,000
1949.....	651,534,000

COVER PICTURE

The Coast Guard in action to stop a disastrous fire at a west coast port. Fires are costly. Close cooperation between all Federal and local agencies responsible for protecting and safeguarding the Nation's harbors and shipping is needed now more than ever. The Coast Guard is charged with the responsibility for the security of waterfront facilities and shipping by water under the National Emergency declared by the President. The assistance of all concerned is needed if fires are to be prevented.

ACCESSION OF HAITI TO 1929 SAFETY CONVENTION

The Department of State has been advised by the British Embassy that the Government of Haiti has acceded to the International Convention for the Safety of Life at Sea, 1929, and will take effect on August 16, 1951, in accordance with the provisions set forth in Article 64 of the Convention.

SIGNAL LETTERS OF THE UNITED STATES MERCHANT MARINE 1950

The pamphlet entitled "Signal Letters of the United States Merchant Marine 1950," dated January 1, 1950, contains the signal letters, radio-call letters, or combined signal and radio-call letters assigned to all vessels documented as vessels of the United States, including yachts. In general, four-letter calls are awarded to vessels which are equipped with radio-transmitting apparatus and two-letter, four-digit calls are assigned to vessels equipped with radio-telephone apparatus. In the case of a vessel equipped with neither radio-transmitting nor radio-telephone apparatus, letters are assigned, in general, in the two-letter, four-digit series.

The pamphlet "Signal Letters of the United States Merchant Marine 1950" may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The price is 40 cents per copy.

ONE CARELESS MOMENT CAN PUT YOU



IN THE HOSPITAL



IN THE HOLE



IN THE DOGHOUSE

NATIONAL SAFETY COUNCIL

USE OF DDT ON SHIPBOARD

INTRODUCTION

In order to suppress insect infestation on vessels, continuous control measures are necessary while at sea as well as in port. While at sea, regular and continuous measures should be carried on under the direction of one of the ship's officers who has been made responsible for this work. If the ship carries a Purser-Pharmacist's Mate, the work might be done under his direction. Certain spaces of a ship are under the supervision of the Steward, and treatment of those spaces should be done in co-operation with him.

To control insects requires unceasing activity. Simple cleanliness with frequent and abundant use of plain soap and hot water is necessary. While there are many chemical compounds that will kill insects, one must not be overdependent on them. The occasional use of the marvelous new insecticides that can be purchased today is not a cure-all that will banish all insect problems forever. Efficient insect control still demands clean-up work, as well as the application of insecticides. The neglect of routine measures of sanitary disposal of human waste, garbage, and trash will present insect problems which cannot be banished by the use of insecticides alone.

While many poisonous compounds can be used to destroy insects, dichlorodiphenyl-trichloroethane, popularly known as DDT, has the remarkable ability to kill a wide variety of insect pests, even when it is applied in very small quantities. It is unique in that it will kill many insects that walk on it weeks and months after it has been applied to a surface.

This insecticide is a fine, white, crystalline powder that has a tendency to lump when it is not mixed with other substances. It is almost insoluble in water, but it is soluble in kerosene, xylene, fuel oil, etc. It can be used in a number of forms to kill insects—oil solution, suspension in water, water emulsion, diluted in dusts, or in smokes.

EFFECT ON INSECTS

The killing action of DDT is not as yet fully understood. DDT appears to be absorbed through the insects' feet as they walk or rest on sprayed or dusted surfaces. DDT does not give immediate kill but after short exposures to the spray residue or dust, the affected insects become irritated, a progressive paralysis occurs that

affects control over the legs, they may turn over on their backs and develop tremors (the "DDT's"), and finally die. The period during which this takes place is variable and is dependent upon the resistance of the insect under attack. In the case of some roaches this period may be as long as 24 hours.

RESIDUAL ACTION

Most insecticide sprays are effective for only a few minutes after they are applied. Pyrethrum is a very good insecticide and it is a constituent of many SPACE SPRAYS because it rids a space of insects quickly. A large percentage of the insects hit by such a spray are incapacitated in a very short time. But within a very few minutes the spray has settled to the deck, leaked out through cracks in the door, or been changed chemically by exposure to air and sunlight. Other materials such as sodium fluoride may be dusted on the deck or in cracks and it may remain effective as long as it stays there. But under normal conditions such dusts are soon mopped up or swept away.

On the other hand when DDT is sprayed or dusted on bulkheads, deckheads, decks, and other surfaces, it leaves a tenacious deposit or residue of tiny DDT crystals. If cockroaches, flies, lice, mosquitoes, or fleas walk over or rest on this deposit long enough to obtain a killing dose of DDT, they will be killed. It is this RESIDUAL EFFECT that withstands a remarkable amount of jarring, weathering, and even washing, that is the great advantage of DDT over older types of insecticides.

PRECAUTIONS

DDT is deadly to most insects found on shipboard, but it is not harmful to man WHEN IT IS USED AS RECOMMENDED. Materials that kill insects necessarily must be poisonous, but DDT is definitely less poisonous than paris green and sodium fluoride, long used as insecticides. Nevertheless, the person who uses DDT must take certain precautions to avoid harmful effects to himself or others. Because it is poisonous and requires radically different methods of application, special knowledge and training are necessary to take full advantage of the potential savings in labor and materials that it offers. The materials in which DDT can be dissolved often are more dangerous to man than DDT itself.

Tests have been made by exposing animals in rooms that contained concentrations of DDT higher than those recommended for use in sprays or dusts as it is used against insects, and these animals have not been harmed. However, it is NOT safe to be careless and expose oneself to abnormally high concentrations of DDT. This will not occur if the standardized directions are followed.

Extra precautions should be taken in galleys, messrooms, and food lockers. All food, unpackaged goods, and cooking utensils should be removed while DDT is being sprayed or dusted. This precaution is not necessary when painting screens with DDT. All DDT containers should be clearly labeled "POISON" and be stored in the paint locker.

If DDT is swallowed accidentally, the victim should be required to drink some MUSTARD WATER IMMEDIATELY. It is made by adding one tablespoonful of mustard to one glass of warm water. Or, stick the finger down the throat. Either causes vomiting which empties the stomach. If a physician can be obtained, he should be called immediately. If not, and the ship is at sea, medical advice should be obtained by radio.

DDT in dust form is not absorbed into the body through the skin unless grease, oil, or greasy skin lotion is also present on the skin. As a precaution, though, DDT powder should not be allowed to remain on the skin. Excessive inhalation of the dust should be avoided. If it is possible to purchase colored DDT powder, this should be done. If the diluted powder is not colored, it may be mistaken for flour or other foodstuffs; therefore, it must be carefully labeled and NEVER be stored with foods.

When DDT is in an oil solution, it is readily absorbed into the body through the skin. For this reason DDT oil solutions should not be allowed to remain on the skin or to saturate the clothing. If some DDT solution does get on the skin, it should be washed off with warm, soapy water. Clothing should be changed promptly if oil solution or emulsion concentrate is spilled on it. When spraying, the mist should not be inhaled and food should not be contaminated with it. A DDT oil solution should NOT be applied to the skin or to the coats of animals. Some of the solvents used in making DDT sprays may irritate the skin and cause harmful results if handled carelessly. There will be no ill effects from using DDT if the precautions that are described herein are followed.

A DDT spraying operation on shipboard usually is a good-sized job. For

that reason, the operator should wear a respirator and goggles to prevent inhaling the fumes and to prevent eye irritation. A wide-brimmed hat, elbow-length rubber gloves, and clothing that will protect arms and shoulders should be worn. If the operator does not wear rubber gloves, he should wash his hands and arms frequently in a strong soap solution. Clean rags should be at hand to wipe off any spray that may collect on the face. Clothing should be changed frequently enough that it does not become saturated with the spray. Greaseless skin lotions may be used to prevent skin irritation due to xylene and other solvents.

AVAILABLE FORMS

DDT is offered for sale to the public in a great variety of forms. These preparations contain DDT in varying amounts. The labels on the containers should be read carefully before making a purchase to be sure that the material contains enough DDT to be effective. An aerosol should contain 3 percent DDT, a residual type spray should contain 5 percent DDT, and a dusting powder should contain 10 percent DDT to be effective.

Oil solutions for residual sprays.—DDT is soluble in a number of the lighter oils, and it is offered for sale dissolved in highly refined, deodorized white kerosene, or in other commercial solvents regularly used in other fly sprays. Most of these sprays contain 5 PERCENT DDT. **OIL SOLUTIONS SHOULD CONTAIN 5 PERCENT DDT TO BE EFFECTIVE AS A RESIDUAL SPRAY IN A WIDE VARIETY OF USES.** Preparations on which labels fail to state the definite concentration of DDT should not be purchased. **CAUTION:** The Navigation Statutes of the United States make it unlawful knowingly to transport, carry, stow, or use articles of ships' stores and supplies of a dangerous nature on board vessels except as permitted by the regulations established thereunder. The United States Coast Guard, which is charged with the enforcement of Navigation Statutes, has published regulations entitled "Explosives or Other Dangerous Articles on Board Vessels" setting forth conditions under which DDT preparations may be certified for use on shipboard. All DDT preparations, whether oil solutions or emulsion concentrations, must meet these requirements. Carbon tetrachloride should NOT be added to an insecticide to raise its flash point and to reduce its flammability because of the extremely poisonous nature of this material when it is dispersed into the air of a compartment.

Weaker insecticides containing 1 to 2 percent or less DDT are not satisfactory as residual sprays. The purchaser of a DDT spray should remember that he is interested primarily in purchasing DDT, and not the solvent used as the carrier. Weak DDT solutions require the use of such large amounts that it is not practical to try to get enough on a bulkhead for an effective residue.

If the manufacturer's label indicates that a DDT isomer or byproduct is the active ingredient, an 8- to 10-percent solution is needed to obtain satisfactory results. The various byproducts are not standardized and they usually are less effective than the technical grade DDT.

DDT in fly sprays.—Many manufacturers of well-known fly sprays are adding small amounts of DDT, one-half to 1 percent, to their products. This is done to insure a greater percentage of kill. These weak solutions are "space sprays" when sprayed into the air to form a poisonous mist, and they are NOT suitable for use to deposit residual DDT on surfaces.

Aerosols.—The aerosol bombs which are available contain an insecticide dissolved in a gas that has been liquefied under high pressure. When this liquefied gas is released by opening the valve on the "bomb," the gas escapes into the air and carries the insecticide with it. Because of the very fine particles produced, this gas is more effective as a space spray than is the same insecticide dispersed through an ordinary mist space spray.

As in the case of the "Fly Sprays," pyrethrum is the primary active ingredient that produces fast knock-down. Other materials such as DDT may be added to insure a greater percentage of kill. For this purpose 3 percent of DDT has been found to be desirable. However, it must be borne in mind that **THESE AEROSOLS ARE NOT EFFECTIVE AS RESIDUAL SPRAYS!** They should be used only as space sprays and they are very effective for that purpose.

BE SURE TO DISTINGUISH BETWEEN "SPACE SPRAYS" AND "RESIDUAL SPRAYS"

The greatest value of DDT is obtained when it is used as a **RESIDUAL SPRAY**.

Suspensions.—A DDT powder containing a chemical which permits the DDT particles to be mixed readily with water may also be used as a residual spray. In such a mixture, called a suspension, small particles of DDT are distributed evenly throughout the liquid.

The 5 percent DDT concentration for a spray is made from such a DDT powder merely by diluting it with water. The amount of water to be added depends upon the concentration of DDT in the commercial product. The manufacturer's label on the container should supply this information.

The DDT suspension can be sprayed on surfaces. It is safe to use because it presents no fire hazard. There is no odor, and it is harmless when applied to the skin or to the coats of animals. After it has been applied to a surface and the water has evaporated, small flecks of both DDT and the carrier remain on the sprayed surface. It will make white spots on dark surfaces such as dark-stained furniture, dark-colored paints, varnished surfaces and window glass. Where there will be no objection to spotting, it is very effective and easy to apply.

Emulsions.—DDT will not dissolve in water, but it will dissolve easily in certain organic solvents. A concentrated solution can be made by using one of those solvents. They may be diluted with water when they are to be used if a chemical called an emulsifier is added. The mixture of DDT, solvent, and emulsifier is called an emulsion concentrate. It is ready to use when mixed with water according to the manufacturer's label on the container. An emulsifier is added to the concentrated DDT solution so

The 5 C's of Food Handling

CLEANLINESS

COURTESY

CAREFULNESS

COMMON SENSE

COMPLIANCE
WITH THE LAW

that the solution will break up into fine droplets when it is mixed with water. These are dispersed throughout the water, giving it a milky appearance. If properly made it is a stable emulsion. It is made ready for use merely by adding clean water. Any clean water may be used to dilute the emulsion concentrate but sea water should not be used unless the printed directions give specific permission, for rather few formulae will work with sea water. Foaming will be avoided if the emulsion concentrate is added to the water. On standing, the diluted emulsion may have a creamy layer on its surface. It only needs to be stirred thoroughly before it is used in the sprayer. As xylene is a solvent commonly used to dissolve DDT, the regulations of the United States Coast Guard must be observed for this material. The DDT emulsion concentrate as purchased and without any water added to it must not have a flash point below 150° F.

Commercial emulsion concentrates usually contain 20 to 35 percent DDT. The amount of water that should be added to produce a 5-percent residual spray will depend upon the concentration of DDT in the emulsion concentrate. The directions on the manufacturer's label should be followed to produce the 5-percent spray.

Paints.—White-wash paints and oil-base paints containing DDT are being produced. At this date little is known about them, and no recommendations about their effectiveness can be made here.

Powders (or dusts).—Dry mixtures of DDT are available for applying as a powder. They contain 5 to 10 percent DDT diluted with some powder such as talc or pyrophyllite. The diluting powder serves as a carrier. The powder should contain 10 percent DDT to be effective.

EQUIPMENT FOR APPLICATION

The use of DDT as a RESIDUAL SPRAY is an entirely new method of insect control. It should NOT be sprayed into the air in the way some fly sprays are used. The purpose of RESIDUAL SPRAYING is to coat a surface with a fine layer of DDT because of its long-lasting killing effect on insects.

It is necessary to paint on the liquid or to apply it as a coarse wet spray so that as much DDT as possible will remain on the treated surface and will not blow away as a mist. For best results, the sprayed surface should be as wet as possible without letting the spray liquid run down the

bulkheads. Residual spraying should be done in swaths from deckhead to deck, etc., with the operator facing his work. He should step sideways the width of the swath after its completion and continue in this manner. The deckhead, etc., should be sprayed in the same way, care being taken to keep the nozzle well away from the operator's face in order to minimize the amount of spray that would fall on him.

An ordinary household insecticide sprayer can be used to apply DDT spray but it is quite a tiresome job. It also is difficult to apply an even coat of DDT where a small plunger type hand sprayer is used. The larger 2½- to 4-gallon air-pressure garden-type hand sprayer is much better to use on shipboard. If the latter type sprayer is employed, the air pressure in it will decrease as it is used with a consequent reduction in the amount of DDT being applied. If a 4-gallon cylindrical sprayer is used, 60 strokes of the air pump at the beginning of work when it contains about 3½ gallons of the emulsion (or solution) will produce a pressure of approximately 50 pounds per square inch. An adequate pressure can be maintained by pumping 30 additional strokes after the first 4 minutes of spraying and then continuing until the tank is empty.

The spray gun must be equipped throughout with oil-resistant hose, washers, and gaskets. DDT must not remain in a spray gun or it will rust the metal, and decompose the hose, washers, and gaskets. After a spray gun has been used, it should be washed out, cleaned, and dried thoroughly. If this procedure is not carried out, the spray tank will rust, the gaskets and washers will decompose, and the nozzle will clog. For shipboard work, the following changes should be made to these spray guns:

- (1) Insert a petcock in the cover. This is to be used as a bleed valve to release air pressure.
- (2) All gaskets, washers, hose, and all other parts that usually are made of ordinary rubber MUST be made of oil-resistant, synthetic rubber.
- (3) Provide pressure, oil-resistant, synthetic rubber hose at least 4 feet long. One end of this hose should be attached SECURELY to the tank and the other end to a brass extension rod 2 feet long. At the tip of this rod an angle fog nozzle should be attached. The nozzle should be able to produce a coarse, wet spray. A flat fan-shaped spray pattern is desirable. The nozzle should be equipped with a strainer to prevent its clogging.

(4) The shoulder strap should be made of durable canvas or leather, with snap ends. Weld (or braze) heavy-wire rings to the tank so that the carrying strap can be attached securely and nothing can break loose.

(5) Weld (or braze) a cup at the bottom of the tank and a clip near the top of the tank to hold the brass extension rod.

(6) Provide a box of repair parts for pressure type spray gun that has been purchased.

A new paint brush, 4 to 6 inches wide, should be used to apply DDT to screens, shelves, ropes, electric-light cords, and special surfaces to kill insects that alight on them. Spraying screens wastes DDT because much of it passes through the mesh. A heavy coat should be applied to screens because many insects either rest on the mesh or pass through them. DDT loses its killing power more readily from exposed screens than from inside protected screens.

A hand-operated dust gun can be used to force DDT powder into cracks and crevices or to distribute it generally over a surface. The 2-ounce can is useful for distributing small quantities of the powder in lice control and in treating dogs for fleas and ticks. DDT powders may contain an added material such as pyrethrum for a quick knockdown—similar to its use in sprays—otherwise a considerable time may elapse before the insects are killed.

CONDITIONS AFFECTING

DDT has long-lasting residual properties. Insects have been killed by it months after it has been applied, depending upon local conditions. Its killing property varies with different types of surfaces, with the dosage used, and with many other conditions. When applied to newly painted surfaces, the effect is lost rapidly. Dust and grease deposits covering treated surfaces (such as in the galley) reduce the length of effectiveness. Vibrations cause a flaking off of the DDT deposit, and shorten the period of residual effect.

