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PROCEEDINGS

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March 1970

IN THIS ISSUE . . .

A New Look at Licensing of Merchant Marine Officers . . .

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COVERS

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FRONT COVER: The freighter American Racer, operated by United States Lines. The vessel was built in 1964; her length is 507.6 feet, breadth 75.1 feet, and depth 27.9 feet. Her gross tonnage is 11,202. A Jeff Blinns photo, courtesy Moran Towing Co.

BACK COVER: Safety cartoon by G. Seal, Pacific Maritime Association.

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PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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The Merchant Marine Council of The United States Coast Guard

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Captain Leonard E. Penso, USCG Executivo Secretary and Momber From an address before the 1969 Marine Section, of the National Safety Congress and Exposition.



A NEW LOOK AT LICENSING OF MERCHANT MARINE OFFICERS

Captain Garth H. Read, USCG

Chief, Merchant Vessel Personnel Division, Headquarters

IN THE PAST 25 years, we in the maritime world have seen unprecedented changes—nuclear powered ships, hydrofoils, hovercraft, automation, and containerization. One thing has remained relatively unchanged the license examination for merchant marine officers.

Historically, the licensing of marine engineers and pilots commenced with the passage of the "Steamboat Act" of 1852. From this beginning, the licensing of mariners has steadily grown to include not only engineers and pilots but masters and mates, including masters of sail vessels over 700 gross tons, which license incidentally, we still have today. Looking back, we see that each new step in maritime progress brought forth a new license, appropriately and elaborately engraved to satisfy its specific category. Consequently, we had a license form for master of sail vessels, then one for master of steam vessels, master of steam yachts, chief engineer of steam vessels, and on and on.

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Captain Garth H. Read who is presently assigned as Chief, Merchant Vessel Personnel Division in the Office of Merchant Marine Safety at U.S. Coast Guard Headquarters in Washington, D.C., is a 1943 graduate of the U.S. Coast Guard Academy.

Captain Read's Merchant Marine inspection service covers some 15 years. He was a marine inspector at Cleveland between 1953 and 1959, completing a year of marine industry training with the Lake Carriers' Association during this period. He returned to Cleveland in 1965 as Officer in Charge, Marine Inspection and Captain of the Port, after serving for 5 years as Chief of Personnel in the Coast Guard's 8th District in New Orleans.

The proliferation of licenses at the turn of the century is well-illustrated by an unusual license for pilot and engineer. This single certificate permitted a person "to serve both as a skillful pilot and engineer of an open steam launch of 10 gross tons and under, limited to certain waters." Although these licenses were admittedly picturesque, I am glad to say that with the passage of time the various forms have been reduced to a single license form. Today we simply type in the qualifications.

The use of the single license form, while an improvement, has only resulted in a reduction in the number of license forms required to be stocked. The licensing structure is still unwieldy and complex and encompasses a multitude of categories, including whether the vessel is inspected or uninspected; its tonnage; the waters on which it operates (lakes, bays or sounds, rivers, Great Lakes, coastwise, oceans); the propulsion system (steam or diesel); the horsepower; and the trade in which the vessel is engaged (such as yachting, fishing, or oceanographic research). Since the 1850's, the number of licenses we issue has grown to 98 different types. We find 35 different masters' licenses, 22 different mates' licenses, 13 different pilots' licenses, and 28 different engineers' licenses.



NEED FOR CHANGE

The Coast Guard has long recognized the need for change, but attempts in the past were done on a piecemeal basis or deferred indefinitely because of budgetary restraints. Finally, realizing that a totally new approach was needed, a contract was awarded to a professional testing and research organization to study and evaluate the licensing procedure.

A final report, at the end of 10 months of intensive study, has been made. The report's constructive criticism and recommendations point the way for practical improvements that can be made now, in the near future and at long term. Study teams have been reviewing these recommendations and the use of them as a basis upon which to draft a new licensing program. A broadly based advisory group with representation from industry, labor, government, and maritime educational institutions will work with the Coast Guard to implement the specifics necessary to create this "new look" in licensing-with the emphasis on maritime safety. It is envisioned that any phase not dealing with vessel safety, such as the

examination subjects of economics, ship's papers, and stowage of cargo other than as it relates to stability, will be reduced if not eliminated.

A significant revision, now under initial consideration, is to change the present four levels of licenses to two levels of licenses. Old familiar licenses of chief mate, second mate, second assistant engineer, and first assistant engineer would no longer be a Coast Guard requirement in this future system. A candidate would be examined only twice, first when he applies for the entry license of mate or engineer and again at the executive or command level, that of master or chief engineer.

MODIFICATION OF FOUR-LEVEL SYSTEM

Pending a final determination to go to two-level licensing, a modification of our existing four-level program will result in a more efficient system and still give some of the advantages of the two-level system. The modification will be a limitation on the scope and extent of the examination at each level of licensing, yet still retaining the basic purpose of the license—safety at sea.

The law requires that the Coast Guard issue four levels of licenses after appropriate examination. Heretofore, a complete examination has been given to an officer each time he upgrades his license. This has meant that the upgrading examinations are, to a large extent, a repetition of previous examinations. We now plan to administer only two comprehensive examinations: First, at the original license level, and secondly, at the command level for master or chief engineer. As a person progresses through the intermediate licenses, that of second mate, chief mate, or second and first assistant engineer, he will be required to complete an abbreviated examination. These shortened examinations will emphasize a particular knowledge or skill considered essential at the higher level of responsibility. For instance, the second mate examination might concentrate on rules of the road and advanced navigation. A chief mate would be required to demonstrate competence in stability as well as rules and regulations.

