PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

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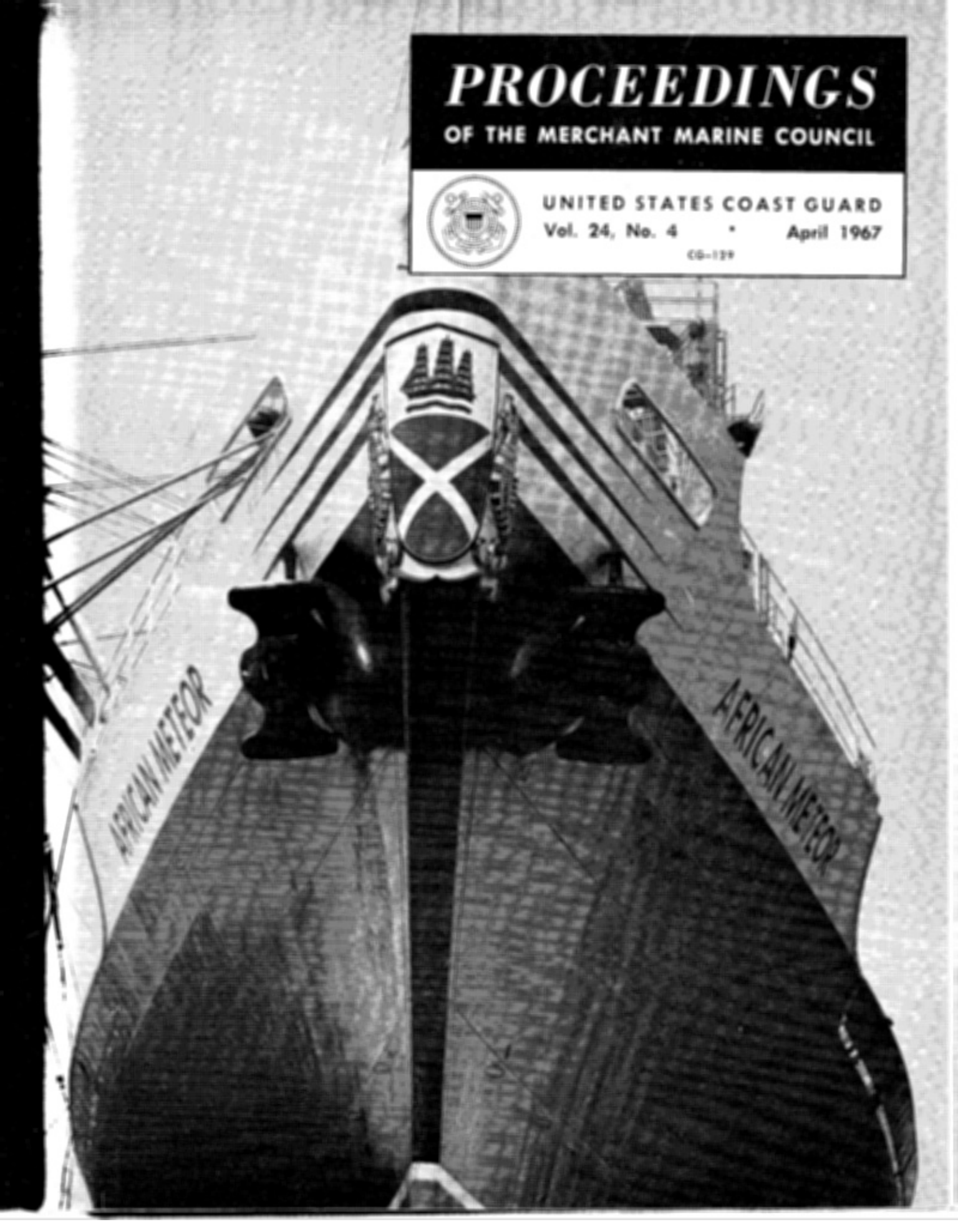

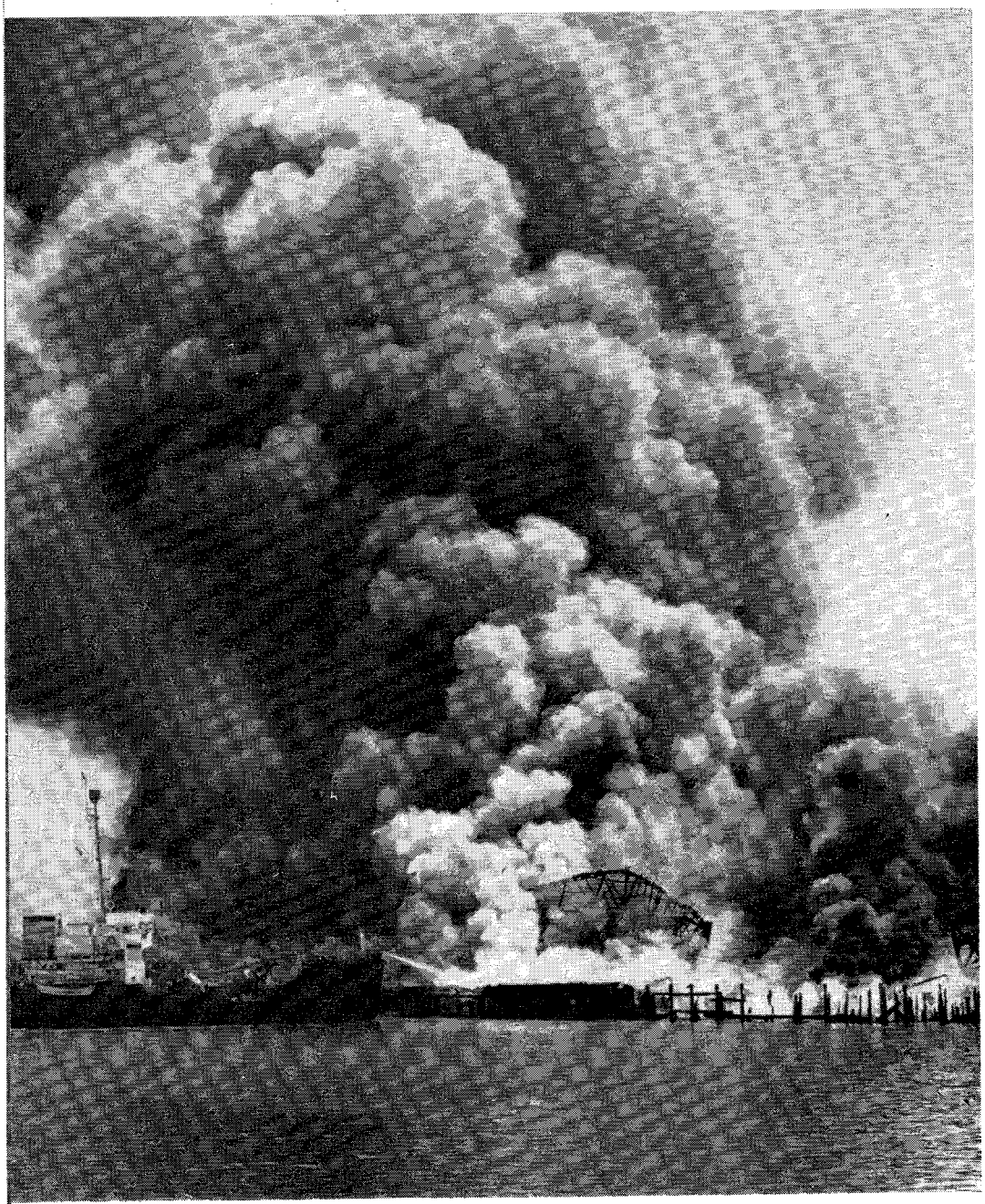

Coast Guard Cutter Iris battles dockside fires, Texas City, Tex., April 16, 1947. In the 20 years since this catastrophe, giant strides have been made in the safe handling of dangerous cargoes.

