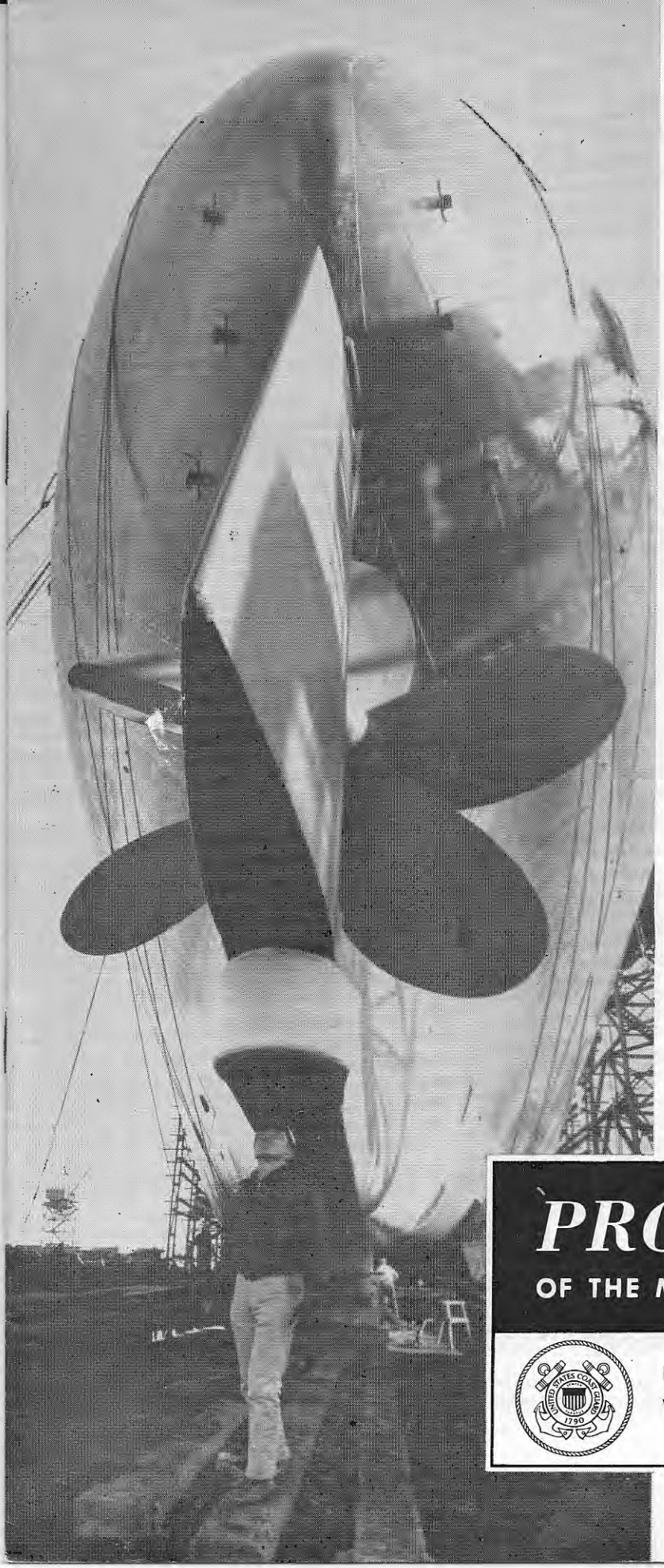

FEATURES

STABILITY OF OFFSHORE SUPPLY VESSELS

SAFETY OF LIFE AT SEA, 1960

PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

UNITED STATES COAST GUARD
Vol. 21, No. 9 • September 1964
CG–129

PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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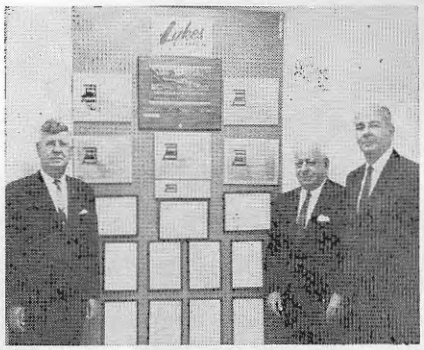
LCDR N. B. Binns, *USCG, Editor*
T. A. DeNardo, *Assistant Editor*

SAFETY AWARDS



A TOTAL OF 17 SAFETY AWARDS were recently presented to ships of the Lykes Line fleet for 1963. W. D. O'Regan, right, president of the Metropolitan New Orleans Safety Council, is shown making the presentation. Receiving the awards in behalf of the company were Capt. James B. Rucker, left, manager, Accident Prevention Division, and Robert F. Rader, vice president of the company.

Mr. O'Regan made the presentations in behalf of the National Safety Council, Chicago, and the American Merchant Marine Institute, New York.

The S.S. *Eugene Lykes* has the most envious safety record, having completed 4 straight years without a single lost-time accident. For this feat, the ship was presented with a 4-year Jones F. Devlin award, sponsored by the American Merchant Marine Institute and the National Safety Council.

Other Lykes vessels recipients of safety awards are:

Joseph Lykes
Charles Lykes
Lipscomb Lykes
Letitia Lykes
Shirley Lykes
Louise Lykes
Stella Lykes
Frederick Lykes
Helen Lykes
Doctor Lykes
Mallory Lykes
Dolly Turman
Sheldon Lykes

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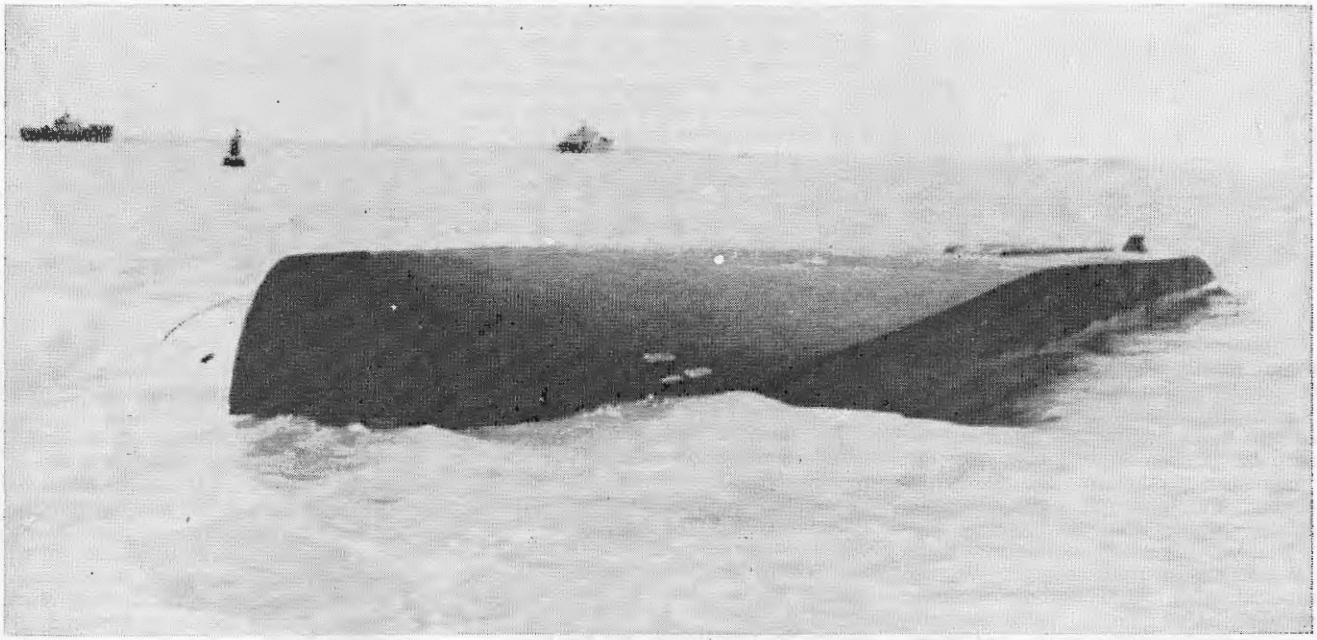


THE ABOVE picture shows what happens when the stability of a flat bottomed supply vessel is impaired by overloading or improper cargo stowage.

STABILITY OF OFFSHORE SUPPLY VESSELS

BY LCDR WILFRED R. BLEAKLEY, JR., USCG
MERCHANT MARINE TECHNICAL DIVISION, HEADQUARTERS

A DESIGNER OF A SHIP has a problem in combining into a workable whole the many characteristics desired by the intended owner. Speed vs. sea-keeping, cargo capacity vs. limiting draft in harbors to be visited, cargo capacity vs. endurance, and cargo capacity vs. exemption from admeasured tonnage are some of the many conflicting aspects of a marine design. Compromises are forced upon the designer and the owner in order to obtain a ship satisfying both the needs of the owner and the expected service conditions.

Just as the designer must appreciate the owner's and operator's intended use of the vessel, so too must the owner and operator appreciate the limitations of the design.