The DDT residue usually will remain effective until dust or deposited salt spray covers it, making it impossible for the insects to touch the DDT to receive a toxic dose. Dusty or dirty surfaces should be cleaned before DDT is applied. Bulkheads, screens, and other surfaces treated with liquid or dust forms of DDT for residual effect should not be washed unless absolutely necessary. Surfaces washed or wetted repeatedly will require more frequent application of DDT.

DIRECTIONS FOR USING

Where appearance is a factor, care should be used in wetting surfaces with DDT spray to avoid spotting. Dark-stained furniture should be covered before spraying is begun. Avoid depositing spray on ports and windows. Spotting can be removed from furniture and dark painted or varnished surfaces with furniture polish liberally applied, then wiped with a clean dry cloth. Light wall surfaces should be wiped with a clean, dry rag to remove dust before spraying. Wall cleaning or painting should be done before DDT is applied, otherwise its period of effectiveness will be greatly shortened. Do not touch a sprayed surface while it still is wet. Streaking will result, and this will show as a white smudge when the spray has dried.

Cockroaches.—DDT will control cockroaches effectively, and it is less poisonous to human beings and pets than sodium fluoride which has been a constituent of many roach powders. Both the 10 percent DDT powder and the 5 percent DDT emulsion (or solution) spray should be used. The emulsion should be sprayed into their favorite hiding places, such as in cracks, behind objects, behind and under drawers, and all cracks and crevices **WHEREVER ROACHES HIDE**. This will bring many of them out into the open and will kill them. Apply the spray to the undersides of tables, shelves, sinks, and to vertical surfaces where most of the cockroaches are found. Then the dust applicator should be used to deposit the powder in the same places where the spray had been applied. Whenever the powder is swept away fresh powder should replace it. Food, vegetables, dishes, and cooking utensils must either be covered or be moved before dusting or spraying is begun.

Since roaches are great travelers and roach infestation often is widespread on a ship, best results will be obtained if the whole ship is attacked simultaneously. If only one area is treated with DDT, many of the surviving roaches will scatter into other areas and it may seem as if the roach problem has been made worse than it was before. To prevent this from happening, it is better to begin roach control of a badly infested place by starting work outside it and moving into it. This method of attack will prevent the roaches from scattering.

One application of DDT is not sufficient. Some roaches escape killing the first time and eggs hatch. More roaches are brought in with food stores constantly. Roach control to

be effective must be carried on constantly. The above procedure will have to be repeated and repeated.

Flies.—The principal resting place of flies in spaces where food is prepared or served should be covered with a 5 percent DDT spray. They will include the galleys, sculleries, messrooms, storerooms, water closet spaces, garbage racks, etc. In galleys and messrooms flies will enter through an open door, but if these compartments have received a thorough individual treatment with DDT, the flies will be dead before the next meal. At night, flies prefer to rest on the deckhead, around cracks and crevices, along edges of the deckhead, bulkheads, gangways, and furniture. All of these places should be sprayed. Electric cords, ropes, and screens should be painted with the DDT solution (or emulsion). When the ship is in port spraying the garbage cans and garbage room will help to reduce the fly problem. Keep all food containers covered after spraying a compartment. Flies fall into them as the DDT takes effect.

Bedbugs.—DDT is probably the best insecticide that has been developed for use against bedbugs. When a 5 percent DDT spray is applied properly to mattresses and berth frames, a single treatment will make them bugproof for months.

Remove or cover all articles made of rubber or leather that are in the compartment that is to be treated with DDT.

Wear the respirator and the goggles that have been recommended. The risk of DDT poisoning is not great, but the xylene (in the emulsion) is irritating to the eyes and the mucous membranes. Close all of the ports during actual spraying if this is necessary to prevent wind from taking the spray stream out of control. Immediately after spraying, all ports should be opened. Prohibit all smoking during spraying and several hours afterward.

Be sure the spray gun produces a semicoarse spray. A foglike spray is ineffective and wasteful.

Mattresses should be placed in a pile of 8 or 10. The outside of the pile should be well sprayed but not wetted. Most of the bedbugs are found in the folds. The top surface of the top mattress then should be sprayed lightly; a slight moistening of the surface is all that is needed. Then it should be turned over to start another pile so that the opposite side can be sprayed too. Pillows should be sprayed lightly.

The removable springs and berth frames should be placed vertically against the bulkhead and then be sprayed, paying particular attention to the joints. (Nonremovable berths will have to be sprayed in place.) As the spray is directed toward the bulkhead, the excess DDT will be deposited on it.

When the spraying has been completed, the mattresses should be returned to the berths. They may be made up and used after they have been aired four hours.

It is advisable to spray blankets and the inside of sea bags and gear lockers. DDT emulsion (or solution) can be used to spray upholstered furniture. In heavy infestations, spray along the bulkheads in the quarters, being certain to force the spray into cracks and crevices everywhere. Although the spray is the best way to kill bedbugs, powder can be used.

Lice.—DDT furnishes a simple and effective way to control lice. It will kill body lice, head lice, and pubic (crab) lice when it is used properly.

Body lice.—Body lice are usually found in clothing rather than on men's bodies; therefore clothing and underwear should be treated. The 2-ounce can of 10 percent DDT powder (carried as part of the medical stores) can be used conveniently to sift the powder over the entire inner surface of the underwear. **IT SHOULD BE RUBBED INTO THE SEAMS.** The inside of shirts, trousers, hats, and other articles of clothing should be treated at the same time. This treatment should be effective for periods of 3 weeks or longer if the clothing is not washed. The effects remain until the clothing is changed or washed. Extra clothing and the bedding should be dusted, too. Infested bedding can be treated by dusting between the sheets. Care should be taken to avoid reinfestation from discarded clothing or bath towels.

Head lice.—Ten percent DDT powder dusted in the hair and rubbed in with the hands will kill growing and adult head lice. The hat also should be dusted, especially inside the hat band. As DDT will not kill louse eggs or nits, the treatment should be repeated 7 to 10 days later. After the DDT powder has been applied, the hair must not be washed for 24 hours, and preferably should not be washed for 2 or more weeks. Keeping it dusted will prevent reinfestation.

Crab lice.—The same instructions that are recommended above for head lice will be effective against crab lice.

Cleaning time is all the time for a better place to work

All portions of the body, especially between the legs and in the armpits, **MUST** be thoroughly dusted. Any area that is not treated may harbor too few lice to be noticed but it will be enough to reinfest the entire body. A second treatment with DDT powder should be made 7 to 10 days after the first one to kill any young lice which may have hatched during this time. Never use DDT solution (or emulsion) on the skin because it may be absorbed into the body.

Mosquitoes.—Spraying with DDT can be used very successfully to kill the mosquitoes that carry malaria, yellow fever, dengue fever, and other mosquito-borne diseases when a ship is in a disease-infected port. It is just as effective anywhere against other mosquitoes that are only a nuisance.

A 5 percent DDT spray can be used to treat surfaces so that infected mosquitoes can rest on these surfaces and be killed before they have a chance to spread disease. When applying this residual spray all bulkhead and deckhead surfaces should be treated, especially dark corners, portions of bulkheads behind pictures, furniture, and berths, and other places where mosquitoes rest undisturbed during the day. The under surfaces of tables, berths, and gear lockers, backs of bookcases and berths, underparts of chairs and tables, closets, and screens should be treated. Instructions for depositing DDT residue by spraying and painting have been given above. This treatment often is effective against mosquitoes for several months when it is done properly.

Fleas.—The cause of flea infestation usually is a pet—a dog or a cat—but sometimes rat fleas will produce an infestation. The infested compartments including the sleeping places of pets and places where they are accustomed to lie down should be dusted thoroughly with 10 percent DDT powder. It should be forced into all cracks and crevices. If the powder is left in place, it should control fleas for 2 months after the dusting. If a 5 percent DDT spray is used instead of the powder, the infested compartments should be sprayed thoroughly, including the decks and about 2 feet up on the bulkheads, rugs, furniture, and in the sleeping places of pets and places where they are accustomed to lie down. Berths and bedding may have to be sprayed too.

Most dogs of average size may be dusted safely with about 1 tablespoonful of 10 percent DDT powder. To apply the powder, part the hair and dust lightly on the skin in a number of places on the body, particularly back of the head and neck, under the

throat, and on the ears. The dog's bed should be dusted. Often a line of DDT powder along the middle of the dog's back is enough to kill all of the fleas and to prevent reinfestation for a week or more. DDT powder activates fleas before causing their death. The rapid crawling and biting of fleas in their death struggle cause a dog to scratch and bite vigorously until the fleas are paralyzed.

DDT powder should **NOT** be used on cats because they lick themselves and may swallow enough DDT to make them sick. Treating the infested areas and the cat's bed probably will be enough without treating the cat.

DDT oil solutions should **NEVER** be used on animals because the DDT may be absorbed directly through their skin with fatal results.

Weevils.—To control the spread of weevils in flour and other cereals and grains, residual spraying with 5 percent DDT emulsion (or solution) will be required in the dry storeroom. Because this part of a vessel is in the steward's department, it will be necessary to have his cooperation to do effective control work. The most important part of weevil control is the work that is done while a vessel is in port **BEFORE** stores are loaded for the next voyage. At this time, the following instructions should be carried out **IN DETAIL**, either by the steward or by the shore staff, depending upon who is responsible:

- (1) All dry stores remaining from the previous voyage **MUST** be removed. The gratings should be lifted, and the decks, deckheads, bulkheads, and shelving should be thoroughly scrubbed with soap and water.
- (2) If any flour remaining in the old stores is too badly infested with weevils, it should be condemned and be disposed of according to the procedure in use on the vessel.
- (3) After the storeroom has been thoroughly cleaned, and before the foods are replaced, **ALL** surfaces should be sprayed with 5 percent DDT emulsion (or solution). This includes the deck, deckhead, bulkheads, gratings, battens, etc. **DO NOT SPRAY THE FOOD CONTAINERS OR THE FLOUR BAGS. REMEMBER THAT DDT IS POISONOUS IF EATEN. BE SURE IT DOES NOT BECOME MIXED WITH THE FLOUR OR ANY FOOD OR SOAK THROUGH ANY FOOD CONTAINERS TO CONTAMINATE THE FOOD IN THEM.** Observing these precautions will prevent DDT from contaminating the food.
- (4) One hour should be allowed after the spraying so that the spray can dry. After this time has elapsed, all foods may be returned to their proper places.

After a voyage has begun it will be necessary that the dry storeroom in which flour and other cereals and grains are stored be sprayed with 5 percent DDT emulsion (or solution) at least once every month. It will be necessary to have the cooperation of the steward to determine the time that will be convenient because of his department's activities in preparing food and so that the spraying can be accomplished in as short a period as possible. Half of the dry storeroom should be treated at a time. After all the flour and other cereals and grains have been removed from this part and it has been thoroughly scrubbed with soap and water, the same procedure for applying DDT should be carried out that was done while the ship was in port. This work should be continued until **ALL** of the infested space has been treated with DDT.

If DDT powder is used instead of DDT spray, great care **MUST** be taken that it is not mixed accidentally with food in the storeroom. In the interest of safety, only colored DDT powder should be used in the storeroom.

IMPORTANT: IN ALL INSECT CONTROL ACTIVITIES, DO NOT TRY TO SUBSTITUTE DDT FOR SANITATION AND CLEANLINESS.



LESSONS FROM CASUALTIES

MASTERS—DON'T SHIRK SAFETY BY OVERLOADING!

Why the Master of a merchant vessel is willing to violate the laws of the United States that are intended for his safety, as well as the safety of others sailing with him, and for the protection of the vessel cannot be understood. Repeated violations of the rules for safety sooner or later are found out. Usually it is not discovered until after a serious casualty has occurred and, then, it's too late to take preventative measures because (1) the men responsible therefor are probably dead or very seriously injured, and (2) the vessel may be seriously damaged. Usually, however, when one person deliberately violates the rules for safety, many innocent persons also suffer because "the chain effect" of accidents doesn't hit the violator alone.

Recently the Master of the S. S. *Archers Hope* owned by the Cities Services Oil Co. did permit his vessel to arrive at ports in the United States with the applicable load lines submerged on two different trips within one month. The first violation was observed by the Bureau of Customs and the second by the Coast Guard. It has been estimated that these two violations by this Master netted his company approximately \$28,000. Since the civil fines provided by law to be assessed against the company are nominal, it can be seen that the owner or operator of the vessel is willing to have the vessel overloaded so long as the Master is willing to carry the brunt of the punishment if and when caught. In this instance the Master was charged with "Inattention to Duty" and these charges were proven. The result? Master's license suspended!

The pertinent parts of the laws applicable in this case read as follows:

(c) If any person shall knowingly permit or cause or attempt to cause any vessel subject to this act and to the regulations established thereunder to depart, or if, being the owner, manager, agent, or master of such vessel, he shall fail to take reasonable care to prevent her from departing from her loading port or place when loading in violation of section 4, or if any person shall knowingly permit or cause or attempt to cause a foreign vessel exempted pursuant to section 5 to depart, or if, being the owner, manager, agent, or master of such vessel, he shall fail to take reasonable care to prevent her from departing from her loading port or place when loaded more deeply than permitted by the laws and

regulations of the country to which she belongs, he shall, in respect of each offense be liable to the United States in a penalty of \$500. The Commandant of the Coast Guard may, in his discretion, remit or mitigate any penalty imposed under this paragraph. (Mar. 2, 1929, sec. 8; 45 Stat. 1494; 46 U. S. C. 85g.)

(c) If any person shall knowingly permit or cause or attempt to cause any vessel subject to this Act to depart or arrive, or if, being the owner, manager, agent, or master of such vessel, he shall fail to take reasonable care to prevent her from departing from or arriving at any port or place designated in section 1 when loaded in violation of section 4, or if any person shall knowingly permit or cause or attempt to cause a foreign vessel exempted pursuant to section 5 to depart or arrive, or if, being the owner, manager, agent, or master of such vessel he shall fail to take reasonable care to prevent her from departing from or arriving at any port or place designated in section 1 when loaded more deeply than permitted by the laws and regulations of the country to which she belongs, he shall, in respect of each offense, be liable to the United States, in a penalty of \$500 unless the vessel's departure or arrival was, under the circumstances, reasonable and justifiable. The Commandant of the Coast Guard may, in his discretion, remit or mitigate any penalty imposed under this paragraph. (Aug. 27, 1935, sec. 8; 49 Stat. 890; 46 U. S. C. 88g.)

(g) In any investigation of acts of incompetency or misconduct or of any act in violation of the provisions of this title, or of any of the regulations issued thereunder, committed by any licensed officer or any holder of a certificate of service, the person whose conduct is under investigation shall be given reasonable notice of the time, place, and subject of such investigation and an opportunity to be heard in his own defense. The whole record of the testimony received by such investigation and the findings and recommendations shall be forwarded to the Commandant of the Coast Guard and if that officer shall find that such licensed officer or holder of certificate of service is incompetent or has been guilty of misbehavior, negligence, or unskillfulness, or has endangered life, or has willfully violated any of the provisions of this title or any of the regulations issued thereunder, he shall, in a written order reciting said findings, suspend or revoke the license or certificate of service of such officer or holder of such certificate. * * * (R. S. 4450—46 U. S. C. 239.)

Some of the more important facts are that two trips, one foreign and the other coastwise, were taken within a very short period of each other. In both instances the departure of the vessel was not noted by Coast Guard officials but when the vessel arrived at its port of destination it was discovered to have applicable load lines substantially sub-

merged. In the foreign voyage, the trip started in the tropical load line zone and ended in the winter zone. The coastwise voyage started in the United States in the summer load line zone and ended in the winter zone. This particular Master violated the act of March 2, 1929, establishing load lines for American vessels, because this act is applicable whether the American vessel sails from a United States port or from a foreign port or place for a voyage by sea. It is also illegal to enter a United States port with the applicable load lines substantially submerged.

In connection with the coastwise voyage, the Master admitted that during the loading operations the vessel rested on the bottom and later slid off without damage. The Master also admitted that after the vessel was free he did not know if the applicable load lines were submerged or not at the time of departure. During the loading operations preparatory for the foreign voyage, this was done out in the stream and not near a dock. Because of the rough weather the Master tried to observe if the applicable load lines were submerged by going some distance from the vessel and by watching the loading operations through binoculars.

The Master pleaded "not guilty" to "inattention to duty." He claimed that the difficulties encountered at the commencement of each voyage, when it was difficult to judge if applicable load lines were submerged, was evidence that he did not "willfully" violate the law. Yet it is obvious that neither did he try to have cargo discharged as soon as he discovered the load lines were submerged nor did he try to show that steps were taken to reduce the amount the winter load lines were submerged. In each instance the Master apparently hoped that the overloading would not be discovered.

The records show that at the end of the foreign voyage the applicable winter load lines were submerged approximately 10.4 inches. At the port of arrival on the coastwise voyage, the applicable winter load lines were submerged approximately 12.75 inches.

The calculation of the proper amount of cargo and the stowage thereof on board the vessel is the responsibility of the Master. It seems there would be many ways a Master can tell if the vessel is overloaded or not properly loaded. The Master is required to make entries in the official

log book of the vessel showing what the draft of the vessel is on departure. If the normal draft of the vessel when loaded is 30 feet in a certain port or place, then it should be obvious to the Master that the vessel is overloaded if the draft is much more, unless there is a valid reason for it being otherwise. The Master also has available data and calculations on how much his vessel can carry under normal conditions. If it is a tanker or a cargo ship, he should know how large the various tanks or holds are and how much cargo can be placed therein, both by volume and weight. An experienced mariner should also be able to tell by the changes in handling and navigating characteristics of the vessel, if the vessel is overloaded or the cargo is not properly arranged. If the vessel on a voyage starts to "ship" water, how does the Master know something is wrong? Of course, he starts looking in the wells, bilges, etc., because he can notice that the ship is acting differently.