IN THIS ISSUE . . .

Safety and Insurance Costs . . .

Towboat Safety . . .

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PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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CONTENTS

COVERS

FRONT: The S.S. *African Meteor* of the Farrell Lines, Inc., docked in New York.

BACK: Cargo being worked at Port of Houston. *Courtesy Lloyd Gregory and Associate.*

Lt. Comdr. Alvin Jones Arnett, USCG, *Editor*

T. A. DeNardo, *Assistant Editor*

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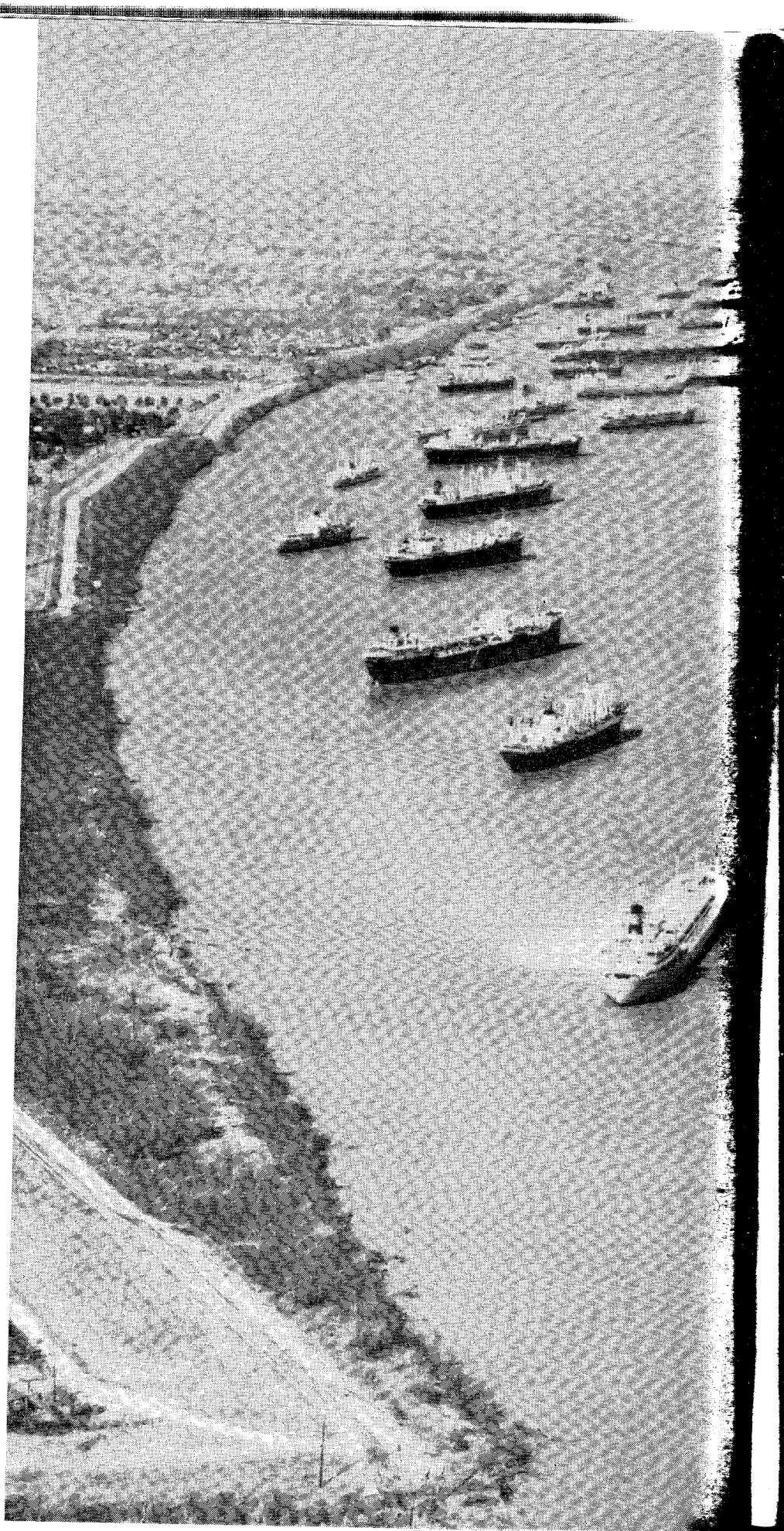
McLennan, Inc.



Safety Directly Affects INSURANCE COSTS

A Marine Section,
National Safety Congress Paper

THE TITLE "Safety Directly Affects Insurance Costs," while correct, is a gross understatement. Would that I had dared: "$20,000 Reward Per Ship Per Year" or "How To Avoid Wasting A Few Hundred Thousand Dollars."

Since each vessel owner's insurances are annually renegotiated largely on the basis of his own claims experience, the control of claims is vital to the control of future insurance costs. The ratio of controllable to noncontrollable insured accidents and claims is far higher, I think, than generally accepted and the possible rewards are frequently grossly underestimated. I will emphasize these points by referring to a little insurance history and by illustrations in dollars and cents.

Marine ventures always have been expensive. Insurance in respect of them has, of necessity, been expensive also. In ancient times and in the middle ages, when insurance existed in reverse, special laws existed which excluded marine loans from the accusation of being usurious and in conflict to Jesus' teachings respecting usury. In those days, while the idea of insurance, as we know it, had not emerged, a merchant shipowner borrowed money to start a venture and repaid it when the voyage or venture was over, but he was free of liability to repay if the venture came to grief as a result of marine perils. Interest on such loans clearly was much higher than on more normal loans.

Today, to most U.S.-flag owners, insurance premiums are the third largest operating item, ranking after wages and fuel. To some foreign-flag operators, wages slide to third, and it becomes fuel, insurance, and wages. What's more, insurance is the only one of those three costs susceptible to direct control. That control is the detection and correction of unsafe conditions and practices, known as a safety or loss prevention program.

Though perhaps we acknowledge marine insurance costs to be large, somehow, when we think of safety and loss prevention we tend to think small. Few blatantly make the point of how truly big are the possible insurance cost rewards or penalties which depend on the success or failure of a safety program. That reward or penalty can be large.

To illustrate, in 1939, there were two very similar fleets whose premium for one particular type of insurance also was very similar. During the intervening years, in which one fleet maintained a most active safety program and the other maintained no such program, the rate for Fleet One increased by 60 percent whereas that for Fleet Two increased by 330 percent. That may sound theoretical and may not sound large but from an even start, these fleets, in just one type of insurance, now differ in premium by more than $20,000 per ship per year. No matter how you slice it, that is not a small amount and would be ample to defray the cost of some control by loss prevention work.

In this case each fleetowner, by his own action—or inaction—has set the level of his own insurance cost—or allowed his employees to do so—for the entire difference in premium cost can be explained by the difference in accident and/or claim cost.

