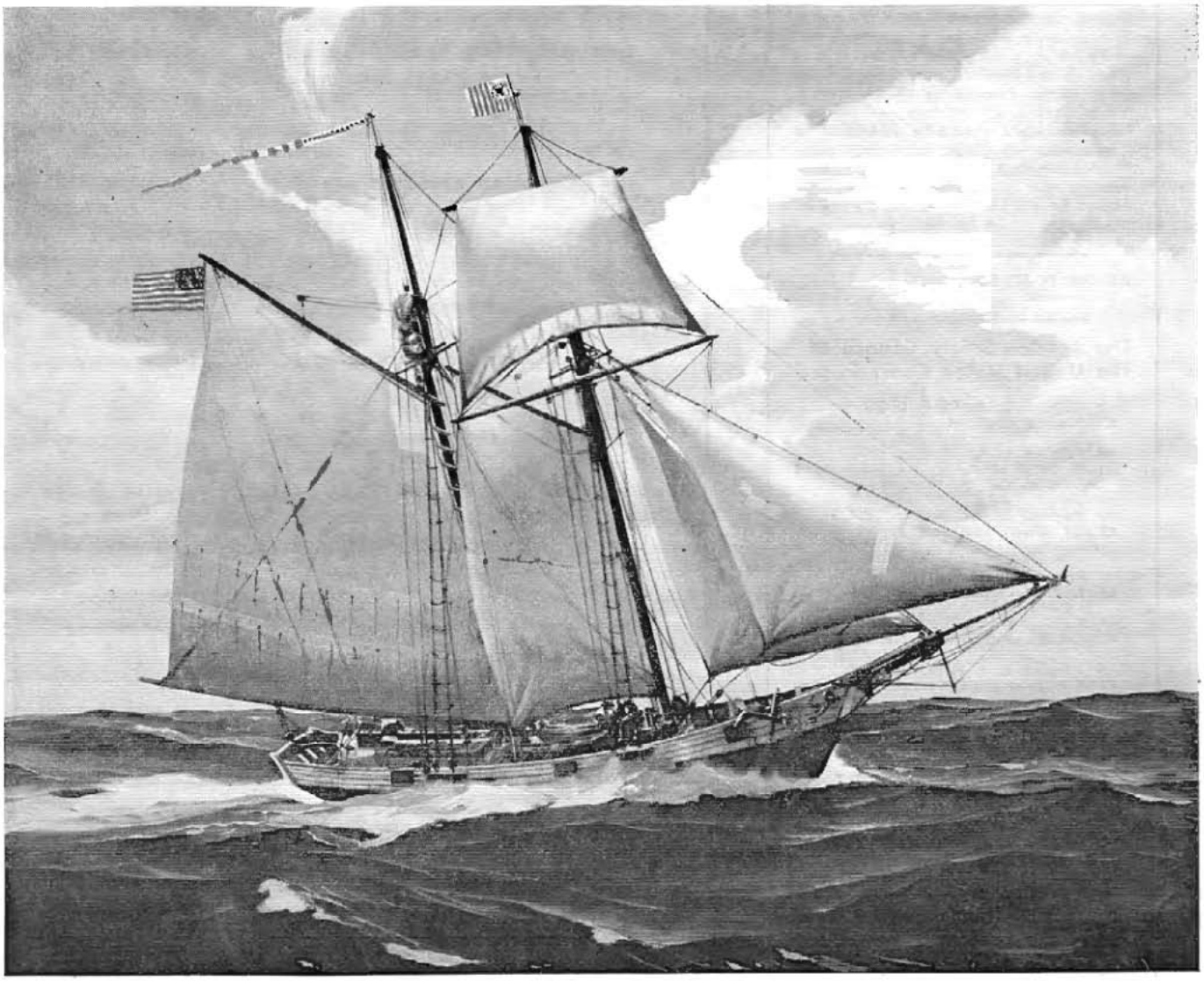
PROCEEDINGS
OF THE MARINE SAFETY COUNCIL



DEPARTMENT OF TRANSPORTATION UNITED STATES COAST GUARD

Vol. 33, No. 1 CG–129 January 1976

PROCEEDINGS

OF THE MARINE SAFETY COUNCIL

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COVERS

The old and the new. In 1790, Alexander Hamilton, first Secretary of the Treasury, persuaded Congress to provide a fleet of 10 armed cutters to enforce collection of tonnage dues and import duties. The first of these, the 50-foot, two-masted cutter *Massachusetts*, was completed in July 1791 at a cost of $1,440.

The world's most powerful icebreaker, and the first addition to the U.S. icebreaking fleet since 1954, the *Polar Star* was launched in November 1973. The 399-foot, 12,000-ton vessel's propulsion system consists of three shafts which combine 60,000 gas turbine horsepower for the hard work and 18,000 diesel electric which will give the icebreaker a sustained speed of 17 knots. She will break ice 6 feet thick at a continuous speed of 3 knots, and will be capable of ramming ice 21 feet thick.

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E: mn(1)
F: kp(1)
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THIS COPY FOR NOT LESS THAN 20 READERS— PLEASE PASS IT ALONG

maritime sidelights

INSTANT FOAM

The Monsanto Research Corporation has concluded its research for the Coast Guard investigating the use of instant foams in emergency flotation systems in small craft such as fishing vessels. A combination of solvent, fire retardant, and plastic material has been identified which appears promising. One apparently intractable problem which did arise is in cold weather foaming. Below about 5° F, the material becomes too viscous to flow out of its container unless a rather high pressure propellant gas is added. Fire retardancy of the foam is good, and it foams without difficulty at a depth of 15 feet. Shelf life study has just been started. It is the last phase of the program and will be complete in 18 months.

WHY ME?

In 1974, waste discharges from vessels on this country's navigable waters approximated the raw wastes discharged from cities of over 500,000 people—cities like Buffalo, Cincinnatti, or San Diego. Such a statistic makes it obvious why control of vessel pollution has to be regarded as such a significant part of the national environmental protection effort.

Undoubtedly, the impact of pollution regulations promulgated by the Coast Guard and other agencies in recent years is well known to those involved in management of large-scale commercial shipping. The Coast Guard recently has made available to the public a pollution prevention brochure directed at the *individual*—primarily recreational boaters, but also operators and employees of service facilities and marinas, and operators of small vessels carrying passengers for hire. However, the information that it contains should be of interest to *anyone* in a position to either cause or prevent marine pollution.

In addition to some basic facts about the problem, the brochure gives a concise explanation of the requirements and penalties for violation of the Federal Water Pollution Control Act and Coast Guard regulations which implement it. And, perhaps most importantly, it tells what we all *can* do to help prevent or minimize pollution.

A toll-free number sticker also is being offered to make reporting of pollution incidents easier. This can be of particular value in cases of pollution by oil or hazardous substances where prompt action can keep a minor problem from becoming a major one.

Copies of both the brochure and the sticker may be obtained through the Marine Environmental Protection Division of your local Coast Guard District office. Any local Coast Guard facility can provide the address.

KEEP THE LID ON

The manufacturer of Mar Tech Emergency Position Indicating Radio Beacons (EPIRB's) has redesigned the EPIRB box cover to prevent its blowing away. The problem exists only on Mar Tech EPIRB's (Model EB–2BW Whaler) when the light float-off cover of the storage box takes flight in a stiff breeze. In some cases the security line has parted, resulting in loss of the cover and peril to personnel on lower decks.

All Mar Tech EPIRB's should have the old style cover which sits on top of the box replaced with the redesigned cover which attaches to the EPIRB and is held to the box by its weight. The redesigned covers are available from Mar Tech Division of Dayton Aircraft, P.O. Box 70, Ft. Lauderdale, Fla. 33302.

An expedient repair to the old style cover is to securely attach a piece of wood to the topside of the cover. This will not impair the float-off lid design, but it will add weight to the cover to help keep it on until the redesigned cover can be obtained. The old style cover should not be lashed or taped to the box or otherwise attached in a manner that will prevent the cover from floating off.

FLASH ARRESTORS

Tankermen need to know the uses of flash or flame arrestors and to know how they work. It's all done with fine metal gauze mesh of copper or copper alloy like brass or Monel. Way back in 1815, Humphrey Davy in England invented the miner's safety lamp and the principle is still the same.

Flame cannot penetrate fine metal mesh or wire gauze even though flammable gas, even explosive mixtures, may be present on the other side of the gauze.

When flame reaches the gauze, and perhaps even burns on one side, the gauze, being woven so fine, cools the minute flame particles that would like to flash on through the mesh. The flame at the mesh is cooled so much it cannot pass through the little holes and the explosive gas on the other side cannot ignite.

MORAL: Be sure that on your tanker you know the purpose of gauze or mesh tank vent flame arrestors and ullage screens. Naturally, if the mesh is torn or punctured, the deal is off and you are in danger! So is your ship!

—Courtesy National Safety Council

Men at Sea—Then and Now

by Commander Benjamin E. Joyce, USCG
Chief, Manning and Personnel Qualifications Branch

In recent years both business and government have had to respond to an increased demand for raw and finished materials. With this demand has come an increased awareness of the need for improvement in social and personal conditions. The factors that influence the relationship between these demands for increased production and improved conditions are: an ever increasing productivity, a rising level of education and skill, a continually rising standard of living, a reduction of physically burdensome labor, and expanding leisure time. Coupled to these factors is the growing application of automated equipment which requires a more sophisticated work force. This increase in sophistication is changing boundaries which have existed between jobs and skill, and between operation and maintenance. The maritime industry, possibly out of a deep sense of tradition, has not, until recent years, moved at the same pace as others in the area of automation. Now, as technological advances are applied in rapid succession, another problem is arising. That is, how do we bring man to a fully productive, safety oriented interface with the machine?