This article discusses in nontechnical terms the stability of the small, broad, shallow-draft vessels which have evolved along the Gulf of Mexico as mobile support vehicles for the offshore drilling sites. It was originally prepared to give operators of these vessels a better appreciation of the limitations and peculiarities of that design. It is included in the PROCEEDINGS because the basic principles discussed herein are of general application.

The principal features of a typical offshore supply vessel are:

LOA 120′ to 130′
Beam 32′
Depth 10′
Load Draft 8′–4″
Freeboard at load draft 20″
Displacement at load draft 700 long tons
Lightship weight 235 long tons
Deadweight 465 long tons

The major portion of the deadweight is for cargo on deck and liquids in the "ballast tanks"—a very minor part is crew, supplies for the crew and the ship, and fuel: (about 7 to 10 tons). If peak tanks forward and aft are filled, this nonpaying deadweight would be about 45 to 50 tons. This boils down to about 400 long tons of paying cargo at 20″ freeboard.

Basically the ship type is a deck barge which has been fined up in the bow for streamlining and cut away at the stern for the propellers. Pilothouse and crew quarters are forward above the main deck. Machinery exhaust, intake and access are contained in trunks projecting up through the deck aft in an outboard position so as not to clutter the cargo area.

Cargo is carried on the broad open deck area bounded with rails, pipe stanchions, or closed bulwarks at the sides. From the quarters forward to the machinery space aft there usually is a below deck tunnel, centerline, which is flanked by large "ballast" deeptanks that extend from the bottom shell to the cargo deck. These tanks are used to transport liquids to the offshore rig.

SOME BASIC DEFINITIONS

The details of a vessel's stability can be quite technical and involved. An effort has been made to keep this discussion simple. As a first step we should review some basic terms:

Draft: Distance from keel to waterline.
Freeboard: Distance from waterline to deck—how close we are to being underwater.
Metacentric height: GM—It is a measure of initial stability. As it gets numerically smaller, stability is reduced.

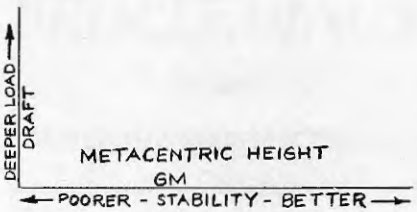


Figure 1.

Figure 1 represents coordinate axis upon which stability is commonly shown in graphical form.

Figure 2 represents a transverse section of a vessel showing the relationship of G, the center of gravity; B, the center of buoyancy; M, the metacenter, the point through which B acts.

Figure 3 is representative of a typical offshore supply vessel. We are interested in trends and not specific numbers at this point. Specific numbers are left to the naval architect. In figure three:

1. The loadline: Defines the maximum draft or more correctly the minimum freeboard. (How close we are to being under the water.)

2. The *required* GM curve (S–S): This defines the minimum stability for survival at sea, assuming the cargo is well secured.

3. The "shaded" area of the graph is the area to avoid. If we are interested in survival we stay in the unshaded area.

NOW FOR THE SHIP AND ITS LOADING (FIG. THREE)

1. Place the "bareboat" ship on the graph as A. This is the basic ship without ballast, crew, cargo, fuel, etc.

2. Put on crew, fuel and supplies and we move to point B.

3. Add a given tonnage of pipe cargo stowed 4 feet high on deck and we move to point C.

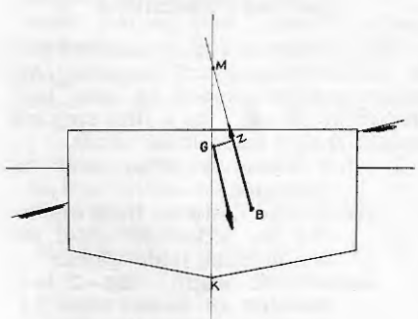


Figure 2.

4. Add drilling water in two below deck tanks till they are each half full; we move to D.

5. Press up those two "ballast" tanks and move to E. So far so good.

6. Now let us go back to point B and assume that instead of pipe we are transporting drilling mud in containers 7′ x 7′ x 18′ or 8′ x 8′ x 16′ mounted on skids which raise them another 6 inches off the deck. From point B load an identical tonnage to what we had before but this time the tonnage is in full or nearly full mud tanks. Since the center of gravity of the cargo is higher than before, we move to point C1.

7. Add same amount of "ballast" as before and move to D1 and E1. As you see, we are now into the shaded area. Numbers have intentionally been omitted, the principle is the important thing and that is all that is being demonstrated. It is definitely possible to load these vessels dangerously.

TO EMPHASIZE THE ABOVE

1. In adding cargo on deck we have moved toward the shaded area of the graph. *Both* freeboard and stability have decreased.

2. In adding ballast in these vessels, contrary to what you might think, the same thing happens; *both* stability and freeboard decrease. Certainly the stability did not decrease as fast as it would have if we had added more deck cargo, but it did decrease.

3. In a conventional cargo vessel when you add low ballast you get a gain in GM shown in figure 4.

4. Such is not the case when you consider an offshore supply vessel with a broad shallow-draft hull form. One nontechnical reason is because, in these vessels, adding ballast does not appreciably lower the center of gravity. In these vessels, tonnage exemption considerations plus a required capability of transporting large quantities of river water "ballast" to the drilling site (to be used as drilling water) do not provide a tankage arrangement which improves stability. The addition of liquids in the deep "ballast" tanks of these vessels never improves stability. The only thing you can say of merit is that stability decreases less than if an equal amount of deck cargo had been added. A more sophisticated reason is that, in this hull form, the displacement is increasing without significant change in the waterplane. These effects combine to reduce GM drastically.

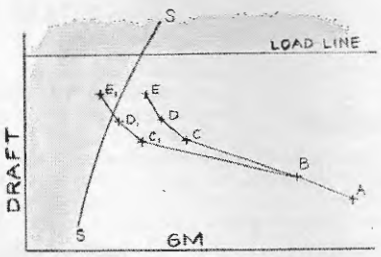


Figure 3.

HOW MUCH STABILITY IS NEEDED?

Our goal is to stay out of the shaded area. To do this we must know the boundaries of the shaded area—this is for the naval architect to determine. After the boundaries are known, we must:

1. Assign the responsibility for maintenance of stability. There must

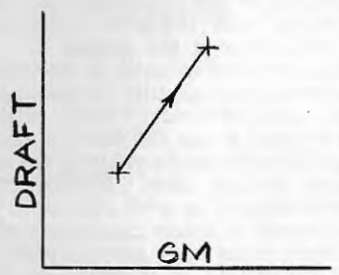


Figure 4.

ABOUT THE AUTHOR

LCDR Bleakley was recently assigned to the Technical Staff of CCGD9(m). He graduated from the Coast Guard Academy in 1951 and completed post graduate training in Naval Construction and Marine Engineering at M.I.T. in 1957. On previous duty assignments in the Coast Guard he has served in the Merchant Marine Technical Division at USCGHQ, in deck and engineering billets on both Atlantic and Pacific Ocean station vessels, and as a Ship Superintendent at the CG Yard.

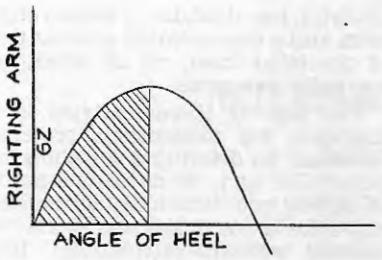


Figure 5.

be a man who knows the condition of the vessel at all times, i.e., someone in charge on board the vessel. This has customarily been the Master.

2. Give the Master a set of simple rules so that he can keep the vessel's stability "out of the shaded area."

The required GM curve which the Coast Guard feels is applicable to this type vessel is based on the work of Rahola (a professor at Helsinki) with a slight modification to take into account more recent studies by J. R. Paulling (a professor of the University of California). Paulling's studies concern the decrease in stability experienced when a ship has a wave crest amidships. For these broad shallow draft hull forms the stability decrease associated with a wave crest amidships is much more significant than in conventional forms. An example of when this stability decrease would be experienced is when running before a sea, where the vessel will be on the crest of a wave for a relatively long time in relation to the roll period.

RAHOLA CRITERIA AND DYNAMIC STABILITY

It has been mentioned earlier in this discussion that metacentric height (GM) is a measure—a yardstick if you will—of initial stability, which for convenience can be considered as stability with no heel on the vessel.

Rahola uses another yardstick, related to GM, but taking into account other factors, such as the behavior in the sea. Rahola's yardstick is called dynamic stability.

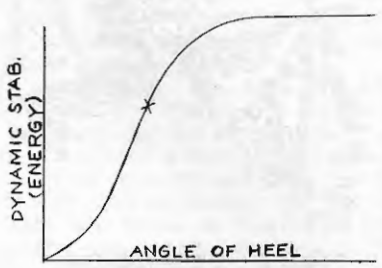


Figure 6.

Definition: Dynamic stability is a measure of the energy required to heel a vessel from upright to a given angle. Figure 5 shows the relation of the righting arm, GZ, to the angle of inclination of a vessel. This is a static stability curve.

Graphically, dynamic stability, at any point, is the area under the static stability curve up to that point, and it usually looks something like figure 6.