Not only are the financial rewards considerable but also the area within which to control insurance claims is very broad. It has been growing broader for years and continues to grow. At how many points and in how many ways, vessel owners through the years have desired their insurance underwriters to be concerned in their accidents, many of us are not really aware. We tend to see a series of isolated unconnected claims where instead we should see a whole pattern of insured exposures—or as safety people would say—"accidents in the making"—"accidents going somewhere to happen"—and by far the majority of these many insured exposures, since they involve human judgment, present an opportunity for control of claim cost through safety programs and thus control of insurance cost.

Having become acutely aware of the broad pattern of insurance ex-

posures through some rather fascinating compilations of insurance history, a little history will help bring into focus the breadth of insurance protection in a shipowner's normal insurance program today. Its breadth incidentally is far more than his shoreside counterpart. It has broadened rather considerably over the past two or three centuries because of desire and demand of vessel owners, as they, in turn, adapted their services to meet changes in commercial practice.

Marine insurance in its present form was apparently conceived in about the 14th century and existed for many years to protect adventurers against fortuitous occurrences for which there was little or no defense such as the perils of heavy weather, lightning, and striking uncharted reefs. Underwriters held themselves out to indemnify the vessel or the cargo owner (in those days usually one and the same person) against accidental loss or damage to the thing insured from perils described in their policy as "of the seas," fire, lightning, and all other like perils, losses, and misfortunes that have or shall come to the hurt, detriment, or damage of the vessel or any part thereof. It was easy to recognize stranding and heavy weather as perils of the sea, but as we shall see there could be great differences of opinion about some other occurrences, as to whether they were perils "of" the seas as opposed to perils "on" the sea. These differences had a curious result.

In 1884, the good ship, *Inchmaree* was lying at anchor. Prior to getting underway, a donkey engine and donkey pump were started to pump water from the sea into her boilers. Nobody checked to see if the valve leading to the boilers was open. It probably wasn't. At any rate the pump burst. Vessel owners claimed this was a "like" peril to one "of the sea."

Underwriters contended not, it's simply "on the sea."

The result was twofold—First, the English House of Lords, as the highest court, upheld underwriters' position that the policy as then written did not cover the damage as a peril "of" the sea—Second, and more important, marine underwriters, at the urging of vessel owners, agreed to write into the policy a new clause which extended the normal policy protection to include the consequences of negligence of masters and mariners, of explosion and of latent defects. Up to this point, "goofs" had primarily been the concern of the shipowner alone. Now by this clause (named then after the vessel and still known today as the Inchmaree Clause) "goofs" by ships' personnel became underwriters' interest as well as the shipowners'—so did the consequences of explosion and latent defects.

Forty years before the *Inchmaree* case, another argument had arisen about perils of the sea where in 1840, the ship *La Valeur* came into collission with a steamer in the Hugle River. Arbitrators so divided the fault that the *La Valeur* owed the steamer for damages done to the steamer. Underwriters of *La Valeur* were perfectly willing to pay the physical damages sustained by herself, but were amazed when her owners tried to stick them with the liabilities for damage done to the steamer, on the theory that these liabilities also were perils "of" the sea.

The litigation again ended by supporting the underwriters, but the immediate result was that underwriters agreed to extend their policies to include liabilities for damage done.

Underwriters were so fearful of this departure toward covering liabilities of negligent navigation, that they refused to give full insurance for such liabilities and would not cover more than 75 percent on the theory that leaving 25 percent as self-insurance to the owner would encourage safe navigation. Today the normal program includes 100-percent collision liability protection rather than just 75 percent.

Thinking of the changing times in the 20th century, we are inclined to forget what changes the 19th century saw. That was the age of steam, increased speeds, a great rise of transportation of passengers and freight as the great wave of immigration swept from the Old World to the New. The Gold Rush, in turn, swept West to California, and Australia began to be settled. Vessels increased greatly in value, naval architects made great strides in the design of ships and harbor installations, which all became more elaborate and susceptible to damage. Cargoes were larger and more subject to concentration. On the human side, a man's rights to sue for injury and damages were legally held not to die with him, but to live on. Human life, rights, and the impairment thereof thus took on immensely greater value.

No such changes could go on then (nor can changes go on today) without being reflected in changes of commercial practice. The sum total of the increases in human and property values and risks caused shipowners to call upon their insurance markets to provide the means to spread the load of accident and misfortune, to

broaden the definition of perils covered by the policies of insurance, and thus to provide a backlog of capital on which they, as venturers, could depend. As a result, the scope of insurance was extended to include more and more coverage for the acts of human error and negligence. Consequently, human errors and negligence came to be far more important sources of claims than the age-old peril of the sea and the Act of God.

This, in turn, brought another great change. Whereas in the 16th, 17th, and 18th centuries, rates for a voyage to the Baltic or the Mediterranean or even the New World could be uniform from owner to owner, by the 19th century the altered scope of insurance protection began to disclose differences—vast differences—in the incidence of claim as between owners, since differences in caliber and training of crews inevitably showed.

This, in turn, brought an increased demand by owners for discrimination in ratemaking to reflect those differences. No longer was the controlling factor those fortuitous perils common to all—rather the control began to shift toward the broader definition of accident, toward the more human elements of negligence, and judgment which either hinder or encourage accidents and insurance claims.

Thus came a shift toward today's practice whereby each owner's insurance claim record is reviewed annually and his fleet's premium individually renegotiated on the basis of its own past claims.

We should not forget that at about the same time, historically, the extension of man's rights to sue for loss of life and personal injury, and the growing recognition of liability for damage to cargo, and to docks and other shore property, brought about the actual creation of facilities to insure what we know today as protection and indemnity risks—which prior to 1825 were actually unknown. Curiously, the normal hull and cargo underwriters wanted no part of this new field of protection—resting solidly as it did on the errors of the shipowner and his employees both shoreside and afloat. Entirely separate facilities came into being to protect these new exposures. In most cases, they remain separate today.

Since so much is usually said about claims control of what today is known as protection and indemnity risks (particularly damage to cargo and injury and illness), the more materialistic hull exposures will be stressed after simply admitting that from the standpoint of frequency, protection and indemnity claims far exceed hull claims. However, industrywide hull claims remain by far the most severe individually (as well as in the aggregate) and are somewhat overlooked as an opportunity for claim control.

Today there is hardly a phase of vessel operation which does not constitute a source of insurance claims. The old "peril of the sea," as originally conceived is much in the minority.

The all-embracing nature of today's insurance programs leaves no room for the old idea of restricting loss prevention efforts to one or two particular fields, i.e., persons or property on deck or below deck. When it comes time to negotiate insurance costs, it is the aggregate claim cost which counts (rather than the individual accident). When you think safety, please think total safety.

Now how about the cost? The value of a safety program is not its own cost but rather the degree to which, by claims avoided, it realizes the large potential annual dollar savings in future insurance costs. How large can these be? Well, those same two shipowners who by reason of different accident costs now differ in premium cost by $20,000 per ship per year for just one type of coverage, actually differ by just over $50,000 per ship per year when their full insurance programs are considered! The savings can be very large. The effectiveness of your safety program will largely determine the cost of your future insurance. To curtail that effectiveness will be costly.