Before examining the various methods of selection and qualification which have been applied to men following the sea as a livelihood, we should take a brief look at history and the safety aspects of marine technology. Merchant ships have played an important role in the growth of our country. The colonists were skillful shipbuilders and sailors. They invented new ships that were faster and more beautiful than any previously known. Fulton demonstrated the reliability of the steamboat in 1809 with the *Clermont*. Steam continued to be a U.S. newsmaker in 1819 when the SS *Savannah* successfully crossed the Atlantic using steam and sail. While this display of technological advancement gained prominence for Americans, there were associated problems; of the 260 recorded accidents to steam engines which caused loss of life or substantial damage to property prior to 1838, all but 30 took place on steamboats. Much of this was due to the large size of steam plants used on steamboats and to the unfavorable conditions under which they operated as compared with stationary and locomotive engines. Since the steam vessels carried passengers as well as freight, the results of explosions were more disastrous and received national notoriety.

The year 1838 is significant. Previously, only the States had established any safety requirements or periodic inspection. These requirements proved useless since they applied only to steamboats operating within the limits of a particular State.

The Federal Government entered the picture with the first national legislation in 1838. Although this first effort was not entirely successful in providing "better security of the lives of passengers" it did establish the first requirement for the employment of experienced and skillful engineers. This requirement, directed at the competence of the individual, was expanded in the Act of 1852, which established the principal of licensing both engineers and pilots. Men desiring to serve as engineers or pilots were required to demonstrate to the officials of the Federal Inspection Service that they possessed not only the requisite knowledge and skill, but also the character and habits regarded as necessary for the proper execution of the duties attached to such responsible posts.

From 1852 to 1871 marine disasters continued to be a problem and finally resulted in the Act of 1871. It is to be noted however, that these years span the Civil War. Many of the disasters were attributed to the heavy demands placed on ships and the lack of maintenance and inspection. The most noteworthy of these tragedies was the loss of the *Sultana* in April 1865. The vessel was certificated by the Federal Inspection Service to carry a maximum of 376 passengers. On the regular northbound passage from New Orleans to St. Louis, the Captain elected to take on board 2,000 released Union prisoners at Vicksburg. On the night of 26 April after departing from Memphis, Tenn., with a total of 2,300 persons on board, a boiler explosion occurred with a subsequent fire that burnt the vessel to the water. Fifteen hundred lives were lost in this disaster. This casualty highlighted many shortcomings in the existing laws. As a result, new requirements were promulgated and combined with the useful features of existing laws to provide a coherent and unified body of law. One

of the new provisions expanded the licensing requirements to include Captains and Chief Mates; it also extended protection from the "better security of passengers" to "the better security of life" to include all persons on vessels. The Act of 1871, as amended, and the regulations constitute the marine safety code of today.

The enforcement of this code was originally assigned to the Federal Inspection Service, later to the Bureau of Navigation and Steamboat Inspection, then in 1936 to the Bureau of Marine Inspection and Navigation. These were the predecessor authorities to the Coast Guard.

In these various legislative actions, I have highlighted the impact on the manning of ships. However, the major thrust of the legislation was toward safer construction and equipment. This trend continued after 1871, stimulated by such well known casualties as the *Titanic*, the *Morro Castle*, the *Andrea Doria/Stockholm*, the *Yarmouth Castle*, and the *Torrey Canyon*. Yet in all of these casualties the investigations had a strong reflection on the human errors involved. One result of the *Morro Castle* catastrophe was passage of a bill placing a duty upon the owners of vessels to ensure "that the crew is fully trained to meet all emergencies that may come to pass and . . . give particular attention to the drills necessary to ensure proper training in the duties necessary to meet emergencies due to fire, collision, and stranding." Although requirements for more qualified personnel have been imposed by international convention and by Congress, it has remained generally an "on-the-job" type of training. Entering officers could receive formal training at State school ships, and after 1942 at the Federal academy. However, advancement was predicated on job training and specified periods of experience. The individual would present himself before the inspectors with an acceptable proof of his experience and recommendations as to his good character. He would either verbally or in writing satisfy the inspectors that he possessed the knowledge necessary for whatever licensed or unlicensed rating he desired. Until very recently the regulations continued to provide for only this method of qualification.

Recent industry trends are placing a burden upon the Coast Guard to examine the traditional methods of the past, because the role of the seaman is changing from a "doer of tasks" to a "supervisor of machines." Over the last decade we have seen the size of ships grow astoundingly; one tanker is the equivalent of 20 that plied the oceans during and immediately after World War II. Container ships, barge-carrying ships, and bulk carriers have cargo capacities three to five times greater than earlier break-bulk cargo ships. Ships 800 to 1,000 feet in length are commonplace today. An additional complication is the increase in types of cargoes carried.

A direct impact of technological advances on the individual has been the operational economics requiring quick turnarounds. Port time, which in the past provided a recreational break from the everyday rigors of extended hours of work, has been curtailed. Shortened port time can initiate a psychological and physiological situation which may result in injuries, illnesses, or actions that precipitate casualties. Also, as ship systems have changed over the past 2 decades, operational decisions have reduced the size of crews aboard ships. At the same time, public interest has forced an immediate concern with the protection of the environment.

Another concern is therefore before us, to provide the number of men necessary to meet the safety requirements of vessels. During the past half century as commercial ships had a tendency to increase in size, there was also an increase in the number of men manning those vessels. This manning resulted from greater operational and maintenance requirements. Essentially the basic crew needed for safe navigation remained the same: Master, mates, engineers, and experienced seamen to provide three watches a day. The Government was removed from the implications of any economic impact on the industry concerning the size of the crew since the owner's requirements were greater than the Government's. The owners wanted qualified unlicensed supervisors and maintenance expertise including: bo's'ns, carpenters, electricians, refrigeration engineers, and general engineers, all of whom were day workers. These individuals also provided a ready source of qualified personnel to meet shortages among the watchstanders during the voyage.

In establishing a balance between crew size and vessel safety the efforts were again directed primarily to the machine. Equipment with a greater degree of sophistication and complexity was installed. The central console concept was applied to bridge and engineroom operating stations. Liquid cargo could be loaded and discharged from centralized locations. The latest application is to automate either partially or totally the everyday operational tasks or alert watchstanding tasks. The alarm buzzer and red light panel is becoming the individual's working focus.

The combination of greater speed, quick turnaround, and automation did make possible a reduction in the general maintenance force aboard a ship, and on an increasing number of large ships, a reduction in the watchstanding force. Aboard vessels 5 to 20 times the conventional size, crews are shrinking to approximately half of the former complement. This has created a human isolation problem without a regular, mentally challenging work demand. (We do not have a full understanding of the relationship between technical change and social effects.) This isolation, combined with less strenuous work, creates monotony. Shipboard duty

then has the potential of quickly changing from routine boredom to an intense demand on personal knowledge and physical resources should there be a mechanical malfunction or failure. This area has only recently been given the focus it deserves.

A number of studies have been initiated to provide an insight into the problems of dealing with the human factors. A recent Coast Guard study was started to identify methods of improving human safety performance in collision, ramming, and grounding prevention. In conjunction with this study there will be a determination of methods needed for evaluating a broader range of personnel qualifications. Present methods rely on specific levels of "on-the-job" training and written tests.

Initial studies have determined that on-the-job training is no longer fully capable of preparing the individual to react effectively to avert major casualties, particularly in critical skill areas. The individual requires a trial and error capability to orient his own thinking. In the past, ships were manned so that this training could be acquired on board. Today the potential risk to physical plant and capital loss is too great to justify individual experimentation. Additionally, reduced manning increases the vulnerability of the vessel to improper or faulty actions since there are no backup personnel available for observing and evaluating. No matter how many strides are made in refining the vessel and its equipment, it will be not better than the men operating and maintaining it. The men responsible will have to be more qualified since the trend toward smaller crews will place both the operating and the preventive and corrective maintenance obligation on the same individual. This rationale is supported by statistical findings that human error has contributed in 85 percent of the casualties and to some extent in 95 percent of the investigated incidents. There is a strong obligation on the part of all segments of the industry and Government to move together for acceptable solutions.

Action has already commenced to prepare the individual for a more responsive role. Scaled shiphandling facilities have been constructed, simulator units coupled to computer-generated situations have been made available. Our problem is to insure that the seafarer avails himself of these benefits. Formalized training is a must, but it is not the be-all to personnel qualification. Formal training requires rounding by on-the-job supplement and periodic retraining. Retraining brings the individual up to date on both new innovations and correct procedures. Experience has shown that a trained person, mentally attuned to the proper and accepted practice of completing safety-oriented tasks, begins to revert to shortcuts after about 6 months.

A particular problem for the Coast Guard involves the method of determining whether the licensed and documented individuals manning the ships are at the level of qualification signified by the endorsement granted. It is recognized that some form of improved examination is needed to replace our past methods.

Presently there is an ongoing project to revise license examinations. The lower level examinations, those for second and third mates and second and third assistant engineers of large vessels, have been changed from subjective to objective, or multiple choice, answer form. This examination has been administered for over a year and a half and the comments from applicants and industry have proven beneficial in smoothing the transition. We are progressing well on the upper level exams. In the overall effort the industry has been consulted for guidance and we continue to solicit their advice. We feel the great step forward has been standardization; that is, throughout the country every applicant for a similar license receives the same examination which is administered on the same days in a predesignated schedule. The questions are forwarded to the various Officers in Charge of Marine Inspection from the Coast Guard Institute in Oklahoma City, and the completed exams are returned to the Institute for grading and computer analysis of the answers. In this manner ambiguous questions are quickly weeded out.

For the future we feel the pencil and paper examination will stay as a necessary tool to determine basic skill qualifications. However, in the areas of critical skills, such as loading and discharging hazardous materials, radar piloting, ship maneuvering, and firefighting, specialized training will be required. In particular, the upper level positions will be subject to a more sophisticated mandatory training requirement. We envision this as a simulator type proficiency testing whenever possible. There are already a number of management and labor sponsored facilities providing automated engineroom console simulators with computer-programmed casualties that can be progressive from minor failures to total loss of the plant if proper action is not initiated by the watch officer. Other simulator setups provide for loading of supertankers by remote control consoles. These also have programmed casualties. It is expected that LNG carrier simulators will also become readily available to operating personnel. The greatest work has been accomplished in the area of simulator radar observer training sponsored by both Government and private interests. These facilities are available on the four coasts of the United States and provide training programs consistent with the basic guidelines acceptable to the Commandant of the Coast Guard.