Rahola says, essentially, that a ship needs a certain amount (15 foot degrees) of dynamic stability to survive in a seaway. He measures this dynamic stability up to a critical angle which is determined by:

(a) A point where the dynamic stability ceases to increase appreciably with more heel; in other words, where the tendency or desire of the vessel to return to the upright condition begins to decrease. Rahola used the point where the angle of maximum righting arm or 40 degrees (whichever is less) has been reached.

If the vessel starts to flood before the previously mentioned point is reached, then "signals are off." The reason is that the vessel does not get the chance to develop its full survival capabilities which it otherwise would have if all openings were closed and the vessel did not flood. So Rahola adds the following:

(b) Or to the angle at which openings admit flood water—the down flooding angle.

A required GM curve can be computed which meets the Rahola criteria. If all openings are closed at all times the general shape of the required GM curve for this type vessel is shown by curve ABC of figure 7. But, if flooding will occur through hull openings then the vessel's heel must be limited to avoid exposing those openings, and the curve would then look something like ABD.

From this we can see that two points about openings on deck should be stressed.

1. The Master must see to it that openings which could flood the ship are kept closed. This is essential in this class of vessel where a roll of 6–10° puts the deck edge under.

2. The designer should assume that if something could go wrong it will go wrong. People will leave doors open, especially in situations with poor ventilation. Doors and other openings should be located well inboard or high up where they have less chance of being awash.

VESSEL'S TRIM IN RELATION TO LOADLINE

Sometime in your childhood days, you may well have gone swimming with other children on a raft. You

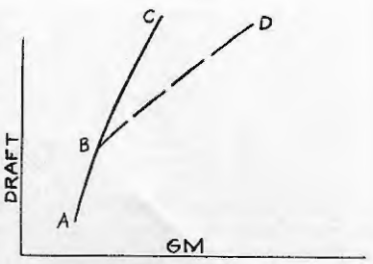


Figure 7.

noticed when the raft got crowded, that as long as you were all evenly distributed or were all near the center of the raft, you were still afloat and the raft was level. If, however, you all went to one end of the raft (mind you, the same number of people on the raft in both cases) you quickly found that the crowded end went under and maybe even scooted out from under you.

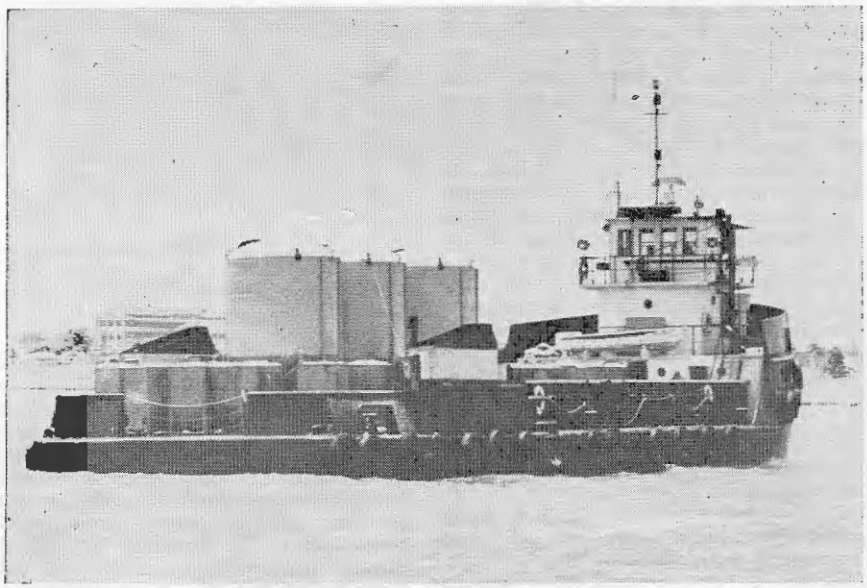
A similar trimming action happens with the typical offshore supply vessel, or with any vessel for that matter. For example, load a barge evenly with cargo. The vessel is level and just has its loadline at the surface of the water. Now move the cargo to the stern. What happens? The freeboard decreases at the stern, but the loadline mark is still above water. The same thing would have happened if you had initially placed the same cargo at the stern.

The consequences of this are numerous and more significant in a vessel without a poop deck. Obviously, any hatches, such as access openings to the steering gear room, are that much closer to being under water or being washed over by waves, and any water on deck tends to reduce stability.

CARGO SHIFT

A ship with properly secured cargo can operate in the unshaded area of the previous diagram and be safe. The required GM curve shown on the left of the diagram assumes that the cargo is secured. But if the cargo is not secured and large heavy objects are allowed to careen across the deck, *you are in trouble,* and following all the other rules in the book won't help once the cargo has shifted and the vessel capsized.

Again we are back to the raft story, except that instead of moving the load to the stern we have moved it to the side of the ship. The results are generally more severe and the response quicker since there is less resistance to heeling than to trimming.



ONE EXAMPLE of an offshore supply vessel carrying heavy weights high above the waterline.

FREE SURFACE

A liquid free surface acts to the detriment of stability in a manner similar to a cargo shift. It is, however, a hidden free roving stability thief out of sight in a tank or a bilge.

Compare the trip from the kitchen sink to the refrigerator with an ice tray full of water, first without and then with the cube divider. This example of the effects of a free surface has a direct parallel to the conditions on a ship with a cross connection between the two wing tanks open or closed.

Two partially full tanks side by side in a ship with an open cross connection between them create a stability loss due to free surface which is four times that which would occur without a cross connection.

Liquid free surfaces do rob you of stability; they must be controlled by elimination of bilge water and control of tank contents.

BLOCKED FREEING PORTS:

Water on deck, held there by bulwarks, is just like tons of deck cargo except that it is also moving. This reduces both freeboard and stability. Therefore, an important design detail is the requirement for an adequate amount of freeing ports to allow the water to drain clear. The operator must insure that freeing ports are not blocked by cargo.

DOWNFLOODING

Water flooded into the internal portions of a ship is a load which reduces freeboard and also reduces stability due to sloshing back and forth or "free surface" effect.

CONCLUDING REMARKS

We have brushed over the high spots of stability, as it affects the offshore supply vessels, in an attempt to describe a rather technical subject in nontechnical terms.

From the stability viewpoint, we still have three basic things to do:

1. Determine the boundaries of the shaded area which we want to avoid. (This is the naval architect's job.)

2. Assign the responsibility for the maintenance of stability.

3. Provide the responsible person with some rules for assuring himself that he does have adequate stability at all times.

Some progress has been made on step 1. This beginning involves a series of calculations done at USCG HQ for one hull form similar to figure 2 which is representative of this type of vessel. This information is currently being used as a basis for approving stability calculations submitted to the Coast Guard for inspected and certificated vessels of this type. Because the hull forms do vary, additional work has been scheduled to include hard chine forms with more deadrise, less deadrise, a double chine form and a conventional gradual turn of the bilge form, all of which are currently in service.

The aim of these analyses is to shortstop the calculations presently necessary to determine a Rahola required GM curve by devising a family of curves from which an appropriate curve for a particular vessel may be selected without calculation. Ultimately it would be desirable to derive a simple formula using principal dimensions such as beam, draft, depth and midship section shape which would provide a curve equal to a Rahola required GM curve.

In addition to giving the owners and operators a better appreciation of the stability limitations and peculiarities of these vessels, it is hoped this article will generate additional interest and progress in the areas of steps 2 and 3 which are vital to assured, rather than chance, operation in the zone of adequate stability.

REFERENCES

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3. "Transverse Stability on Tuna Clippers"—J. R. Paulling Jr.—pp. 489–495—Fishing Boats of the World: 2—Published by Fishing News (Books) Ltd., 110 Fleet Street, London, E.C. 4.

Courtesy Maritime Reporter

COUNCIL ACTIVITIES

INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1960

THE INTERNATIONAL CONVENTION for the Safety of Life at Sea, 1960 (SOLAS), will become effective on 26 May 1965 having been ratified by the requisite number of nations. This Convention is the result of the fourth International Conference on the Safety of Life at Sea, prior ones having been held in 1913, 1929, and 1948. The Countries having accepted this International Convention are as follows:

	Date of deposit of acceptance
Algeria	20 Jan. 1964
Cuba	22 Aug. 1963
France	16 Oct. 1961
Ghana	22 Mar. 1962
Greece	13 Feb. 1963
Haiti	17 Mar. 1961
Japan	23 Apr. 1963
Liberia	26 May 1964
Madagascar	13 Sept. 1962
Morocco	28 Nov. 1962
Norway	23 Aug. 1961
Paraguay	11 Sept. 1963
Peru	25 July 1962
Spain	22 Jan. 1963
Tunisia	20 May 1963
United Kingdom of Great Britain and Northern Ireland	11 June 1964
United States of America	2 Aug. 1962
Viet-Nam (Republic of)	8 Jan. 1962

Held under the auspices of the Intergovernmental Maritime Consultative Organization (IMCO), an agency of the United Nations, the fourth International Conference on the Safety of Life at Sea considered a wide variety of safety problems confronting the maritime nations of the world. It reviewed and revised the existing Convention for Safety of Life at Sea (SOLAS), which dates back to 1948, in the light of technical and scientific advances in maritime matters. These include machinery and electrical installations; subdivision, stability, and watertight integrity; fire protection and extinction; lifesaving appliances; radio; safety of navigation; carriage of grain, ore and bulk cargoes; carriage of dangerous goods; and the safety of nuclear powered ships.