In deliberately violating the law and overloading the vessel, it is the Master who will suffer because such actions may constitute "negligence" or "inattention to duty." In proceedings looking toward the suspension or revocation of such a Master's license, it is the Master who is deprived, or is liable to be deprived, of his right to continue his profession. In this particular case the Master suffered the greatest loss because his license was suspended.

It is obvious that owners and operators of vessels are apparently willing to permit Masters (without actually saying so in so many words) to overload vessels if it will increase the profits and earnings for the ship.

In the long run there is nothing gained by overloading a merchant vessel. The requirements set forth in the Coast Guard Load Line Regulations and in the International Load Line Convention of 1930 establish a standard of safety to which a vessel may be safely loaded under normal conditions which can be expected for the waters on which the vessel may sail. When these safety standards are violated, the Master not only violates the law but worse yet, he places his own life in jeopardy, as well as lives of other persons, and endangers the vessel. The vessel's maneuvering ability may be adversely affected when overloaded and thereby increasing the possibility of collision with another vessel or property in a congested harbor. If the water is shallow or subject to the formation of sand bars or mud banks, it is possible that a severe grounding may occur. One accident or casualty in-

volving serious damage to a vessel will wipe out the profits derived from overloading the vessel many times.

It is essential for National Defense that safety standards established by laws and regulations, which are based on experiences of past disasters, be followed by all concerned. If safety is left out of normal ship operations, then we will all suffer.

OVERLOADING TANKERS AGAIN—UNSAFE AND COSTLY

The Master of the *S. S. Merrimac*, an American tanker over 10,000 gross tons, operated by the North American Shipping & Trading Co., Inc., of New York, was found guilty by plea at the Court of Summary Jurisdiction at Grays, England, of overloading his vessel in violation of sections 44 and 57 of the Merchant Shipping (Safety and Load Line Conventions) Act, 1932, Great Britain. For this offense he was fined \$4,200 plus costs amounting to \$14.70.

The Master of the *S. S. Sweetwater*, an American tanker of over 10,000 gross tons, owned by the Metro Petroleum Shipping Co., Inc., and operated by the Mar Trading Co., of Philadelphia, Pa., was found guilty by plea at the Court of Summary Jurisdiction at Swansea, England, of overloading his vessel in violation of sections 44 and 57 of the Merchant Shipping (Safety and Load Line Conventions) Act, 1932, of Great Britain. For this offense he was fined \$1,960 plus costs amounting to \$29.40.

The overloading of tank vessels violates the International Load Line Convention of 1930, the Act of March 2, 1929, as amended, and the United States Coast Guard Load Line Regulations in 46 CFR Part 43, promulgated in accordance with law. The Masters of the *S. S. Merrimac* and *S. S. Sweetwater* are liable to charges under the provisions of R. S. 4450, as amended (46 U. S. C. 239), looking to the suspension or revocation of their licenses.

The United States is a signatory nation to the International Load Line Convention of 1930. The overloading of an American vessel is a violation of the laws of the United States. Such willful actions on the part of masters of American vessels bring disgrace upon the flag of their country. Whenever an American vessel is found to be overloaded by another signatory or acceding nation to the International Load Line Convention of 1930 the master of such a vessel is prosecuted for violation of this Convention and the local enabling legislation.

The International Load Line Convention of 1930 was adopted to fur-

ther safety of life at sea and to set standards which would be recognized internationally at which a vessel may be safely loaded. When a master of a vessel willfully violates the recognized international safety standards established for merchant vessels he is unnecessarily endangering his own life and all the lives of the people aboard, as well as the vessel and cargo. Also the overloaded vessel's maneuvering ability may be adversely affected and thereby other lives and property may be endangered.

It is well known that a vessel cannot be so navigated as to always miss heavy weather. When the master of a vessel overloads the vessel in order to obtain immediate profits, even after paying a severe fine, he is being "Penny-wise and pound-foolish."

When a vessel is overloaded, who suffers? The master—because he is subject to action against his license under the provisions of R. S. 4450, as amended! The crew—because their lives may be placed in jeopardy! The ship's owners or operator—because the vessel may be endangered unjustifiably!

In some cases of severe overloading it may be necessary to require that the vessel be surveyed to determine if the ship has been damaged structurally. This can happen when unexpected heavy weather has been encountered.

The purpose of the International Load Line Convention of 1930 is to promote safety of life and property at sea by establishing in common agreement uniform principles and rules with regard to the safe limits to which ships on international voyages may be loaded. The discussion and establishment of requirements limiting the drafts to which vessels may be loaded are old subjects. Before the act of March 2, 1929, which requires the establishment of load lines for United States vessels making foreign voyages, various other large maritime nations had requirements regarding the loading of vessels in their ports. The British Board of Trade issued Load Line Rules in January 1886, and other large maritime nations like Denmark, France, Germany, Netherlands, Norway, and Sweden had requirements in effect before 1915. At the Conference for the establishment of the International Load Line Convention held in London in 1930, many of the large maritime nations considered tank vessels to be in the same category as other cargo vessels and were surprised at the definite opinions expressed by representatives of some of the other nations, particularly those from the United States of America, where it was felt that vessels carrying

liquid cargoes should be given special consideration and allowed deeper loading than other cargo vessels. The outcome of the discussions at this Conference was the preparation of special rules and regulations for application to vessels carrying liquid cargo which were embodied in the International Convention Rules.

The deeper loading of tankers when compared with dry cargo vessels is permitted on the basis that in the construction of vessels of this type there are embodied certain features which add to the safety of the ship and her crew.

The International Convention Rules are such that a reasonable measure of safety is provided in the structure of the ship by adequate standard of strength and sufficient reserve buoyancy provided by the intact portion above water to meet every reasonable condition at sea when employed on her regular service. When the master overloads his vessel he is deliberately violating the rules which experience has taught are essential for safety of life and property at sea.

LIMIT SWITCHES AND EMERGENCY DISCONNECT SWITCHES IN CONTROL CIRCUITS OF LIFEBOAT WINCHES

For many years the problem of maintaining adequate limit switches and emergency disconnect switches in control circuits of lifeboat winches has been the subject for articles in "Lessons From Casualties" and for changes in the rules and regulations for all merchant vessels. Over the years various designs and arrangements have been tried. The Merchant Marine Council considered this subject at a public hearing held on March 27, 1951, and as a result expressed by representatives of some of Commandant adopted new regulations.

The purpose of the amendments to the regulations regarding limit

switches and emergency disconnect switches in control circuits of lifeboat winches is to have the requirements for such equipment to be the same on existing vessels as on new vessels. At the public hearing it was brought out that 30 accidents in a 5-year period were caused by defective limit switches. These casualties resulted in 3 deaths, 18 persons injured, and considerable property damage. The extension of the application of the regulations to installations on existing vessels and revision of requirements for limit switches and emergency disconnect switches are in the interest of safety of life at sea. Since March 1951 at least 6 more casualties have occurred as a result of defective limit switches. In order to improve safety it is necessary to design or modify electrical equipment to accomplish the intent of the revised regulations. During this period of developing and testing various devices, it is essential that masters, shipowners and ship operators make the preliminary plans for such equipment installations so that just as soon as satisfactory devices are listed and published in the "Proceedings" it will be possible to start making the actual installations. During this period it is essential that existing installations on board the vessels be kept in good operating condition. If maintenance is neglected the possibility of more casualties increases tremendously.

A Navigation and Vessel Inspection Circular No. 8-51 is set forth on page 245 which elaborates upon the intent of the regulations and shows typical acceptable arrangements of the electrical components of power-operated lifeboat winches. It is necessary that existing vessels fitted with gravity davits and power-operated winches shall have such equipment modified so that these installations will be in compliance with the regulations by July 1, 1952.

AVOIDABLE ACCIDENTS

The *Safety Bulletin* of the Standard Oil Company of California de-

scribes a freak accident—actually a normal, everyday mishap with amazing lack of consequences. The welder demonstrates one method of saving life and lessening the results of an accident; it is not a recommended method.

"Burns and Fall. An oiler was overhauling a valve in a steam line in the engine room on a vessel in a drydock. He was perched on another steam line some 15 feet above the floor plates. The main sea suction had been dismantled and the parts were strewn around directly under him. The oiler had removed the body of the valve when a fellow crew member cracked a valve in the line admitting steam (60 lbs.). The oiler heard the gurgle of the condensate and turned his head away. Hot water and steam came from the pipe and struck him on the side of the neck and upper chest. In attempting to escape from the steam, the man fell from the pipe. He hit an angle iron with his hip and bounced through an open floor plate into the bilges. He lit on a welder but did not hurt the latter. It was thought at first that the man was seriously burned and that probably he had a fractured hip. Fortunately these fears were not realized. The man was hospitalized, discharged after a short stay and is now back at work."

"Shore Safety Committee Comment: This man was fortunate to escape as lightly as he did. Anyone viewing the place he fell would be convinced of this."

What lesson does this incident teach? The basic cause of this accident was "poor supervision." First, steps should have been taken to see that no valves would be opened which might admit steam to that portion of the line the man was working on. In some industries they would padlock block valves closed to protect the man. Valves could also be lashed closed. Second, rigging should have been provided for this job. If the man had had a couple of planks, the chances of falling would have been less.

APPENDIX

Executive Order 10277

AMENDING REGULATIONS RELATING TO THE SAFEGUARDING OF VESSELS, HARBORS, PORTS, AND WATERFRONT FACILITIES OF THE UNITED STATES

By virtue of the authority vested in me by Public Law 679, 81st Con-

gress, 2d Session, approved August 9, 1950, which amended section 1, Title II of the act of June 15, 1917, 40 Stat, 220 (50 U. S. C. 191), and as President of the United States, I hereby prescribe the following amendments of the regulations prescribed by Executive Order 10173 of October 18, 1950, which regulations constitute Part 6, Subchapter A,

Chapter I, Title 33 of the Code of Federal Regulations:

1. Paragraph (a) of § 6.04-1 is amended to read as follows:

§ 6.04-1 *Enforcement.* (a) The rules and regulations in this part shall be enforced by the captain of the port under the supervision and general direction of the District Commander and the Commandant, and

all authority and power vested in the captain of the port by the regulations in this part shall be deemed vested in and may be exercised by the District Commander and the Commandant.

2. Section 6.10-1 is amended to read as follows:

§ 6.10-1 *Issuance of documents and employment of persons aboard vessels.* No person shall be issued a document required for employment on a merchant vessel of the United States nor shall any licensed officer or certificated man be employed on a merchant vessel of the United States unless the Commandant is satisfied that the character and habits of life of such person are such as to authorize the belief that the presence of the individual on board would not be inimical to the security of the United States: *Provided*, That the Commandant may designate categories of merchant vessels to which the foregoing shall not apply.

3. Section 6.10-7 is amended to read as follows:

§ 6.10-7 *Identification credentials.* The identification credential to be issued by the Commandant shall be known as the Coast Guard Port Security Card, and the form of such credential, and the conditions and the manner of its issuance shall be as prescribed by the Commandant after consultation with the Secretary of Labor. The Commandant shall not issue a Coast Guard Port Security Card unless he is satisfied that the character and habits of life of the applicant therefor are such as to authorize the belief that the presence of such individual on board a vessel or within a waterfront facility would not be inimical to the security of the United States. The Commandant shall revoke and require the surrender of a Coast Guard Port Security Card when he is no longer satisfied that the holder is entitled thereto. The Commandant may recognize for the same purpose such other credentials as he may designate in lieu of the Coast Guard Port Security Card.

4. A new subpart 6.14 is added to read as follows:

SUBPART 6.14—SECURITY OF WATERFRONT FACILITIES AND VESSELS IN PORT

§ 6.14-1 *Safety measures.* The Commandant, in order to achieve the purposes of these regulations, may prescribe such conditions and restrictions relating to the safety of waterfront facilities and vessels in port as he finds to be necessary under exist-

ing circumstances. Such conditions and restrictions may extend, but shall not be limited to, the inspection, operation, maintenance, guarding, and manning of, and fire-prevention measures for, such vessels and waterfront facilities.

§ 6.14-2 *Condition of waterfront facility a danger to vessel.* Whenever the captain of the port finds that the mooring of any vessel to a wharf, dock, pier, or other waterfront structure would endanger such vessel, or any other vessel, or the harbor or any facility therein by reason of conditions existing on or about such wharf, dock, pier, or other waterfront structure, including, but not limited to, inadequate guard service, insufficient lighting, fire hazards, inadequate fire protection, unsafe machinery, internal disturbance, or unsatisfactory operation, the captain of the port may prevent the mooring of any vessel to such wharf, dock, pier, or other waterfront structure until the unsatisfactory condition or conditions so found are corrected, and he may, for the same reasons after any vessel has been moored, compel the shifting of such vessel from any such wharf, dock, pier, or other waterfront structure.

5. A new subpart 6.19 is added to read as follows:

SUBPART 6.19—RESPONSIBILITY FOR SECURITY OF VESSELS AND WATERFRONT FACILITIES

§ 6.19-1 *Primary responsibility.* Nothing contained in this part shall be construed as relieving the masters, owners, operators, and agents of vessels or other waterfront facilities from their primary responsibility for the protection and security of such vessels or waterfront facilities.

HARRY S. TRUMAN,
THE WHITE HOUSE,
August 1, 1951.

[F. R. Doc. 51-8984; Filed, Aug. 1, 1951;
10:43 a. m., 16 F. R. 7537-8/2/51.]

Amendments to Regulations

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter I—Coast Guard, Department of the Treasury

Subchapter A—General

PART 6—PROTECTION AND SECURITY OF VESSELS, HARBORS, AND WATERFRONT FACILITIES

CROSS REFERENCE: For amendment of §§ 6.04-1, 6.10-1, and 6.10-7, and

addition of §§ 6.14-1, 6.14-2, and 6.19-1, see Executive Order 10277, *supra*.

Subchapter K—Security of Vessels (CGFR 51-40)

PART 121—SECURITY CHECK AND CLEARANCE OF MERCHANT MARINE PERSONNEL

REQUIREMENTS FOR DOCUMENTS BEARING SECURITY CLEARANCE INDORSEMENT

Pursuant to the authority of 33 CFR 6.10-3 in Executive Order No. 10173 (15 F. R. 7007, 3 CFR, 1950 Supp.), the Commandant may require that all licensed officers and certificated men employed on other than exempted designated categories of merchant vessels of the United States be holders of specially validated documents. The purpose of the following amendment to 33 CFR 121.16 (b) is to postpone the effective date from "September 1, 1951" to "October 1, 1951" because it has been determined that the average percentage of crews holding validated documents is approximately 71 percent. The regulation, designated as § 121.16 (b), was published in the FEDERAL REGISTER dated July 18, 1951 (16 F. R. 6868), and requires that all persons employed on merchant vessels of the United States of 100 gross tons and upwards engaged in (1) foreign trade, or (2) the intercoastal trade, or (3) the coastwise trade to Alaska or the Hawaiian Islands, shall be holders of specially validated documents as a condition precedent to employment thereon. Since the security interests of the United States called for the aforesaid application of the provisions of 33 CFR 6.10-3 at the earliest practicable date and because of the national emergency declared by the President, it is found that compliance with the notice of proposed rule making, public rule making procedure thereon, and effective date requirements of the Administrative Procedure Act is impracticable and contrary to the public interest.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Executive Order No. 10173, as amended by Executive Order No. 10277, § 121.16 (b) is amended by changing the effective date from "September 1, 1951" to "October 1, 1951" so that it will read as follows:

§ 121.16 *Requirements for documents bearing security clearance indorsement.* * * *

(b) On and after October 1, 1951, all persons employed on merchant vessels of the United States of 100

gross tons and upwards engaged in (1) the foreign trade, or (2) the intercoastal trade, or (3) the coast-wise trade to Alaska or the Hawaiian Islands, shall be required as a condition of employment to be in possession of a document bearing a special validation indorsement for emergency service prior to acceptance of employment as members of crews of such vessels. The issuance of documents bearing security clearance shall be in the form and manner prescribed by § 121.15.

(40 Stat. 220, as amended; 50 U. S. C. 191, E. O. 10173, Oct. 18, 1950, 15 F. R. 7005, as amended by E. O. 10277, Aug. 1, 1951, 16 F. R. 7537; 3 CFR, 1950 Supp.)

Dated: August 29, 1951.

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

[F. R. Doc. 51-10526; Filed, Aug. 30, 1951;
8:50 a. m., 16 F. R. 8846—8/31/51.]