It should be noted that the United States is not the only nation with training concerns. There is within the U.N. structure the Intergovernmental Maritime Consultative Organization (IMCO) which is composed of the maritime nations of the world.

A particular subcommittee of the IMCO Maritime Safety Committee deals with the Standards of Training and Watchkeeping (STW). Its formation resulted from discussions of one of the IMCO working groups in 1970. The group reported "that in view of the continuing alarming rise in maritime casualties and pollution, it is necessary for urgent action to be taken aimed at strengthening and improving standards and professional qualifications of mariners as a means of securing better guarantees of safety at sea and protection of the marine environment."

In October 1971, the Maritime Safety Committee established a new subcommittee and tasked it with studying the subject and preparing a position to be considered at the Joint IMCO/ILO Committee on Training. The subcommittee met once in 1972 and twice a year since that time. It has generated several provisional documents which were considered at a Joint IMCO/ILO Training Committee meeting in January 1975. Also, two documents have been approved and circulated; these are (1) Recommendation on Basic Principles to be Observed in Keeping a Navigational Watch at Sea and (2) Recommendations on Training and Qualifications of Officers and Crews of Ships Carrying Hazardous or Noxious Chemicals in Bulk. [*For articles on these two documents see, respectively, the September 1974 and February 1975* PROCEEDINGS.] There are several other documents that are in advanced stages of development, outlining proposals for the mandatory minimum requirements for certifications of the various deck officers, engineer officers, and unlicensed ratings. This work is being done in preparation for a conference scheduled for 1978.

There is an impetus to promote safety for foreign-flag ships that are engaged in servicing U.S. ports; therefore, the Coast Guard is very concerned and is vigorously promoting the development of international standards for officers and crews of ships. It is our feeling that this is necessary and the preferred approach, since our waters are vulnerable to casualties involving foreign-flag vessels as well as U.S.-flag shipping. The Coast Guard, in chairing the U.S. delegation to this committee, is working to develop basic training requirements for all officers and crewmembers in firefighting, health hazards, personnel safety, emergency procedures, and periodic refreshers. Advanced training is considered necessary for all officers and selected crewmembers who have duties in connection with certain special or hazardous cargoes such as liquified natural gas, and also for very large crude carriers.

The U.S. Government actively supports the objective of providing qualified personnel. The primary Federal responsibility for insuring training of competent civilian crews abroad merchant ships rests with the Maritime Administration of the Department of Commerce. The Coast Guard has the responsibility of assuring that the individual has adequately assimulated the training and combined it with a certain level of experience before he is certified for advanced ratings. In order to strengthen the conjunctive interest of the two agencies the Commandant of the Coast Guard and the Assistant Secretary for Maritime Affairs, Department of Commerce (MARAD) signed a joint policy statement on 6 September 1974. The purpose of this document is to establish policy and program guidelines to more effectively meet the interlocking statutory responsibilities of the Coast Guard and the Maritime Administration in assuring that ships of the U.S. Merchant Marine are manned by qualified, trained, and efficient citizen personnel. The goal is to combine training and testing into one qualification course conducted in selected areas in the same physical plant. Such a program can do much to eliminate costly duplication of training aids. The ultimate aim is to replace, in the critical skill areas, the pencil and paper tests with realistic proficiency testing. The system will additionally provide training for both MARAD and Coast Guard field personnel.

The recommendations of industry will be solicited and considered and the programs will be evaluated to assure responsiveness to changing needs. Of course it is to be recognized that any new training programs under the joint agency auspices will have safety as a primary objective, including prevention of personal injury or death and avoidance of degradation of the environment, and must insure that there will be no adverse effect upon the general public.

We are presently organizing to continue the minimal firefighting training and field facilities that are available. In conjunction, our efforts are with the Military Sealift Command and the National Fire Prevention and Control Administration to expand this training with new facilities. Here again we look to a close relationship with industry, for the training is of a dual nature—classroom instruction of an approved or acceptable level convenient to the locale of the trainees, supplemented by experience at a field firefighting facility located consistent with environmental concerns. Substantive efforts are envisioned since both international and national action in the near future will make such training mandatory. Accordingly, our joint efforts are also directed to encouraging and assisting in the establishment of approved training courses in the private sector.

Some initial results of the joint policy are the Toledo Radar Simulator Training School on the Great Lakes, which commenced operation in February 1975, and a similar school which is being established in Seattle to serve the Pacific Northwest. Other instruction provided at the schools includes gyro compass and loran navigation. These schools supplement various other approved industry programs in their regions.

In summary, we have historically focused our major effort on the machine and its associated equipment. Now that we have advanced to a well designed, reliably functioning unit it is time to direct an intensified effort to bring the man to the same level of sophistication. The machine's effectiveness truly depends on man's full ability to supervise, operate, and maintain it. Our thinking at this time leads to the conclusion that the greatest return for the dollar invested comes from training the man in the system in simulated situations since the capital investment in vessels speaks against the trial-and-error training of the past.

Today MARAD and Coast Guard are two Government agencies working together to best utilize the resources that are available. We see the private sector with management and labor as welcome sides of the triangle to insure improved personnel performance and accomplish our primary objective of safety. ⚓

Annual Statistics of Casualties

Annually the U.S. Coast Guard presents a statistical summary of commercial vessel casualties that were investigated by Coast Guard marine inspectors during the previous fiscal year. The public, industry, and the Coast Guard have used the findings of these investigations to establish standards and determine the need for legislation to improve the protection of safety of life and property at sea.

The master of a vessel is required by law to report a marine casualty as soon as possible after its occurrence to the Officer in Charge, Marine Inspection, U.S. Coast Guard. Casualties involving commercial vessels are required to be reported to the Coast Guard whenever the casualty results in any of the following:

(a) Actual physical damage to property in excess of $1,500;

(b) Material damage affecting the seaworthiness or efficiency of a vessel;

(c) Stranding or grounding (with or without damage);

(d) Loss of life;

(e) Injury causing any person to remain incapacitated for a period in excess of 72 hours, except injury to harbor workers not resulting in death and not resulting from vessel casualty or vessel equipment casualty.

Every event involving a vessel or her personnel which meets any of the conditions of a reportable casualty is of great concern to the Coast Guard. A number of reportable casualties are not investigated by the Coast Guard each year simply because they are not reported. Thus it is of primary importance that the masters of all vessels ensure that all casualties are reported and investigated. Through the cooperation of the masters, owners, and agents of commercial vessels many of the unreported casualties can be investigated.

The statistical summary represents casualties to commercial vessels which meet the above criteria. It is important to note that the summary represents casualties reported to Coast Guard Headquarters in fiscal year 1975, which ended June 30, 1975. Statistics concerning noncommercial recreational boating accidents can be found in CG–357, Boating Statistics, published by the Office of Boating Safety.

This summary also includes those casualties serious enough by reason of dollar damage or number of deaths and/or injuries to warrant the convening of a Marine Board of Investigation. Included in this year's statistics are the following Marine Boards of Investigation: the collision in the Mississippi River of the Norwegian vessel *Baune* and the U.S. tanker *Keytrader;* the explosion of the Greek tanker *Elias* in Philadelphia; the stranding of the U.S. tanker *Transhuron* off the west coast of India; and the collision of the U.S. tanker *Edgar M. Queeny* with the moored Liberian tanker *Corinthos* at Marcus Hook, Pennsylvania. As a result of these casualties there were 55 deaths and 13 injuries. Dollar damage amounted to $49,820,000 for vessels, cargoes, and property.

This statistical tabulation is intended to summarize the casualty experience for the entire commercial fleet. Because this summary is so all-encompassing the use of the statistics may lead to erroneous conclusions unless the limitations of the data are well understood.

The Information and Analysis Staff of the Office of Merchant Marine Safety will gladly assist in quantifying those limitations for each specific need. Comments and recommendations for changes or improvements to these statistics should be addressed to Commandant (G-MIS/83), U.S. Coast Guard, Washington, D.C. 20590.