In addition to the 1960 SOLAS Convention, the Conference adopted 56 recommendations on subjects directly connected with maritime safety. These recommendations have been and will be studied by IMCO so that the latest developments in maritime safety may be continually under scrutiny, for the purpose of securing the highest practicable standards of maritime safety and efficient navigation.

The International Convention for Safety of Life at Sea, 1960 (SOLAS), was ratified by the United States and this Convention will replace the International Convention for Safety of Life at Sea, 1948. The 1960 SOLAS Convention enters into force 26 May 1965, for those countries depositing instruments of acceptance within 12 months after 26 May 1964, as well as for those countries whose acceptances had been already deposited. Acceptances deposited after 26 May 1965 will take effect 3 months after the date of their deposit.

The 1960 SOLAS Convention bears a strong resemblance to the 1948 SOLAS Convention insofar as general format is concerned. This Convention sets forth the basic responsibilities among the contracting governments, together with provisions relating to procedural matters. Annexed to the Convention and forming an integral part thereof are 8 chapters of technical regulations titled respectively: "General Provisions"; "Construction"; "Lifesaving Appliances, etc."; "Radiotelegraphy and Radiotelephony"; "Safety of Navigation"; "Carriage of Grain"; "Carriage of Dangerous Goods"; and "Nuclear Ships." The following is a brief description of some of the major changes between the 1948 and the 1960 SOLAS Conventions:

CHAPTER I—GENERAL PROVISIONS

The most important change in this chapter concerns the area of application of the 1960 SOLAS Convention. The Great Lakes and the St. Lawrence River west of the lower exit of the Lachine Canal were exempted from the provisions of the 1948 SOLAS Convention. In the 1960 SOLAS Convention this area of exemption was extended to Anticosti Island to permit Great Lakes freight vessels to bring in the Labrador ore from Seven Islands and similar ports to the Great Lakes ports without being subject to the Convention. Therefore, limited operations in the Gulf of St. Lawrence are permitted by Great Lakes vessels without requiring compliance with the 1960 SOLAS Convention.

CHAPTER II—CONSTRUCTION

The provisions with respect to subdivision and stability have been revised and improved over the 1948 standards. Significant machinery and electrical changes were made for passenger vessels, particularly with regard to steering gear and a prohibition against low flashpoint fuels. The steering and electrical requirements were also extended to cover cargo ships (including tankers) of 500 gross tons and over. The fire protection requirements have been increased so that in effect they are now closer to the minimum standards required by Coast Guard regulations. In particular, the application of requirements was broadened to include cargo ships to a limited extent. The fire detecting and extinguishing requirements were also improved.

CHAPTER III—LIFESAVING APPLIANCES, ETC.

The requirements for lifesaving appliances were revised and increased. The application covers passenger and cargo ships (including tankers). One of the reasons given for calling the 1960 Conference was to consider the possible use of inflatable liferafts which were prohibited under the 1948 SOLAS Convention. In view of the improvements in the industry since 1948, inflatable liferafts will be accepted under the Convention. The minimum requirements for the construction and use of inflatable liferafts were established.

CHAPTER IV—RADIOTELEGRAPHY AND RADIOTELEPHONY

The scope of application was extended to a new category of ships, namely, those from 300 to 500 gross tons which are on international voyages. Four years after the 1960 SOLAS Convention comes into force, the automatic alarms on all ships will be required to be of a new and improved type.

CHAPTER V—SAFETY OF NAVIGATION

A new concept was introduced regarding the North Atlantic routes used by passenger and cargo vessels. This emphasizes the importance of the converging areas on both sides of the Atlantic and the necessity to ensure adherence to such routes by all ships when in such converging areas.

CHAPTER VI—CARRIAGE OF GRAIN

Stability has been recognized as one of the main factors in the carriage of bulk grain. Provisions are made for vessels which are specifically designed for the carriage of bulk grain.

CHAPTER VII—CARRIAGE OF DANGEROUS GOODS

There was no significant change to this subject, except that it was rewritten to provide more clarity and to correspond to recognized safety practices for the transportation of dangerous goods by sea.

CHAPTER VIII—NUCLEAR SHIPS

This is a new subject, and the 1948 SOLAS Convention was silent concerning special safety practices for nuclear powered ships. The 1960 SOLAS Convention includes suitable provisions for accepting foreign nuclear powered ships into one's ports or denying their entrance. The scope of application includes all nuclear ships, except ships of war. These nuclear ships are now recognized as a separate class. The Convention provides a procedure whereby a nation may evaluate the safety of a foreign nuclear ship before permitting it to enter its ports. In addition, authorization is provided for a government to take such steps as necessary to ensure that the presence of the ship does not create an unreasonable radiation hazard. These new provisions for nuclear ships are in general agreement with United States procedures governing the N.S. *Savannah*.

WHERE TO OBTAIN COPIES

Copies of the 1960 "International Convention for Safety of Life at Sea" may be purchased from the British Information Office, 45 Rockefeller Plaza, New York 20, N.Y., Sales No. IMCO 1960.1, S.O. Code 88–3501, for $3.78 per copy, plus local sales tax if applicable.

PROPOSED IMPLEMENTING REGULATIONS

The Merchant Marine Council held a public hearing in March 1964, in Washington, D.C., and received comments, views and data on the proposed changes in the navigation and vessel inspection rules and regulations as set forth in the Merchant Marine Council Public Hearing Agenda. The Agenda contained the specific changes being proposed to the navigation and vessel inspection regulations, and for certain items in the present and proposed regulations as set forth in comparison form, together with reasons for the changes.

Copies of this Agenda were mailed to persons and organizations who have expressed a continued interest in the subjects under consideration and have requested that copies be furnished them. Copies of the Agenda will be furnished, upon request, to the Commandant (CMC), United States Coast Guard, Washington, D.C., 20226, so long as they are available.

Comments on the proposed regulations were invited and presented in writing and orally at the public hearing. Not having information at that time as to when the 1960 SOLAS would become effective, the Merchant Marine Council announced that final action on the proposed regulations was postponed and that further written comments could be submitted for the Council's consideration until 30 September 1964.

In order to give effect to the 1960 SOLAS Convention with respect to those matters coming within the jurisdiction of the Coast Guard, the vessel inspection regulations will be revised. It is intended that the passenger, tank, cargo and miscellaneous vessels intended for use on voyages subject to the 1960 SOLAS Convention will be in general conformity with Convention requirements at the time required inspections are made by the Coast Guard. Some of the necessary changes to the marine and electrical engineering regulations and the grain regulations have been already accomplished, as they were considered at the 1961 Merchant Marine Council Public Hearing, and could be made effective at that time. Certain proposals regarding equipment specifications are still being developed and will be considered at a later date. The proposals in this item will revise the "Rules and Regulations for Passenger Vessels" (CG–256), "Rules and Regulations for Cargo and Miscellaneous Vessels" (CG–257), and "Rules and Regulations for Tank Vessels" (CG–123). The more important proposals, without references to specific sections, are:

GENERAL PROVISIONS

The proposals provide authority for the Commandant's exemption to be given to certain vessels on international waters so that compliance with 1960 SOLAS Convention requirements will not be required when it is desired to move vessels not normally engaged on international voyages. The definitions of "international voyage" are revised so that they will be in agreement with the definition in the 1960 SOLAS Convention.

INSPECTION AND CERTIFICATION

Proposals are added to provide for inspection and certification of nuclear powered ships. The proposals also describe convention certificates and applicable posting requirements on board ships. For tank vessels proposed changes also revise descriptions of and initial and subsequent inspection requirements.

CONSTRUCTION AND ARRANGEMENT

For passenger vessels the proposals are extensive and revise requirements to agree with 1960 SOLAS Convention. However, the major change involves the fire bulkhead test procedure, which was modified to include heat testing at all joints, which increases present Coast Guard requirements.

WATERTIGHT SUBDIVISION

For passenger vessels the proposals contain many detailed changes of a technical nature in order that the regulations will agree with 1960 SOLAS Convention.

STABILITY

Many detailed changes of a technical nature are proposed for passenger, cargo and tank vessels in order to have the regulations agree with the 1960 SOLAS Convention. The proposals will also authorize the Commandant to allow the stability test of an individual vessel or class of vessels, especially when designed for the carriage of liquid or ore in bulk, to be omitted when reference to existing data for similar vessels indicates such vessels have more than sufficient metacentric height available under normal loading conditions.

LIFESAVING DEVICES, ETC.