One more thought: To what extent do your supervisory personnel appreciate, or do you wish them to appreciate, that they, not you or your brokers or your underwriters, actually set the level of your annual insurance costs—that the aggregate accident cost results of their actions over a 5-year period and their own performances are actually reviewed in negotiating your insurance premium?

Captains, chiefs, mates, and engineers in the final analysis set the level of your insurance costs—they take the action which directly affects these costs and yet to some it comes as a shock that for vessel insurances first, there are no rates except that which vessel personnel set; second, that some owners pay two or even three times the insurance costs of others. Whether they should be made more aware of this dollar importance of safety and loss control is a question I leave with you.

If you don't correct misapprehensions and misunderstandings, who will? More positively, if you don't detect and correct unsafe conditions and practices and insist on training, you will pay dearly for it. ⚓

Tailoring known Safety techniques to Towboat safety

Arvid Tienson

General Dynamics Corp.

A Marine Section,
National Safety Congress Paper

To get maximum results for safety efforts, known safety techniques must be used to fit a towboat safety program. Since we all have limited funds it is important to concentrate our safety dollar in those areas in which it will give us the greatest return in the prevention of accidents and "Jones Act" cases.

There are many unique aspects to a towboat operation. It would be well to start taking measurements of some of these aspects and see what material, what safety techniques, what approach might be most effective.

Inland waterways bargeline operators, through the union hiring hall, tradition, and intermittent layups, interchange employees more than any other industry I am aware of. This fact and the "Jones Act" emphasize the need for a common approach and a common pool of knowledge in regard to our employees. We have found that the following has proved valuable in preventing injuries and/or Jones Act cases; (1) a preemployment physical examination which includes a good medical history so that accident or claim prone individuals can be screened; (2) the individual should be fit for *heavy* work. Galley personnel should have blood checks. All pilots should have good distance visual acuity with adequate depth perception. We have used our own eye-testing equipment for checking distance vision on a 3-year basis. For pilots, mates, and engineers we have arranged for a yearly physical checkup. We believe it pays off.

A free exchange of information between bargelines on prospective employees is not only useful but perhaps essential. Care should be taken not to discriminate against any individual.

The one essential piece of protective equipment that there can be no equivocation about is the "lifejacket"—*100 percent of the time* on, to and from the tow. I recall that we had a drowning many years ago in which a deckhand on his way to the head of the tow slipped and went into the ship canal. His body was found a day and a half later. This man had intended to use the lifejacket of the man he was relieving. 100 percent of the time would have saved this man.

Foot protection is next on the list particularly for handling rigging. Again no substitute for *100 percent of the time* when on duty. Eye protection and eye correction are essential—remember, the pilot. We have found it good business to provide safety glasses ground to prescription for our regular employees. A steel cable snapped and hit a deckhand across the eyes. The results of this one occurrence has paid for our eye-protection program.

Emergency first aid while critical in all industries, is emphasized in importance on a tow. It is not at all unusual to be at least an hour and more or even a half-day away from professional assistance. The following checklist of things to do and have is useful. One, have an adequate first aid industrial kit with supplies kept up and in a sanitary condition. We have found the inflatable type plastic splints superior in use. A stretcher, a small portable oxygen tank (medical) are also desirable. Have at hand the names, locations, and phone numbers of people to call in case of emergency. Know at what mile what sources of help are to be called. Lastly, if at all possible, someone regularly on board should have first aid training. On shore there should be a coordinated procedure to provide any necessary emergency assistance to the tow in case of a serious injury or accident.

Investigate accidents promptly and thoroughly. Accidents that involve real or alleged injury, call for immediate action. All facts that may have a bearing on the incident should be ascertained and accurately recorded. Signed statements by witnesses and anyone having knowledge of the accident should be taken. Frequently photos taken by a professional photographer are in order. An accident report giving all particulars should be made up by a trained observer if possible. If a hazardous condition exists that may have contributed to the accident, correct it at once.

Fire, always dangerous, can be catastrophic on a tow. We see this common denominator of "exaggeration" for bargelines in "costs of injuries," "increased employment prob-

. . . tailormade safety works

lems," providing first aid, and now fire. The need of the tailormade program becomes ever clearer.

The provision of an adequate and proper type of portable fire extinguisher goes without saying. What we must be sure of, however, is that all boat personnel are aware of their location. The fire extinguisher locations must be clearly marked and readily accessible. A periodic check or inspection should be made preferably on a monthly basis to see that all extinguishers are in proper working order and have unbroken seals.

All of our boats are provided with a piped CO_2 system capable of handling the entire bilge. Also we have fog nozzles for our fire hoses.

A station bill with periodic fire drills is a Coast Guard regulation. An efficient and effective firefighting procedure is fine and necessary, but really why have fires?

Good housekeeping is absolutely essential. Excessive accumulations of oil, grease around machinery, grease in the galley, open paint cans, improper containers for solvents, etc., are fuel for a fire. Do not let them accumulate. Minimize fuel by using fire resistant or retardant materials on board wherever possible. Fire retardant paint is a fine example. Dispose of accumulated waste materials in a safe sanitary manner, being careful not to throw anything into the river. This is against the law.

Be wary for instance of disposal-type toilets (electric). We wound up with a few "hot seats." Smoking in bed can be dangerous. Have disposal units for cigarette butts. Containers for gasoline, oil, cleaning solvent must be of an approved type, properly labeled and stored. Portable gasoline driven pumps or light plants need to be in good repair. They too can leak fuel and present a fire hazard.

Remember that since you most frequently must be self-sufficient or alone in handling a fire avoid the fight and/or be on the ready.

The Inland Waterways Health and Safety Committee has developed statistics on accidents and types from the records of a number of bargelines. Emphasis and frequency is in the handling of rigging, slips and falls. Anything you can do to prevent slips and falls by the use of antiskid steps, plates, or paint is money well spent. See that your rigging is in good repair and inspected frequently. Are your mates and in turn your deckhands familiar with the proper ways to carry, use, and store rigging? These are the big, the frequency producing potential hazards.

As an industry, the highest cost for similar injuries, the greatest interchange of employees, the most difficult first aid treatment problem, our fire hazard potential is exaggerated and so on down the line. We sincerely believe a tailormade safety program using approaches we have discussed, and strong support from top management works. ⚓

Comparison of special accidents[1] to total accidents by year and to 4-year totals

Year	Total accidents	Special accidents	Percent of total accidents	Percent of total cost
1962	25	12	48	23
1963	16	6	37	62
1964	14	3	21	5
1965	15	4	38	10
Total	70	25	36	27

[1] Special accidents are those which result from the *unusual* hazards instead of those hazards which are usual to the marine industry.

Golden Gate Radio Plot

A comprehensive harbor ship traffic radio plot system has been inaugurated at San Francisco.

The breakthrough in achieving a common working system, using a shoreside intelligence center and radiotelephone reports from all regional shipping, culminates a 6-year study and development program by the San Francisco Marine Exchange.

Nearly 5,000 commercial ship arrivals are logged annually by the Exchange at Golden Gate ports. In addition to this commercial vessel traffic participation, military sea traffic reportedly will take part, as will tugboat operators, bay and river equipment users and key shore installations.

Heart of the new system is a ship location and movement "console" located in the Marine Exchange's main lookout station, on San Francisco's pier 45 next to famed Fisherman's Wharf. Here, a regular stream of radiotelephone reports are received from ship pilots and other navigators—advising of their locations, intended moves and destinations within the bay and river system.