Another change even more basic involves the categories of deck licenses. Instead of the vast array of special and limited licenses, we must develop a simple plan that recognizes large vessel ocean and coastwise operations as one grouping and groups all small vessels into a second category with the only limitations being for inland or oceans operations. Equally important is the subject of engineer's licenses where we must separate high and low endurance capabilities of the engineering plant. The present level of 4,000 horsepower as qualifying for unlimited steam vessel operation seems valid. However, with diesel, such a horsepower alone no longer recognizes all the requirements for unlimited diesel operation. Many plants of well above 4,000 horsepower are now found which lack the essentials for long distance ocean operation. A new way to assure all-operation competence must be found. We have simply identified it as 10,000 horsepower, although we don't be-

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lieve this is the whole answer to reflect the combined complexity of all machinery on board an oceangoing motor vessel.

PRACTICAL VERSUS THEORETICAL

An important change underway at present concerns the subject matter of the examinations. A committee designated as the "Merchant Marine Officers Skill Analysis Group," representing labor, management, and government, is right now formulating up-to-date specifications for testing merchant marine officers. This group will concern itself with the question of what professional skills and knowledge are required of the modern day mariner to safely navigate and operate a merchant vessel.

We might speculate as to what subjects could be eliminated from the present examination as well as what could be added to update the testing program to bring it in line with 20th century operation.

In considering the deck officer's examination, subjects and questions will be directed more toward the practical rather than the theoretical. In the subject of navigation, great circle problems involving lengthy computations will probably be climinated, since the mathematical solution has outlived its usefulness and is impractical. Instead the gnomonic or Great Circle Chart and a Mercator Chart will allow a candidate to sufficiently demonstrate his ability to navigate by great circle. A Lampert Chart can also be used for the same purpose. The need for solving great circle courses and distances mathematically appears to be one of those "nice-to-know" items. If it should become necessary for the mariner to employ the mathematical solution, he can refresh his memory through the appropriate reference books.

Likewise, many of the current questions are patterned for testing a student of astronomy. Much of the subject of astronomy is in the nice-toknow category with no practical ap-



FIGURE 1

plication. As an example, one of the questions in our pool of cards is: "Why are there more total lunar eclipses than total solar eclipses?" I think it would be difficult to reduce an answer to something less than a thesis. And how do we apply such knowledge to modern day navigation?

The rules of the road examination will concentrate on those aspects of the rules which are most often used and which unfortunately still result in collisions. We would guess that in the near future the rules of the road examination might include practical problems using an audiovisual device to present actual situations on the screen. As most people may recall, this form of test was given by a major TV network to publicize safe driving on the highways.

In summary, deck officer examinations will be oriented toward on-thejob requirements of mariners as they apply to 20th-century operation. Although the examinations will stress the practical rather than the theoretical, we recognize that ship operations are becoming more complex with the advent of larger and faster vessels utilizing more sophisticated equipment. Advances in technology will continue to demand more training in technical skills for the deck officer.

And now just a word about the engineering examination. Ghanges are evidenced by the nuclear powered Savannah. Although vessel propulsion machinery has been energized by steam and diesel engines for many years, the systems have become much more complex with the introduction of automation. The automation of vessels demands new skills and technical knowledge. Accordingly, engineering examinations will be programed toward the operation and safety maintenance of propulsion plants rather than detailed construction and design problems.

A "NEW LOOK" FOR LICENSE EXAMINATIONS

Today, it takes the average deck officer 10 to 12 days to complete his examination while the engineer takes about 6 days. We will streamline the examination procedures by changing from essay-type questions to multiple choice questions. (See fig. 1.)

The use of multiple choice questions will permit a candidate to complete the examination in possibly 4 or 5 days. This reduction in time will not sacrifice the scope of the examina-



FIGURE 2



tions; quite the opposite. Testing with multiple choice questions will permit the use of a greater number of questions resulting in broader coverage of the subject than can be accomplished with a limited number of essay-type questions.

The new look in examinations will be evidenced by the fact that the questions for each module will be packaged in booklet form instead of individual question cards. The applicant will be allowed 90 minutes to complete a module. In addition, the booklet will list all of the formulas or units of measurement the applicant will need to solve the problems presented, but he will still have to know which formula to select to solve a particular problem.

Another change will be the use of "open book" type questions. This type of test is considered particularly appropriate for subjects such as "Rules and Regulations" and "Signaling." The applicant will no longer have to memorize, verbatim, miscellaneous material that would be readily available to him. In actual practice at sea, he would not guess at the size of the lettering required when painting a warning sign. Instead, he would refer to the proper reference materialregulations or codes. Why not make this part of the examination more realistic? A candidate will have to know where to look to find the information needed and then how to interpret the information.

To insure that the multiple choice questions in the new look examinations are clear and comprehensive, the services of professional test consultants are being employed to develop a high quality examination item bank. Knowledgeable persons in the maritime industry will assist in the preparation of the examinations.

As these new examinations are developed, the questions will be pretested to determine the level of difficulty. Pretesting and statistical monitoring will facilitate the elimination of doubtful questions, resulting in a precise examination as a final product.