A number of changes are proposed for passenger, cargo and tank vessels to reflect changes required by the 1960 SOLAS Convention. The Convention established minimum requirements for certain vessels engaged in specific occupations, such as whaling, etc., and as there are few of such vessels performing such work registered in the United States, it is proposed to authorize the Commandant to give such vessels special consideration in prescribing the lifesaving equipment requirements therefor on an individual vessel basis rather than to add voluminous details to the regulations which may seldom or never be used. The 1960 SOLAS Convention limits the size for hand-propelled lifeboats to 100-person capacity, and all lifeboats for over 100-person capacity will be required to be motor lifeboats. The requirements for the rigid type liferafts have been modified by the 1960 SOLAS Convention so that the 400-pound rigid type liferaft allowed by the 1948 SOLAS Convention will no longer be permitted as part of the required equipment. The proposed regulations also permit the substitution of inflatable liferafts carried under approved launching devices for certain lifeboats on passenger vessels, but existing vessels which carry inflatable liferafts cannot use

such equipment to increase the number of passengers presently allowed. The proposals also include requirements for inflatable liferafts to accommodate 50 percent of the persons authorized to be carried on cargo and tank vessels. While the 1960 SOLAS Convention does not require inflatable liferafts on tank vessels, it is proposed to require them. Revised requirements are proposed regarding liferafts on vessels engaging in short international voyages. While the 1960 SOLAS Convention does not require the 25 percent buoyant apparatus presently required by the regulations, it is proposed to continue this requirement for buoyant apparatus, even though the 1960 SOLAS Convention substituted 10 percent liferafts for buoyant apparatus. Other proposals deal with such things as liferaft stowage, additional lifeboat equipment, permitting the use of desalting kits under certain circumstances, prohibition against the nesting of lifeboats on new construction, liferaft launching devices, minimum winch capacity, whistles for life preservers, additional life preservers required, smoke signals for attachment to ring buoys, and illumination requirements for inflatable liferaft launching operations. The use of inflatable life preservers on cargo vessels only is permitted in the 1960 SOLAS Convention. No reason is known why the 1960 SOLAS Convention permits inflatable preservers on one type of vessel only. The proposals do not permit the use of inflatable life preservers. This action is proposed because the Coast Guard has serious reservations regarding the adequacy of inflatable life preservers under emergency conditions and it is felt that problems of shipboard inspection and maintenance of inflatable life preservers have not been satisfactorily resolved.

FIRE PROTECTION EQUIPMENT

Few changes are proposed with respect to fire protection requirements. The principal proposals will require the carriage of an international firemain shore connection, and that the firemain piping size shall be capable of handling the output from two fire pumps. The water spray system requirements were revised by the 1960 SOLAS Convention and placed certain operating conditions on such installations. It is proposed to delete present requirements regarding water spray extinguishing systems because such systems have not found favor with the industry and the revised conditions make future installations even less likely. However, authorization is provided in the regulations so that if such an installation is proposed for a specific vessel, it may be permitted. For cargo vessels it is proposed to also require smoke detecting devices when transporting explosives.

VESSEL CONTROL AND MISCELLANEOUS SYSTEMS

The 1960 SOLAS Convention no longer requires a flame safety lamp, and substituted a flashlight. Requirements for a flame safety lamp will be continued since it has very practical usage on board vessels. New proposals regarding fireman's outfits are added to be in compliance with the 1960 SOLAS Convention.

OPERATIONS

Proposals regarding lifesaving signals have been added and will be applicable to all vessels, regardless of whether or not they are on voyages subject to the 1960 SOLAS Convention except those vessels on strictly inland waters and Great Lakes vessels under 150 gross tons. With respect to markings on lifesaving equipment, it will be necessary to have placed on lifeboats, liferafts, buoyant apparatus and ring buoys, the vessel's name and port of registry. In addition, on lifeboats the name of the vessel and the port of registry shall be marked on both bows.

PUBLICATION OF REGULATIONS

It is anticipated that the final actions on the proposed implementing regulations in the 1964 Public Hearing Agenda will be completed and published in the Federal Register sometime in December 1964, with an effective date of 26 May 1965.

APPLICATION OF IMPLEMENTING REGULATIONS

The regulations when prescribed will apply to all vessels, as described in the regulations, which are subject to (a) Rules and Regulations for Passenger Vessels; or (b) Rules and Regulations for Cargo and Miscellaneous Vessels; or (c) Rules and Regulations for Tank Vessels.

It should be noted that the 1960 SOLAS Convention has provisions for new construction, which are stipulated in terms of "keel laid," and these specific requirements must be considered in terms of the date of the laying of the keel rather than the date of the signing of the contract or other types of dates used in the regulations. However, it is desirable to note that for some time after the new regulations are in effect, vessels will be completed and receive their first certificates, but for the purpose of the regulations they will be considered as existing vessels.

In writing the amended regulations, it is assumed that each existing vessel was in complete compliance with all the applicable existing requirements as indicated by its certificate of inspection. This being the case, no change is contemplated to such vessels other than adding or substituting some few items as specifically required by the text of the regulations for all vessels. Many of the subparts of the regulations are written specifically for new vessels. Such subparts have as their concluding section the applicable requirements for existing vessels, and it will be noted that such sections are nearly always numbered "90." In most cases, instead of giving detailed requirements for existing vessels, it is indicated that existing arrangements and materials previously accepted or approved will be considered satisfactory so long as they are maintained in good condition. The advantage of this method is that it preserves the status quo on arrangements and details which have been previously accepted without the voluminous wording necessary to take care of the many special cases which have been acted upon in the past. However, so that some requirements could be available in the event that there is a question on a particular subject or if repairs or alterations are contemplated, wording has been generally added to the effect that the arrangements and details should be in general agreement with the requirements for new vessels insofar as is reasonable and practicable. Accordingly, it is not intended that each item will be checked on each vessel to determine if it is reasonable and practicable to change it to the new standards, but rather, this wording is for informational purposes to give the general scope of the subject.

It is not intended to ascertain that all existing vessels are in compliance with the new regulations on 26 May 1965, and special inspections for that purpose will not be made at that time. However, as the various vessels come up for their regular inspection for certification after that date the new requirements will be applied so that by 26 May 1966 passenger vessels, and by 26 May 1967 cargo and tank vessels will have been examined for compliance with the new regulations.

Starting on 26 May 1965, the 1960 SOLAS Convention certificates will be issued as such vessels come up for their inspection for certification, in lieu of the 1948 SOLAS Convention certificates if presently required. In this manner all passenger vessels will have the 1960 SOLAS Convention certificates by 26 May 1966 and all cargo and tank vessels required to have 1960 SOLAS Convention certificates issued will have them by 26 May 1967.

MARITIME SIDELIGHTS

There were 916 vessels of 1,000 gross tons and over in the active oceangoing U.S. merchant fleet on July 1, 1964, 7 more than the number active on June 1, 1964, according to the Maritime Administration, U.S. Department of Commerce.

There were 18 government-owned and 898 privately owned ships in active service. These figures did not include privately owned vessels temporarily inactive. They also exclude 25 vessels in the custody of the Departments of Defense, State, and Interior and the Panama Canal Company.

There were 10 more active vessels and 9 fewer inactive vessels in the privately owned fleet. One freighter, the *Gulf Banker*, was delivered from construction. This made a net gain of 1 to a total of 968. Of the 70 privately owned inactive vessels, 11 freighters and 8 tankers were being repaired or overhauled. The others were laid up or temporarily idle.

The Maritime Administration's active fleet decreased by 3 while the inactive fleet decreased by 4. Nine ships were sold for scrap. Two Navy-owned military ships were placed in Reserve Fleet custody. The total government fleet decreased by 7 to 1,760. The total U.S. merchant fleet decreased by 6 from June 1, 1964, to 2,728.

One new contract for four cargo ships for Lykes Bros. Steamship Co. was placed with Avondale Shipyards. A tanker conversion to a bulk carrier was ordered from Newport News. One new freighter and a tanker conversion were delivered. The number of large oceangoing ships under construction in U.S. shipyards increased by 3 to 52.

⚓ ⚓ ⚓

United States Lines Co. will take another big step shortly toward replacing its 45 ship fleet when it asks for bids for 4 or 5 more big fast "Challenger" class ships for trans-Atlantic freight service.

Eleven new ships under U.S. Lines subsidy contract have already been delivered and five more are under construction at Sun Shipbuilding and Drydock Co., Chester, Pa.

AMVER

THE 290-FOOT, 2,300-ton Panamanian Freighter *M/V Beth* burns furiously 90 miles south, southwest of Santo Domingo, Dominican Republic, in the Caribbean Sea after her cargo of lubricating oils and chemicals caught fire on a voyage from Port Arthur, Tex., to Martinique.

A Coast Guard HU 16E "Albatross" from the Coast Guard Air Detachment, San Juan, P.R., located the burning hulk and reported that it was a mass of flames. Later the aircraft located a lifeboat with 20 *Beth* survivors who had abandoned ship. A radio was parachuted to the men in the lifeboat in order to communicate with them.

The 504-foot, 10,499-ton Liberian freighter *World Jonquil* was diverted to the scene and recovered the 20 survivors, who were reported in good condition.

Later, the 165-foot Coast Guard Cutter *Aurora*, dispatched from San Juan, removed the survivors from the *World Jonquil* and transported them to San Juan.