Navigators also report defective or missing channel buoys, obstructions, visibility and weather conditions, or mishaps and other emergencies.

At the Exchange's central station, this information flow is translated into immediately available reports for use by other ships, or prompts required action—such as Coast Guard assistance, dispatch of tugs, or advice of a change in vessel arrival time.

Often, pilots and other waterborne traffic hear the message to the Exchange as they monitor the navigation radio frequency, reducing their need to call for current traffic reports on the channel segment which they are entering.

But each can request vessel activity summaries for their area. At pier 45, the around-the-clock ship reporters scan the console, on which movable "tiles" represent each vessel or floating unit currently operational on the bay and river system. These markers are mounted in side-lighted racks—one for each segment of the waterway system. Insert cards on the tiles record the ship's name and other pertinent information, including the time and location of the last position report. At a glance, the central operator can summarize known traffic and other relevant data for the navigator calling.

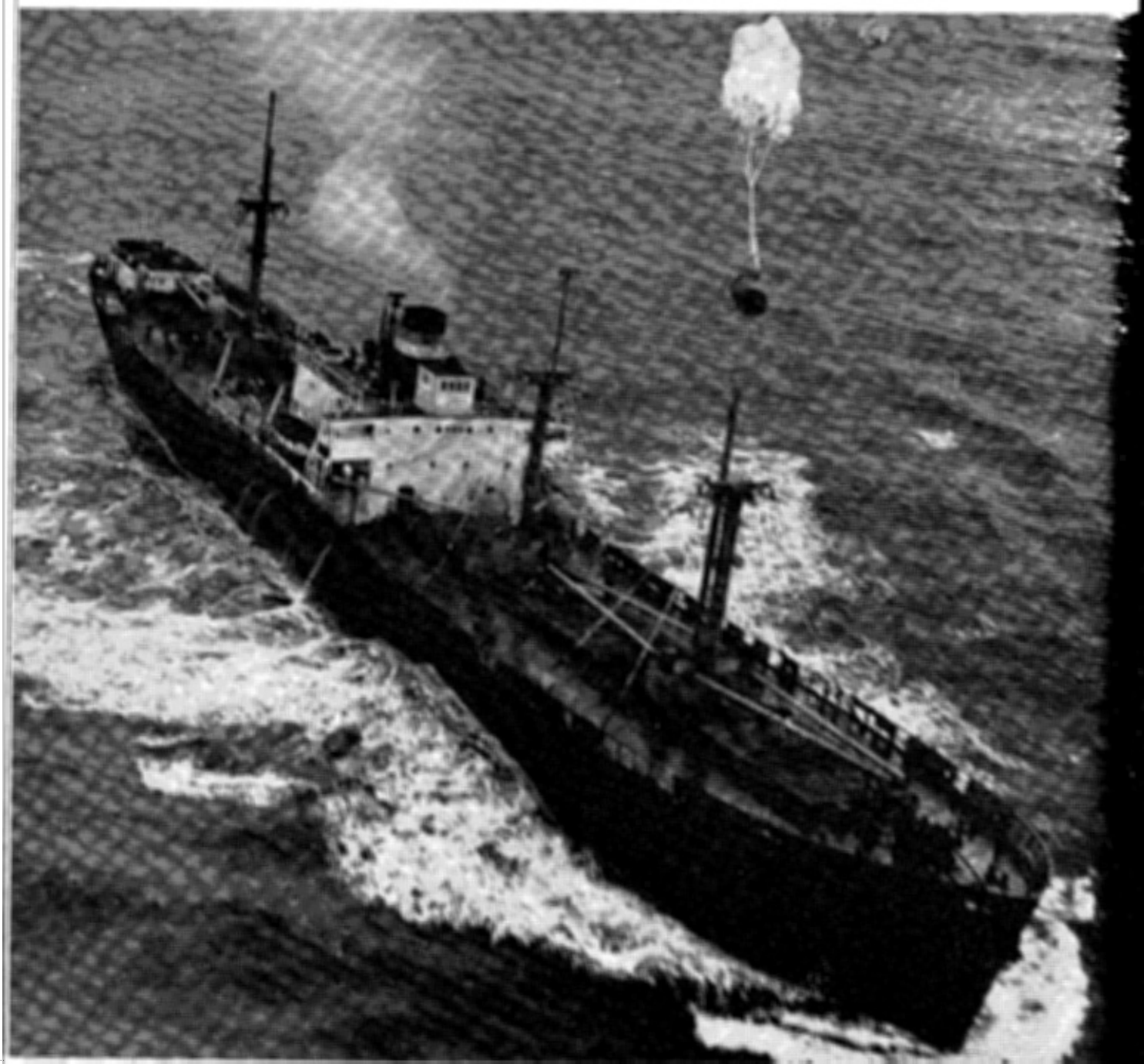
A minimum of six "calling in" points have been established for ship location reports, with others optional, depending on weather, traffic, and visibility conditions.

Fourteen lift bridges and locks in the region participate, as well as Coast Guard shore stations, tug dispatch offices, ports and barge operators. Currently, navigation information is transmitted exclusively on VHF channel 18A (156.90 mc.), with two additional channels used for dispatch and business operations. Consideration is being given to further specialization by early use of channel 6 (156.30 Mc/s.) for all docking and undocking operations—communications between tugs and ships—and reserving channel 18A for information relating only to vessels underway in the navigation system.

While "first of its kind" in the United States—in terms of its comprehensive coverage of a wide region encompassing a variety of traffic and conditions—the Golden Gate program is considered by its sponsors as probably an interim measure, hopefully leading to an integration in the future with harbor radar. The Marine Exchange currently operates a 3-cm. surveillance radar at pier 45, but lacks the network system highly developed in European and United Kingdom harbors. Ultimate tie-in of radar-developed plots from shore stations would further aid navigators—just as aircraft are assisted today, and has been proven feasible in Europe and Japan. The Exchange's graphic display console is similar to the techniques perfected by the Federal Aviation Agency, which cooperated in its development. ⚓

maritime sidelights

***U.S. Coast Guard** rescue aircraft airdrops medicine to the SS Grand Explorer.*



Successful Coast Guard Air drop

A Coast Guard rescue plane air-dropped medicine January 29, 1967, to an ailing crewman of a Liberian freighter 750 miles north of Honolulu after the ship's captain reported fearing for the man's life, when the vessel's medicine supply became exhausted.

A messboy aboard the SS *Grand Explorer,* was stricken with an asthma attack, was having difficulty breathing and had severe stomach pains. The captain of the Chinese-manned vessel requested an airdrop to save the man's life.

An HC–130B Hercules aircraft from the Barber's Point Coast Guard Air Station, piloted by Lt. Comdr. H. U. Wilson, dropped the medicine in buoyant containers. A *Grand Explorer* crewman leaped into the rough seas to retrieve the medicine.

Later a message was received from the vessel thanking the Coast Guard for the medicine. No mention was made of the patient's condition.