One method will be to pretest by inserting new questions in current examinations. We won't count these questions; however, the recorded answers will be subjected to analysis to determine their validity. This is used extensively in modern testing. The test will be under constant revision as new questions become available, as older ones are retired, and as changes in technology make modification necessary. In this way, the steady input of high quality questions into the examinations will be assured.

To supplement the new system, study guides containing information about the examination will be available. Sample questions will be included in the booklet as an aid to the applicant. Bibliographies and reference material will be included. These study guides should serve to remove some of the preexamination anxieties that every applicant experiences, especially those who have had only a limited amount of formal education and little prior exposure to proficiency examinations.

SATELLITE TESTING SYSTEM

In addition to the new examinations, we plan to streamline our administrative procedures to achieve standardization. At present, 49 ports. each serving as an examination center, are evaluating sea service, assembling and controlling questions for each examination. We intend to reduce the number of examination centers from 49 to five. Looking into the future, we see major centers located at New York to serve the east coast ports; New Orleans for the gulf coast area; San Francisco for the west coast; Cleveland for the Great Lakes area; and St. Louis for all inland river ports. (See figs. 2 and 3.)

The various other marine inspection offices will screen applications and forward them to a major center for evaluation. The local officer in charge will be able to discuss problems with the applicant and make recommendations to the major center to assist in the evaluation. This will continue direct communication between the mariner and the local office, which we consider a highly desirable feature. The major centers will evaluate the application and select the appropriate examination. A packaged examination, will be forwarded to the satellite port for monitoring. Upon completion, the examination will be returned to the major center for scoring. The local office will be notified of the results and will issue the license to successful candidates.

The various ports will continue to administer and grade examinations in which local knowledge is considered a paramount requisite, such as for first class pilotage or a motorboat license.

While the use of multiple choice questions will greatly reduce sitting time for examinations, the flow of forms and tests between the major center and the satellite port will result in a few days' lag in issuing the license. A person wishing to avoid this administrative delay, may, on his own initiative, go to the major center for his examination.

The previous discussion has described the new look in licensing as it will pertain to new examinations, procedures, and a satellite system to be implemented in 1972. But there is one thing that we are doing immediately, and that is to revise our reexamination policy. A candidate now must retake only those subjects he fails. This procedure will have certain requirements to preclude a person from taking an examination piecemeal fashion over an extended period of time.

Under this new policy, a candidate who fails not more than two subjects will be permitted to complete the examination and then will have 60 days in which to return and take the subjects he failed. I am sure that this relaxation will do much to obviate the pressure a candidate feels as he progresses through the examination faced with a 100-percent retake if he fails one subject.

LONG RANGE PLANS

When the new look in licensing arrives in 1972, we do not intend to stop



FIGURE 4

there. We anticipate continuing a close working liaison with the maritime industry in improving the program. One innovation that appears to be just a few years away is the transmission of printed materials by remote means. Although this is now possible, the cost is prohibitive. In the near future, further advances will not only improve this system, but will reduce the costs so that general use will be feasible. We intend to be ready when that day arrives. When it becomes a reality, we foresee that applications, tests, and answer sheets will be expeditiously handled by one central office for evaluation and grading with even more efficiency.

Another area that will be studied closely is the use of audiovisual test materials, such as slides, photographs, and motion pictures during the examination process to increase realism. These techniques will provide an excellent means to evaluate a person's performance in the practical application of job knowledge requirements.

The advent of digital computers revolutionized the field of simulation and has made performance testing a reality. Simulators have been used with great success in training pilots to fly airplanes even before they were built and have been largely responsible for the flawless performance of our astronauts on the moon. It is anticipated that the solutions to problems involving use of radar, loran, and the radio direction finder can be realistically evaluated by use of simulators. A typical radar simulator layout can be seen in figure 4. Our longrange plans call for the installation of digital computerized radar simulators in major ports in the United States to be used to examine applicants for deck licenses. Testing exercises and gaming areas depicting approaches to harbors, coastlines, or the open sea along with other vessels can be realistically simulated merely by programing the problem into a digital computer. As the exercise progresses, this dynamic approach presents real time situations as they would occur aboard ship. A candidate must properly interpret radar plots and change course and/or speed to safely navigate his own ship into harbors or navigate in relation to surface traffic. The

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digital computer automatically processes data derived from the candidate's action, and a computer teletypewriter provides a hard-copy printout of the results. Thus, we will have a means to measure, in a standardized manner, a candidate's performance in piloting skills and the use of navigational aids and radar. It is possible that the same simulators may be programed to test the ship handling skills of deck officers in heavy weather and on super tankers, a very real problem on the horizon.

Automated enginerooms now provide for either automatic or remote operation of controls, switches, and valves previously controlled by local manipulation. When the console signals a malfunction, either by a warning light or other alarm the engineer must be capable of taking immediate corrective action to keep the plant functioning. Here, performance testing and evaluation of engineers can be accurately measured by a console simulator capable of programing problems as they occur in an engineering system aboard ship.

With the prospect of some 300 super tankers of over 100,000 tons sailing by 1972, it is urgent that every effort be made to insure that the officers mauning these vessels are familiar with the mancuvering characteristics of such mammoth vessels and trained in ship handling. Our long range program will explore the possibility of using simulators to test the ship handling capabilities of deck officers who will be licensed to man super tankers.

As you can see, we have many plans for change in the future, but there is one thing we will not change and that is the license itself. This hard-carned symbol of achievement has long given its possessor a mark of prestige, and in the future its status promises to be enhanced even more. The license you now see will truly be a certificate of competency and will be recognized the world over as the ultimate marine license.