Subchapter L—Security of Waterfront Facilities
[CGFR 51-33]

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

Pursuant to the authority of 33 CFR 6.10-5 in Executive Order No. 10173 (15 F. R. 7007), the Commandant may define and designate those categories of vessels and waterfront facilities wherein any person seeking access thereto shall be required to carry identification credentials as prescribed in 33 CFR 6.10-7 and 125.11. The purpose of the following new regulation, designated as § 125.37, is to define and designate towing vessels or barges engaged in trade on the Great Lakes or the western rivers as two of the categories of vessels which will require persons seeking access thereto by reason of employment as masters or members of the crews of such vessels to carry identification credentials as provided for in 33 CFR 6.10-7 and 125.11. This is the first of a series of similar requirements. Since the security interests of the United States call for the aforesaid application of the provisions of 33 CFR 6.10-5 at the earliest practicable date and because of the national emergency declared by the President, and in order that applications for necessary credentials may be filed and considered, and necessary credentials issued, where proper, in advance of the effective date of such application of the provisions of 33 CFR 6.10-5 to towing vessels or barges engaged in trade on the Great Lakes or western rivers, it is hereby

found that compliance with the notice of proposed rule making, public rule making procedure thereon, and effective date requirements of the Administrative Procedure Act is impracticable and contrary to the public interest.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Executive Order No. 10173, as amended by Executive Order No. 10277, the following regulations are prescribed which shall become effective on and after January 1, 1952:

Part 125 is amended by adding a new § 125.37 as follows:

§ 125.37 Requirements for credentials; towing vessels or barges engaged in trade on the Great Lakes or the western rivers. (a) On and after January 1, 1952, all persons desiring access to towing vessels or barges engaged in trade on the Great Lakes or the western rivers by reason of employment as masters or members of the crews of such vessels shall be required to be in possession of one of the identification credentials listed in § 125.11, and the master, operator, or owners of such vessels shall deny access to such vessels to any such persons who are not in possession of one of such identification credentials.

(b) The term "Great Lakes" as used in this section means the Great Lakes and their connecting and tributary waters as far east as Montreal. The term "western rivers" as used in this section means the Red River of the North, the Mississippi River and its tributaries above Huey P. Long Bridge, the Mobile River and its tributaries above Choctaw Point, and that part of the Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway.

(c) Where the Coast Guard port security card (Form CG 2514) is to be used as the identification credential required by paragraph (a) of this section, application for such card may be made immediately by persons regularly employed or seeking regular employment on towing vessels or barges engaged in trade on the Great Lakes or the western rivers in accordance with § 125.19. The issuance of the Coast Guard port security card

Safety starts between the ears

SHORT SHORT

"Injury," said the workman.
"Inattention," said the supervisor.
"Inflammation," said the hospital.
"Incurable," said the hospital.
"Incredible," said the mourners.
"In PEACE," said the tombstone.

shall be in the form and manner prescribed by § 125.17.

(E. O. 10173, Oct. 18, 1950, as amended by E. O. 10277, Aug. 1, 1951, 15 F. R. 7005, 16 F. R. 7537. Interprets or applies 40 Stat. 220, as amended, 50 U. S. C. 191)

Dated: August 15, 1951.

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

[F. R. Doc. 51-9939; Filed, Aug. 20, 1951;
8:51 a. m., 16 F. R. 8273—8/21/51.]

Subchapter L—Security of Waterfront Facilities

[CGFR 51-37]

PART 126—HANDLING OF EXPLOSIVES OR
OTHER DANGEROUS CARGOES WITHIN
OR CONTIGUOUS TO WATERFRONT FACILITIES

SAFETY MEASURES RE HANDLING OF EXPLOSIVES OR OTHER DANGEROUS CARGOES

A notice regarding regulations governing the handling of explosives or other dangerous cargoes within or contiguous to waterfront facilities was published in the Federal Register dated June 16, 1951 (16 F. R. 5770, et seq.), and a public hearing was held by the Merchant Marine Council on July 9, 1951, at Coast Guard Headquarters, Washington, D. C.

All comments submitted were considered by the Merchant Marine Council and changes in the regulations have been made.

The purpose for the regulations designated as 33 CFR Part 126 regarding the handling of explosives or other dangerous cargoes within or contiguous to waterfront facilities is to provide adequate protection and safety for waterfront facilities and port and harbor areas, including vessels and harbor craft therein, during the transportation, handling, loading, discharging, stowage or storage of explosives, inflammable or combustible liquids in bulk or other dangerous articles or cargoes which are subject to requirements set forth in "Explosives or Other Dangerous Articles on Board Vessels" (CG 187) (46 CFR Part 146) and the Tank Vessel Regulations (CG 123) (46 CFR Parts 30 to 39, inclusive). These regulations do not apply to waterfront facilities directly operated by the Departments of the Army, Navy, or Air Force. The regulations designated 33 CFR Part 126 are the same as or similar to the requirements which were in effect during World War II and known as "Port Security Regulations" and proved to be so successful in protecting waterfront facilities. Because of the limitations contained in Executive Order 10173, as amended by Executive Order 10277, it is not possible to reinstate the "Port Security

Regulations" verbatim which were in use during World War II.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Executive Order No. 10173 (15 F. R. 7005) as amended by Executive Order No. 10277 (16 F. R. 7537), the following regulations are added to Chapter I of 33 CFR and shall become effective on and after October 1, 1951:

Sec.

- 126.01 General definitions.
- 126.05 Designated waterfront facility.
- 126.07 Dangerous cargo.
- 126.09 Designated dangerous cargo.
- 126.11 Waiver authority based on local or unusual conditions.
- 126.13 Designation of waterfront facilities.
- 126.15 Conditions for designation as designated waterfront facility.
- 126.17 Permits required for handling designated dangerous cargo.
- 126.19 Issuance of permits for handling designated dangerous cargo.
- 126.21 Permitted transactions.
- 126.23 Termination or suspension of permits.
- 126.25 Penalties for handling designated dangerous cargo without permit.
- 126.27 General permit for handling dangerous cargo.
- 126.29 Supervision and control of dangerous cargo.
- 126.31 Termination or suspension of general permit.
- 126.33 Penalties for handling dangerous cargo without permit.
- 126.35 Primary responsibility.
- 126.37 Separability.

AUTHORITY: §§ 126.01 to 126.37 Issued under E. O. 10173, Oct. 18, 1950, 15 F. R. 7005, 3 CFR, 1950 Supp., as amended by E. O. 10277, Aug. 1, 1951, 16 F. R. 7537. Interpret or apply 40 Stat. 220, as amended, R. S. 4417a and 4472, as amended; 50 U. S. C. 191, 46 U. S. C. 391a and 170.

§ 126.01 *General definitions.* The terms "Commandant," "District Commander," "Captain of the Port," and "Waterfront Facility" when used in this part shall have the meaning set forth in §§ 6.01-1, 6.01-2, 6.01-3, and 6.01-4, respectively, of Executive Order No. 10173 (15 F. R. 7005), except that the term "waterfront facility" shall not include such a facility directly operated by the Departments of the Army, Navy, or Air Force.

§ 126.05 *Designated waterfront facility.* The term "designated waterfront facility" shall mean a waterfront facility designated by § 126.13 for the handling and storage of, and for vessel loading and discharging of, explosives, inflammable or combustible liquids in bulk, or other dangerous articles or cargo covered by the regulations entitled "Explosives or Other Dangerous Articles on Board Vessels" (46 CFR Part 146) and the

regulations governing tank vessels (46 CFR Parts 30 to 39, inclusive).

§ 126.07 *Dangerous cargo.* The term "dangerous cargo" shall mean all explosives and other dangerous articles or cargo covered by the regulations entitled "Explosives or Other Dangerous Articles on Board Vessels" (46 CFR Part 146) and the regulations governing tank vessels (46 CFR Parts 30 to 39, inclusive).

§ 126.09 *Designated dangerous cargo.* The term "designated dangerous cargo" shall mean Explosives, Class A, and Military Explosives as classified in 46 CFR Part 146.

§ 126.11 *Waiver authority based on local or unusual conditions.* Whenever the Commandant, the District Commander, or the Captain of the Port shall find that the application of any provision contained in this part is not necessary to the security of the port and vessels and waterfront facilities therein, or that its application is not practical because of local conditions or because the materials or personnel required for compliance are not available, or because the requirements of the national defense justify a departure from such provision, he may waive compliance with such provision to the extent and under such requirements as he may determine.

§ 126.13 *Designation of waterfront facilities.* (a) Waterfront facilities which fulfill the conditions required in § 126.15, unless waived under provision of § 126.11, and only such waterfront facilities are designated for the handling, storing, stowing, loading, discharging, and transporting of dangerous cargo, subject to compliance with other applicable requirements and provisions set forth in this part.

(b) Handling, storing, stowing, loading, discharging, and transporting dangerous cargo at any waterfront facility other than one designated by this section is hereby prohibited, and violation of this prohibition will subject the violator to the penalties of fine and imprisonment provided in section 2, title II of the act of June 15, 1917, as amended, 50 U. S. C. 192.

§ 126.15 *Conditions for designation as designated waterfront facility.* The conditions referred to in § 126.13 for designation of a waterfront facility for the purpose of handling, storing, stowing, loading, discharging, or transporting of dangerous cargo shall be as follows:

(a) *Guards.* That guards are provided by the owner or operator of the waterfront facility for the protection thereof in such numbers and of

such qualifications as to assure adequate surveillance, prevent unlawful entrance, detect fire hazards, and check the readiness of protective equipment.

(b) *Smoking.* That smoking is prohibited on the waterfront facility except at such portions thereof as may be designated by the owner or operator thereof: *Provided,* That smoking in such areas shall only be permitted in accordance with local ordinances and regulations and that signs are conspicuously posted marking such authorized smoking areas and that "No Smoking" signs are conspicuously posted elsewhere on the waterfront facility.

(c) *Welding or hot work.* That oxy-acetylene or similar welding or burning, or other hot work including electric welding or the operation of equipment therefor is prohibited on the waterfront facility during the handling, storing, stowing, loading, discharging, and transporting of dangerous cargo thereon, except when approved by the Captain of the Port: *Provided,* That such work shall not be conducted at any time during the handling, storing, stowing, loading, discharging and transporting of explosives.

(d) *Trucks and other motor vehicles.* That trucks and other motor vehicles are not permitted to remain or park upon the waterfront facility except under the following conditions:

(1) When actually awaiting opportunity to load or discharge cargo, ship supplies, or passengers.

(2) When loading or discharging tools, equipment, or materials incident to maintenance, repair, or alterations.

(3) When the vehicle is headed toward an unimpeded exit and is attended by a driver.

(e) *Pier automotive equipment.* That tractors, stackers, lift trucks, hoisters, and other equipment driven by internal combustion engines used on the waterfront facility are of such construction and condition and free from excess grease, oil, or lint as not to constitute a fire hazard; that each unit of such equipment is provided with an approved type hand extinguisher; that, when not in use, such equipment is stored in a safe manner and location; that gasoline or other fuel used for such equipment is stored and handled in accordance with accepted safe practices, and is not stored on the waterfront facility except in conformity with paragraph (g) of this section; and that refueling of such equipment is prohibited on any pier or wharf within the waterfront facility.

(f) *Rubbish and waste materials.* That the waterfront facility is free from rubbish, debris, and waste materials.

(g) *Maintenance stores and supplies.* That supplies classified as dangerous by the provisions of the regulations entitled "Explosives or Other Dangerous Articles on Board Vessels" (46 CFR Part 146), to be used in connection with operation or maintenance of the property or facility are not stored on any pier or wharf within the waterfront facility and are not stored elsewhere on the waterfront facility except in amounts necessary for normal current operating conditions; that such storage is in a compartment remote from combustible material and so constructed as to be readily accessible and provide safe storage; that storage compartments are kept clean and maintained free of scrap materials, empty containers, soiled wiping rags, waste, and other debris; that covered metal containers are provided for storage of used wiping cloths and contents removed at the end of each working day; that clothing lockers are maintained clean and orderly and properly ventilated; and that fire-extinguishing equipment suitable for the type of hazard is readily available.

(h) *Electric wiring.* That new installations of electric wiring and equipment are made in accordance with accepted safe practices (conformity with the requirements of the National Electric Code (current edition) and the requirements of applicable local regulations shall be deemed evidence of compliance with such accepted safe practices); that materials, fittings, and devices are of type and character approved for the intended use by Underwriters Laboratories, Inc., Associated Factory Mutual Laboratories, or United States National Bureau of Standards; that existing electric wiring is maintained in a safe condition, free of defects or modifications which may cause fire or personal injury; that defective or dangerous wiring, equipment, and devices are permanently disconnected from sources of energy.

(i) *Heating equipment.* That heating equipment is safely installed and maintained in good operating condition; that adequate clearances to prevent undue heating of nearby combustible materials are maintained between heating appliances, chimneys, stove pipes, gas vents, or other heat producing elements, and any combustible materials of the floor, walls, partitions or roofs; that, in general, clearances are such that continuous operation of the heat produc-

ing device at full capacity will not increase the temperature of nearby woodwork more than 90° above the ambient temperature; that, where necessary to prevent contact with movable combustible materials, heating appliances are enclosed or screened; that spark arrestors are provided on chimneys or appliances burning solid fuel used in locations where sparks constitute a hazard to nearby combustible materials. (As a guide to safe installation of heating equipment, the appropriate chapters of the National Board of Fire Underwriters Building Code (current edition) are recommended.)

(j) *Fire extinguishing equipment.* That fire extinguishing appliances are made available in adequate quantities, locations, and types; that first aid fire appliances are installed and maintained in accordance with accepted safe practices (conformity with the requirements prescribed in the current "Standards for First Aid Fire Appliances," issued by the National Fire Protection Association, shall be deemed evidence of compliance with such accepted safe practices); that fire extinguishing equipment, fire alarm systems and devices, and fire doors and other safety equipment are maintained in good operating condition at all times; that provision is made so that, when hazards arise which require such precaution, emergency hose lines will be led out and other emergency fire-fighting equipment will be placed immediately adjacent to such hazards.

(k) *Marking of fire appliance locations.* That the locations of all fire appliances, including hydrants, standpipe and hose stations, fire extinguishers, and fire alarm boxes, are conspicuously marked; and that ready accessibility to such appliances is maintained.

(l) *Lighting.* That subject to applicable dimout and blackout regulations, such waterfront facility is adequately illuminated during the handling, storing, stowing, loading, discharging, and transporting of dangerous cargo thereon; and that kerosene and gasoline lamps and lanterns are not used on such waterfront facility.

(m) *Arrangement of cargo.* That cargo is arranged on the waterfront facility according to the individual structure of such facility, in a manner to permit complete access for the purpose of fire extinguishment; that, except on facilities used primarily for the transfer of railroad or highway vehicles to or from cargo vessels and carfloats, cargo is placed on the waterfront facility in accordance with the following:

(1) At least two feet of clear and open space will be maintained free of rubbish, dunnage, and other obstructions between cargo piles and the sides of the pier, fire walls or fire stops in enclosed piers. This distance shall be measured from the most prominent projection of the wall such as studding, bracings, or other obstructions that are a part of the structure.

(2) Inflammable and combustible cargo, not including bulk cargo, shall not be tiered higher than 12 feet. All cargo including inflammable and combustible cargo shall be so tiered as to maintain a clearance between the upper level of the top tier and trusses, beams, girders, or other structural members of not less than 36", and between such upper level and sprinkler heads a clearance of at least 12" shall be maintained.

(3) There shall be maintained at least four feet of clear and open operating space around any fire alarm box, standpipe, fire hose, sprinkler valve, fire door, deck hatch, or first-aid fire appliance.

(4) When first-aid fire appliances, alarm boxes, other safety equipment, or deck hatches are located in a space surrounded by cargo, there shall be maintained a straight, free, and open space at least three feet in width, running therefrom to the center aisle. This space shall be kept clear of all rubbish, dunnage, and other obstruction.

(5) A main aisle of at least twenty feet in width shall be maintained the entire length of the waterfront facility if control of fire requires trucks to come on the pier. The aisle may be reduced to eight feet in width if such access by fire trucks is not required.

(6) Cross aisles, at least five feet wide, straight and at right angles to the main aisle, shall be maintained at intervals not exceeding seventy-five feet, and extending to the side of the waterfront facility.

§ 126.17 *Permits required for handling designated dangerous cargo.* Designated dangerous cargo in amounts exceeding five hundred (500) pounds may be handled, stored, stowed, loaded, discharged, and transported at any designated waterfront facility only if a permit therefor has been issued by the Captain of the Port, except that no permit shall be required for the handling, loading, discharging, or transporting of such cargoes to or from, on or across, a waterfront facility used for the transfer of railroad vehicles to or from a railroad carfloat when such cargoes are not removed from, or placed in, the railroad vehicle while in or on such waterfront facility.

§ 126.19 Issuance of permits for handling designated dangerous cargo.

(a) Upon application of the owners or operators of a designated waterfront facility, or of their authorized representatives, the Captain of the Port is authorized to issue a permit for each transaction of handling, storing, stowing, loading, discharging, or transporting designated dangerous cargo in amounts exceeding five hundred (500) pounds net weight at such waterfront facility provided the following requirements are met:

(1) The Captain of the Port shall be furnished a written permit or document having comparable legal effect from the state, municipal, or port authority authorizing the use of the designated waterfront facility for handling, storing, stowing, loading, discharging, or transporting the designated dangerous cargo.

(2) The facility shall comply in all respects with the regulations in this subchapter.

(3) The facility shall offer isolation and remoteness from populous areas which compare favorably with the distance required by the American Table of Distances for inhabited buildings, unbaricaded.

(b) Each such permit shall show on its face the largest total amount of designated dangerous cargo which at any time during the transaction may be present on the waterfront facility and vessels moored thereto. In determining this amount the Captain of the Port will be guided by the American Table of Distances and suitable instructions issued by the Commandant.

NOTE: The American Table of Distances may be purchased from the Institute of Makers of Explosives, 343 Lexington Avenue, New York, N. Y.

§ 126.21 Permitted transactions. All permits issued pursuant to § 126.19 are hereby conditioned upon the observance of fulfillment of the following:

(a) The conditions set forth in § 126.15 shall at all times be strictly observed.

(b) No amount of designated dangerous cargo in excess of the total amount shown on the face of the permit shall, at any time during the transaction for which the permit is issued, be present on the waterfront facility and vessels moored thereto.