The *Grand Explorer* is a U.S.-type Liberty ship now flying the Liberian flag. ⚓

Merchant Fleet Up

There were 1,097 vessels of 1,000 gross tons and over in the active oceangoing U.S. merchant fleet on February 1, 1967, 2 more than the number active on January 1, 1967, according to the Merchant Marine Data Sheet released by the Maritime Administration. ⚓

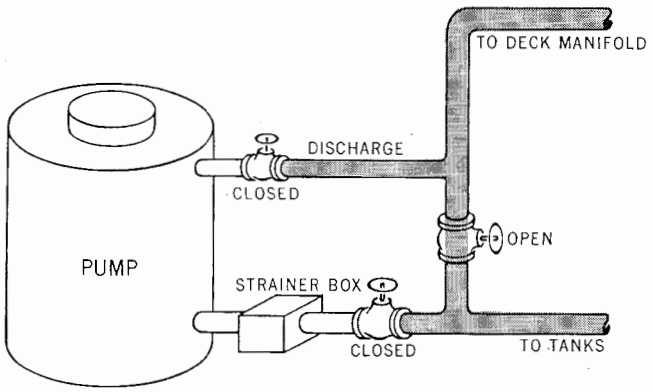
John Browns 20th year

The Schoolship *John W. Brown,* an annex of Food and Maritime Trades High School of New York, has celebrated its 20th Anniversary. Thousands of nautically minded boys have been trained since December 13, 1946, when Congressman Ellsworth Buck raised the New York City Board of Education flag above the ship's deck. For 20 years, high school students with a yen to "go down to the sea in ships" have learned their "basics" aboard this World War II Liberty Ship. The Schoolship offers a practical "classroom" for those students who want to specialize in the Deck, Engine, or Steward Department studies.

This type of maritime training on a high school level is unusual. The Schoolship *John W. Brown* is unique not only to the New York City area, but to the Nation as well. ⚓

Of course, uncovering is a time-consuming, but necessary, part of every boat drill. Instructor is former Master of a Liberty Ship.

Tanker Catastrophe



Proper Line Up When Loading Through Pumproom

A tanker was at an oil wharf loading a part cargo of light crude. Loading was almost finished and the Master and the Mate were on the wharf looking at the draft marks. A sailor on deck near the pumproom shouted down to the Captain that the pumproom was flooded. The Captain immediately ordered loading stopped. At that same moment there was a terrific explosion in the engineroom. The ship's stack was blown off and landed on the maindeck forward of the afterhouse. The bunkers and the pumproom burned. The main cargo tanks did not get seriously involved. They flared at the ullage plugs. These flares eventually went out by themselves. The vessel was taken to anchor where she burned for 8 days. Shoreside forces fought the fire. We cannot comment on the firefighting as we lack precise information.

While we lack precise information, we can make some valid observations and illustrate some important points in safe tanker operation.

What carried away in the pumproom? We don't know. It could have been the lines themselves or a pump casing or a strainer box. Pump casings and strainer boxes are not designed to take the pressures that might develop during loading. We have had more than one strainer box carry away when loading. Because of possible failure in the pumproom it is good practice not to load through the pumproom when a choice exists. Since a choice frequently does not exist and cargo must be loaded through the pumproom, the pumps and strainer boxes should always be protected by closing block valves. Another reason for closing the pump block valves is to prevent pressure being put on the strainer box through the pump as can occur with some kind of pumps.

How did the crude get from the pumproom into the engineroom? We don't know, but think that it might have leaked through the supposedly oil-tight glands around the pump shafts. This has occurred on one company vessel. Fortunately, the product was diesel and no great amount came through as an alert oiler noticed the leakage as he was making the rounds. Daylight has also been seen through one of these glands on a company vessel. There is also a possibility that a pumproom lighting fixture deadlight or other fitting had been removed or was damaged. U.S. Coast Guard regulations specify that the bulkhead separating the engineroom from the pumproom must be gastight at all times.

We don't know if the ship had a pumproom bilge alarm. With a massive release of cargo into the pumproom, maybe this wouldn't have made any difference. But with a slow release, the alarm will sound before the oil gets up to the shaft glands and action can be taken to limit the spill.

With proper maintenance and attention paid to the points listed above, tragic accidents of the type described can be prevented. ⚓

From: *Safety Bulletin, Chevron Shipping Company*

Who's In Charge Here?

The time a ship spends in port can be considered time lost in dollars and cents, yet this is the only time that many of the innumerable tasks necessary to keep the ship at sea can be completed. Consequently, there is a general pandemonium in which personnel from shoreside facilities, company representatives, and various department heads—not to mention longshoremen carrying out cargo operations—are seemingly going in all directions in a concerted effort to get the ship back to sea. When this happens there are often times when duties or areas of work begin to overlap, and a lack of communication and coordination among various personnel can result in or contribute to a costly, if not serious, casualty.

Soon after a vessel arrived in port and was moored, longshoremen began discharging a cargo of jute under the direction of the Chief Mate while personnel from a shoreside facility boarded the vessel to accomplish various vessel repairs as contracted for by the Port Engineer. The work had been in progress only a short time when a fire was reported in the lower 'tween deck area of No. 1 cargo hold. The alarm was immediately sounded, and the local fire department was notified. Firehose which had been previously laid out was manned, and water was on the fire within minutes after the first alarm. The fire department then arrived, and water was applied to the lower 'tween deck area. At the Master's suggestion the area was closed off, and CO_2 (carbon dioxide) was used in lieu of water to extinguish the blaze. This required additional CO_2 which was released into the area during the remainder of the day and night. The next morning the hold was opened, and longshoremen began discharging the contents of No. 1 lower 'tween deck. Subsequent to the fire, one of the longshoremen who had been working in No. 1 hold stated that he saw smoke and then fire break out in an area on the starboard side of the lower 'tween deck. He had previously noted sparks falling from a cutting torch that was being used to perform repairs around the hatch coaming to No. 1 hold on the main deck.

Another similar casualty occurred while a myriad of tasks were being accomplished on board a vessel preparing for sea. As the Master, who had been appointed an hour and a half previously, was reporting aboard, he was confronted by stevedores running off the ship shouting fire. Since he could not get up the gangway, he boarded the vessel through an open side port and went aft to No. 7 hatch where the fire had originated. The vessel's crew was already engaged in fighting the fire which was in a cargo of cotton in the 'tween deck. A relieving Chief Mate had just reported aboard and was in his room with the former Chief Mate discussing matters pertinent to the change in personnel. The fire department soon arrived, and with the assistance of the ship's officers and crew, the fire was extinguished in about a half hour. Subsequent investigation revealed that, at the time of the fire, a shoreside repair facility was in the process of burning clips from a vent pipe located directly above the burned bales of cotton. No fire watch had been posted while the work was being conducted. It was also learned that neither the Master nor either of the Chief Mates had been advised or consulted by company representatives in regard to the decision to perform such repairs.

Fortunately the damage to cargo and vessel was minimal in both instances. However, if they had been serious, the ship could have been lost. An investigation by the company to determine who was ultimately responsible might have resulted in some jobless individuals. Company representatives and supervisory personnel should maintain communications and coordinate their efforts at all times to protect the vessel and the lives of other personnel. ⚓

Bulging Ballast Tanks

An oceangoing cargo vessel recently suffered a casualty to its No. 1 bottom ballast tanks. The vessel was berthed in a foreign port, and the tanks were being ballasted. When the tanks were full and before the ballast pump could be secured, the tanktops were found to be bulging.

Each tank was equipped with one standard filling line and two gooseneck vents. The terminal valves of the vents were of the automatic float type. It was later determined that with pressure coming from the vent line, the valve floats rested on the valve screens, reducing the effective vent outlet area to considerably less than the inlet area.