ALL TIED UP IN KNOTS?

"Make fast where she is". "Finished with Engines". With these words, another sea passage is over.

Well, not quite. Being properly secured in a safe berth is more of a problem than ever. Vessels are growing in size and docks are getting older, in too many cases already inadequate to properly handle today's vessels.



If you really want to see some fast action, watch the boys hop to it when a passing vessel has sucked all the water out, popped the lines, and the only connection to the dock is the loading hoses with Class A product coming aboard at 10,000 bbls. per hour!

A recent technical study by a leading tanker operator has given more insight into the answers of questions every master asks when he docks his vessel.¹

What are the forces affecting a moored vessel? From wind, current, surging; from wakes of passing vessels, tides, ice; from maneuvering in and out of berth?

How are these forces distributed to the mooring lines? What is a good mooring arrangement?

Some of the findings of this study can be put into every day practical use under any existing conditions.

For instance, wind force varies with the square of the velocity—a 40-knot wind' exerting four times as much force on a vessel as a 20-knotter. Wind will exert a greater force if on the heam rather than on the bow or stern due to the greater "sail area" exposed—in some cases up to 10 times as much. On a 250,000 d.w.t. tanker in light condition it was found that a 60 m.p.h. wind on the beam exerted a force of 400 tons, on the bow 90 tons.

Some conclusions from this study were:

1. The mooring pattern should be as symmetrical as possible about the vessel's transverse centerline.

2. The most efficient lead to resist a force is a line oriented in the same direction.

3. Breast lines should be oriented to parallel the transverse centerline of the vessel and spring lines to parallel the longitudinal centerline.

4. Generally, mooring lines of the same size and type of material should be used for all leads, but *always* use mooring lines of the same size and type in the same service, i.e., all breast lines or all spring lines or all bow lines, etc.

5. Mooring lines should be arranged so all lines in the same service are about the same length and the vertical angle between mooring line and pier deck should be minimized.

While it will seldom be possible to moor under optimum conditions, consideration of these recommendations will result in a more satisfactory and safer berth.

Robert H. Smith, U.S. P&I Agency

¹ Tanker Mooring Arrangements, J. W. Leibald-J. Mascenik, Esso Research & Engineering Co., 50 Rockefeller Plaza, New York, N.X. 10020.

maritime sidelights

NATIONAL SAFETY COUNCIL



-Photo courtesy Mart Studio Inc.

Above are Coast Guard participants in the marine section program of the 57th Annual Safety Conference, sponsored by the National Safety Council. To the left is Capt. Leonard E. Penso, USCG, Executive Secretary, Merchant Marine Council, who served as session arranger for the Coast Guard presentation. Speakers and subjects, from left to right, were: Comdr. Myron E. Welsh, USCG, assistant chief, Hazardous Materials Division, Coast Guard Headquarters, "Hazard Evaluation and Its Use in the Regulation of Hazardous Materials Transportation"; Capt. Garth H. Read, USCG, chief, Merchant Vessel Personnel Division, Coast Guard Headquarters, "A New Look at Licensing of Merchant Marine Officers"; and Comdr. Donald F. Hall, USCG, assistant chief, Merchant Vessel Inspection Division, Coast Guard Headquarters, "The Anatomy of Marine Casualty Investigations." to the right is Capt. J. B. McCarty, Jr., USCG, deputy chief, Office of Merchant Marine Safety, Coast Guard Headquarters, who served as session chairman for the Coast Guard program.

The National Safety Conference was held at Chicago's La Salle Hotel October 27–29 and included the following marine sessions in addition to the Coast Guard program: Shipbuilding and repair, inland waterways, stevedoring, ship operations, annual marine executive committee meeting, best paper award presentations, and the joint marine section/Port of Chicago Propeller Club luncheon. Speaker at the joint luncheon was Rear Adm. W. R. Rea, Commander of the Coast Guard's 9th District.

March 1970

Coast Guard International Search and Rescue Seminar Announced

Secretary of Transportation John A. Volpe announced recently that the U.S. Coast Guard will sponsor an international search and rescue seminar at New York, October 26 to 29, 1970.

The 4-day seminar is being planned by the Coast Guard with the cooperation of the Federal Aviation Administration (FAA).

Designated the "North Atlantic Air/Surface Search and Rescue Seminar", the 1970 conference will be hosted by Rear Adm. Mark A. Whalen, Commander of the Coast Guard's eastern area. The last such meeting took place in New York in 1965. Commenting on the forthcoming seminar, Admiral Whalen said, "A lot has changed in the past 5 years. There is a great deal more traffic and significant increases in our technological capabilities. We share with other nations a deep concern for the safety of life and property at sea. This exchange of views at an international level should promote more efficient search and rescue operations."

In addition to participation by the Coast Guard and the FAA, U.S. military commands with search and rescue responsibilities will be invited to be part of the U.S. delegation. Participation is also anticipated from representatives of other nations, forcign and domestic industry, and major international organizations.

Details of the agenda and further information can be obtained by contacting: Commander Eastern Area, U.S. Coast Guard, Governors Island, New York, N.Y. 10004.

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nautical queries

FIRE EQUIPMENT

Q. On the foam type fire extinguisher sketched, name and describe the function of each of the parts indicated by letters.