Commander, Coast Guard Eastern Area, in New York City, provided the Search and Rescue Mission Coordinator, Commander Greater Antilles Section in San Juan, with an AMVER (*A*tlantic *M*erchant *V*Essel Report) SURPIC (*SUR*face *PIC*ture) of five merchant vessels with predicted positions within a 100-mile radius of the *Beth*. The *World Jonquil* was an AMVER participant and on the SURPIC.

The 13,890-ton nuclear passenger-cargo liner *Savannah* recently docked at Pier B, Hoboken, N.J., completing her first overseas voyage—a 10,000-mile, 42-day trip to West Germany, Britain, and Ireland.

Capt. David McMichael, her master, said the ship had consumed only 2 pounds of her 750-pound uranium oxide charge during the voyage.

The *Savannah* is said to be capable of operating for 3 years without refueling. A conventionally powered vessel, Captain McMichael said, would have burned 1,000 tons of oil on the voyage just ended.

The Government-owned ship is operated by American Export Isbrandtsen Lines.

nautical queries

DECK

Q. A steamer is 965 miles from her port of destination. She has fuel enough to do 720 miles at a speed of 13 knots. At what reduced speed must she steam to reach her port?

A. $So^2 : Sn^2 : : dn : do$

$13^2 : x^2 : : 965 : 720$

$$x^2 = \frac{13^2 \times 720}{965} = 126.09$$

$x = 11.2$ knots

Q. Define horizon and distinguish between the visible or apparent horizon, the sensible horizon, and the celestial or rational horizon.

A. The horizon is that great circle of the celestial sphere midway between the zenith and nadir, or a line resembling or approximating such a circle. That line where earth and sky appear to meet, and the projection of this line upon the celestial sphere, is called visible or apparent horizon. A line resembling the visible horizon but above or below it is called a false horizon. That circle of the celestial sphere formed by the intersection of the celestial sphere and a plane perpendicular to the zenith-nadir line is called sensible horizon if the plane is through any point, such as the eye of an observer; geoidal horizon if through any sea-level point; and celestial or rational horizon if through the center of the earth.

Q. For a given time the GHA of a Planet is 150°, and at the same time the GHA of the First Point of Aries is 315°.

For the given time, what is:

(a) The right ascension of the Planet?

(b) The sidereal hour angle of the Planet?

A. (a) 11 hours.

(b) 195°.

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

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

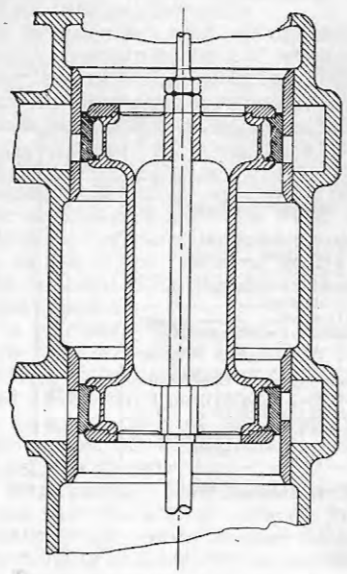
A. (a) 2°–27′ or 147 miles.

(b) The center of the circle of equal altitudes would be placed at Latitude 17°–25′ North and Longitude 63°–46′ West.

ENGINE

PISTON TYPE VALVE

Q. Sketch a cross-section view of a piston type valve, showing the manner in which it is attached and secured to valve stem.



Piston Valve.

Q. Enumerate the possible causes of a constantly decreasing alkalinity and chlorimity in the boiler water of a modern water tube boiler fitted with a superheater and a desuperheater.

A. A constantly decreasing alkalinity and chlorinity indicates a leak in the water side of the boiler. This may be due to the leaking of any valve below the water level, such as the blowdown valves, sidewall header drains, etc.; due to the leaking of generating or circulating tubes; or due to water leaking into the desuperheater caused by leaking joints.

Q. Describe the operating characteristics of the radiant and the convection type superheaters.

A. In the convection type superheater the temperature of the superheated system will rise while the boiler is operating from low load to about three-fourths load. The superheat temperature will then remain approximately constant to full load. In the radiant type superheater the temperature of the superheated steam will remain approximately constant from low to a little over one-half load and then fall rapidly with further increase in load.

Q. (a) Explain how the water level in a water tube boiler is affected when the load is taken off the boiler, the fires cut out and relighted as when maneuvering, the feedwater being under the control of a single element automatic feedwater regulator.

(b) How is this condition overcome in actual operation aboard ship?

A. (a) Single element feedwater regulators are designed to maintain a constant water level in the boilers at all times. When the load is taken off the boiler and the fires extinguished, the steam bubbles in the water collapse and cause a lowering of the water level. The regulator immediately functions and raises the water to its former level. When the fires are lit again, the level will rise rapidly, possibly causing priming and damage to the machinery.

(b) When maneuvering or operating under varying loads, the hand-controlled feed check valve should be used and the level maintained slightly below the normal steaming level unless a surge chamber or other dampening device is used in conjunction with the single element feedwater regulator to reduce the effect of sudden changes in the water level.

Q. Under what conditions should the control element (thermostat) of the thermomechanical feedwater regulator be blown down? When cut into service?

A. The thermostat should be blown down when firing up a cold boiler and whenever the drum pressure has been allowed to drop below 25 p.s.i. It should also be blown down weekly when operating with very dirty water in the drum. The thermostat will come to equilibrium temperature 15 to 20 minutes after being blown down and will be ready to be put into service. Then as soon as the boiler is up to pressure and is carrying a load, open the feed stop and check valves wide and cut the regulator in.

MERCHANT MARINE PERSONNEL STATISTICS

MERCHANT MARINE OFFICER LICENSES ISSUED

QUARTER ENDING JUNE 30, 1964

DECK

Grade	Original	Renewal
Master:		
Ocean	32	462
Coastwise	15	47
Great Lakes	2	22
B.S. & L	23	87
Rivers	15	50
Radio officer licenses issued	19	379
Chief mate:		
Ocean	38	103
Coastwise	1	2
Mate:		
Great Lakes	2	2
B.S. & L	1	7
Rivers	13	27
2d mate:		
Ocean	59	78
Coastwise	1	
3d mate:		
Ocean	124	77
Coastwise		
Pilots:		
Great Lakes	4	10
B.S. & L	90	29
Rivers	146	58
Master: Uninspected vessels	29	21
Mate: Uninspected vessels	19	3
Motor boat operators	391	533
Total	1,024	1,997
Grand total	3,021	

ENGINEER

Grade	Original	Renewal
STEAM		
Chief engineer:		
Unlimited	31	430
Limited	10	81
1st assistant engineer:		
Unlimited	43	161
Limited	1	6
2d assistant engineer:		
Unlimited	73	225
Limited	1	2
3d assistant engineer:		
Unlimited	148	216
Limited	1	1
MOTOR		
Chief engineer:		
Unlimited	13	92
Limited	39	109
MOTOR—Continued		
1st assistant engineer:		
Unlimited	7	14
Limited	19	12
2d assistant engineer:		
Unlimited	6	13
Limited	3	4
3d assistant engineer:		
Unlimited	112	134
Limited	3	1
Chief engineer: Uninspected vessels	21	22
Assistant engineer: Uninspected vessels	10	9
Total	541	1,532
Grand total	2,073	

MERCHANT SEAMEN'S DOCUMENTS ISSUED

Type of Document	Atlantic coast	Gulf coast	Pacific coast	Great Lakes and rivers	Total
Staff officer	38	13	39	2	92
Continuous discharge book		19			19
Merchant mariner's documents	1,617	782	1,114	1,389	4,902
AB any waters unlimited	118	72	70	40	300
AB any waters, 12 months	116	37	29	38	220
AB Great Lakes, 18 months	5	1	14	20	40
AB tugs and towboats, any waters	10	1	9	17	37
AB bays and sounds	4				4
Ab Seagoing Barges	5	2	1	1	9
Lifeboatman	181	11	37	3	232
QMED	227	65	67	43	402
Entry ratings	1,464	716	1,068	1,341	4,589
Tankerman	15	59	9	49	132
Total	3,800	1,778	2,457	2,943	10,978

INVESTIGATING UNITS

Coast Guard Merchant Marine Investigating units and Merchant Marine Details investigated a total of 3,112 casualty cases and 1,957 complaint cases during the second quarter of 1964. During this period 876 licensed and 2,175 unlicensed seamen were subject to investigation and remedial action involving 100 licenses and 534 merchant mariner's documents was completed. In the case of licensed personnel, 1 license was revoked, 4 suspended outright, 11 suspended outright plus an additional suspension on probation, 12 suspended on probation, 8 cases were closed with an admonition and 43 warnings were issued. Eighteen cases were dismissed after a hearing, 3 voluntarily surrendered in lieu of hearing. Of the unlicensed personnel, 17 merchant mariner's documents were revoked, 8 suspended outright, 52 suspended outright plus an additional suspension on probation, 97 suspended on probation, 21 cases were closed with an admonition and 296 warnings were issued. Eighteen cases were dismissed after a hearing, 25 voluntarily surrendered in lieu of hearing. Sixty-four licenses and 116 documents were voluntarily deposited due to temporary unfitness for sea duty and 8 licenses and 115 documents were returned upon a finding of fit for duty.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 4–64

JUNE 19, 1964.