Although the cause for this casualty can be attributed to a design fault, it probably could have been avoided if a crewmember had been standing by to observe when the tanks reached their capacity. ⚓

from Marine Office of America

Covers Are Not for Walking

There you are leaning on the gunnel listening to the "chuff-chuff" of a steam tug, the gulls, the whistle signals, the diesel sounds, the engine room gongs, the squeak of straining hawsers and the background hum of conversation in the pilothouse. The sun is warmish and it all creates a dreamy atmosphere and as most men usually do, you picture yourself back in time as one of the daring, dashing, gallant adventurers that the stories, movies, and folk singers picture as the early river boatman. They never worried about safety despite the dangers of uncharted channels, the tying down of boiler safety valves and overloads in treacherous waters—their only goal was to outrun their rivals and those who wouldn't take a chance were treated with contempt. A very romantic picture but man, snap out of it and watch where you walk! Today is today and the law of laws by which we live is SAFETY. To take chances with your own or another's life or limb is criminal because the odds are so overwhelmingly stacked against you.

Despite rules and regulations coupled with repeated warnings, human nature being what it is, crewmembers tempt fate by walking across the barge covers for a shortcut. These covers are *not* work areas and their only purpose is to keep out weather from grain or other cargoes susceptible to damage from rain, snow, or other weather elements. Men are usually hurt when the barge is light as the average height from cover to the steel deck of the hold is 15 to 16 feet. Rarely is anyone harmed when the barge is loaded because if a cover is open the person's fall is broken by the height of the cargo. This, of course, is not true when carrying a high density cargo but frequently in these cases the covers are lifted off or the roller covers are placed in an open position leaving no area to walk on except the two extreme ends. Investigation reveals that covers are mostly left open when leaving the unloading terminal and the shore workers have been negligent, or when a barge has been washed for a change of cargo and the captain leaves the covers off for airing or drying. The crew have the best of intentions and realize that the covers have to be replaced but what with making up tow, checking barge rigging and handling lines, Hell gets a few more paving blocks.

To management, we suggest the use of paint to protect those crewmembers who fail to heed your restrictions against using covers as a walkway. Where covers are of the roller or telescoping type broad strips of at least 6 inches width should be painted longitudinally either on the centerline or one on each side of the center. Such lines when appearing broken would be a reminder to the men that the covers are open. The paint should be of luminous composition in order to pick up reflection from flashlight or T/B searchlight. If the hinged doors on lift covers are of single door design, these should also be painted a luminous color to reflect light. If double hinged doors are located on a lift cover, diagonal lines of 6 inches width should be painted across both doors, so that if one door is opened the pattern would be broken and obvious.

Do you think we are making much ado about nothing? Listen to deckhand A's story. "Me and B were making up tow in the early a.m. when the captain called for two men to come aft on the barge to let go the boat. B went on the side of the barge and I went on top of the covers. I was using my flashlight but when I got near midway on the barge I was blinded by the searchlight and stepped off between two hatch covers, that had been left open by the mill dock workers, and landed at the bottom about 15 feet down." A sustained fractures of two vertebrae, his left wrist, right foot and ankle. Eight months later A is still convalescing at home babysitting for his three minor children. IF YOU MUST GO TO THE HOSPITAL, GO AS A VISITOR!! ⚓

Alvin Robinson and Anton Drabik, U.S. P. & I. Agency

DECK

Q. What is the formula for finding the salt water displacement of a vessel?

A. The formula for finding salt water displacement of a vessel is:

$$\frac{L \times B \times D}{35} \times \text{Block Coefficient} = \text{S. W. Displacement}$$

Q. "Arming" of the lead means:

(a) Stopping the vessel for an up and down cast of the lead.

(b) Placing rubber about the casing for the glass tube.

(c) Putting tallow, soft soap, or other substance in the cup shaped recess of a sounding lead.

(d) Adding additional weight to the lead line.

(e) Taking the dipsy lead as far forward as possible.

A. (c) Putting tallow, soft soap, or other substance in the cup shaped recess of a sounding lead.

Q. An anchor shackle is:

(a) Any shackle in the anchor chain.

(b) The shackle by which the anchor is connected to the cable.

(c) The shackle used to connect the bitter end of the anchor chain to the chain locker.

(d) A shackle made to pass over the wild cat.

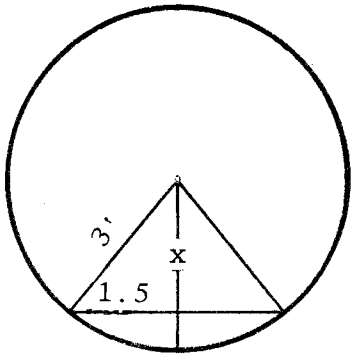
(e) A shackle used on the devil's claws.

A. (b) The shackle by which the anchor is connected to the cable.

Q. What entries are required in the official logbook with respect to the load line and draft?

A. The master of a vessel subject to the load line regulations shall note in the vessel's official log, before departing from her loading port or place, the position of the load line mark, port and starboard, as applicable to the voyage and the actual drafts of the vessel forward and aft at the time of departing from port, as nearly as the same can be ascertained.

Q. A cylindrical tank 12 feet long and 6 feet in diameter is placed horizontally. It is less than half full of fresh water and the width of the water at the surface is 3 feet. Find the maximum depth of the water.



A. $3^2 = 1.5^2 + x^2$

$\therefore x = \sqrt{3^2 - 1.5^2} = \sqrt{6.75}$

$X = 2.598$ or 2.6 feet

$3 - 2.6 = 0.4$ foot

$.4 \times 12 = 4.8$ inches

$1.5 \times 1.5 = 2.25$ $\quad 900 - 2.25 = 6.75$ $\quad 75 \times 15 = 2.25$

$$\begin{array}{r} 2.598 \\ \sqrt{6.75} \\ 4 \\ 45\sqrt{275} \\ 225 \\ 509\sqrt{5000} \\ 4581 \\ 5188\sqrt{41900} \\ 41504 \end{array}$$

0.4 foot or 4.8 inches

ENGINE

Q. What devices are installed on steam turbines for the purpose of controlling the speed of the rotor? State briefly the arrangement for each control.

A. (1) The main throttle (ahead and astern)—Balanced type valve, controlled by hand wheel or lever linked to valve stem.

(2) Nozzle blocks—A number of nozzles set into a block or manifold, and operated by hand. The individual nozzles are opened or closed to provide the amount of steam required for different speeds.

(3) Main governors—Of the centrifugal type, connected through bell cranks, linkage or oil relay mechanism, which functions to alter the steam supply and maintain a set rotor speed.

(4) Emergency trip—The centrifugal governor connected through linkage to the main steam supply and set to trip at about 10% over speed.

(5) Vacuum valve—Connected to governor mechanism, this valve is usually of the simple butterfly type, installed in the exhaust chamber. The principle in reducing the speed of the rotor is in reducing the effective pressure through the turbine engine, by admitting air so as to increase the absolute pressure on the exhaust end.

Q. What is likely to happen if the throttle on a turbine is opened wide suddenly while maneuvering, and what precautions should be taken?