- A. A=Relief valve to protect against excessive pressure in cylinder.
 - B=Strainer to prevent clogging of safety valve.
 - C=Lead stopper which falls out when extinguisher is inverted, allowing the contents of the inner and outer cylinders to mix and create the foam.
 D=Filling level indicator to show proper
 - height to which the outer cylinder should be filled.

DECK

Q. How would you embark passengers in lifeboats suspended from gravity davits? Describe precautions in the use of tricing pendants in particular.

A. Boats should be stowed with the tricing pendant secured by a trip hook to the shackle at the moving block of the fall. They should always be lowered in an emergency, or simulated emergency such as a drill, to the embarkation deck where the tricing pendant serves to pull the boat against the ship's side. Frapping lines are then passed around the falls. After the frapping lines are secured, the trip hooks on the tricing pendants are released by jerking on the tripping lines, taking care that the men in the boat are seated or holding on so that any movement that occurs may not cause them to fall overboard. With the boat held in position by the frapping lines around the falls, the passengers are embarked. The frapping lines may then be slacked until the falls are vertical, or the boat may be lowered with the frapping lines taut.

Q. How accurate are radio time signals?

A. The majority of radio time signals are transmitted automatically, being controlled by the standard clock of an astronomical observatory. Absolute reliance may be had in these signals and they should be correct to 0.05 second. Other radio stations, however, use hand transmission which should be correct to 0.25 second.

Q. How should lifeboat chocks on passenger vessels be fitted in order to facilitate the launching of the boats?

A. Lifeboat chocks on passenger vessels shall be so fitted that the lifeboats they serve shall not require lifting before launching.

ENGINE

Q. If your vessel's engines became disabled in heavy weather, what steps might you take to cause her to ride easier rather than rolling in the trough of the sea?

A. A vessel disabled or stopped at sea will assume a position where the force of the wind against her exposed hull and superstructure, and the lateral resistance of the immersed portion of her hull are in approximate equilibrium, usually this will cause the vessel to lay in the trough of the sea, with the wind slightly abaft the beam. If the heavy rolling and breaking seas are considered dangerous, several expedients may be tried to get the vessel more end on bow or stern to the sea, the effectiveness of the expedients depending on circumstances such as the size of the vessel, trim, etc.

They are:

Trimming the vessel to increase immersed resistance at one end.

Use of emergency rigged storm staysails to increase wind resistance at one end.

Use of an emergency drogue, such as a hawser, to increase immersed resistance at one end.

In addition to steps to bring the vessel more end on to the sea, the use of oil on the water might be of value in mollifying the effect of the wind on the sea.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 11-69

2 December 1969

Subj: Statement of Claims for Specially Exempted Water-ballast Spaces in Tonnage Calculations

Ref: (a) 19 CFR 2.43(g) Special Exempted Waterballast Spaces

PURPOSE

To describe the justification required to support claims for special exemption from gross tonnage of water-ballast spaces needed for stability, trim, immersion, seakeeping capabilities and strength.

DISCUSSION

a. A space in a vessel adapted only for water ballast outside the double bottom may be specially exempted from gross tonnage if the Coast Guard is satisfied that the primary purpose of the space is to afford a means of maintaining stability, trim, immersion, seakeeping capabilities and strength under varying conditions and requirements of the vessel's operation and that the space is necessary to and will be available at all times for any one of these purposes.

b. Applications for special exemption of water-ballast space in excess of 30 percent of the gross tonnage calculated without such exemption are required by 19 CFR 2.43(g)(3) to be submitted to Coast Guard Headquarters for approval. They must include an appropriate statement to support claims as to the primary purpose of, the need for, and the continuous availability of the water-ballast spaces for one or more of the prescribed purposes.

c. Such a statement, in each case, must include a designation of the intended service of the vessel, a description of the operation or operations of the vessel which will require the water ballast claimed to be necessary, and justification including supporting calculations accounting for every specially exempted water-ballast space.

d. A simple statement that a space is needed for water ballast will not be accepted as sufficient justification of the need for the water ballast. While appropriate computations relating to a single loading and/or operating condition may, in some cases, serve to justify all waterballast spaces claimed to be needed, it will be necessary in other cases to include computations for several conditions in order to justify the need for each water-ballast space claimed.

e. Further, the justification for use of a particular tank in a given loading condition may not be accepted if there is another tank for which justification in a different loading condition has been accepted and that second-mentioned tank can be used as effectively within established safety standards to offset the given condition.

While the provisions of this Circular are not new, they have not heretofore been clearly defined and for that reason may not have been uniformly applied. Henceforth, they shall apply to all vessels except those existing vessels for which special exemption for water-ballast space has already been approved unless there is a change in the use of such a specially exempted water-ballast space or the vessel undergoes an alteration or modification which would result in a substantial change in the gross tonnage. A vessel which is found to have a previously approved specially exempted water-ballast space used for an unauthorized purpose will be required to have its need for such exempted space reconsidered by the Coast Guard in accordance with the provisions of this Circular and 19 CFR 2.43(g).