STATISTICAL SUMMARY OF CASUALTIES TO COMMERCIAL VESSELS

1 July 1974 to 30 June 1975

Fiscal year 1975

	Nature of casualty																	
	Collision; crossing, meeting, and overtaking	Collision; while anchored, docking, or undocking	Collision, fog	Collisions with piers and bridges	Collisions, all others	Explosion and/or fires—Cargo	Explosion and/or fires—Vessel's fuel	Explosion and/or fire—Boilers, pressure vessel	Explosion and/or fire—Structure, equipment, all others	Grounding with damage	Grounding without damage	Founderings, capsizings and floodings	Heavy weather damage	Cargo damage	Material failure—Structure and equipment	Material Failure—Machinery and engineering equipment	Casualty not otherwise classified	Total
Number of casualties	223	260	14	569	269	16	49	12	129	396	390	438	58	18	170	231	63	3305
Number of vessels involved	684	721	44	1161	438	20	51	12	132	615	504	541	71	22	185	237	113	5551
Number of inspected vessels involved	182	186	12	348	169	13	11	8	23	173	182	47	52	17	115	126	30	1704
Number of uninspected vessels involved	502	535	32	812	269	7	40	4	110	442	322	494	19	5	70	101	83	3847
PRIMARY CAUSE																		
Personnel fault																		
Pilots—State	8	9		21	6					6	22							72
Pilots—Federal	2	1		7	1					2	4	1						18
Licensed Officer—Documented seaman	128	114	11	373	93	2		1	2	150	120	26	3	1	3	2	11	1040
Unlicensed—Undocumented persons	70	33	8	14	22	2	4	1		73	48	31			1		7	314
All others	24	27		40	15	2	1		8	13	31	20		1	9	2	8	201
Error in judgement-calculated risk	2	1			4													7
Restricted maneuvering room	5	8		3	5				1		2						2	26
Storms—Adverse weather	3	45		21	23					40	18	50	61	12	17	2	1	293
Unusual currents		1		8							2	1						12
Sheer, suction, bank cushion	3	3		3	1					3	9							22
Depth of water less than expected	2			2	8					23	63	2						100
Failure of equipment	16	47		58	28	5	34	8	65	56	61	55	2	2	98	221	32	788
Unseaworthy—Lack of maintenance												35			4		1	40
Floating debris—Submerged object				2	44					12	1	39			10		2	110
Inadequate tug assistance	1	2		17	2					1	2	1						26
Fault on part of other vessel or person	417	399	25	576	168	4	4	1	6	218	113	186	5	6	28	7	23	2186
Unknown—Insufficient information	3	31		15	18	5	8	1	51	18	8	94			15	3	26	296
TYPE OF VESSEL INVOLVED																		
Inspected vessels:																		
Passenger and ferry—large	2	2		7	1			1	2	2	5	1	1		2	8	1	35
Passenger and ferry—small	14	10		9	18		4		6	11	11	19	2		11	22	3	140
Freight	25	48	2	75	30	6	2	3	8	24	53	3	26	13	55	63	11	447
Cargo Barge	11	11		15	20		1			18	17	10	3	3	3		2	114
Tankships	7	25	2	28	17		2	4	5	13	38	1	11		27	30	1	211
Tank barges	120	75	7	208	67	7	1			93	51	6	5		13	5	7	665
Public	1	1		1	1				1							2		7
Miscellaneous	2	14	1	5	15		1		1	12	7	7	4	1	4	6	5	85
Uninspected vessels:																		
Fishing	87	69	9	14	46		22	2	54	130	89	184	5		39	70	30	850
Tugs	215	175	11	454	130	2	7		24	172	110	141	9	4	13	13	6	1486
Foreign	49	110	2	57	28	4	3	1	7	35	81	3	1		4	2	7	394
Miscellaneous	151	181	10	287	65	1	8	1	25	105	42	166	4	1	14	16	40	1117
GROSS TONNAGE																		
300 tons or Less	356	327	21	487	240	1	41	2	108	289	230	428	20	5	72	115	46	2788
Over 300 to 1,000 tons	151	139	10	332	62	3	5		7	169	46	82	2		13	7	27	1055
Over 1,000 to 10,000 tons	128	140	8	253	96	8	2	3	7	106	88	26	20	7	34	43	24	903
Over 10,000 tons	49	115	5	88	40	8	3	7	11	51	140	5	29	10	66	72	16	715
LENGTH																		
Less than 100 feet	281	266	16	359	174	1	41	2	97	250	193	372	13	2	64	108	39	2277
100 to less than 300 feet	329	281	23	611	181	9	6	1	18	295	121	156	15	5	31	24	42	2148
300 to less than 500 feet	23	48	1	65	33	1		2	5	15	42	5	6	4	12	21	14	297
500 feet and over	51	126	4	125	50	9	4	7	13	55	149	8	37	11	78	84	18	829
AGE																		
Less than 10 years	327	293	17	504	187	9	24	7	43	231	167	137	32	6	72	107	65	2228
10 to less than 20 years	174	179	13	282	102	6	10		28	158	130	120	12	5	38	39	24	1320
20 to less than 30 years	79	85	8	176	57	3	6	1	24	98	90	121	13	4	30	38	7	838
30 years and over	104	164	6	198	92	2	11	4	38	128	117	163	14	7	45	55	17	1165
LOCATION OF CASUALTY																		
Inland—Atlantic	32	69	2	116	52	6	10	1	28	89	113	72	2		29	26	7	654
Inland—Gulf	79	63	4	149	63	2	8	2	24	75	100	75		1	16	5	9	675
Inland—Pacific	25	26	2	46	56	1	15		39	90	84	87	6	5	34	49	5	570
Ocean—Atlantic	6	6		2	12	3	2	2	5	7	6	19	26	6	21	19	7	149
Ocean—Gulf	13	4	2	3	30		4		8	9	3	43	6		13	23	11	172
Ocean—Pacific	8	2			7		5	3	7	15	2	40	16	5	26	67	3	206
Great Lakes	8	13	1	67	17			2	2	21	24	7			15	28	6	211
Western rivers	49	65	3	167	24	3	4	1	11	83	41	80	1		2	3	11	557
Ocean—Other				2	1		1		1	3	3	5			2			18
Foreign waters	3	12		17	7	1		1	4	4	14	1	1	1	12	11	4	93
TIME OF DAY																		
Daylight	111	146	10	283	132	8	32	8	73	175	204	223	28	8	116	154	36	1747
Nighttime	100	101	4	253	112	5	14	4	46	191	157	186	27	7	42	57	20	1326
Twilight	12	13		33	25	3	3		10	30	29	29	3	3	12	20	7	232

STATISTICAL SUMMARY OF CASUALTIES TO COMMERCIAL VESSELS—Continued

1 July 1974 to 30 June 1975

Fiscal year 1975

	Nature of casualty																	
	Collision; crossing, meeting, and overtaking	Collision; while anchored, docking or undocking	Collision, fog	Collisions with piers and bridges	Collisions, all others	Explosion and/or fires—Cargo	Explosion and/or fires—Vessel's fuel	Explosion and/or fire—Boilers, pressure vessel	Explosion and/or fire—Structure, equipment, all others	Grounding with damage	Grounding without damage	Founderings, capsizings and floodings	Heavy weather damage	Cargo damage	Material failure—Structure and equipment	Material failure—Machinery and engineering equipment	Casualty not otherwise classified	Total
ESTIMATED LOSSES (×1,000)																		
Vessel	18343	16922	690	7770	7868	11085	3483	603	9903	36008	123	23586	1490	94	3893	6276	802	148938
Cargo	1589	4511	26	1852	330	414	7	------	382	3230	22	5311	755	1194	175	750	2356	21803
Property	1105	12067	5	10152	623	9999	21	------	644	527	55	1132	605	30	168	1605	1861	40599
VESSELS TOTALLY LOST																		
Inspected	1	1	------	1	------	1	1	------	1	6	------	9	------	------	------	2	1	24
Uninspected	11	6	------	7	11	1	11	1	50	44	1	148	------	------	7	------	3	301

STATISTICAL SUMMARY OF DEATHS/INJURIES DUE TO A VESSEL CASUALTY

1 July 1974 to 30 June 1975

Fiscal year 1975

	Nature of Casualty																	
	Collision; crossing, meeting, and overtaking	Collision; while anchored, docking, or undocking	Collision, fog	Collisions with piers and bridges	Collisions, all others	Explosion and/or fires—Cargo	Explosion and/or fires—Vessel's fuel	Explosion and/or fire—Boilers, pressure vessel	Explosion and/or fires—Structure, equipment, all others	Grounding with damage	Grounding without damage	Founderings, capsizings and floodings	Heavy weather damage	Cargo damage	Material failure—Structure and equipment	Material failure—Machinery and engineering equipment	Casualty not otherwise classified	Total
Number of casualties	18	10	1	6	3	5	8	1	13	2	2	45	1	------	8	1	7	131
Number of inspected vessels involved	3	2	------	2	------	3	2	------	2	1	------	1	------	------	2	------	1	19
Number of uninspected vessels involved	17	9	1	4	3	2	6	1	11	1	2	44	1	------	6	1	6	115
Number of persons deceased/injured	29/17	31/13	/1	5/5	5/3	14/2	2/9	1/	4/15	4/	1/1	79/3	/1	------	7/3	1/	7/1	190/74
PRIMARY CAUSE																		
Personnel fault:																		
Pilots—State	------	------	------	------	------	------	------	------	/1	------	------	------	------	------	------	------	------	/1
Pilots—Federal	------	------	------	------	------	------	------	------	1/	------	------	4/	------	------	------	------	------	14/11
Licensed Officer—Documented seaman	4/4	2/5	/1	3/	/1	------	/2	------	------	3/	1/	4/	------	------	------	------	------	18/7
Unlicensed—Undocumented persons	4/3	2/	------	1/	3/2	------	------	------	------	------	------	5/	------	------	2/	------	2/	22/5
All others	/1	------	------	/2	------	13/1	------	------	/1	------	------	------	------	------	------	------	------	------
Error in judgement—Calculated risk	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Restricted manuevering room	------	------	------	1/	------	------	/2	------	------	------	------	20/1	/1	------	------	------	------	21/4
Storms—Adverse weather	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Unusual currents	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Sheer, suction, bank cushion	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Depth of water less than expected	------	------	------	------	------	------	2/1	------	3/11	------	/1	5/1	------	------	3/1	1/	1/	15/16
Failure of equipment	/1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1/	1/
Unseaworthy—Lack of maintenance	------	------	------	------	------	------	------	------	------	------	------	2/	------	------	------	------	------	2/
Floating debris—Submerged object	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Inadequate tug assistance	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	52/22
Fault on part of other vessel or person	21/8	27/8	------	/3	------	1/	------	------	/1	1/	------	2/1	------	------	/1	------	------	45/8
Unknown—Insufficient information	------	------	------	------	2/	/1	/4	1/	/1	------	------	37/	------	------	2/1	------	3/1	
TYPE OF VESSEL INVOLVED																		
Inspected vessels:																		
Passenger and ferry—large	------	/1	------	------	------	1/	------	------	------	------	------	/1	------	------	------	------	------	/1
Passenger and ferry—small	/2	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1/3
Freight	/1	------	------	/1	------	------	/2	------	1/2	------	------	------	------	------	1/	------	------	2/6
Cargo barge	------	------	------	------	------	------	------	------	------	1/	------	------	------	------	------	------	------	1/
Tankships	2/	1/4	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	3/4
Tank barges	------	------	------	/2	------	/1	/2	------	------	------	------	------	------	------	------	------	------	/5
Public	------	------	------	------	------	------	------	------	------	------	------	/1	------	------	1/	------	/1	1/4
Miscellaneous	------	------	------	------	------	------	/2	------	------	------	------	------	------	------	------	------	------	------
Uninspected vessels:																		
Fishing	0/	1/1	------	1/1	3/2	------	2/1	------	2/7	3/	1/	44/1	/1	------	3/3	------	4/	70/17
Tugs	1/7	1/2	------	3/1	------	------	/2	------	1/	------	/1	8/	------	------	------	------	------	14/13
Foreign	14/4	24/5	------	------	------	13/1	------	1/	/2	------	------	------	------	------	------	------	1/	53/12
Miscellaneous	6/3	4/	/1	1/	2/1	------	------	------	/4	------	------	27/	------	------	2/	1/	2/	45/9