Subj: Inflatable liferafts on vessels subject to the International Convention for the Safety of Life at Sea, SOLAS 1960.

1. *Purpose.* To advise all interested parties of the conditions under which currently approved inflatable liferafts will be accepted as meeting the requirements of SOLAS 1960 as of 26 May 1965, its effective date.

2. *Background.* The specifications for approved inflatable liferafts are published in 46 CFR 160.051. In many cases inflatable liferafts manufactured under the approved specifications have been installed on board inspected vessels either as excess equipment or as part of the required lifesaving equipment where permitted by the regulations. Inflatable liferafts previously manufactured and currently being manufactured as approved equipment will not in all respects meet the specific requirements of SOLAS 1960. The question has been raised as to whether these inflatable rafts which are not in all respects in compliance with SOLAS 1960 will be acceptable after 26 May 1965, the effective date of SOLAS 1960.

3. *Discussion.* The differences in the currently approved inflatable liferafts and the requirements of SOLAS 1960 concern maximum weight permissible, capacity and equipment.

a. *Weight.* SOLAS 1960 establishes 400 pounds as the maximum allowed weight of inflatable rafts including equipment and container. Certain existing rafts originally had the following weights:

	Pounds
160.051/6/0	388
160.051/9/0	456
160.051/11/0	390

These rafts can be expected to approach or exceed the 400-pound limitation if fully equipped to meet the 1960 SOLAS requirements; however, the weight increase can be held to approximately 10 pounds by using desalting kits in lieu of additional water, as noted in paragraph 3(c)(8) below. The remaining approved rafts will not pose a weight problem.

b. *Capacity.* SOLAS 1960 establishes the minimum inflatable liferaft capacity as 6 persons and the maximum as 25 persons. Currently approved rafts range in size from 4-person to 25-person. All of these approved rafts will meet the SOLAS 1960 capacity limitations except for the 4-person raft which will not be permited for use as a part of SOLAS 1960 equipment.

c. *Equipment.* In order for currently approved inflatable liferafts to meet the requirements of SOLAS 1960, it will be necessary to add the following equipment to rafts which are currently equipped for ocean service:

(1) Increase length of buoyant line from 60 feet to 100 feet.

(2) Provide two (2) knives for each raft where one (1) is currently required on rafts exceeding 12-person capacity.

(3) Provide three (3) tin openers. None are presently required; however, CG approved knives may be accepted as meeting this requirement to extent provided.

(4) Provide waterproof containers for the spare flashlight batteries and bulb.

(5) Provide one (1) signalling whistle.

(6) Provide 6 hand flares (bright red). Present specifications require either 3 hand combination flare and smoke distress signals (46 CFR 160.023), or 3 hand orange smoke distress signals (46 CFR 160.037). SOLAS 1960 requirement may be met by substituting for this option 6 red flare distress signals constructed in accordance with 46 CFR 160.021 or 160.023. (The hand flares referred to in this paragraph are in addition to the parachute flares which are also required.)

(7) Provide one (1) set of fishing tackle.

(8) Provide total of 3 pints of water per person in lieu of 2 pints presently required. Approved desalting kits may be provided in lieu of one (1) pint of the water required per person.

(9) Provide six (6) antiseasick tablets for each person.

(10) Provide one (1) copy of lifesaving signals.

(11) Provide inside lifeline.

(12) Provide two (2) bailers for rafts with capacity in excess of 12 persons in lieu of one (1) presently required.

d. *Other Equipment.* Other items of equipment required by current specifications and which are not mentioned in paragraph 3(c) above are considered to be in full compliance with SOLAS 1960 requirements. Consideration is being given to reduction of these items to the minimum required by SOLAS 1960; any change in requirements will be incorporated in a subsequent amendment to 46 CFR 160.051.

4. *General.* The current specifications for inflatable liferafts will be amended on or before the effective date of SOLAS 1960 such that all approved liferafts will then be manufactured in compliance with the SOLAS 1960 requirements.

It is intended that all inflatable liferafts manufactured and equipped under the present specifications (other than the previously mentioned four-person raft) will be accepted as being in substantial compliance with SOLAS 1960, subject to the provision that they will be fully equipped if possible at the first servicing after effective date of the Convention.

5. *Policy.* The following policy is to be followed when SOLAS 1960 becomes effective:

a. *Weight.* Those rafts which exceed the 400-pound limitation will continue to be accepted if manufactured as approved equipment prior to the effective date of the amended specification 46 CFR 160.051 (date not yet established).

b. *Capacity.* Inflatable liferafts of less than six-person capacity may be carried on vessels subject to the provisions of SOLAS 1960 as optional equipment but not as a part of the required equipment. Rafts of less than six-person capacity may be accepted as either required equipment or optional equipment on vessels not subject to SOLAS 1960 in those cases authorized by applicable regulations.

c. *Equipment.* At the first servicing of inflatable rafts after effective date of SOLAS 1960, the additional equipment described in paragraph 3(c) above is to be installed in the raft to the maximum extent practicable. Since the rafts are generally tightly fitted in their containers, the available space may establish a limitation as to amount of additional equipment to be provided. It is believed that all of the additional equipment can be installed in existing rafts with the possible exception of part of the water, in some raft models, and the inside lifeline. In those cases where it is not practicable to install all of the additional equipment in existing rafts, an explanatory notation should be made in the raft inspection report. Desalting kits should be used in lieu of the additional water to maximum extent permitted in all cases where there is a weight and/or stowage space problem. It is the intent to equip all rafts in complete compliance with SOLAS 1960 if stowage space is available, and additionally, to keep the maximum weight below 400 pounds where it is possible to do so.

6. *New Equipment Categories.* Information will be published as soon as approval action has been completed concerning acceptable types of fishing tackle and desalting kits. Commercially available seasick tablets may be accepted without specific approval. The tin openers will not require specific approval but must be of a type suitable for opening hermetically sealed containers of water and provisions. The signal whistle will not require specific approval but must be of the ball-type and made of corrosion-resistant construction with a 36-inch lanyard attached. CG-811 is being revised to meet the requirements for lifesaving signals and breeches buoy instructions.

ACCEPTABLE COVERED STEEL ARC WELDING ELECTRODES

The following are additions to the list of electrodes which are acceptable to United States Coast Guard for use in welded fabrications

Distributors and/or manufacturers	Brand	AWS class	Operating positions and electrode sizes (inches)				
			5/32	3/16	7/32	1/4	5/16
Arcos Corp., 1500 S. 50th St., Philadelphia 43, Pa.	Ductilend 70	7018	1	1	2	2	
Do	Chromend K	308-15	2	2			
Do	Stainlend K	308-16	1	1			
Do	Chromend KMO	316-15	1	2			
Do	Chromend 19/9	347-15	1	2			
Alloy Rods Co., York, Pa.	ATOM-ARC 9018 CM	E9018 B3	1	1	1	1	

EQUIPMENT APPROVED BY THE COMMANDANT

[EDITOR'S NOTE.—Due to space limitations, it is not possible to publish the documents regarding approvals and terminations of approvals of equipment published in the Federal Registers dated July 2, 1964 (CGFR 64–38), July 18, 1964 (CGFR 64–39 and 64–41) and July 28, 1964 (CGFR 64–40). Copies of these documents may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.]

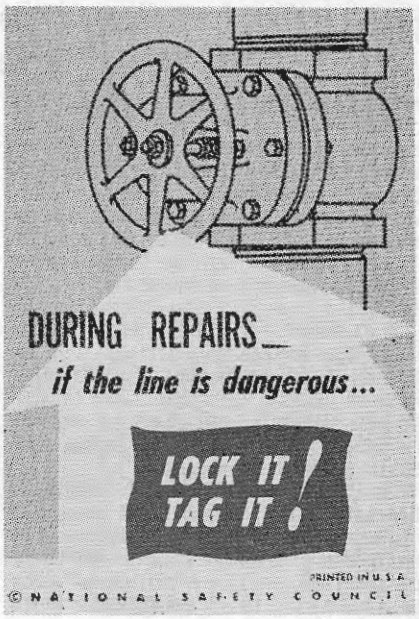
ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from July 1 to July 31, 1964, inclusive, for use on board vessels in accordance with the provisions of Part 147 of the regulations governing "Explosives or Other Dangerous Articles on Board Vessels" are as follows:

CERTIFIED

Sonneborn Chemical and Refining Co., 300 Park Ave. South, New York, N.Y., Certificate No. 599, dated July 1, 1964, PETROSENE G.

The Hockwald Co., P.O. Box 24000, San Francisco, Calif., Certificate No. 600, dated July 8, 1964, HOCKWALD NO. 816.



Diamond Alkali Co., P.O. Box 191, Painesville, Ohio, Certificate No. 601, dated July 14, 1964, DIAMOND ONE-ONE-ONE TRICHLOROETHANE.