(c) Designated dangerous cargo in amounts exceeding five hundred (500) pounds shall not be brought onto the waterfront facility from shore except when laden within a railroad car or highway vehicle and shall remain in such railroad car or highway vehicle except when removed as an incident of prompt transshipment. Designated danger-

ous cargo in amounts exceeding five hundred (500) pounds shall not be brought onto the waterfront facility from a vessel except as an incident of its prompt transshipment by railroad car or highway vehicle.

(d) No other dangerous cargo not covered by the permit shall be on the waterfront facility during the transaction for which the permit has been issued, but this shall not apply to maintenance stores and supplies on the waterfront facility in conformity with § 126.15 (g).

§ 126.23 Termination or suspension of permits. Any permit issued pursuant to § 126.19 shall terminate automatically at the conclusion of the transaction for which the permit has been issued and may be terminated, or suspended, prior thereto by the Captain of the Port whenever he deems that the security or safety of the port or vessels or waterfront facilities therein so requires. Confirmation of such termination or suspension by the Captain of the Port shall be given to the permittee in writing.

§ 126.25 Penalties for handling designated dangerous cargo without permit. Handling, storing, stowing, loading, discharging, or transporting any designated dangerous cargo in amounts exceeding five hundred (500) pounds without a permit, as provided under § 126.17, being in force, will subject persons responsible therefor to the penalties of fine and imprisonment provided in section 2, Title II of the act of June 15, 1917, as amended, 40 U. S. C. 192.

§ 126.27 General permit for handling dangerous cargo. A general permit is hereby issued for the handling, storing, stowing, loading, discharging, and transporting of dangerous cargo (other than designated dangerous cargo in amounts exceeding five hundred (500) pounds) at designated waterfront facilities other than those waterfront facilities in actual use for the handling, storing, stowing, loading, discharging, or transporting of designated dangerous cargo in amounts exceeding five hundred (500) pounds. Such general permit is hereby conditioned upon the observance and fulfillment of the following regulations:

(a) The conditions set forth in § 126.15 shall at all times be strictly observed.

(b) The following classes of dangerous cargo as classified in the regulations entitled "Explosives or Other Dangerous Articles on Board Vessels" (46 CFR 146), in the amounts specified, shall not be handled, stored, stowed, loaded, discharged, or trans-

ported at any one time, except on waterfront facilities used primarily for the transfer of railway or highway vehicles to or from cargo vessels or carfloats, without notification to the Captain of the Port:

(1) Explosives, Class B, in excess of 1 ton.

(2) Explosives, Class C, in excess of 10 tons.

(3) Inflammable liquids, in containers, in excess of 10 tons.

(4) Oxidizing materials, in excess of 100 tons.

(5) Inflammable compressed gases, in excess of 10 tons.

(6) Poison, Class A, any amount.

(c) Inflammable liquids and compressed gases shall be so handled and stored as to provide maximum separation between freight consisting of acids, corrosive liquids, or combustible materials. Storage for inflammable solids or oxidizing materials shall be so arranged as to prevent moisture coming in contact therewith.

(d) Acids and corrosive liquids shall be so handled and stored as to prevent such acids and liquids in event of leakage from contacting any organic materials.

(e) Poisonous gases and poisonous liquids shall be so handled and stored as to prevent their contact with acids, corrosive liquids, or inflammable liquids.

(f) Dangerous cargo covered by this section and which may be stored on the waterfront facility shall be arranged in such manner as to retard the spread of fire. This may be accomplished by interspersing piles of dangerous freight with piles of inert or less combustible materials.

§ 126.29 Supervision and control of dangerous cargo. The Captain of the Port is authorized to require that any transaction of handling, storing, stowing, loading, discharging, or transporting the dangerous cargo covered by this subchapter shall be undertaken and continued only under the immediate supervision and control of the Captain of the Port or his duly authorized representative. In case the Captain of the Port exercises such authority, all directions, instructions, and orders of the Captain of the Port or his representative, not inconsistent with this part, with respect to such handling, storing, stowing, loading, discharging, and transporting; with respect to the operation of the waterfront facility; with respect to the ingress and egress of persons, articles, and things and to their presence on the waterfront facility; and with respect to vessels approaching, moored at, and departing from the waterfront facility, shall be promptly obeyed.

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

Subchapter K—Seamen

[CGFR 51-15]

PART 136—MARINE INVESTIGATION REGULATIONS

PART 137—SUSPENSION AND REVOCATION PROCEEDINGS

COAST GUARD PERSONNEL AS WITNESSES IN JUDICIAL PROCEEDINGS

The purpose of the following amendments to 46 CFR 136.15-1 and 137.17-25 is to clarify the regulations and to resolve conflicting interpretations of what is required in the giving of testimony by persons in the service of the Coast Guard in civil or criminal court cases. It is necessary to distinguish those cases in which definitive affidavits are required as a condition precedent to the appearance of Coast Guard personnel in judicial proceedings from those cases in which such affidavits are not required. Because conflicting interpretations of the requirements have resulted in inequities to the public as well as the Government in the handling of various judicial proceedings and because no additional requirements are added to the regulations, it is hereby found that compliance with the notice of proposed rule making, the public rule making procedure thereon, and effective date requirements of the Administrative Procedure Act is impracticable and contrary to the public interest.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Treasury Department Order No. 120, dated July 31, 1950 (15 F. R. 6521), as well as the statutes cited with the regulations below, the following amendments to the regulations are prescribed which shall become effective on the date of publication of this document in the Federal Register:

1. Section 136.15-1 is amended to read as follows:

§ 136.15-1 *Persons in service of Coast Guard.* (a) No person in the service of the Coast Guard shall, without prior approval of the Commandant, give any testimony with respect to any investigation or any other official proceedings in any suit or action in the courts. This applies

equally to cases in state or Federal courts and to civil as well as criminal cases.

(b) In cases involving (1) civil litigation between private parties; or, (2) criminal matters before state courts; or, (3) civil litigation for or against the United States where Coast Guard personnel are called by parties opposing the United States; an affidavit by the litigant or his attorney setting forth the interest of the litigant and the information with respect to which the testimony of such Coast Guard officer or employee is desired must be submitted before permission to testify will be granted. Permission to testify will, in all cases, be limited to the information set forth in the affidavit, or to such portions thereof as may be deemed proper. In addition to the permission required by this paragraph, the Commandant may insist that the appearance of the Coast Guard officer or employee as a witness be conditioned on the issuance of a subpoena or subpoena duces tecum (as appropriate) from a court of competent jurisdiction.

(c) In cases where the appearance of Coast Guard personnel is desired by counsel representing the United States to support the affirmative claims or defenses of the United States in civil matters or on behalf of the United States in criminal matters, no affidavit as described in paragraph (b) of this section shall be required, but the Commandant's prior approval must nevertheless be obtained, except in those cases where the Coast Guard personnel desired as witnesses file the original complaint.

(R. S. 4405, as amended, secs. 1, 2, 49 Stat. 1544, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 375, 367, 50 U. S. C. 1275. Interprets or applies R. S. 4450, as amended; 46 U. S. C. 239.)

2. Section 137.17-25 is amended to read as follows:

§ 137.17-25 *Testimony by Coast Guard personnel.* (a) No person in the service of the Coast Guard shall, without prior approval of the Commandant, give any testimony with respect to any investigation or any other official proceedings in any suit or action in the courts. This applies equally to cases in state or Federal courts and to civil as well as criminal cases.

(b) In cases involving (1) civil litigation between private parties; or, (2) criminal matters before state courts; or, (3) civil litigation for or against the United States where Coast Guard personnel are called by parties opposing the United States; an affidavit by the litigant or his attorney setting forth the interest of the litigant and the information with respect to which the testimony of such

§ 126.31 *Termination or suspension of general permit.* The Captain of the Port is hereby authorized to terminate or to suspend the general permit granted by § 126.27 in respect to any particular designated waterfront facility whenever he deems that the security or safety of the port or vessels or waterfront facilities therein so requires. Confirmation of such termination or suspension shall be given to the permittee in writing. After such termination, the general permit may be revived by the Commandant with respect to such particular waterfront facility upon a finding by him that the cause of termination no longer exists and is unlikely to recur. After such suspension, the general permit shall be revived by the Captain of the Port with respect to such particular waterfront facility when the cause of suspension no longer exists, and he shall so advise the permittee in writing.

§ 126.33 *Penalties for handling dangerous cargo without permit.* Handling, storing, stowing, loading, discharging, or transporting any dangerous cargo covered by § 126.27 under circumstances not covered by the general permit granted in § 126.27 or when such general permit is not in force will subject persons responsible therefor to the penalties of fine and imprisonment provided in section 2, Title II of the act of June 15, 1917, as amended, 50 U. S. C. 192.

§ 126.35 *Primary responsibility.* Nothing contained in the rules, regulations, condition, and designations in this part shall be construed as relieving the masters, owners, operators, and agents of vessels, docks, piers, wharves, or other waterfront facilities from their primary responsibility for the security of such vessels, docks, piers, wharves, or waterfront facilities.

§ 126.37 *Separability.* If any provision of the rules, regulations, conditions, or designations contained in this part or the application of such provision to any person, waterfront facility, or circumstances shall be held invalid, the validity of the remainder of the rules, regulations, conditions, or designations contained in this part and applicability of such provision to other persons, waterfront facilities, or circumstances, shall not be affected thereby.

Dated: August 22, 1951.

[SEAL] MERLIN O'NEIL,
Vice Admiral, U. S. Coast Guard,
Commandant.

[F. R. Doc. 51-10323; Filed, Aug. 27, 1951;
8:47 a. m., 16 F. R. 8677-8/28/51.]

**Foresight will
provide that "ounce
of prevention"**

Coast Guard officer or employee is desired must be submitted before permission to testify will be granted. Permission to testify will, in all cases, be limited to the information set forth in the affidavit, or to such portions thereof as may be deemed proper. In addition to the permission required by this paragraph, the Commandant may insist that the appearance of the Coast Guard officer or employee as a witness be conditioned on the issuance of a subpoena or subpoena duces tecum (as appropriate) from a court of competent jurisdiction.

(c) In cases where the appearance of Coast Guard personnel is desired by counsel representing the United States to support the affirmative claims or defenses of the United States in civil matters or on behalf of the United States in criminal matters, no affidavit as described in paragraph (b) of this section shall be required but the Commandant's prior approval must nevertheless be obtained, except in those cases where the Coast Guard personnel desired as witnesses file the original complaint.

(R. S. 4405, as amended, secs. 1, 2, 49 Stat. 1544, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 375, 367, 50 U. S. C. 1275. Interprets or applies R. S. 4450, as amended; 46 U. S. C. 239.)

Dated: August 24, 1951.

[SEAL] MERLIN O'NEILL,
Vice Admiral, U. S. Coast Guard,
Commandant.

[F. R. Doc. 51-10483; Filed, Aug. 30, 1951;
8:48 a. m., 16 F. R. 8848—8/31/51.]

MISCELLANEOUS AMENDMENTS TO CHAPTER [CGFR 51-19]

A notice regarding proposed changes in the regulations for the transportation of inflammable liquids and specifications for fibrous glass life preservers, pistol projected parachute red flare distress signals and signal pistols was published in the Federal Register dated February 27, 1951, 16 F. R. 1831, as Items III and IV on the Agenda to be considered by the Merchant Marine Council, and a public hearing was held by the Merchant Marine Council on March 27, 1951, in Washington, D. C. All the comments submitted were considered and where practicable were incorporated into the regulations.

The purpose of the amendments to 46 CFR §§ 146.03-9, 146.04-5, 146.21-1 to 146.21-100, inclusive, and 146.25-100 is to revise the requirements for the transportation of inflammable liquids so that the Coast Guard requirements will be in agreement with the Interstate Commerce Commission's regulations and will contain

new requirements covering new inflammable liquids which have become commercially important. The subpart entitled "Detailed Regulations Governing Inflammable Liquids" has been brought up to date and the text of former §§ 146.21-1, 146.21-2, 146.21-14, and 146.21-100 was revised. The regulations in this subpart have been renumbered in order to allow for future expansion of text if necessary. For convenience tables showing the old section numbers and the new section numbers assigned are printed below and the asterisks indicate which sections have been revised.

COMPARISON OF OLD SECTION NUMBERS WITH NEW SECTION NUMBERS

Old section Nos.	New section Nos.
*146.21-1	*146.21-1
*146.21-2	*146.21-5
146.21-3	146.21-10
146.21-4	146.21-15
146.21-5	146.21-20
146.21-6	146.21-25
146.21-7	146.21-30
146.21-8	146.21-35
146.21-9	146.21-40
146.21-10	146.21-45
146.21-11	146.21-50
146.21-12	146.21-55
146.21-13	146.21-60
*146.21-14	*146.21-65
146.21-15	146.21-70
146.21-16	146.21-75
*146.21-100	*146.21-100

COMPARISON OF NEW SECTION NUMBERS WITH OLD SECTION NUMBERS

New section Nos.	Old section Nos.
*146.21-1	*146.21-1
*146.21-5	*146.21-2
146.21-10	146.21-3
146.21-15	146.21-4
146.21-20	146.21-5
146.21-25	146.21-6
146.21-30	146.21-7
146.21-35	146.21-8
146.21-40	146.21-9
146.21-45	146.21-10
146.21-50	146.21-11
146.21-55	146.21-12
146.21-60	146.21-13
*146.21-65	*146.21-14
146.21-70	146.21-15
146.21-75	146.21-16
*146.21-100	*146.21-100

The purpose for adding a new specification covering life preservers using fibrous glass as buoyant material as 46 CFR Subpart § 160.005 in Subchapter Q, Specifications, is to provide an alternate type of life preserver for use on inspected vessels. This specification sets forth the requirements to be followed in manufacturing life preservers using fibrous glass as buoyant material, as well as inspections and tests required, and the procedures for obtaining approval.

The purpose for the two specifications covering pistol projected parachute red flare distress signals and signal pistols is to separate present specification requirements into two specifications in order that manufacturing requirements may be more easily understood. The revision of the specifications does not change the requirements or add new requirements except that the cost of qualification tests for type or brand approval must now be borne by the manufacturer. The specification in 46 CFR Subpart § 160.024 now contains the requirements to be followed in the manufacturing of pistol projected parachute red flare distress signals. The specification in 46 CFR Subpart § 160.028 contains the requirements to be followed in the manufacturing of signal pistols. These specifications also contain the requirements covering the inspections and tests required and procedures for obtaining approval.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Treasury Department Order No. 120 dated July 31, 1950 (15 F. R. 6521), to promulgate regulations in accordance with the statutes cited with the regulations below, the following amendments to the regulations are prescribed which shall become effective 90 days after date of publication of this document in the Federal Register:

Subchapter N—Explosives or Other Dangerous Articles or Substances and Combustible Liquids on Board Vessels

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

SUBPART—DEFINITIONS OF WORDS AND TERMS CONTAINED WITHIN THE REGULATIONS IN THIS SUBCHAPTER

1. Part 146 is amended by adding a new § 146.03-9 reading as follows:

§ 146.03-9 *Flammable or inflammable*. For the purpose of the regulations in this subchapter, the words "inflammable" and "flammable" are interchangeable or synonymous terms.

(R. S. 4405, as amended, 4472, as amended; 46 U. S. C. 375, 170. Interpret or apply Sec. 5, 55 Stat. 244, as amended; 50 U. S. C. App. 1275.)

SUBPART—LIST OF EXPLOSIVES OR OTHER DANGEROUS ARTICLES CONTAINING THE SHIPPING NAME OR DESCRIPTION OF ARTICLES SUBJECT TO THE REGULATIONS IN THIS SUBCHAPTER

2. Section 146.04-5 is amended to read as follows:

§ 146.04-5 *List of explosives and other dangerous articles and combustible liquids.*

NOTE: This table is not reprinted herein because space is not available. Copies may be obtained upon request from the Commandant (CMC), Coast Guard Headquarters, Washington 25, D. C.

3. Sections 146.21-1 to 146.21-100, inclusive, are amended to read as follows:

SUBPART—DETAILED REGULATIONS GOVERNING INFLAMMABLE LIQUIDS

Sec.	
146.21-1	Definition of inflammable liquid.
146.21-5	Inflammable liquid defined.
146.21-10	Export shipments of inflammable liquids.
146.21-15	Stowage on board vessels.
146.21-20	"On deck" stowage.
146.21-25	"Under deck" stowage.
146.21-30	Prohibited storage.
146.21-35	Boundary bulkheads.
146.21-40	Hatch closing means.
146.21-45	Ventilation.
146.21-50	Electrical equipment in holds.
146.21-55	Smoking prohibited, warning signs.
146.21-60	Potable spirits.
146.21-65	Limited quantity shipments.
146.21-70	Limited quantity shipments of paint products.
146.21-75	Limited quantity shipments of polishes.
146.21-100	Table D—Classification: Inflammable liquids.

AUTHORITY: §§ 146.21-1 to 146.21-100 issued under R. S. 4405, as amended, 4472, as amended; 46 U. S. C. 375, 170. Interpret or apply sec. 5, 55 Stat. 244, as amended; 50 U. S. C. App. 1275.

§ 146.21-1 *Definition of inflammable liquid.* An inflammable liquid (flammable liquid) is defined by the ICC regulations as set forth in § 146.21-5, and such definition is binding upon all shippers making shipments of inflammable liquids (flammable liquids) by common carrier vessels engaged in interstate or foreign commerce by water. This definition is accepted and adopted and forms part of the regulations in this subchapter applying to all shippers making shipments of inflammable liquids (flammable liquids) on any vessel and shall apply to the owners, charterers, agents, master, or other persons in charge of a vessel and to other persons transporting, carrying, conveying, storing, stowing or using inflammable liquids (flammable liquids), on board any vessel subject to R. S. 4472, as amended; 46 U. S. C. 170, and the regulations in this subchapter.