ACTION

The procedures described herein for a statement of claim for special exemption of water-ballast spaces are effective immediately. The designated loading conditions and the methods proposed to offset those conditions submitted with each application for a special exemption of water-ballast spaces must be realistic. The complexity of each supporting justification will depend on the conditions that need to be demonstrated. Examples of the types of information required to justify three of the purposes for specially exempted water-ballast spaces provided by the regulations follow.

a. Immersion. If immersion is the stated reason for claiming water ballast, the proposed loading conditions that are required to be submitted as justification must show the need for such immersion and the weight and trim calculations to support the water-ballast claim.

b. Stability. If water ballast is required to improve stability, a complete loading calculation showing a resultant GM for each proposed loading condition is necessary to support the water-ballast claim.

c. Seakeeping. When seakeeping ability is cited as a requirement for the exemption of claimed water-ballast spaces all specified loading conditions should be described in complete detail. The justification submitted should include GM, period of roll, and (if speed is involved) a speed versus trim/draft calculation for technical evaluation.

GENERAL

Applications for approval of special water-ballast exemptions under the provisions of 19 CFR 2.43(g), or questions concerning the application of that regulation to any specific vessel, should be submitted to Commandant (MMT-6) through the Officer in Charge, Marine Inspection, of the port responsible for measuring the vessel. By following this procedure the owner of the vessel or his responsible agent may be assured that all officials concerned with the approval of a special exemption for water ballast will be fully informed of the circumstances of the case. The Officer in Charge is responsible for confirming any information relevant to the special exemption for water ballast supplied by the owner or his agent concerning the construction of the vessel; for reporting any unusual conditions observed about the vessel which might have a bearing on the approval of the special exemption; and for making any recommendation he believes to be appropriate in the case.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 12-69

12 December 1969

Subj: Special Examination in Lieu of Drydocking for Large Mobile Drilling Units

PURPOSE

To set forth procedures to be used when conducting an examination in lieu of drydocking on large mobile drilling units. This circular does not establish a new requirement but is intended to provide uniform procedures for an existing requirement.

DISCUSSION

In recent years, certain types of mobile drilling units have been built and certificated which are so large that they cannot be handled by any existing drydock facility. These units have not been exempted from the routine drydock requirements of the regulations under which they were certificated. In view of the above, a special examination is required to provide the information normally obtained during a drydock examination.

ACTION

Special examinations in lieu of drydocking will be conducted in accordance with the procedures set forth in enclosure (1) insofar as they are applicable to the unit being examined. The interval between examinations will be as specified in the applicable regulations. Until such time as the Coast Guard offers inspection service at overseas locations, it is the responsibility of the owner to conduct an examination in accordance with the procedures set forth herein in cases where a drydock examination becomes due while the vessel is operating at an overseas location. The results of this owner conducted examination shall be entered in the vessel's lng book.

EXAMINATION PROCEDURES

The purpose of an examination of the underwater body is to make an evaluation of the condition of the hull and its fittings. Of primary concern are the effects of corrosion, and hull damage. If these are not detected and corrective action taken, they could lead to reduced strength and loss of hull integrity. Insofar as is practicable, the special ex-

amination in lieu of drydocking shall be conducted using the same procedures as in a regular drydocking examination. The guidelines contained in the current Notes on Inspection and Repair of Steel Hulls are applicable. Special procedures necessary because of the nature of these vessels are discussed below.

In lieu of drydocking, large mobile drilling units shall be placed in their lightest draft condition consistent with adequate stability. The area above this waterline shall be examined by traditional means. Particular attention shall be paid to areas of high stress such as joints of structural members. The remaining submerged area of the hull shall be inspected by independent divers acceptable to the OCMI. In addition, underwater television shall be employed to give a visual presentation to the inspector. A permanent magnetic tape record of the TV presentation shall be retained, by the owner, until the next examination. The hull shall be cleaned to the degree necessary to allow an adequate determination of the hull condition. The underwater area of the hull shall be thickness gauged to the degree necessary for the OCMI to ascertain the condition of the hull. This gauging may be accomplished either by underwater ultrasonic testing, or by ultrasonic testing internally. The method and procedures used in the ultrasonic gauging shall be acceptable to the OCMI. Fittings which penetrate the hull shall be given the same examination as is accomplished at a regular drydocking. All internal compartments shall be entered and visually examined.

If acceptable to the OCMI, at every second examination, the owner may have the examination conducted while the unit is at its working draft. This examination shall be conducted as above with the following exceptions:

(a) The hull gauging will, of necessity, have to be accomplished using underwater ultrasonic techniques.

(b) In addition, a representative number of welds in high stress areas shall be examined using underwater ultrasonic techniques acceptable to the OCMI. Records of indications, such as sketches of detected flaws, will be maintained in sufficient form to be used for comparative purposes during subsequent inspections. (c) The only internal compartments required to be entered and examined at this examination will be those which can be made accessible in the working condition.

Prior to the examination, the owner shall submit an inspection plan to the OCMI for his approval. The plan shall set forth the draft at which the unit is to be examined, the divers to be used, method of visual presentation, method of underwater cleaning, method of gauging, the locations that are to be gauged, the hull fittings to be opened, compartments to be opened for examination, high stress areas to be examined, and the method of examining welds in high stress areas. The OCMI may request the assistance of the appropriate MMT Office in reviewing the inspection plan. Prior to the conducting of non-destructive tests, the inspector shall satisfy himself as to the calibration of the equipment being used. Comparison with the original plans and previous test results will be necessary to determine criteria upon which to base acceptance or rejection of hull conditions at the time of inspection. Therefore, the OCMI shall retain the results of all tests conducted.

Inasmuch as this examination requires more planning and discussion between the owner and the OCMI, than does a routine drydocking, arrangements should be made as far in advance as possible. If repairs to the underwater hull are required, it is the responsibility of the owner to propose an acceptable method of repair. \ddagger

"So You Think You Know It All"

A master of many years experience, highly respected by his company and without a blemish on his license was speaking to me about a close call he had recently entering a port which we both knew well.