STATISTICAL SUMMARY OF DEATHS/INJURIES DUE TO A VESSEL CASUALTY—Continued

1 July 1974 to 30 June 1975

Fiscal year 1975

	Nature of Casualty																	
	Collision; crossing meeting and overtaking	Collision, while anchored, docking or undocking	Collision, fog	Collisions with piers and bridges	Collisions, all others	Explosion and/or fires—Cargo	Explosion and/or fires—Vessel's fuel	Explosion and/or fire—Boilers, pressure vessel	Explosion and/or fires—Structure, equipment, all others	Grounding with damage	Grounding without damage	Foundorings, capsizings and floodings	Heavy weather damage	Cargo damage	Material failure—Structure and equipment	Material failure—Machinery and engineering equipment	Casualty not otherwise classified	Total
PARTICULARS OF PERSON DECEASED/INJURED																		
Papers of deceased/injured:																		
Licensed by Coast Guard	-----	/1	-----	/3	-----	-----	/2	-----	1/	-----	/1	3/	-----	-----	-----	-----	-----	4/7
Documented by Coast Guard	4/5	2/4	/1	-----	-----	1/1	/2	-----	/2	1/	-----	-----	-----	-----	-----	-----	-----	8/15
No license or document	10/8	5/3	-----	2/2	5/3	/1	2/5	-----	3/11	3/	1/	76/3	-----	-----	6/3	1/	7/1	121/40
Other—Unknown—Foreign	15/4	24/5	-----	3/	-----	13/	-----	1/	/2	-----	-----	-----	/1	-----	1/	-----	-----	57/12
Status or capacity on vessel:																		
Passenger	4/1	4/	-----	-----	-----	-----	-----	-----	/1	-----	-----	2/	-----	-----	/1	-----	-----	10/3
Longshoreman—Harbor worker	-----	-----	-----	-----	-----	-----	-----	-----	1/	-----	-----	5/	-----	-----	2/	-----	1/	9/
Crewmember	24/12	25/13	/1	1/4	5/3	9/	2/6	1/	3/12	4/	1/1	63/3	/1	-----	3/2	-----	4/1	145/59
Other	1/4	2/	-----	4/1	-----	5/2	/3	-----	/2	-----	-----	9/	-----	-----	2/	1/	2/	26/12
Activity engaged in:																		
Off duty	/1	2/4	/1	-----	1/	-----	1/	-----	2/2	-----	-----	3/	-----	-----	/1	-----	-----	9/9
Deck department duties	11/6	7/2	-----	1/3	4/3	1/	1/7	-----	/6	2/	/1	58/2	/1	-----	1/1	-----	3/	89/32
Engine department duties	3/	3/1	-----	-----	-----	-----	-----	1/	1/4	1/	-----	/1	-----	-----	-----	-----	/1	9/7
Stewards department duties	/1	/1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	/2
Handling cargo	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1/	1/
Fishing	1/	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	6/	-----	-----	2/1	-----	1/	10/1
Drills	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2/	-----	-----	-----	-----	-----	2/
Passenger	4/1	4/	-----	-----	-----	-----	-----	-----	/1	-----	-----	-----	-----	-----	-----	-----	-----	8/2
Other and unknown	10/8	15/5	-----	4/2	-----	13/2	/2	-----	1/2	1/	1/	10/	-----	-----	4/	1/	2/	62/21
Location of vessel:																		
At anchor/at dock	-----	24/8	-----	/1	-----	14/2	2/7	1/	2/5	-----	-----	6/	-----	-----	2/1	1/	3/1	55/25
Underway	29/16	7/5	/1	5/4	5/3	-----	/3	-----	2/10	4/	/1	73/3	/1	-----	4/2	-----	4/	133/48
Unknown	/1	-----	-----	-----	-----	-----	-----	-----	-----	-----	1/	-----	-----	-----	1/	-----	-----	2/1
PART OF BODY INVOLVED																		
Head and upper limbs	/3	-----	-----	/2	-----	-----	/3	1/	/1	-----	/1	-----	-----	-----	3/	1/	2/1	7/11
Back and lower limbs	/4	1/4	-----	1/1	/1	-----	/1	-----	/1	-----	-----	/1	-----	-----	/2	-----	-----	2/15
Chest	1/1	/1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1/2
Extremities	/4	-----	/1	/1	-----	/1	/2	-----	2/10	-----	-----	/2	/1	-----	/1	-----	-----	2/23
Illness	-----	-----	-----	/1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	/1
Drowning	12/	3/	-----	4/	4/1	1/	1/	-----	-----	2/	1/	67/	-----	-----	2/	-----	3/	99/1
Unspecified and miscellaneous	16/5	27/8	-----	-----	1/1	13/1	1/3	-----	2/3	2/	-----	12/	-----	-----	2/	-----	3/	79/21

STATISTICAL SUMMARY OF DEATHS ON BOARD COMMERCIAL VESSELS

(Not Involving a Vessel Casualty)

1 July 1974 to 30 June 1975

Fiscal year 1975

	Nature of death																					
	Natural cause	Homicide	Suicide	Disappearance	Slips and falls—Ladders	Slips and falls—Gangways	Slips and falls—On deck	Slips and Falls—Other	Falls from vessel—Into water	Falls into holds or tanks	Struck by objects: falling, dropped or moving	Exposure and asphyxiation	Struck against, crushed, bumped into objects	Operating machinery and tools	Burns and scalds (other than electrical)	Electrical shock and burns	Caught in lines, chains, or wire ropes	Pinching and crushing	Heavy weather	Overexertion, sprains and strains	Cuts, lacerations, bruises and punctures	Aftereadons and misconduct	Unknown or insufficient information	Total
Number of deaths	144	2	12	----	5	2	1	9	113	4	15	11	1	----	2	4	4	8	----	----	----	3	8	348
Number of inspected vessels deaths	110	1	5	----	3	1	1	6	22	2	5	5	1	----	1	1	4	4	----	----	----	2	3	177
Number of uninspected vessels deaths	34	1	7	----	2	1	----	3	91	2	10	6	----	----	1	3	----	4	----	----	----	1	5	171
CAUSE OF DEATH																								
Intoxication	----	1	----	----	2	----	1	1	5	----	----	----	----	----	----	----	----	----	----	----	----	----	1	11
Physical deficiency or handicap	143	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	144
Unsafe movement or posture	----	----	----	----	1	1	----	3	53	2	----	----	----	----	----	----	----	2	----	----	----	----	1	63
Psychological-immaturity, insanity	----	----	12	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	1	1	15
Unsafe practice	----	----	----	----	----	----	----	----	5	----	2	2	----	----	----	----	----	1	----	----	----	----	----	10
Violation of law or regulation	1	1	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3
Human errors	----	----	----	----	1	----	----	1	17	1	1	----	1	----	2	1	1	2	----	----	----	2	----	30
Decks—slippery or cluttered	----	----	----	----	----	1	----	----	6	----	----	----	----	----	----	1	----	1	----	----	----	----	----	9
Weather conditions	----	----	----	----	1	----	----	----	8	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9

STATISTICAL SUMMARY OF DEATHS ON BOARD COMMERCIAL VESSELS—Continued

(Not Involving a Vessel Casualty)

1 July 1974 to 30 June 1975

Fiscal year 1975

	Nature of death																						
	Natural cause	Homicide	Suicide	Disappearance	Slips and falls—Ladders	Slips and falls—Gangways	Slips and falls—On deck	Slips and Falls—Other	Falls from vessel—Into water	Falls into holds or tanks	Struck by ob'ects: falling, dropped or moving	Exposure and asphyxiation	Struck against, crushed, bumped into ob'ects	Operating machinery and tools	Burns and scalds (other than electrical)	Electrical shock and burns	Caught in lines, chains, or wire ropes	Pinching and crushing	Heavy weather	Overexertion, sprains and strains	Cuts, lacerations, bruises and punctures	Altercations and misconduct	Unknown or insufficient information	Total
Poor maintenance or housekeeping																							
Inadequate lighting																							
Inadequate rails or guards																							
Failure of equipment								2			6	3				1							11
Inadequate supervision								1	3	1	2	1					2	1					11
Inadequate life preservers									7								1						8
Inadequate tools or equipment											1												1
Inadequate protective equipment								1	2		1	3						1					8
Improper use of tools or equipment																1							1
Miscellaneous causes									5		2	2										5	14
TYPES OF VESSELS INVOLVED																							
Inspected vessels:																							
Passenger and ferry—large	13		1					1	2														17
Passenger and ferry—small	22								6		1											1	2	32
Freight ships and barges	59	1	1		2		1	2	9	2	1		1					1					1	81
Tankships and barges	16		2		1			1	3			5			1	1						1		31
Public						1			2															3
Miscellaneous			1					2			3							3						9
Uninspected vessels:																								
Fishing	8	1	2					2	30		1	4			1		3	1				1	2	56
Tugs	11		1						25							2	1	1						41
Foreign	5		2		1	1			9	2	2	1						1					1	25
Miscellaneous	10		2		1			1	27		7	1				1		1				2		53
TIME OF DAY																								
Daytime	89	2	7		2	1	1	8	61	3	9	11	1		1	2	3	6				1	5	213
Nighttime	45		4		3	1		1	40	1	5					2		1				1	2	106
Twilight	10		1						12		1				1		1	1				1	1	29
PARTICULARS OF DECEASED																								
Papers of deceased:																								
Licensed by Coast Guard	29		1		1			1	7			1	1		1	1		1					2	46
Documented by Coast Guard	59	1	4		2	1	1	3	21	2	2	2				1		2				1	1	103
No license or document	56	1	7		2			5	85	2	13	7			1	2	4	5				2	5	197
Other—Unknown—Foreign						1						1												2
Status or capacity on vessel:																								
Passenger	36		1						9													1	1	48
Longshoreman—Harbor worker	2		1						3	1	1	1					1	3						13
Crewmember	104	1	10		4	2	1	7	92	3	9	7	1		1	4	2	4				2	7	261
Other	2	1			1			2	9		5	3			1		1	1						26
Activity engaged in:																								
Off duty	44		3						14	1												1	1	64
Deck department duties	32	1	1		2			5	52	1	7	4				3		4					4	116
Engine department duties	11		2		1				6	1	2	3	1		1									29
Stewards department duties	5		1		1	1	1																	9
Handling cargo											2							1						3
Fishing	18		1						12			1					2	1				1		38
Drills																								
Passenger	16		1						7														1	25
Other and unknown	18	1	3		1	1		4	22	1	4	3			1	1	2	2				1	2	67
Location of vessel:																								
At dock anchor	44	1			4	2	1	4	41	4	4	3			1	3	1	3					2	118
Underway	100	1	12		1			5	72		11	8	1		1	1	3	5				3	6	230
Unknown																								
PART OF BODY INVOLVED																								
Head	2				1		1	4	2	3	9						1	2				1		26
Back																								
Chest	1	1	5								2							1						5
Extremities	1					1		1		1								2						6
Illness	128								1							1								130
Drowning	2				3	1		1	104		1	1					3	1				2		124
Unspecified and miscellaneous	10	1	7		1			3	6		3	10	1		2	3		2					8	57