§ 146.21-5 *Inflammable liquid defined.* An inflammable liquid (flammable liquid) is any liquid which gives off inflammable (flammable) vapors (as determined by flashpoint from Tagliabue's open-cup tester, as used for test of burning oils) at or below a temperature of 80° F.

§ 146.21-10 *Export shipments of inflammable liquids.* Certain inflammable liquids are permitted by these regulations to be exported under shipping names differing from shipping names as required in domestic transportation. Such substances together with these "synonym" shipping names are indicated in the tables in § 146.21-100 and the "synonym" shipping names that are permitted are shown thereon. Substances shipped under these "synonym" shipping names may be accepted on board vessels that are permitted to transport such substances in export; provided the shipment otherwise conforms to the provisions of the regulations in this part. Stowage on board vessels shall be in accordance with the stowages indicated in the tables for the particular character of vessel involved.

§ 146.21-15 *Stowage on board vessels.* All inflammable liquids permitted for transportation on board vessels shall, when taken on board a vessel, be stowed in accordance with the provisions applying to the particular character of vessel as shown in the tables, § 146.21-100, and with the detailed regulations of stowage shown herein.

§ 146.21-20 *"On deck" stowage.* (a) Inflammable liquids, stowage of which is permitted "On deck" by the provisions of the table § 146.21-100 shall be properly secured, when so stowed, in a manner satisfactory to the master or other person in charge of the vessel consistent with the following conditions:

(1) Such inflammable liquid shall be so stowed as to provide safe access to the crew's quarters and to all parts of the deck required to be used in the navigation and necessary working of the vessel.

(2) Such inflammable liquids shall not be stowed within a distance in a horizontal plane of 25 feet of an operating or embarkation point of a lifeboat when such point is at the same deck level as that upon which an inflammable liquid cargo is stowed, except on a vessel which by reason of its breadth, it is impossible to provide such horizontal distance; deck stowage is permitted when the cargo is confined to only one side of the centerline of the vessel.

(3) Fire plugs, sounding pipes and access to same shall be maintained free and clear of inflammable liquid cargo stowed "On deck"

(b) On passenger-carrying vessels, when limited stowage of inflammable liquid is permitted "On deck", such liquids shall be stowed well away from any deck or spaces provided for use of passengers.

(c) At least one section of fire hose shall be connected with an adequate water supply and shall be in readiness for use adjacent to inflammable liquids when stowed "On deck". No cargo shall be stowed "On deck" unless two portable fire extinguishers of at least 2½ gallon foam type each or equivalent shall be located in a position easily accessible to such cargo.

§ 146.21-25 *"Under deck" stowage.* (a) Stowage of inflammable liquids "Under deck" shall be either in ventilated holds or in holds that are gas-tight.

(b) Inflammable liquids that are permitted by these regulations to be stowed in a cargo hold or a compartment on board a passenger vessel shall not be so stowed unless the compartment or hold authorized for such stowage is fitted with either an overhead water sprinkler system, inert gas or steam smothering system.

(c) Inflammable liquids permitted on passenger vessels may be stowed in a hold or compartment the overdeck of which forms a boundary of a passenger space, provided such overdeck is of an AI type of construction or in lieu thereof is fitted on its underside in way of the passenger area with three inches of incombustible insulation.

(d) Compartments or holds in which inflammable liquid cargo is to be stowed and which are fitted with electrical circuits having outlets within the compartment or hold shall have such circuits disconnected from all sources of power supply unless the fixtures within the hold are of a vapor proof type, and such circuits shall not be again connected for power until the compartment or hold has been freed of any accumulation of inflammable vapors.

(e) After the stowage of inflammable liquid cargo has commenced in a compartment or hold that is not fitted with vapor proof type of electrical outlets no portable means of artificial lighting shall be used within such a compartment or hold unless such portable equipment is of the vapor proof type. Electrical connections for permitted portable lighting shall be made to outlets located outside of

the compartment or hold and above the weather deck. Hand flashlights shall be of the non-sparking type.

§ 146.21-30 *Prohibited storage.* (a) Inflammable liquids in any quantity shall not be stowed in a magazine in which is stowed any explosive, nor in a compartment or hold in which a magazine containing explosives is located.

(b) Inflammable liquids in a quantity in excess of 1 ton shall not be stowed "On deck" in vessels carrying Class "A" Dangerous Explosives or Class "B" Less Dangerous Explosives, unless the engine and boiler room spaces intervene between holds containing explosives and the space over which these liquids are stowed.

(c) Inflammable liquids in quantities in excess of 1 ton shall not be stowed in the same compartment, or in a compartment adjacent, or over, or under one in which inflammable compressed gases (except liquefied petroleum gases), as shown in the tables appearing in the compressed gas section (§ 146.24-100) are stowed. Small cargo vessels, having only two holds adjacent to each other, may stow inflammable liquids and compressed gases in adjacent holds provided such are separated from each other by the maximum horizontal distance available.

(d) Inflammable liquids may be stowed in a compartment having a boundary bulkhead or deck which also forms a boundary to a boiler room, engine room or a coal bunker or galley provided no containers of such inflammable liquid are stowed within twenty (20) feet of such bulkhead or deck. When the amount of such inflammable liquid to be stowed in the hold exceeds the space available the twenty (20) feet separation need not be complied with provided one or more of the following protections are provided:

(1) The bulkhead or deck is insulated with at least three (3) inches of insulation throughout its entire area subject to heat.

(2) A temporary wooden bulkhead of at least two inches thickness is constructed in the hold at least three inches off the engine room and six inches off the boiler room bulkhead and covering the entire area of the bulkhead that is subject to heat. The space between the permanent bulkhead and the temporary wooden bulkhead shall be filled full with bulk asbestos or mineral wool.

(3) A temporary wooden bulkhead constructed of one inch T and G sheathing located three feet off the boiler room or engine room bulkhead

and filled with sand to a height of six feet above the tank top.

(e) Cargo compartment located "Tween decks" and having a boundary bulkhead which also forms a boundary to a boiler room, engine room, coal bunker, galley or a boiler room uptake casing may be utilized for the stowage of inflammable liquids under the conditions as outlined in paragraph (d) except that the provision in subparagraph (3) requiring filling with sand to a height of 6 feet shall be modified to provide for only 3 feet of sand.

(f) Inflammable liquids in drums or in export wooden cases having inside containers in excess of one quart capacity shall not be stowed as beam fillers. Wooden barrels, wooden boxes, and fiberboard boxes with inside containers of inflammable liquids of less than one quart capacity shall not be stowed as beam fillers unless it is possible to stow and observe "This Side Up" markings.

§ 146.21-35 *Boundary bulkheads.* Holds, with bulkheads in which cargo openings to adjacent holds are fitted, shall not be used for the stowage of inflammable liquids unless such openings are provided with means to securely close off and make the hold gastight or unless the adjacent hold is also used for the stowage of inflammable or combustible liquid cargo.

§ 146.21-40 *Hatch closing means.* All unit compartments or holds used for the stowage of inflammable liquids shall be provided with full and efficient hatch covers. Tarpaulins if fitted or required to be fitted shall be protected by dunnaging before over-stowing with cargo. Such tarpaulins shall be in one piece and free of rents, tears, or holes.

§ 146.21-45 *Ventilation.* All cargo holds in which inflammable liquids are to be stowed and which are provided with means for ventilating shall, before any inflammable liquid cargo in a quantity in excess of 1 ton be stowed in such hold, have fire screens fitted at the weather end of the vent ducts. This fire screen shall consist of two layers of fine brass wire screen of at least 20 x 20 mesh, spaced not less than 1/2 inch or more than 1 1/2 inches apart. This screen may be removable, and if so fitted, means for effectively securing the same in place when in service shall be provided. Mushroom-type heads shall have similar fire screens so fitted as to completely and efficiently cover the open area. For holds that are gastight and fitted with vent trunks such vent trunks may be efficiently blanked off at both termini in lieu of fitting

flame screens. Stowage of inflammable liquids in a quantity in excess of 1 ton shall not be permitted in holds or compartments that are fitted with gooseneck-type of vent trunk heads.

§ 146.21-50 *Electrical equipment in holds.* Inflammable liquids shall not be stowed in holds or compartments in which electrical apparatus of any type, except vaporproof, are fitted unless positive means for disconnecting all such electrical apparatus are provided and such control means are located outside the boundaries of said space. Electrical power lines passing through a hold that is to be used for the stowage of inflammable liquids shall have such run of cable protected by metal covering to prevent damage and possible short circuit. Such metal protection shall be substantial enough to prevent crushing, by reason of cargo which might be stowed against same.

§ 146.21-55 *Smoking prohibited, warning signs.* (a) Smoking prohibited in the vicinity of inflammable liquid cargo stowed "On deck" and in holds in which such cargo is stowed or in the vicinity of ventilators from such holds.

(b) Signs carrying the legend

Inflammable Vapors
Keep Lights and Fire Away
No Smoking

shall be posted at each avenue of approach to inflammable liquid cargo when stowed "On deck" and in the vicinity of cargo hold ventilators when inflammable cargo is stowed in the hold. Such sign shall be painted on a white background using a bright red color for lettering. The letters shall not be less than 3 inches high.

§ 146.21-60 *Potable spirits.* Potable spirits packed in strong, tight barrels, drums, casks, wooden or fiberboard boxes may, when stowed in a compartment not subject to artificial heat, be transported on board any vessel without further restriction.

§ 146.21-65 *Limited quantity shipments.* (a) Inflammable liquids, except those enumerated in paragraph (c) of this section, in inside glass or earthenware containers having a capacity not over 1 pint or 16 ounces by weight each, or inside metal containers not over 1 quart capacity each, packed in strong outside containers, except as otherwise provided, are exempt from specification packaging, marking other than name of contents, and labeling requirements.

(b) Such shipments may be accepted on board vessels subject to the regulations in this subpart, provided the bill of lading or other shipping paper correctly describes the article in accordance with the true name as shown in the commodity list. Stowage shall be "On deck under cover" or "Tween decks" in a compartment not subject to artificial heat.

(c) The following articles in any quantity are not exempt from any of the provisions of the regulations in this subpart:

- (1) Acrolein.
- (2) Carbon bisulfide (disulfide).
- (3) Ethyl chloride.
- (4) Ethyl trichlorosilane.
- (5) Ethylene oxide.
- (6) Inflammable liquids (flammable liquids) which are also corrosive liquids or oxidizing materials under these regulations.
- (7) Lithium aluminum hydride (ethereal).
- (8) Nickel carbonyl.
- (9) Pentaborane.
- (10) Spirits of nitroglycerin in excess of one percent by weight.
- (11) Trichlorosilane.
- (12) Zinc ethyl.

§ 146.21-70 *Limited quantity shipments of paint products.* (a) Paint, enamel, lacquer, stain, shellac, varnish, aluminum, bronze, gold, wood filler, liquid, and lacquer base liquid and thinning, reducing and removing compounds therefor, and driers, liquid, therefor, when packed in inside glass or earthenware containers of not over 1-quart capacity each, or metal containers not over 5 gallons capacity each, and packed in strong outside containers are exempt from specification packaging, marking other than name of contents, and labeling requirements. When fiberboard box is used for such shipments by water gross weight must not exceed 65 pounds.

(b) Such shipments may be accepted on board all vessels subject to the regulations in this part, provided the bill of lading or other shipping paper correctly describes the article in accordance with the true name as shown in the commodity list. Stowage shall be "On deck under cover" or "Tween decks" in a compartment not subject to artificial heat.

§ 146.21-75 *Limited quantity shipments of polishes.* (a) Polishes, metal, stove, furniture and wood, liquid, when packed in inside glass or earthenware containers of not over 1 quart capacity each, or metal containers not over 5 gallons capacity each, and packed in strong outside containers are exempt from specification packaging, marking other than name of contents, and labeling requirements.

(b) Such shipments may be accepted on board all vessels subject to

the regulations in this part, provided the bill of lading or other shipping paper correctly describes the article in accordance with the true name as shown in the commodity list. Stowage shall be "On deck under cover" or "Tween decks" in a compartment not subject to artificial heat.

§ 146.21-100 Table D—Classification: Inflammable liquids.

NOTE: This table is not reprinted herein because space is not available. Copies may be obtained upon request from the Commandant (CMC), Coast Guard Headquarters, Washington 25, D. C.

4. § 146.25-100 Table H—Classification: Class A: Extremely dangerous poisons is amended by deleting the article "Acrolein" in column 1 together with its description in column 2 and label required in column 3. (This item has been reclassified from a poison gas to an inflammable liquid.) (R. S. 4405, as amended, 4472, as amended; 46 U. S. C. 375, 170)

Subchapter Q—Specifications

PART 160—LIFESAVING EQUIPMENT

1. Part 160 is amended by adding a new subpart 160.005, containing §§ 160.005-1 to 160.005-7, inclusive, reading as follows:

SUBPART 160.005—LIFE PRESERVERS, FIBROUS GLASS, ADULT AND CHILD (JACKET TYPE), MODELS 51, 52, 55, AND 56, FOR MERCHANT VESSELS

- Sec.
- 160.005-1 Applicable specifications and plans.
- 160.005-2 Types and models.
- 160.005-3 Materials.
- 160.005-4 Construction.
- 160.005-5 Inspections and tests.
- 160.005-6 Marking.
- 160.005-7 Procedure for approval.

AUTHORITY: §§ 160.005-1 to 160.005-7 issued under R. S. 4405, as amended, 4481, 4488, as amended; 46 U. S. C. 375, 474, 481. Interpret or apply R. S. 4417a, as amended, 4426, as amended, 4482, 4491, as amended, 4492, sec. 11, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 163-167, sec. 3, 54 Stat. 347, sec. 5, 55 U. S. C. 244, as amended; 46 U. S. C. 391a, 404, 475, 489, 490, 396, 367, 526-526t, 1333, 50 U. S. C. App. 1275.

NOTE: This specification is not reprinted herein because space is not available. Copies may be obtained upon request from the Commandant (CMC), Coast Guard Headquarters, Washington 25, D. C.

2. Subpart 160.024, containing §§ 160.024-1 to 160.024-7, inclusive, is amended to read as follows:

SUBPART 160.024—SIGNALS, DISTRESS, PISTOL-PROJECTED PARACHUTE RED FLARE, FOR MERCHANT VESSELS

- Sec.
- 160.024-1 Applicable specifications and plans.
- 160.024-2 Type.
- 160.024-3 Materials, workmanship, construction, and performance requirements.
- 160.024-4 Sampling, inspections, conditioning, and tests.
- 160.024-5 Marking.
- 160.024-6 Container.
- 160.024-7 Procedure for approval.

AUTHORITY: §§ 160.024-1 to 160.024-7 issued under R. S. 4405, as amended, 4488, as amended; 46 U. S. C. 375, 481. Interpret or apply R. S. 4417a, as amended, 4491, as amended, 49 Stat. 1544, 54 Stat. 347, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 1, 391a, 489, 367, 1333, 50 U. S. C. App. 1275.

NOTE: This specification is not reprinted herein because space is not available. Copies may be obtained upon request from the Commandant (CMC), Coast Guard Headquarters, Washington 25, D. C.

3. Part 160 is amended by adding a new subpart 160.028, containing §§ 160.028-1 to 160.028-7, inclusive, reading as follows:

SUBPART 160.028—SIGNAL PISTOLS FOR PARACHUTE RED FLARE DISTRESS SIGNALS FOR MERCHANT VESSELS

- Sec.
- 160.028-1 Applicable specifications and plans.
- 160.028-2 Type.
- 160.028-3 Materials, workmanship, construction, and performance requirements.
- 160.028-4 Inspections and tests.
- 160.028-5 Marking.
- 160.028-6 Container.
- 160.028-7 Procedure for approval.

AUTHORITY: §§ 160.028-1 to 160.028-7 issued under R. S. 4405, as amended, 4488, as amended; 46 U. S. C. 375, 481. Interpret or apply R. S. 4417a, as amended, 4491, as amended, 49 Stat. 1544, 54 Stat. 347, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 1, 391a, 489, 367, 1333, 50 U. S. C. App. 1275.

NOTE:—This specification is not reprinted herein because space is not available. Copies may be obtained upon request from the Commandant (CMC), Coast Guard Headquarters, Washington 25, D. C.

Dated: May 31, 1951.

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

[F. R. Doc. 51-8521; Filed, July 23, 1951; 8:49 a. m., 16 F. R. 7211-7/24/51.]

Navigation and Vessel Inspection Circular No. 5-51

UNITED STATES COAST GUARD,
WASHINGTON 25, D. C.,
May 14, 1951.

Subj: Records regarding numbering
of outboard motorboats 16 feet
or less.

1. In 1947 the Coast Guard discontinued issuing certificates of award of numbers to outboard motorboats 16 feet or less in length. The records maintained by the Coast Guard for these outboard motorboats for the period from 1938 to 1947 are to be destroyed. The records consist of applications for numbering, certificates of award, builder's statements, and papers proving ownership.

2. The owners of outboard motorboats 16 feet or less in length who submitted builder's statements and other papers proving ownership during the period from 1938 to 1947 may obtain such documents upon written request to the District Commander who originally issued the certificate of award of number. This request will have to be submitted before September 1, 1951.

3. Authorization has been granted to the Coast Guard to dispose of records consisting of application for numbering, certificates of award, builder's statements, papers proving ownership, and other related correspondence dealing with the awarding of numbers to outboard motorboats 16 feet or less in length for the period from 1938 to 1947, inclusive. These records will be destroyed in September 1951.

4. It is requested that this information be given wide distribution in order that all persons interested in such records may reclaim builder's statements and other proof of ownership originally submitted to the Coast Guard or its predecessor, the Bureau of Marine Inspection and Navigation.