"It was a fool thing to do and I still wake up once in a while in a cold sweat! You know how narrow the channel entrance is through the reefs? You normally arrive well off, line up on the course and come in watching the seas break on either side as you do.

Instead I made arrival directly off the entrance and put the wheel over as we come just about abeam of the channel. The ship didn't answer too well and there we were going full speed with the reefs dead ahead! Maybe an out-going current prevented us from swinging. At any rate, there was nothing to do but pray. We finally came around but we were so close it wasn't funny. Why I did such a thing I'll never know but it's made me think that I can never be too careful no matter how experienced I consider myself or how familiar I am with my ship or a particular harbor entrance".



Every Master, indeed every ship's officer can remember a personal experience of this sort where possible luck was the determining factor between a near miss and a major casualty. The writer can remember clawing off the Pensacola Bar when he let his ship get in too close while waiting for daylight and a pilot. What advice can anyone give to an officer standing his first watch or a Master taking out his first ship. Again the writer remembers going aboard his first ship as Master and asking the Skipper whom he was relieving, "Can you give me any special advice, what should I look out for?", and the old timer answering, "Take it easy for the first couple of years; you'll think you've learned everything and that is the time you will get in trouble".

Looking back I still can't think of a better piece of advice to offer to a man about to stand his first watch or take command of his first ship. Perhaps I might qualify the advice by saying, "We never really know it all, we must take every precaution every time".

Just this past year a collision occurred between two vessels underway in thick weather, both proceeding at an excessive speed. One was commanded by a Master on his first trip; the other was commanded by a Master on his final trip before retirement. NEED MORE BE SAID? ‡

Robert H. Smith, U.S.P. & I. Agency

Title 46 Changes

Chapter I—Coast Guard, Department of Transportation

SUBCHAPTER G-DOCUMENTATION AND MEASUREMENT OF VESSELS

TRANSFER OF REGULATIONS

Pursuant to authority vested in him by law, including Reorganization Plan No. 26 of 1950 and section 301, title 5, United States Code, the Secretary of the Treasury by Treasury Department Order No. 167-81 (32 F.R. 2463), effective February 24, 1967, transferred to the Commandant, U.S. Coast Guard certain functions performed by the Commissioner of Customs pertaining to: (a) Admeasurement of vessels; (b) documentation of vessels and preparation and publication of merchant vessel registers; (c) registration of stack insignia; and (d) port security. By a notice dated March 15, 1967, and published in the FEDERAL REGISTER of March 22, 1967 (32 F.R. 4365), the Commandant, U.S. Coast Guard pursuant to the authority delegated to him adopted and affirmed with respect to these functions all orders, rules, regulations, directives, requirements, standards, policies, procedures, permits, and other actions which were issued, granted, or allowed to become effective prior to February 24, 1967.

On April 1, 1967, the Department of Transportation Act, Public Law 89-670 (49 U.S.C. 1651-1659) became effective in accordance with the terms of Executive Order No. 11340 (32 F.R. 5453), and the U.S. Coast Guard was transferred to that Department. Under the provisions of section 6(b)(1) of the Act, the functions enumerated in the four categories above were transferred to the Secretary of Transportation. By a rule contained in 49 CFR 1.4(a)(2) the Secretary of Transportation delegated

the authority to exercise these functions to the Commandant, U.S. Coast Guard. Pursuant to this delegation of authority from the Secretary of Transportation, the Commandant, U.S. Coast Guard by a notice dated March 31, 1967, and published in the FEDERAL REGISTER of April 5, 1967 (32 F.R. 5611), adopted and affirmed with respect to these functions all orders, rules, regulations, directives, requirements, standards, policies, procedures, permits, and other actions which were issued, granted, or allowed to become effective prior to April 1, 1967.

By Reorganization Plan No. 1 of 1967 (32 F.R. 7049), effective May 9, 1967, the President of the United States transferred to the Secretary of Transportation the functions then vested in the Secretary of Commerce relating to the approval of the surrender of documents of a vessel pursuant to subsections B(4) and O(a)of the Ship Mortgage Act, 1920, as amended (46 U.S.C. 911(4) and 961 (a)). By a rule contained in 49 CFR 1.4(a)(4) the Secretary of Transportation delegated responsibility for the performance of the transferred functions to the Commandant, U.S. Coast Guard. Pursuant to this delegation of authority, the Commandant by a notice effective on May 9, 1967, and published in the FEDERAL REG-ISTER of June 23, 1967 (32 F.R. 8980), established temporary rules, regulations, and instructions.

The rules and regulations of the Bureau of Customs are contained in 19 CFR Chapter I. Part 1 contains regulations of general application; Part 2, the regulations pertaining to the measurement of vessels; Part 3, the regulations pertaining to the documentation of vessels, and Part 4, the regulations pertaining to customs financial and accounting procedure. The regulations in this document, namely 46 CFR Parts 66, 67, and 69 are based, in the main, on pertinent

sections of Parts 2 and 3 of the aforementioned regulations of the Bureau of Customs. In addition, the substance of 19 CFR 1.2(c), 4.98(a)(g)(k) and 24.12(a)(4) have been incorporated in these new regulations.