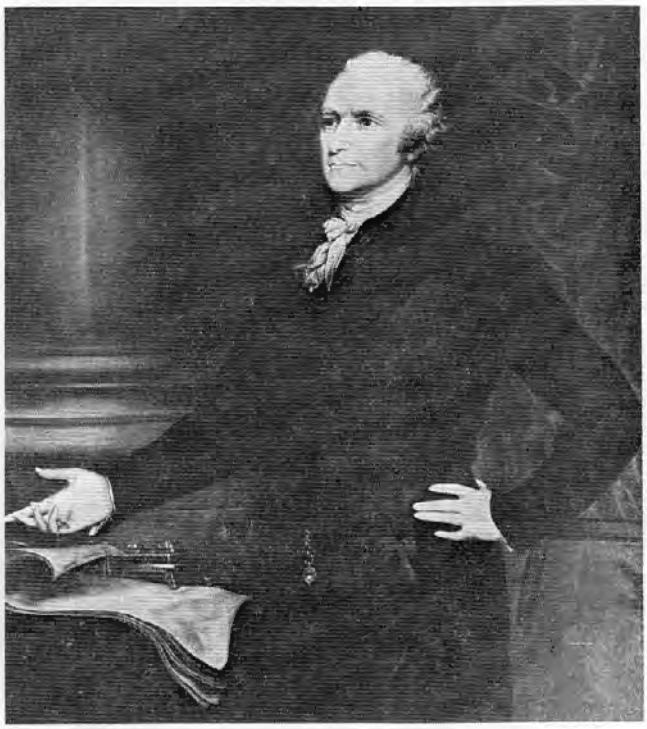
STATISTICAL SUMMARY OF PERSONNEL INJURIES ON BOARD ALL COMMERCIAL VESSELS (Not Involving a Vessel Casualty)

1 July 1974 to 30 June 1975

Fiscal year 1975

	Nature of injury																		
	Slips and falls—Ladders	Slips and falls—Gangways	Slips and falls—On deck	Slips and falls—Other	Falls from vessel—into water	Falls into holds or tanks	Struck by objects; falling, dropped or moving	Exposure and asphyxiation	Struck against, crushed, bumped into objects	Operating machinery and tools	Burns and scalds (other than electrical)	Electrical shock and burns	Caught in lines, chains or wire ropes	Pinching and crushing	Heavy weather	Overexertion, sprains and strains	Cuts, lacerations, bruises and punctures	Altercations and misconduct	Unknown or insufficient information	Total
Number of injuries	120	19	129	209	5	17	223	11	50	1	52	7	52	108	1	83	48	49	32	1216
Number of inspected vessels injuries	107	19	116	178	3	10	169	5	44	1	45	7	30	87	1	76	40	47	24	1009
Number of uninspected vessels injuries	13	----	13	31	2	7	54	6	6	----	7	----	22	21	----	7	8	2	8	207
CAUSE OF INJURY																				
Intoxication	6	4	4	6	----	----	----	----	----	----	----	----	----	2	----	2	3	10	2	39
Physical deficiency or handicap	1	----	4	5	----	----	----	1	1	----	2	----	----	1	----	13	2	----	12	42
Unsafe movement or posture	2	1	3	7	----	2	3	----	----	----	----	----	----	----	----	11	1	----	----	30
Psychological-immaturity, insanity	----	----	1	1	----	----	1	----	1	----	----	----	----	----	----	----	2	35	1	42
Unsafe practice	3	----	----	----	----	----	5	----	2	----	----	----	2	3	----	1	----	----	1	17
Violation of law or regulation	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3	----	3
Human errors	84	12	63	125	2	11	113	1	37	1	25	4	33	75	----	45	32	1	13	677
Decks—Slippery or cluttered	8	----	35	18	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	62
Weather conditions	3	1	14	27	----	----	7	----	5	----	1	----	1	14	1	1	----	----	1	76
Poor maintenance or housekeeping	1	1	1	2	----	----	3	----	----	----	----	----	----	1	----	----	----	----	----	9
Inadequate lighting	----	----	----	1	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	3
Inadequate rails or guards	----	----	----	1	----	1	----	----	1	----	----	----	1	1	----	----	----	----	----	5
Failure of equipment	2	----	3	2	----	----	46	----	1	----	12	2	4	1	----	----	3	----	----	76
Inadequate supervision	1	----	1	1	2	----	6	4	----	----	5	----	3	4	----	5	----	----	----	32
Inadequate life preservers	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Inadequate tools or equipment	----	----	----	1	----	----	2	----	----	----	----	----	1	2	----	----	----	----	----	6
Inadequate protective equipment	----	----	----	3	----	----	10	4	1	----	3	----	3	1	----	1	1	----	1	28
Improper use of tools or equipment	7	----	----	5	----	----	8	1	1	----	3	1	4	3	----	2	4	----	----	49
Miscellaneous causes	2	----	----	4	1	----	9	----	----	----	1	----	----	----	----	2	----	----	1	20
TYPES OF VESSELS INVOLVED																				
Inspected vessels:																				
Passenger and ferry—large	6	4	6	8	----	----	5	----	1	----	3	----	1	2	----	1	----	----	----	37
Passenger and ferry—small	2	----	4	6	1	1	----	----	----	----	----	----	1	1	----	----	1	----	3	20
Freight ships and barges	77	14	88	137	2	7	136	5	40	1	31	7	21	65	1	61	32	38	17	780
Tankships and barges	14	1	15	20	----	2	20	----	1	----	8	----	3	11	----	10	6	8	3	122
Public	3	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	1	----	----	5
Miscellaneous	5	----	3	7	----	----	8	----	1	----	3	----	4	8	----	4	----	1	1	45
Uninspected vessels:																				
Fishing	----	----	2	3	----	1	17	----	3	----	3	----	13	10	----	2	5	1	5	65
Tugs	6	----	6	22	2	5	25	1	3	----	4	----	5	5	----	3	2	----	1	90
Foreign	2	----	----	1	----	----	1	4	----	----	----	----	----	----	----	----	----	----	2	10
Miscellaneous	5	----	5	5	----	1	11	1	----	----	----	----	4	6	----	2	1	1	----	42
TIME OF DAY																				
Daytime	74	8	82	139	1	10	156	10	30	1	36	5	40	83	1	65	35	17	22	815
Nighttime	39	8	36	57	2	6	54	----	18	----	15	----	8	24	----	17	10	26	7	329
Twilight	7	3	11	13	2	1	13	1	2	----	1	2	4	1	----	1	3	4	3	72
PARTICULARS OF PERSONS INJURED																				
Papers of person injured:																				
Licensed by Coast Guard	23	3	20	32	----	2	26	1	13	1	18	3	4	10	----	9	7	5	5	182
Documented by Coast Guard	79	14	92	136	3	9	146	5	32	----	24	2	27	67	1	65	32	43	15	792
No license or document	18	2	17	41	2	6	51	5	5	----	10	2	21	31	----	9	9	1	12	242
Other—Unknown—Foreign	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Status or capacity on vessel:																				
Passenger	2	2	6	15	----	1	1	----	----	----	----	----	----	2	----	----	----	----	2	31
Longshoreman—Harbor worker	3	----	3	1	2	1	1	----	----	----	4	1	1	----	----	----	1	----	1	19
Crewmember	110	----	118	186	3	15	209	10	50	1	46	6	48	99	1	83	46	49	26	1106
Other	5	17	2	7	----	----	12	1	----	----	2	----	3	7	----	----	1	----	3	60
Activity engaged in:																				
Off duty	4	5	3	3	----	----	1	----	----	----	2	----	----	1	----	1	3	7	1	31
Deck department duties	34	4	65	102	2	7	141	6	21	----	9	1	35	42	----	43	10	10	8	540
Engine department duties	43	2	30	42	2	8	45	2	15	1	28	6	7	26	----	25	17	12	4	315
Stewards department duties	21	1	17	25	----	----	8	2	9	----	9	----	1	22	----	10	8	13	4	150
Handling cargo	----	----	1	----	----	----	3	----	----	----	----	----	----	----	----	----	1	----	----	5
Fishing	2	----	1	3	----	1	8	----	1	----	2	----	6	4	----	1	4	----	1	34
Drills	----	----	1	3	----	----	2	----	----	----	----	----	----	1	----	----	----	----	----	7
Passenger	2	1	7	12	1	1	1	----	----	----	----	----	----	2	----	----	----	----	2	29
Other and unknown	14	6	4	19	----	----	14	1	4	----	2	----	3	10	1	3	5	7	12	105
Location of vessel:																				
At dock/anchor	45	16	50	84	2	10	104	6	26	----	27	4	22	38	----	39	24	31	20	548
Underway	75	3	79	125	3	7	119	5	24	1	25	3	30	70	1	44	24	18	12	668
Unknown	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Part of body injured:																				
Eye	2	----	2	7	----	----	14	2	2	----	4	1	----	----	----	1	2	4	2	43
Head	10	2	10	12	----	----	20	----	6	----	----	----	----	----	----	1	----	8	----	69
Back	25	1	19	31	----	1	6	1	1	----	1	----	----	1	----	47	----	4	3	141
Neck and shoulder	2	1	6	10	1	1	6	----	4	----	----	----	1	1	----	2	1	----	3	39
Chest	1	----	1	1	1	1	2	----	2	----	1	----	----	----	----	----	----	2	5	17
Abdomen and hip	4	1	13	13	----	2	4	----	2	----	2	----	----	2	----	7	1	----	----	51
Extremities	68	13	76	124	2	12	165	3	33	1	38	6	50	104	1	20	43	28	10	797
Unspecified miscellaneous	8	1	2	11	1	----	6	5	----	----	6	----	1	----	----	5	1	3	9	59