(S) MERLIN O'NEILL,
Vice Admiral, U. S. Coast Guard,
Commandant.

SAFETY IS

Sensible
Alert
Fireproof
Efficient
Thorough
Yielding

Navigation and Vessel Inspection Circular No. 6-51

UNITED STATES COAST GUARD,
WASHINGTON 25, D. C.,
July 23, 1951.

Subj: Merchant seamen rejected as
poor security risks; ineligibility
for employment.

1. An order exempting from the requirements of 33 CFR 6.10-1 of Executive Order 10173 all merchant vessels of the United States with the exception of certain categories of vessels was duly published in the January 30, 1951, Federal Register at page 817 as follows:

(a) All merchant vessels of the United States of 100 gross tons and upward engaged in the foreign trade.

(b) All merchant vessels of the United States of 100 gross tons and upward engaged in trade to the Dominion of Canada, the West Indies, or Mexico.

(c) All merchant vessels of the United States of 100 gross tons and upward engaged in the intercoastal trade.

(d) All merchant vessels of the United States of 100 gross tons and upward engaged in the coastwise trade, including those vessels engaged in trade to Alaska, or the Hawaiian Islands.

(e) All merchant vessels of the United States of 100 gross tons and upward engaged in trade on the Great Lakes.

2. In exempting all merchant vessels of the United States with the exception of those in the above categories, the regulations contained in 33 CFR 121 were thus made applicable to categories (a) through (e) inclusive.

3. In the administration of the regulations contained in Part 121, the Commandant has refused validated documents and denied security clearance to certain persons on the basis specified in section 121.13. At the time of such refusal or denial the person affected was advised in writing of his ineligibility for employment on merchant vessels of the United States in the above categories.

4. The above categories include all merchant vessels of the United States of 100 gross tons and upwards engaged in the foreign, nearby foreign, intercoastal, coastwise and Great Lakes trades. These categories of vessels are legally "engaged in trade" whether at anchor, or made fast to

a dock, loading or unloading passengers or cargo, or merely in an idle status awaiting passengers or cargo. Employment on board the aforesaid categories of vessels is thus prohibited to such persons unless the vessels are laid up or dismantled or out of commission. By "employment" is meant the engagement of any person to fill any licensed or certificated berth on board ship whether or not under articles and includes those engaged for standby, relief, or other capacities.

5. It is thus evident from the foregoing that any person who has been declared ineligible for the specified employment and furnished written notice thereof is subject to imprisonment for not more than ten years or fined not more than \$10,000 under Title 50, U. S. C. 192 and the regulations promulgated thereunder, 33 CFR 6.18 (a), if he accepts such employment after being declared ineligible.

6. It is requested that the above information be given wide distribution in order that all persons concerned will have knowledge thereof.

/s/ MERLIN O'NEILL,
Vice Admiral, U. S. Coast Guard,
Commandant.

Navigation and Vessel Inspection Circular No. 7-51

UNITED STATES COAST GUARD,
WASHINGTON 25, D. C.,
July 26, 1951.

Subj: Validated documents for merchant marine personnel; advance information concerning.

1. With respect to the requirements for documents bearing security clearance or indorsement for personnel employed on certain categories of vessels on and after September 1, 1951, the following amendment to 33 CFR 121.16 was published in the Federal Register dated July 18 1951:

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

CHAPTER I—COAST GUARD, DEPARTMENT OF THE TREASURY

Subchapter K—Security of Vessels

PART 121—SECURITY CHECK AND CLEARANCE OF MERCHANT MARINE PERSONNEL

REQUIREMENTS FOR DOCUMENTS BEARING SECURITY CLEARANCE INDORSEMENT

Section 121.16 is amended by adding a new paragraph (b), reading as follows:

§ 121.16 Requirements for documents bearing security clearance indorsement.

(b) On and after September 1, 1951, all persons employed on merchant vessels of the United States of 100 gross tons and upwards engaged in (1) the foreign trade, or (2) the inter-coastal trade, or (3) the coast-wise trade to Alaska or the Hawaiian Islands, shall be required as a condition of employment to be in possession of a document bearing a special validation indorsement for emergency service prior to acceptance of employment as members of crews of such vessels. The issuance of documents bearing security clearance shall be in the form and manner prescribed by Section 121.15.

2. It will be noted that the new regulation is effective on and after September 1, 1951, and the cooperation of all operators of vessels and organizations of maritime personnel is requested in making effective this new regulation.

3. A similar requirement effective on and after August 1, 1951 for vessels engaged in trade on the Great Lakes was published in the Federal Register on June 27, 1951.

[S] MERLIN O'NEILL,
Vice Admiral, U. S. Coast Guard,
Commandant.

Navigation and Vessel Inspection Circular No. 8-51

UNITED STATES COAST GUARD,
WASHINGTON 25, D. C.,
August 22, 1951.

Subj: Limit switches and emergency disconnect switches in control circuits of lifeboat winches.

1. In order to promote safety of life at sea the requirements for limit switches and emergency disconnect switches in the control circuits for lifeboat winches on existing vessels and new vessels were revised by amendments to 46 CFR 59.3a (b), 60.21a (b), 76.15a (b), 94.14a (b), and 160.015-3 (k), which were published in the Federal Register on June 8, 1951. Federal Register Reprint No. 25-51, containing these amendments to the regulations, is inclosed. The new requirements require that existing vessels fitted with gravity davits and power operated winches shall be modified so that these installations will be in compliance with 46 CFR 160.015-3 (k) by July 1, 1952.

2. The purpose of this circular is to elaborate upon the intent of the regulations and to show typical acceptable arrangements of the electrical components of power operated lifeboat winches.

MAIN LINE EMERGENCY DISCONNECT SWITCHES

3. The purpose of a main line emergency disconnect switch required by 46 CFR 160.015-3 (k) (1) is to provide a means for interrupting quickly the electric circuit to the winch motor in the event of failure of the normal control devices (master switch and limit switches) properly to stop the motor. The main line emergency switch also acts as a disconnect switch to disconnect the winch motor from the power supply when not in use and when the units are being serviced. The characteristics of a main line emergency switch which will effectively perform this function include:

- (a) The switch should be so located as to be (1) adjacent to the master switch, (2) within reach of the winch operator, (3) accessible to the person in charge of the boat stowage, and (4) in a position from which the movement of both davit arms can be observed as they approach the final stowed position. Where all the above conditions cannot be met, the switch should be located as directed by the Officer in Charge, Marine Inspection, having jurisdiction.
- (b) The switch shall be capable of being operated by a prominent operating handle external to the enclosure.
- (c) The switch shall be capable of interrupting the motor current under adverse conditions such as when the motor rotor is stalled. The switch shall, therefore, be a "motor circuit switch" rated in horsepower and having a horsepower rating not less than that of the winch motor. Such switches are usually of the "quick-make-and-break" type so that the speed at which the switch contacts interrupt the circuit will be independent of the speed at which the operator pulls the switch handle.
- (d) The switch enclosure shall be of waterproof construction, sufficiently rugged and of proper material to permit mounting in an exposed location.

4. Motor disconnect switches commonly installed on existing vessels have rarely been other than the knife switch type. Such switches, unless of the "quick acting" type, are not designed to interrupt an inductive circuit load. In most cases, it will not be possible to employ successfully an existing lifeboat winch motor controller disconnect switch as the main line emergency disconnect switch. Where it is necessary to install a new main line emergency disconnect switch and the existing installation included a disconnect switch at or in the motor controller, the controller disconnect device shall be removed or permanently locked in the closed-circuit position as indicated by Figure 113.70-25 (e) (1).

5. When a motor controller is so located as to fulfill the four requirements of subparagraph 3 (a) above and is provided with an externally operative disconnect switch of the "quick acting" type having a horsepower rating not less than that of its associated motor and mounted either within the controller or adjacent thereto in a waterproof enclosure, this switch may serve the dual purpose of a power circuit disconnect switch (not shown in any of the figures 113.70-25 (e) (1) to 113.70-25 (e) (4), inclusive, but required by paragraph 27.01 of A. I. E. E. Standard No. 45) and the emergency disconnect switch.

6. When the motor controller is not located on deck adjacent to the winch, the sequence of power wiring devices beginning with the incoming supply shall be (1) disconnect switch adjacent to controller, (2) main line emergency switch at winch, (3) motor controller, and (4) motor.

7. Particular attention is directed to the fact that the main line emergency switch should always be on the supply side of the motor controller and never between the controller and the motor. The latter arrangement could result in the motor being started across the line with disastrous results on a direct-current installation.

GRAVITY DAVIT LIMIT SWITCHES

8. It is required by 46 CFR 160.015-3 (k) (2) that a limit switch shall be installed for each davit arm and that each limit switch shall be connected in such a way as to completely interrupt the circuit in which it operates. The limit switches may operate either in the control circuit of the motor controller or in the main power line ahead of the motor controller.

9. The characteristics of a limit switch which will effectively perform this intended function include:

- (a) The limit switches, each in conjunction with its actuating member on the davit arm, shall be located so that the switch contacts will open when the davit arms are not less than 12 inches from their final stowed position. These switch contacts shall remain open until the davit arms move outboard beyond the tripping position of the switches.
- (b) Each actuating member shall maintain the limit switch arm in a position to prevent the switch contacts from reclosing as the davit arms are cranked to their final stowed position.
- (c) Each actuating member shall operate the limit switch smoothly and without unnecessary stress to the switch arm.
- (d) When the limit switch interrupts the power circuit directly, as illustrated in figures 113.70-25 (e) (3) and 113.70-25 (e) (4), the switch shall be a motor circuit switch and rated in horsepower as described for the main line emergency switch.
- (e) The switch enclosure shall be of waterproof construction, sufficiently rugged and of proper material to permit mounting in an exposed location.
10. In most cases existing installations have employed only a single limit switch and this switch interrupted only one side of the motor starter control circuit. Some existing limit switches in use on existing vessels will be found to be two-pole switches, either one of the poles being not used or the two poles being connected in series. Such two-pole limit switches could be retained if the construction and condition of the switch are satisfactory and if the motor control circuit is rewired in accordance with the revised requirements. In determining whether a limit switch is of acceptable waterproof construction, the following should be observed:
- (a) The cover gasket should be intact and possess the flexibility necessary for a satisfactory seal;
- (b) Only a negligible amount of moisture, if any, should be found within the inclosure;
- (c) There should be practically no evidence of corrosion on any of the interior parts;
- (d) There should be practically no pitting on any electrical contact circuits; and
- (e) The operating arm should not bind throughout its movement.

11. The Coast Guard believes it will be necessary to modify the motor controller wiring systems on all existing vessels in order to connect control circuit limit switches in the manner required by 46 CFR 160.015-3 (k) (2), as illustrated in figures 113.70-25 (e) (1) and 113.70-25 (e) (2).

12. Where an existing limit switch is found to be of the single pole type, it will rarely be possible to modify the switch to provide a second pole. A new limit switch will usually have to be installed. It should be noted that a change in a limit switch will usually require a change in the switch actuating member on the davit arm.

13. Each motor controller should, and usually does, have a wiring diagram attached to the inner side of the door. In order to assist in the future servicing of the controller, the wiring diagram should be modified at the time modifications are made to the controller wiring.

DUAL WINCH CLUTCH INTERLOCK SWITCHES

14. In the "dual winch" type of installation one electric motor serves two lifeboats in combination with two clutches, one for each lifeboat. The clutch arrangement is such that either clutch may be engaged at one time or both clutches may be simultaneously disengaged. Furthermore, in this particular installation very often an interlocking switch actuated by the clutch lever has been added to prevent the electric controls associated with one boat from operating the motor should it be mechanically clutched to the other boat. In this type of installation it is essential that an interlocking switch shall be installed and shall be of waterproof construction. The interlocking switch should be so constructed that it will be actuated by the clutch lever and shall be so connected in the control circuit that the controls associated with one lifeboat cannot operate the motor should the motor be mechanically clutched to the other lifeboat. The revised requirements require clutch handle mechanical interlocks and clutch interlock switches to be installed in "dual winch" installations. A typical "dual winch" installation is illustrated in figure 113.70-25 (e) (2).

HAND CRANK DISCONNECT

15. It is required by 46 CFR 160.015-3 (1) that means shall be provided to prevent the power unit from operating while the hand crank is engaged. All winches presently being approved are provided with mechanical means to disengage the hand crank should the power unit be started. Winch manufacturers have

designed such mechanical disengaging devices for some, but not all, existing winches. On existing vessels winches should be provided with mechanical means to disengage the hand crank should the power unit be started where such arrangements have not already been provided.

COAST GUARD APPROVAL

16. The Coast Guard has requested various manufacturers to submit samples and drawings of emergency disconnect switches and limit switches suitable for use with lifeboat winches. After the Coast Guard determines that a unit is suitable for use on merchant vessels, the description of the unit and the manufacturer's name will be published in the appendix to the "Proceedings of the Merchant Marine Council" under the heading "Electrical Appliances." Any person having knowledge of emergency disconnect switches and limit switches which may be of suitable construction are invited to advise Coast Guard Headquarters so that sample units may be obtained.

17. It is necessary to design or modify electrical equipment to accomplish the intent of the revised regulations. During this period of developing and testing various devices, it is essential that masters, shipowners and ship operators make the preliminary plans for such equipment installations so that just as soon as satisfactory devices are listed and published in the "Proceedings" it will be possible to start making the actual installations. During this period it is essential that existing installations on board the vessels be kept in good operating condition. If maintenance is neglected, then the possibility of a serious casualty increases tremendously.

18. While it is believed that the arrangement of equipment and wiring shown on figures 113.70-25 (e) (1) to 113.70-25 (e) (4), inclusive, will serve as a guide for most installations, it is felt that some installations will require special consideration to effect the desired results, and these cases should be referred to Coast Guard Headquarters.

19. The corrective measures outlined in this circular should not be construed as precluding from consideration any other method which will accomplish the same purpose with the same degree of safety.

/s/ MERLIN O'NEILL,

Vice Admiral, U. S. Coast Guard,
Commandant.

Incls.

Federal Register Reprint No. 25-51.
Four sketches, Figures 113.70-25 (e) (1) to (4), incl.

FEDERAL REGISTER

REPRINT NO. 25-51

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 51-20]

LIMIT SWITCHES AND EMERGENCY DISCONNECT SWITCHES IN CONTROL CIRCUITS OF LIFEBOAT WINCHES

A notice regarding proposed changes in the regulations for limit switches and emergency disconnect switches was published in the Federal Register dated February 27, 1951, 16 F. R. 1831, as Item II on the Agenda to be considered by the Merchant Marine Council, and a public hearing was held by the Merchant Marine Council on March 27, 1951, in Washington, D. C. All the comments submitted were considered and where practicable were incorporated into the regulations.

The purpose of the amendments to 46 CFR 59.3a (b), 60.21a (b), 76.15a (b), 94.14a (b), and 160.015-3 (k) is to have the requirements for limit switches and emergency disconnect switches in the control circuits for lifeboat winches on existing vessels and new vessels to be the same, to require effective means for cutting off the electric power to lifeboat winches. During the last five years the records of the Coast Guard show there have been thirty accidents caused by defective limit switches. These thirty casualties have resulted in three deaths, eighteen persons injured, and considerable property damage. During this same period two men were killed and seven were injured as a result of being struck by spinning crank handles while in the act of hand cranking the davits to their final position.

The extension of the application of the regulations to installations on existing vessels and revision of requirements for limit switches and emergency disconnect switches are in the interest of safety of life at sea.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Treasury Department Order No. 120, dated July 31, 1950 (15 F. R. 6521), to promulgate regulations in accordance with the statutes cited with the regulations below, the following amendments to the regulations are prescribed which shall become effective ninety days after date of publication of this document in the Federal Register.

Subchapter G—Ocean and Coastwise; General Rules and Regulations

PART 59—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES (OCEAN)

Section 59.3a (b) is amended to read as follows:

§ 59.3a *Mechanical means for lowering.* * * *

(b) (1) Winches proposed for use in new installations shall be of an approved type and constructed in accordance with Subpart 160.015 of Subchapter Q (Specifications) of this chapter.

(2) All existing vessels fitted with gravity davits and winches shall comply with the requirements contained in § 160.015-3 (k) of Subpart 160.015 of Subchapter Q (Specifications) of this chapter not later than July 1, 1952.

(R. S. 4405, as amended, 4488, as amended; 46 U. S. C. 375, 481. Interprets or applies R. S. 4491, as amended, 49 Stat. 1544, sec. 3, 54 Stat. 347, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 1, 489, 367, 1333, 50 U. S. C. App. 1275)

PART 60—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES (COASTWISE)

Section 60.21a (b) is amended to read as follows:

§ 60.21a *Mechanical means for lowering.* (See § 59.3a of this subchapter, as amended, which is identical with this section.)

(R. S. 4405, as amended, 4488, as amended; 46 U. S. C. 375, 481. Interprets or applies R. S. 4491, as amended, 49 Stat. 1544, sec. 3, 54 Stat. 347, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 1, 489, 367, 1333, 50 U. S. C. App. 1275)

Subchapter H—Great Lakes; General Rules and Regulations

PART 76—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES

Section 76.15a (b) is amended to read as follows:

§ 76.15a *Mechanical means for lowering.* (See § 59.3a of this chapter, as amended, which is identical with this section.)

(R. S. 4405, as amended, 4488, as amended; 46 U. S. C. 375, 481. Interprets or applies R. S. 4491, as amended, 49 Stat. 1544, sec. 3, 54 Stat. 347, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 1, 489, 367, 1333, 50 U. S. C. App. 1275)

Subchapter I—Bays, Sounds, and Lakes Other Than the Great Lakes; General Rules and Regulations

PART 94—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES

Section 94.14a (b) is amended to read as follows:

§ 94.14a *Mechanical means for lowering.* (See § 59.3a of this chapter, as amended, which is identical with this section.)