AFFIDAVITS

The following affidavits were accepted during the period from June 15, 1964, to July 15, 1964:

Miller Valve Co., Inc., 1620 Pennsylvania Ave., Pittsburgh, Pa., 15233, VALVES.

BFG Marine Supply Co., Inc., 710 Greenwich St., New York, N.Y., 10014, BOLTING.

Texas Foundries, Inc., P.O. Box 1608, Lufkin, Tex., 75902, CASTINGS.

Standard Fittings Co., 82 Herbert St., Framingham, Mass., VALVES AND FITTINGS.

Scott Valve Division, Nibco, Inc., 701 South Elm St., Blytheville, Ark., VALVES.

Hanford Foundry Co., 119 South Arrowhead Ave., San Bernardino Calif., CASTINGS.

West Coast Forge, Inc., 1721 North Alameda, Compton, Calif., 90222, FORGINGS.

Hydril Co., 714 West Olympic Blvd., Los Angeles, Calif., VALVES.

NOTE: Listed on page 56 of CG–190, the Alloy Rods Co., is now a division of Chemetron Corp., this information will be incorporated in the revised edition of CG–190.

ACCEPTABLE HYDRAULIC CAST IRON VALVES

Hydraulic cast iron valves which have passed high impact shock tests and accepted under the provisions of 46 CFR 55.07–1(e)(3).

Manufacturer	Valve type	Identity	Maximum allowable pressure (psi)
Double A Products Manchester, Mich	Solenoid operated 4-way valve	QJP–01****	3,000
		QFP–01****	3,000
		PQF–01****	3,000
Do	Solenoid-hydraulic operated 4-way valve	QM–06****	3,000
		QJ–06****	3,000
		QPC–06****	3,000
		PQF–06****	3,000
		PQM–06****	3,000
		PQJ–06****	3,000
		PQC–06****	3,000
Do	Pilot controlled relief valve	BT–06–10–A1	3,000 psi
Do	do	BT–10–10AL	3,000 psi
Do	do	QB–06–10AL	3,000 psi
Do	do	QB–10–10A1	3,000 psi
Do	Lever and stem operated 4-way valve	N3–175–FFN	2,000 psi
Do	Angle check valve	D6–175	3,000 psi
Do	Flow control	QXA3–160	2,000 psi
Do	4-way solenoid operated valve	QF–06–C–10A2	3,000 psi
Rivett Lathe & Grinder, Inc	Solenoid pilot operated, 3-way to 4-way, 2 and 3 position, directional valve.	Series 66** (⅜" to 1")	3,000
Do	Pilot operated reducing valve	Series PS8** (size code 06)	2,875

MERCHANT MARINE SAFETY PUBLICATIONS

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

CG No.	TITLE OF PUBLICATION
101	Specimen Examination for Merchant Marine Deck Officers (7–1–63).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–62).
115	Marine Engineering Regulations and Material Specifications (3–1–63), F.R. 8–20–63, 10–26–63, 6–5–64.
123	Rules and Regulations for Tank Vessels (4–1–64). F.R. 5–16–64, 6–5–64.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (6–1–62), F.R. 1–18–63, 5–23–63, 5–29–63, 7–6–63, 10–2–63, 12–13–63, 4–30–64.
172	Rules of the Road—Great Lakes (6–1–62). F.R. 8–31–62, 5–11–63, 5–23–63, 5–29–63, 10–2–63, 10–15–63, 4–30–64.
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (3–2–64).
175	Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (9–1–60).
176	Load Line Regulation (7–1–63). F.R. 4–14–64.
182	Specimen Examinations for Merchant Marine Engineer Licenses (7–1–63).
184	Rules of the Road—Western Rivers (6–1–62). F.R. 1–18–63, 5–23–63, 5–29–63, 9–25–63, 10–2–63, 10–15–63.
190	Equipment Lists (4–2–62). F.R. 5–17–62, 5–25–62, 7–24–62, 8–4–62, 8–11–62, 9–11–62, 10–4–62, 10–30–62, 11–22–62, 11–24–62, 12–29–62, 1–4–63, 1–8–63, 2–7–63, 2–27–63, 3–20–63, 4–24–63, 6–11–63, 6–15–63, 6–22–63, 6–28–63, 8–10–63, 10–16–63, 11–23–63, 12–3–63, 2–5–64, 2–11–64, 3–12–64, 3–21–64, 3–27–64, 4–29–64, 5–6–64, 5–19–64, 5–26–64, 7–2–64, 7–18–64, 7–28–64.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (7–1–63). F.R. 9–18–63, 12–13–63, 6–5–64.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (10–1–63).
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57).
227	Laws Governing Marine Inspection (6–1–62).
239	Security of Vessels and Waterfront Facilities (8–1–61). F.R. 11–3–61, 12–12–61, 8–8–62, 8–31–62, 11–15–62, 1–30–63, 3–27–63, 5–29–63, 6–4–63, 10–9–63, 1–30–64, 4–17–64, 6–9–64.
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (1–2–62). F.R. 5–2–62, 9–11–62, 12–28–62, 4–4–63, 5–30–63, 8–20–63, 9–6–63, 10–26–63, 6–5–64.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (11–1–62). F.R. 2–1–63, 2–6–63, 3–13–63, 4–4–63, 5–30–63, 8–20–63, 9–6–63, 10–2–63, 10–26–63, 6–5–64.
258	Rules and Regulations for Uninspected Vessels (1–2–64), F.R. 6–5–64, 6–6–64.
259	Electrical Engineering Regulations (12–1–60). F.R. 9–23–61, 9–30–61, 5–2–62, 9–11–62, 8–20–63, 9–6–63, 6–5–64.
266	Rules and Regulations for Bulk Grain Cargoes (5–1–62). F.R. 9–11–62, 12–24–63.
268	Rules and Regulations for Manning of Vessels (2–1–63).
269	Rules and Regulations for Nautical Schools (5–1–63). F.R. 10–2–63, 6–5–64.
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60.
293	Miscellaneous Electrical Equipment List (6–1–62).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60, 11–3–61, 4–10–62, 4–24–63.
323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (2–3–64) F.R. 6–5–64.
329	Fire Fighting Manual for Tank Vessels (4–1–58).

Official changes in rules and regulations are published in the Federal Register, which is printed daily except Sunday, Monday, and days following holidays. The Federal Register is a sales publication and may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402. It is furnished by mail to subscribers for $1.50 per month or $15 per year, payable in advance. Individual copies desired may be purchased as long as they are available. The charge for individual copies of the Federal Register varies in proportion to the size of the issue and will be 15 cents unless otherwise noted in the table of changes below. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated January 1, 1964, are now available from the Superintendent of Documents, price: $2.50.

CHANGES PUBLISHED DURING JULY 1964

The following have been modified by Federal Registers:
CG–190, Federal Registers, July 2, 18 and 28, 1964.

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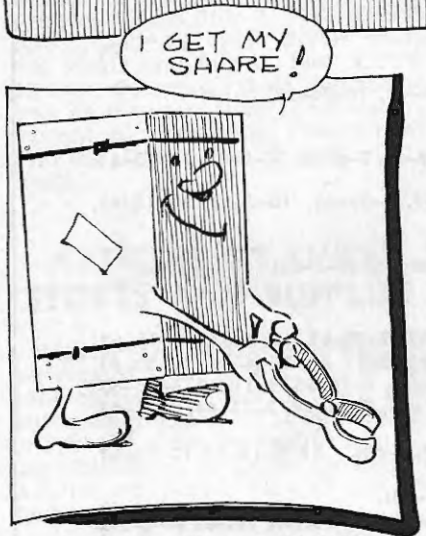

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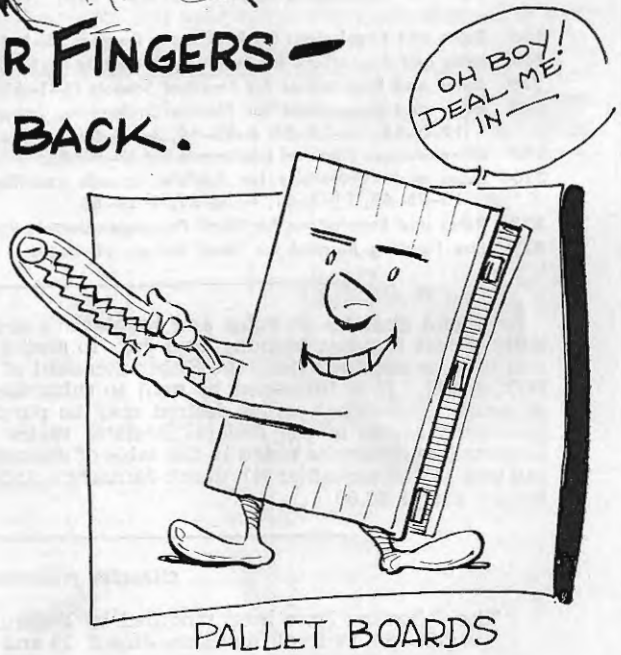

PALLET BOARDS

U.S. GOVERNMENT PRINTING OFFICE: 1964