A. Priming of boilers will damage turbine. Make sure that fireroom receives signals before opening throttle wide. If the throttle is closed suddenly, water is likely to go out of sight in the glass. In turbine operation it is common practice, on receiving a "stop" from "full ahead," to close ahead steam and open astern steam immediately, to avoid losing water level in the boiler and to facilitate stopping. Correct water level during maneuvering is most important as sudden stops with low water or sudden full-ahead operations with high water must be handled carefully.

AMENDMENTS TO REGULATIONS

STORES AND SUPPLIES

Articles of ships' stores and supplies certificated and canceled from February 1, to February 28, 1967, inclusive, for use on board vessels in accordance with the provisions of part 147 of the regulations governing "Explosives or Other Dangerous Articles on Board Vessels" are as follows:

CERTIFIED

Brulin & Co., Inc., 2929 Martindale Ave., Indianapolis, Ind. 46207: Certificate No. 713, dated February 9, 1967, FORMULA 715 N.

Chemical Specialties Sales Corp., 75 Hillside Rd., Fairfield, Conn. 06430: Certificate No. 714, dated February 24, 1967, CH–22.

CANCELED

U.S. Rubber Co., 1230 Ave. of the Americas, New York, N.Y. 10020: Certificate No. 642, dated February 25, 1966, HYDRAZINE (Solutions).

Chemical Specialties Corp., 2200 North Grand Ave., Evansville, Ind. 47711: Certificate No. 342, dated February 21, 1952, YELLOW LABEL SPECIAL 444 FORMULA AEROSOL INSECTICIDE.

The C. B. Dolge Co., Westport, Conn. 06880: Certificate No. 428, dated May 27, 1960, NOFALS.

Polymer Coatings, Inc., 1417 Sheridan St., Camden, N.J. 08104: Certificate No. 532, dated July 12, 1962, DIRT–RID.

Fuels Research Corp., 2114 Curtis St., Denver, Colo. 80205: Certificate No. 461, dated November 16, 1960, BSC–1000.

Spray Inc., 218 North 15th St., East Orange, N.J. 07017: Certificate No. 240, dated January 27, 1948, SPRAYSECT.

The Dow Chemical Co., Midland, Mich. 48640: Certificate No. 567, dated July 16, 1963, KORLAN 24E.

Pacific Chemical Co., 4501 Shilshole Northwest, Seattle, Wash. 98107: Certificate No. 371, dated April 3, 1964, DEGREASER SFD; Certificate No. 406, dated November 10, 1959, DEGREASER S2.

Axion Chemical Co., Inc., 223 Erie St., Buffalo, N.Y. 14202: Certificate No. 133, dated May 27, 1957, AXION BOILER WATER TREATMENT; Certificate No. 136, dated May 27, 1957, AXION DUAL TREATMENT; Certificate No. 129, dated May 27, 1957, AXION SMOKE TREATMENT; Certificate No. 202, dated February 6, 1958, AXION FUEL OIL TREATMENT; Certificate No. 204, dated February 6, 1958, AXION DIESEL FUEL OIL TREATMENT; Certificate No. 210, dated February 6, 1958, AXION ELECTRICAL CLEANING SOLVENT NO. 500; Certificate No. 261, dated March 19, 1958, AXION DEGREASING SOLVENT NO. 701 SALT WATER; Certificate No. 265, dated March 19, 1958, AXION DEGREASING SOLVENT NO. 702 FRESH WATER.

Virginia Smelting Co., West Norfolk, Va. 23703: Certificate No. 206, dated October 25, 1946, LETHALAIRE R–10; Certificate No. 230, dated December 27, 1955, LETHALAIRE V–23; Certificate No. 266, dated February 7, 1949, LETHALAIRE V–21 FORMULA; Certificate No. 342, dated February 7, 1952, LETHALAIRE AERO DEODORANT FORMULA R–15; Certificate No. 416, dated January 15, 1960, LETHALAIRE V–24; Certificate No. 417, dated January 15, 1960, LETHALAIRE JR–4.

AFFIDAVITS

The following affidavits were accepted during the period from January 15, 1967, to February 15, 1967:

R–P & C Division, White Consolidated Industries, Inc., Post Office Drawer RR, Fairview (Erie County) Pa. 16415, VALVES.

Char-Lynn Co., 15151 Highway 5, Eden Prairie, Minn. 55345, CAST IRON CONTROL VALVE.[1]

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[1]

Model	*Pressure*
UB3–91	1200
UC3–91	1200
UD3–91	1200
UE3–91	1200
UK3–91	1200
UM3–91	1200
WB3–91	1200
WC3–91	1200
WD3–91	1200
WE3–91	1200
WK3–91	1200
YM2–91	1200
YP2–91	1200
YS2–91	1200
YT2–91	1200
YU2–91	1200

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 may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Subscription rate is $1.50 per month or $15 per year, payable in advance. Individual copies may be purchased so long as they are available. The charge for individual copies of the Federal Register varies in proportion to the size of the issue but will be 15 cents unless otherwise noted in the table of changes below. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated January 1, 1967, are now available from the Superintendent of Documents, price: $2.50.

CG No.	TITLE OF PUBLICATION
101	Specimen Examination for Merchant Marine Deck Officers (7–1–63).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–62).
115	Marine Engineering Regulations and Material Specifications (3–1–66). F.R. 12–6–66.
123	Rules and Regulations for Tank Vessels (5–2–66). F.R. 12–6–66.
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.
172	Rules of the Road—Great Lakes (9–1–66).
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.
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.
190	Equipment lists (8–3–64). F.R. 10–21–64, 10–27–64, 3–2–65, 3–26–65, 4–21–65, 5–26–65, 7–10–65, 8–4–65, 10–22–65, 10–27–65, 1–27–66, 2–2–66, 2–5–66, 2–10–66, 3–15–66, 3–24–66, 4–15–66, 9–8–66, 11–18–66.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (2–1–65). F.R. 2–13–65, 8–21–65, 3–17–66, 10–22–66, 12–6–66, 12–13–66.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (10–1–63). F.R. 11–5–64, 5–18–65.
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 Vessels and Waterfront Facilities (7–1–64). F.R. 6–3–65, 7–10–65, 10–9–65, 10–13–65, 3–22–66, 7–30–66, 8–2–66.
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (5–2–66). F.R. 12–6–66, 1–13–67.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (1–3–66). F.R. 4–16–66, 12–6–66, 1–13–67.
258	Rules and Regulations for Uninspected Vessels (1–2–64). F.R. 6–5–64, 6–6–64, 9–1–64, 5–12–65, 8–18–65, 9–8–65, 12–6–66.
259	Electrical Engineering Regulations (7–1–64). F.R. 2–13–65, 9–8–65, 12–6–66, 12–31–66.
266	Rules and Regulations for Bulk Grain Cargoes (11–1–66).
268	Rules and Regulations for Manning of Vessels (2–1–63). F.R. 2–13–65, 8–21–65, 12–6–66.
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60, 9–8–65.
293	Miscellaneous Electrical Equipment List (4–1–66).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60, 11–3–61, 4–10–62, 4–24–63, 10–27–64, 8–9–66.
323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (1–3–66). F.R. 12–6–66, 1–13–67.
329	Fire Fighting Manual for Tank Vessels (4–1–58).

CHANGES PUBLISHED DURING FEBRUARY 1967

The following have been modified by Federal Registers:
(None.)

U.S. GOVERNMENT PRINTING OFFICE: 1967