No substantive changes in the existing regulations of the Bureau of Customs are made. The only changes are editorial in nature to reflect the transfer of functions to the Coast Guard and to reorganize the contents to conform to the format of the regulations in Title 46, Code of Federal Regulations. It is therefore, found that it is unnecessary to comply with the provisions of the Administrative Procedure Act relating to notice of proposed rule making and public procedure thereon, since these regulations are exempted from these requirements by the provisions of 5 U.S.C. 553. Future changes of substance to the regulations hereby enacted are contemplated. However, these changes will be made only after notice of proposed rule making in accordance with the provisions of the Administrative Procedure Act.

The complete text of these changes was published in the "Federal Register" of December 23, 1969, part II.

These regulations may be obtained from the local marine inspection office or by writing Commandant (CAS-2) U.S. Coast Guard, Washington, D.C. 20591.

Approved Equipment

Commandant Issues Equipment Approvals; Terminates Others

U.S. Coast Guard approval was granted to certain items of lifesaving, and other miscellaneous equipment and materials.

Those interested in these approvals should consult the Federal Register of January 27 and 30, 1970, for detailed itemization and identification.

MERCHANT MARINE SAFETY PUBLICATIONS

The following publications of marine safety rules and regulations may be obtained from the nearest marine inspection office of the U.S. Coast Guard. Because changes to the rules and regulations are made from time to time, these publications, between revisions, must be kept current by the individual consulting the latest applicable Federal Register. (Official changes to all Federal rules and regulations are published in the Federal Register, printed daily except Sunday, Monday, and days following holidays.) The date of each Coast Guard publication in the table below is indicated in parentheses following its title. The dates of the Federal Registers affecting each publication are noted after the date of each edition.

The Federal Register will be furnished by mail to subscribers, free of postage, for \$2.50 per month or \$25 per year, payable in advance. The charge for individual copies is 20 cents for each issue, or 20 cents for each group of pages as actually bound. Remit check or money order, made payable to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated January 1, 1969 are now available from the Superintendent of Documents; price: \$3.75.

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 (5-1-68).
- 115 Marine Engineering Regulations and Material Specifications (3-1-66). F.R. 12-18-68.
- 123 Rules and Regulations for Tank Vessels (5-1-69). F.R. 10-29-69.
- 129 Proceedings of the Merchant Marine Council (Monthly).
- 169 Rules of the Road—International—Inland (9–1–65). F.R. 12–8–65, 12–22–65, 2–5–66, 3–15–66, 7–30–66, 8–2–66, 9–7–66, 10–22–66, 12–23–67, 6–4–68, 10–29–69, 11–29–69.
- 172 Rules of the Road—Great Lakes (9-1-66). F.R. 7-4-69.
- 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 (3-1-65).
- 176 Load Line Regulations (1-3-66). F.R. 12-6-66, 1-6-67, 9-27-67, 7-12-68, 6-5-69, 7-26-69, 10-12-69.
- 182 Specimen Examinations for Merchant Marine Engineer Licenses (7-1-63).
- 184 Rules of the Road-Western Rivers (9-1-66). F.R. 9-7-66, 5-11-67, 12-23-67, 6-4-68, 11-29-69.
- 190 Equipment Lists (8-1-68). F.R. 11-7-68, 11-8-68, 11-16-68, 11-19-68, 11-20-68, 12-11-68, 12-18-68, 2-11-69, 2-18-69, 2-21-69, 2-26-69, 3-15-69, 3-27-69, 4-4-69, 4-12-69, 4-19-69, 4-25-69, 4-26-69, 4-28-69, 5-3-69, 5-9-69, 6-18-69, 6-19-69, 7-169, 7-15-69, 7-17-69, 9-12-69, 9-25-69, 10-10-69, 10-11-69, 10-22-69, 10-31-69, 11-19-69, 12-13-69, 1-27-70, 1-30-70.
- 191 Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (5–1–68). F.R. 11–28–68.
- 200 Marine Investigation Regulations and Suspension and Revocation Proceedings (5–1–67). F.R. 3–30–68.
- 220 Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4-1-57).
- 227 Laws Governing Marine Inspection (3-1-65).
- 239 Security of Vesels and Waterfront Facilities (5-1-68). F.R. 10-29-69.
- 249 Merchant Marine Council Public Hearing Agenda (Annually)
- 256 Rules and Regulations for Passenger Vessels (5–1–69). F.R. 10–29–69.
- 257 Rules and Regulations for Cargo and Miscellaneous Vessels (8-1-69). F.R. 10-29-69.
- 258 Rules and Regulations for Uninspected Vessels (3-1-67). F.R. 12-27-67, 1-27-68, 4-12-68, 12-28-68, 3-27-69, 10-29-69.
- 259 Electrical Engineering Regulations (3-1-67). F.R. 12-20-67, 12-27-67, 1-27-68, 4-12-68, 12-18-68, 12-28-68, 10-29-69.
- 266 Rules and Regulations for Bulk Grain Cargoes (5-1-68). F.R. 12-4-69.
- 268 Rules and Regulations for Manning of Vessels (5-1-67). F.R. 4-12-68.
- 293 Miscellaneous Electrical Equipment List (9-3-68).
- 320 Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (11–1–68). F.R. 12–17–68, 10–29–69.
- 323 Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (7-1-69). F.R. 10-29-69.
- 329 Fire Fighting Manual for Tank Vessels (7-1-68).

CHANGES PUBLISHED DURING JANUARY 1970

The following has been modified by Federal Registers: CG-190, Federal Register, January 27 and 30, 1970.