HERITAGE



Alexander Hamilton was appointed by President George Washington to be the first Secretary of the Treasury, upon establishment of the Treasury Department by act of the First Congress to function under the Treasury from September 11, 1789, to January 31, 1795.

Alexander Hamilton was born in the West Indies on January 11, 1757. In 1772 he was sent to New York to continue his formal education, eventually attending King's College, now Columbia University. Hamilton was fatally wounded on July 11, 1804 during a duel with Aaron Burr, and died in New York City the following day.

As Secretary, Hamilton's term was marked by bold innovation and statesmanlike planning. His financial programs provided public credit and gave the infant Nation a circulating medium and financial machinery. In office barely 1 month, he proposed the idea of a seagoing branch of the military to secure the revenue against contraband, which the Congress authorized the following summer. The proposal created a Revenue Marine force of 10 small cutters. The small force flourishes today as the U.S. Coast Guard. Hamilton played a crucial role in creating the U.S. Navy and proposed creation of a Naval Academy, an idea in advance of his time.

His "Report on the Public Credit" (January 14, 1790) constituted a watershed in American history, marking the end of an era of bankruptcy and repudiation. Provisions for assumption of both the domestic and foreign debts were strongly opposed by Madison and Jefferson, but Hamilton's plan carried overwhelmingly. Hamilton advocated assumption by the Federal Government of the debts of the States. This plan was also opposed by Madison and Jefferson; but the dispute was settled in a private meeting held on July 21, 1790, when Hamilton agreed to the future location of the Nation's Capital on the Potomac River. In return Jefferson supported assumption.

Hamilton's perceptive and creative mind coupled with his driving ambition to set his ideas in motion resulted in such proposals to the Congress as a plan for raising a revenue including import duties and excise taxes; funding of the revolutionary debt; suggestions on navigation laws; charter by Congress of the first bank of the United States; and the placing of the revenues on a firm basis. Strong opposition to the collection of his excise tax on spirits erupted into the "Whiskey Rebellion" in Western Pennsylvania and Virginia in 1794. Hamilton felt that the need for compliance with this law was so urgent that he accompanied General Henry Lee and his troops as an advisor to help put down the insurrection.

Hamilton's great qualities of mind and spirit revealed themselves early. While in his teens, he took a firm stand on the side of the patriots, and became a leader in the movement advocating independence. Before he was 20, Hamilton commanded artillery troops in several important battles, then transferred to headquarters as aide-de-camp to General Washington. He left Washington to take command of an infantry regiment which took part in the siege of Yorktown. At the age of 25 he served as a member of the Continental Congress (1782–83), then retired to open his own law office in New York City. His public career continued simultaneously with his attendance as a delegate to the Annapolis Convention (1786), service in the New York State Legislature, attendance at the Philadelphia Convention (1787) which studied and subsequently adopted the Constitution of the United States (September 2, 1789), and another term (1788) in what proved to be the last Continental Congress under the old Articles of Confederation. Hamilton's resignation as Treasury Secretary did not remove him from public life. With resumption of his law practice, he remained close to Washington as both advisor and friend. ⚓

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

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TO ALL READERS OF THE PROCEEDING OF THE MARINE SAFETY COUNCIL:

The Office of Merchant Marine Safety is engaging in an extensive effort to revise enclosure (1) of Navigation and Inspection Circular No. 2–63, entitled "Guide for Inspection and Repair of Lifesaving Equipment." The purpose of this guide is to provide direction to individuals and inspection personnel when repairing items of livesaving equipment.

There have been many changes over the years regarding materials used and construction methods which require updating of the guide. This effort cannot be comprehensive without knowledge of those repairs normally required of shipboard lifesaving equipment.

You, the seamen, engineers, masters, pilots, shipowners, inspection personnel, manufacturers, and repair facilities are the people we look to for comments and suggestions. Providing us with details of your experiences will enable us to develop a new guide covering all aspects of lifesaving equipment inspection and repair.

By writing your comments on the reverse side of this page and dropping it in the mail to us, you will be making an important contribution to the safety of your life at sea.

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COMMENTS

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MARINE SAFETY COUNCIL MEMBERSHIP

On July 25, Captain C. Kirk Greiner, Jr., became Executive Secretary of the Marine Safety Council, succeeding the retiring Captain Richard Brooks. Captain Greiner has broad experience in the marine inspection field, and prior to assuming his present post served alternately as Senior Inspector of Materiel, Senior Investigating Officer, and Senior Inspector of Personnel in the Marine Inspection Office, Seattle.

The Executive Secretary, as head of the seven-person officer and clerical staff of the Council, serves as the focal point of the Coast Guard public regulatory system. In administering the day-to-day business of the Council, he is responsible for establishing procedures and coordinating the efforts of technical and legal personnel in the development of regulatory projects, and for maintaining the pertinent records, including comments from the public in response to notices of proposed rulemaking. In addition he serves as executive secretary of four public advisory committees to the Council.

Born in Philadelphia in 1931, Greiner was graduated from Staples High School in Westport, Conn., in 1949. In 1953 he was graduated from the Coast Guard Academy with a B.S. degree and a commission as ensign. His first tour of duty was on board the 327-foot Cutter *Campbell* in both deck and engineering billets until September 1955, followed by duty as Assistant Engineer on board that vessel's sister ship, the *Spencer,* both operating out of New York. From May 1956 to July 1957, he commanded the Coast Guard Loran Station at Cape Sarichef, Alaska. During the following year he was stationed at the Coast Guard Base at Alameda, Calif., as Engineering Officer and Industrial Manager.

While next stationed at the Coast Guard Marine Inspection Office, New York, from July 1958 to May 1962, he gained actual experience as Boiler Inspector and Marine Investigating Officer. After that he served for 3 years as a Deck and Boiler Inspector, Marine Investigating Officer, and Senior Inspector of Materiel at the Marine Inspection Office in Juneau, Alaska. Also during part of that period he was assigned the collateral duty of district director of the Coast Guard Auxiliary.

After serving as Engineer Officer of the 327-foot Cutter *Taney* out of Alameda, Calif., from July 1965 to September 1967, Commander Greiner was assigned as Officer in Charge of the Merchant Marine Indoctrination School and as Senior Watch Officer at the Coast Guard Reserve Training Center, Yorktown, Va. In June 1968, he was reassigned as Executive Officer of that Training Center, and served in that capacity until transferred to the Marine Inspection Office in Seattle in 1970. During

the latter assignment he attended evening law school at the University of Puget Sound, and is now completing his studies for a Juris Doctor degree in law at Georgetown Law School in Washington, D.C.

He is a member of the Propeller Club and the Society of Port Engineers.

Captain Greiner is married to the former June Bergstrom of Birsay, Saskatchewan, Canada. They have two children, Kirk, 16, and Kim, 14. ⚓

Nautical Queries

This month's questions are taken from examinations presently in use for 2d and 3d assistant engineers and towboat operators.

Engineers

1. Diesel engine air starting valve timing is controlled by
   A. a hydraulic rotary valve.
   B. individual cams and valve gear.
   C. engine operating speed.
   D. an air manifold.

2. The cranking time required to start a diesel engine would be most affected by the
   A. air receiver capacity.
   B. lubricating oil pressure.
   C. engine compression ratio.
   D. engine operating speed.

3. If a diesel engine failed to start when starting air is applied, the cause would be
   A. low lubricating oil pressure.
   B. excessive intake valve lift.
   C. high compression pressure.
   D. late fuel injection timing.

4. If a cold diesel engine cannot be turned over at a normal starting speed, the
   A. air-intake temperature may too cold.
   B. lube oil may be too cold.
   C. fuel injection timing may be retarded.
   D. fuel injection pressure may be too low.

5. Reduction gear teeth that are pitted and have a deep blue color with evidence of overheating have probably been operated with
   A. inadequate lubrication.
   B. extreme misalignment.
   C. improper warm-up.
   D. excessive speed.

Towboat Operators

1. A vessel on Inland waters that sounds three short blasts on the whistle is indicating the vessel's engines are going
I. astern.
II. full speed astern.
   A. I only
   B. II only
   C. Either I or II
   D. Neither I nor II

2. Blood flowing from a cut artery would appear
   A. dark red with a steady flow.
   B. bright red with a steady flow.
   C. bright red and in spurts.
   D. dark red and in spurts.

3. Which statement(s) is (are) true concerning a "sea buoy" which marks the center of a channel entrance?
1. It is marked with black and white vertical stripes.
2. It may have either a red or green light.
   A. 1 only
   B. 2 only
   C. Both 1 and 2
   D. Neither 1 nor 2

4. A vessel proceeding along the bank of a channel or canal has the tendency to
   A. continue in line with the bank.
   B. hug the bank.
   C. sheer away from bank.
   D. increase speed.