(R. S. 4405, as amended, 4488, as amended; 46 U. S. C. 375, 481. Interprets or applies R. S. 4491, as amended, 49 Stat. 1544, sec. 3, 54 Stat. 347, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 1, 483, 367, 1333, 50 U. S. C. App. 1275)

(F. R. Doc. 51-6653; Filed, June 7, 1951; 8:52 a. m., 16 F. R. 6653-6 8/51.)

Subchapter Q—Specifications

PART 160—LIFESAVING EQUIPMENT

SUBPART 160.015—LIFEBOAT WINCHES FOR MERCHANT VESSELS

Section 160.015-3 (k) is amended to read as follows:

§ 160.015-3 *Construction of lifeboat winches.* * * *

(k) Limit switch and emergency disconnect switch requirements:

(1) A main line emergency disconnect switch shall be provided, the opening of which will disconnect all electrical potential to the lifeboat winch. This switch shall be located in a position accessible to the person in charge of the boat stowage, and for gravity davit installations, shall be in a position from which the movement of both davit arms can be observed as they approach the final stowed position.

(2) Where power driven winches are used with gravity davits, two limit switches, one for each davit arm, shall be provided to limit the travel of the davit arms as they approach the final stowed position. These switches shall be connected in series, they may be connected in either the control or the power circuit, and they shall be so arranged that the opening of either switch will disconnect all electrical potential of the circuit in which the switches are connected. These switches shall be arranged to stop the travel of the davit arms not less than 12 inches from their final stowed position and they shall remain open until the davit arms move outboard beyond the tripping position of the switches.

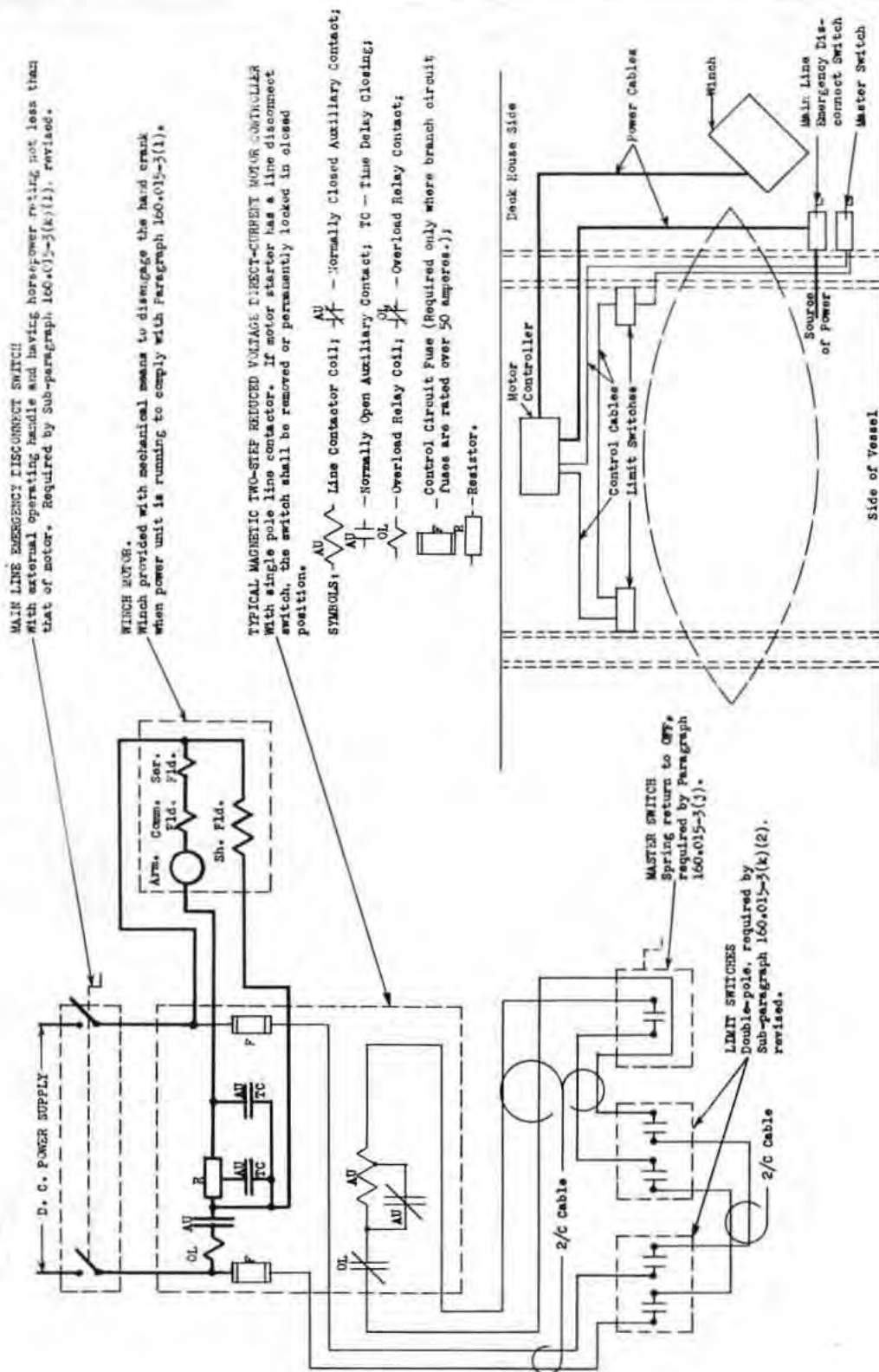
(3) Other arrangements equivalent in design and safety will be given special consideration.

(R. S. 4405, as amended, 4488, as amended; 46 U. S. C. 375, 481. Interprets or applies R. S. 4417a, as amended, 4426, as amended, 4481, 4491, as amended, sec. 11, 35 Stat. 428, 49 Stat. 1544, sec. 3, 54 Stat. 347, sec. 5, 55 Stat. 244, as amended; 46 U. S. C. 1, 391a, 404, 474, 489, 396, 337, 1333, 50 U. S. C. App. 1275.)

Dated, May 31, 1951.

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

TYPICAL ELEMENTARY WIRING DIAGRAM AND ARRANGEMENT PLAN OF GRAVITY DAVIT AND BOAT WINCH EMPLOYING DOUBLE-POLE LIMIT SWITCHES AND SAID LIFE EMERGENCY SWITCH IN ACCORDANCE WITH SUBPART 160.015, SUBCHAPTER S



TTYPICAL ELEMENTARY WIRING DIAGRAM AND ARRANGEMENT PLAN OF GRAVITY DAVITS AND DUAL BOAT WINCH EMPLOYING DOUBLE-POLE LIMIT SWITCHES, CLUTCH INTERLOCK SWITCHES, AND MAIN LINE EMERGENCY SWITCHES IN ACCORDANCE WITH SUPPART 160.015, SUBCHAPTER Q



Winch is disengaged and clutch interlock switch contacts are open in "Out" position of clutch handles. Both clutch handles may be "Out" at the same time. Only one clutch handle may be "In" at the same time.

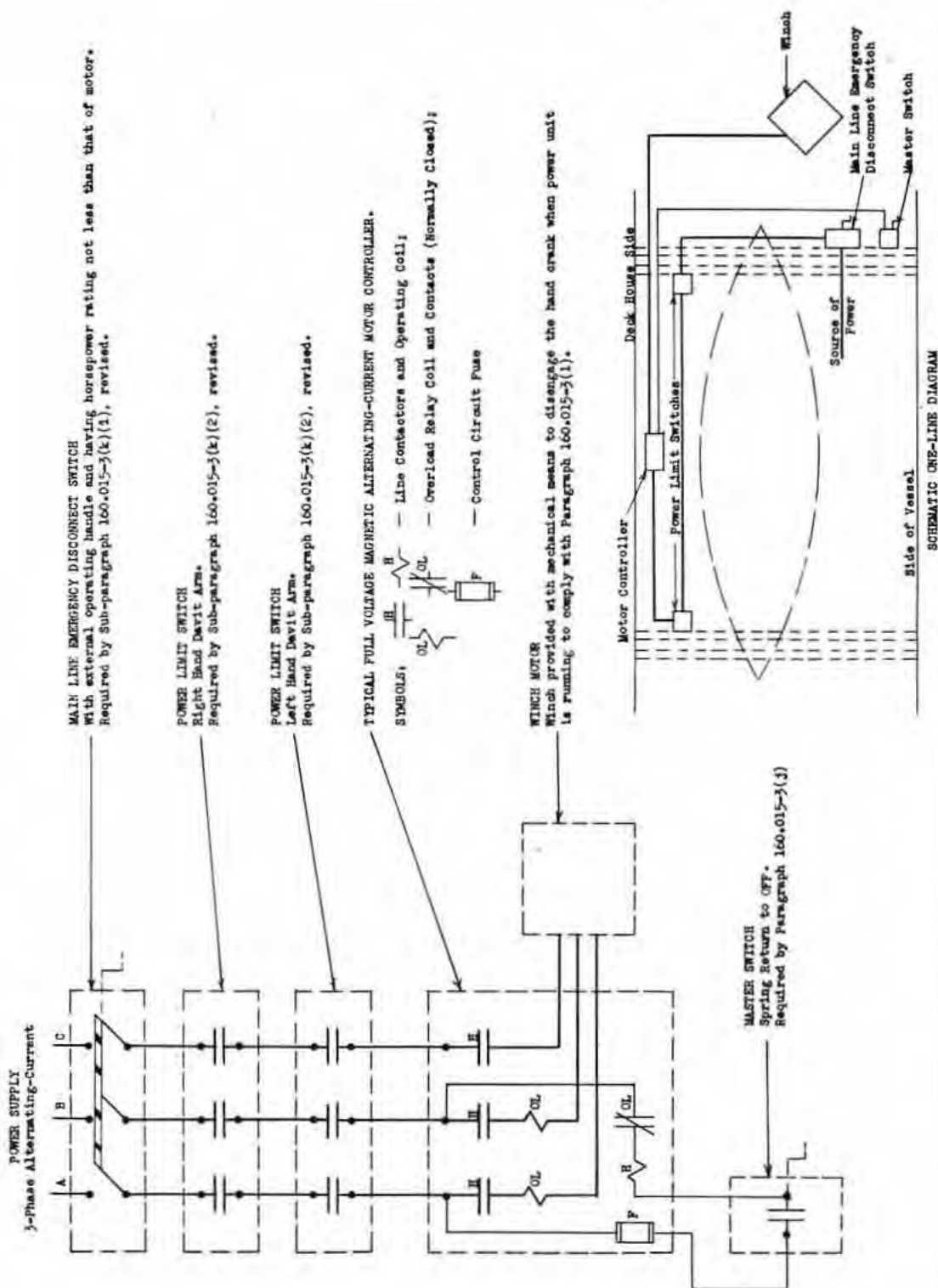
MASTER SWITCH
Spring return to OFF, required by Paragraph 160.015-3(1), revised.

TYPICAL ELEMENTARY WIRING DIAGRAM AND ARRANGEMENT PLAN OF GRAVITY DAVIT AND HOIST WINCH EMPLOYING POWER LIMIT SWITCHES AND COMBINED STARTER AND MAIN LINE EMERGENCY DISCONNECT SWITCH IN ACCORDANCE WITH SUBPART 160.015, SUBCHAPTER Q



FIGURE 113.70-05 (a) (4)

TYPICAL ELEMENTARY WIRING DIAGRAM AND ARRANGEMENT PLAN OF GRAVITY DAVIT AND BOAT WINCH EMPLOYING MAIN LINE EMERGENCY SWITCH AND POWER LIMIT SWITCHES
IN ACCORDANCE WITH SUBPART 160.015, SUBCHAPTER Q



Equipment Approved by the Commandant

Withdrawal of Approval of Certain Carbon
Dioxide Type, Hand Portable Fire Ex-
tinguishers

HEARING

[CGFR 51-39]

1. The Approval No. 162.005/25/0 for a Model R-10, 10-lb. carbon dioxide type, hand portable fire extinguisher and the Approval No. 162.005/26/0 for a Model R-15, 15-lb. carbon dioxide type, hand portable fire extinguisher, manufactured by the Randolph Laboratories, Inc., 8 East Kinzie Street, Chicago 11, Ill., were suspended on August 3, 1951, for non-compliance with requirements of Coast Guard regulations. The Randolph Laboratories, Inc., was requested to state what action they intend to take toward recalling and withdrawing from marine service all of the fire extinguishers of Models R-10 and R-15, covered by Approval Nos. 162.005/25/0 and 162.005/26/0, respectively, which incorporate changes that are different from the design, construction, or materials approved by the Commandant, U. S. Coast Guard. The manufacturer stated that he had no marine supply dealers for fire extinguishers Models R-10 and R-15, and that those presently in the hands of dealers are intended for ordinary industrial trade and not marine use. The manufacturer also stated that orders for Models R-10 and R-15 fire extinguishers for marine use were to be sent direct to Randolph Laboratories, Inc., Chicago, Ill., and these fire extinguishers were then made according to the design, construction, and materials approved by the Coast Guard. From time to time, under the Coast Guard's program for spot checking equipment approved for marine service that is not subject to factory inspections, articles approved for use on inspected vessels, motorboats and other vessels are purchased from marine supply dealers. Under this program a Model R-15, 15-pound carbon dioxide type, hand portable fire extinguisher was purchased from a marine supply dealer and this extinguisher was checked by the National Bureau of Standards for compliance with Coast Guard requirements. This examination showed that changes from the approved construction had been incorporated in the Model R-15 fire ex-

tinguisher, particularly with reference to the design and construction of the valve, the horn construction, and the method of attachment of the main body of the horn to the "lower horn handle part." Since both Models R-10 and R-15 fire extinguishers were presented by the manufacturer as having identical valve mechanisms, as well as having similar parts in many other respects, it is necessary to include Model R-10 in this action. The certificates of Approvals Nos. 162.005/25/0 and 162.005/26/0 provide that before modifications in the approved design, construction, or materials may be incorporated in the article, proper permission must be received from the Coast Guard. Since the manufacturer is using the same Model Nos. R-10 and R-15 for fire extinguishers that may be used in the ordinary industrial trade as well as for marine service, and since marine supply dealers, as well as the public or the Government, cannot distinguish between these fire extinguishers for ordinary industrial trade from those for marine service, it is necessary for safety of life at sea that Approval No. 162.005/25/0 and Approval No. 162.005/26/0 be withdrawn and that any Models R-10 and R-15 fire extinguishers on board inspected vessels, motorboats, or other vessels shall be removed and replaced with other fire extinguishers of an approved type.

2. It is therefore ordered, That Approval No. 162.005/25/0 for a Model R-10, 10-pound carbon dioxide type, hand portable fire extinguisher, and Approval No. 162.005/26/0 for a Model R-15, 15-pound carbon dioxide type, hand portable fire extinguisher, shall be withdrawn effective August 3, 1951, and it is further ordered that all carbon dioxide fire extinguishers bearing the Model No. R-10 or R-15 and manufactured by the Randolph Laboratories, Inc., Chicago, Ill., shall be removed from inspected vessels, motorboats, or other vessels required by law or regulation to carry Coast Guard approved fire extinguishers and all fire extinguishers removed shall be replaced by Coast Guard approved fire extinguishers: *Provided, however,* That owners, operators, masters, or others responsible, shall have until the next inspection or reinspection of their Coast Guard inspected vessels to replace such fire extinguishers; and the owners, operators, masters, or others responsible, for motorboats and vessels not inspected by the Coast Guard shall have until March 1, 1952, to replace such

fire extinguishers; before being subject to any of the penalties of law.

3. Any person aggrieved by the withdrawal of Approval No. 162.005/25/0 for a Model R-10, 10-pound carbon dioxide type, hand portable fire extinguisher, and withdrawal of Approval No. 162.005/26/0 for a Model R-15, 15-pound carbon dioxide type, hand portable fire extinguisher may submit a written brief setting forth all pertinent facts for receipt by the Commandant (CMC), U. S. Coast Guard, Washington 25, D. C., prior to September 17, 1951, and such written brief may be supported by oral arguments at a public hearing of the Merchant Marine Council at 9:30 a. m., d. s. t., September 19, 1951, in Room 4120, Coast Guard Headquarters, Thirteenth and E Streets NW., Washington, D. C.

Dated: August 28, 1951.

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

[F. R. Doc. 51-10585; Filed, Aug. 31, 1951;
8:53 a. m., 16 F. R. 8941-9/1/51.]

FUSIBLE PLUGS

The Marine Engineering Regulations and Material Specifications require that manufacturers submit samples from each heat of fusible plugs to the Commandant for test prior to plugs manufactured from the heat being used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from July 15 to August 15, 1951, is as follows:

H. B. Sherman Manufacturing Co.,
Battle Creek, Mich. Heat Nos. 732
and 736 through 741.

M. Greenberg's Sons, 765 Folsom
Street, San Francisco, 7, Calif. Heat
No. 164.

CERTIFICATION OF ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of Ships' Stores and Supplies certificated from July 26 to August 25, 1951, 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:

Gamlen Chemical Co., 321 Victory
Avenue, South San Francisco, Calif.,
Certificate No. 334, dated August 3,
1951, "Gamlen Compound No. 8."

E. F. Drew & Co., Inc., 15 East
Twenty-sixth Street, New York, N. Y.,
Certificate No. 335, dated August 9,
1951, "Drew Oil Remover."

Your Goose Will Be Cooked Quicker With a Hot Temper.