5. You are proceeding parallel to the coast. Lighthouse A is abeam to port, Lighthouse B is 40° off your port bow and both lighthouses are clearly displayed on your radar. What would result in the most reliable fix?
   A. Range and bearing to A
   B. Bearing to A and B
   C. Ranges to A and B
   D. Bearing to A and range to B

ANSWERS

Engineers
1. B 2. C 3. D 4. B 5. A
Towboat Operators
1. C 2. C 3. A 4. C 5. C

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 Saturday, Sunday, and 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 $5.00 per month or $50 per year, payable in advance. The charge for individual copies is 75 cents for each issue, or 75 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.

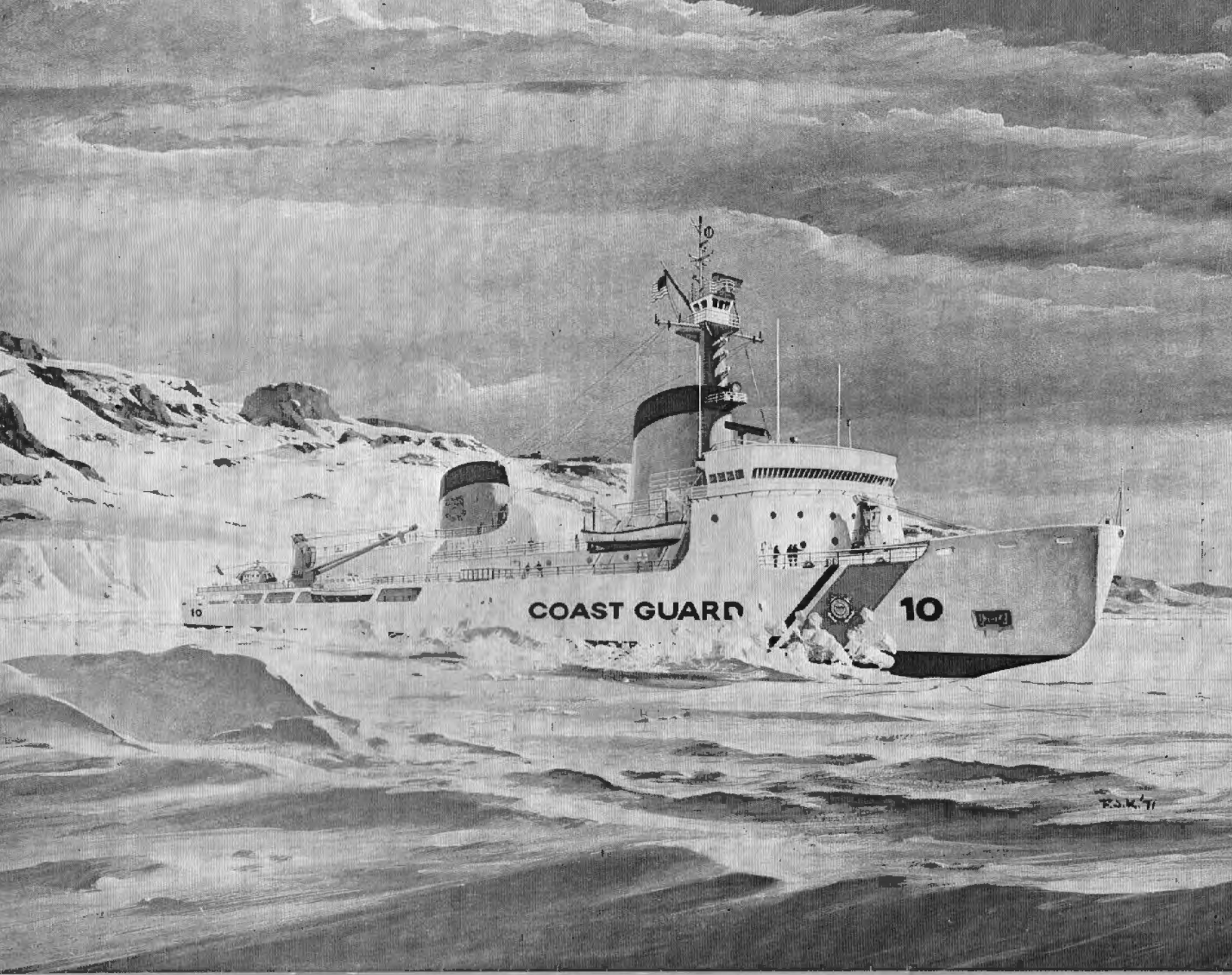
CG No.	TITLE OF PUBLICATION
101	Specimen Examinations for Merchant Marine Deck Officers (Chief Mate and Master) (1–1–74).
101–1	Specimen Examinations for Merchant Marine Deck Officers (2d and 3d mate) (10–1–73).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (4–1–72). F.R. 7–21–72, 12–1–72, 11–14–74, 6–18–75.
*115	Marine Engineering Regulations (6–1–73). F.R. 6–29–73, 3–8–74, 5–30–74, 6–25–74, 8–26–74, 6–30–75.
123	Rules and Regulations for Tank Vessels (1–1–73). F.R. 8–24–73, 10–3–73, 10–24–73, 2–28–74, 3–18–74, 5–30–74, 6–25–74, 1–15–75, 2–10–75, 4–16–75, 4–22–75, 5–20–75, 6–11–75, 8–20–75, 9–2–75, 10–14–75.
169	Rules of the Road—International—Inland (8–1–72). F.R. 9–12–72, 3–29–74, 6–3–74, 11–27–74, 4–28–75, 10–22–75.
*172	Rules of the Road—Great Lakes (7–1–72). F.R. 10–6–72, 11–4–72, 1–16–73, 1–29–73, 5–8–73, 3–29–74, 6–3–74, 11–27–74, 4–16–75, 4–28–75, 10–22–75.
*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 (3–1–73).
*176	Load Line Regulations (2–1–71). F.R. 10–1–71, 5–10–73, 7–10–74, 10–14–75.
182	Specimen Examinations for Merchant Marine Engineer Licenses (1–1–74).
182–1	Specimen Examinations for Merchant Marine Licenses (2d and 3d Assistant) (4–1–75).
184	Rules of the Road—Western Rivers (8–1–72). F.R. 9–12–72, 12–28–72, 3–8–74, 3–29–74, 6–3–74, 11–27–74, 4–16–75, 4–28–75, 10–22–75.
190	Equipment List (8–1–72). F.R. 8–9–72, 8–11–72, 8–31–72, 9–14–72, 10–19–72, 11–8–72, 12–5–72, 1–15–73, 2–6–73, 2–26–73, 3–27–73, 4–3–73, 4–12–73, 4–26–73, 6–1–73, 8–1–73, 9–18–73, 10–5–73, 11–26–73, 1–17–74, 2–28–74, 3–25–74, 4–17–74, 7–2–74, 7–17–74, 9–5–74, 10–22–74, 11–27–74, 12–3–74, 12–30–74, 1–15–75, 1–21–75, 2–13–75, 2–19–75, 3–18–75, 3–19–75, 4–9–75, 4–16–75, 5–1–75, 5–7–75, 6–2–75, 6–25–75, 7–22–75, 7–24–75, 8–1–75, 8–20–75, 9–23–75, 10–8–75, 11–21–75.
*191	Rules and Regulations for Licensing and Certification of Merchant Marine Personnel (6–1–72). F.R. 12–21–72, 3–2–73, 3–5–73, 5–8–73, 5–11–73, 5–24–73, 8–24–73, 10–24–73, 5–22–74, 9–26–74, 3–27–75, 6–2–75, 7–24–75, 8–13–75.
*200	Marine Investigation Regulations and Suspension and Revocation Proceedings (5–1–67). F.R. 3–30–68, 4–30–70, 10–20–70, 7–18–72, 4–24–73, 11–26–73, 12–17–73, 9–17–74, 3–27–75, 7–28–75, 8–20–75.
*227	Laws Governing Marine Inspection (3–1–65).
*239	Security of Vessels and Waterfront Facilities (5–1–74). F.R. 5–15–74, 5–24–74, 8–15–74, 9–5–74, 9–9–74, 12–3–74, 1–6–75, 1–29–75, 4–22–75, 7–2–75, 7–7–75, 7–24–75, 10–1–75, 10–8–75.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (4–1–73). F.R. 12–22–72, 6–28–73, 6–29–73, 8–1–73, 10–24–73, 12–5–73, 3–18–74, 5–30–74, 6–24–74, 1–15–75, 2–10–75, 8–20–75.
*258	Rules and Regulations for Uninspected Vessels (5–1–70). F.R. 1–8–73, 3–2–73, 3–28–73, 1–25–74, 3–7–74.
*259	Electrical Engineering Regulations (6–1–71). F.R. 3–8–72, 3–9–72, 8–16–72, 8–24–73, 11–29–73, 4–22–75.
*266	Rules and Regulations for Bulk Grain Cargoes (5–1–68). F.R. 12–4–69, 8–20–75.
268	Rules and Regulations for Manning of Vessels (12–1–73).
293	Miscellaneous Electrical Equipment List (7–2–73).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (7–1–72). F.R. 7–8–72.
323	Rules and Regulations for Small Passenger Vessel (Under 100 Gross Tons) (9–1–73). F.R. 1–25–74, 3–18–74, 9–20–74, 2–10–75.
329	Fire Fighting Manual for Tank Vessels (1–1–74).
439	Bridge-to-Bridge Radiotelephone Communications (12–1–72). F.R. 12–28–72, 3–8–74, 5–5–75.
*467	Specimen Examinations for Uninspected Towing Vessel Operators (10–1–74).

CHANGES PUBLISHED DURING NOVEMBER 1975

The following have been modified by Federal Registers:

CG–190, Federal Register of November 21.

*Due to budget constraints or major revision projects, publications marked with an asterisk are out of print. Most of these pamphlets reprint portions of Titles 33 and 46, Code of Federal Regulations, which are available from the Superintendent of Documents. Consult your local Marine Inspection Office for information on availability and prices.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