Proceedings

of the Marine Safety Council

Vol. 47, No. 4 *July-August 1990*

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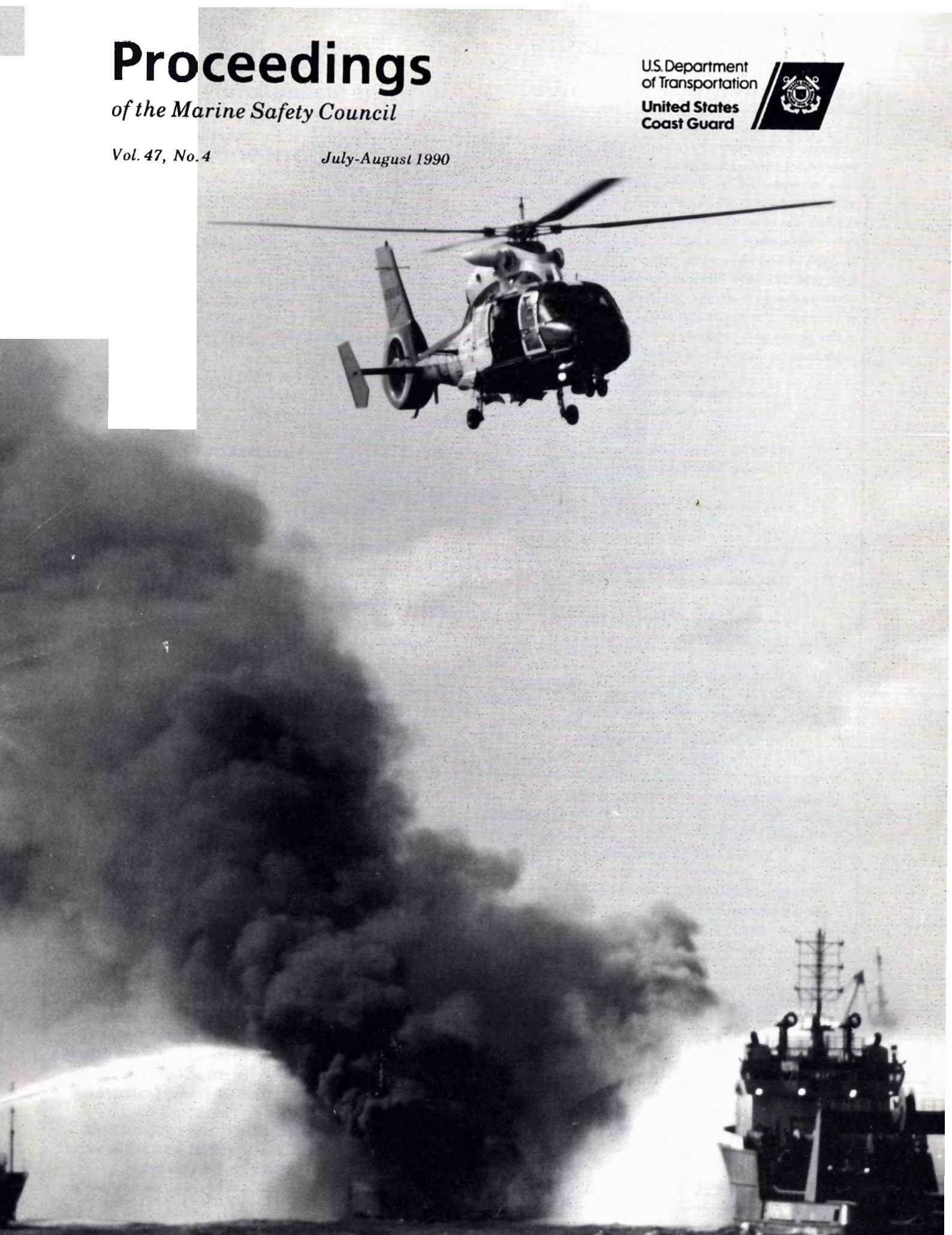

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Coast Guard helicopter from Airstation Houston observes efforts to fight fire aboard Mega Borg.
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Special *Proceedings* Issue

The September-October issue of *Proceedings* will highlight cruise passenger vessel safety. The evolution of the modern cruise liner, International Maritime Organization safety measures, Coast Guard inspection procedures and predictions on the future of cruise ship safety are among the topics to be featured.

We welcome your suggestions on this and other future special issues. Let us know what subjects you would like to be covered.

Admiral J. William Kime

New Coast Guard Commandant

"Never before has there been such a confluence of issues facing the nation which so directly impacts the Coast Guard," stated Admiral J. William Kime in his first Congressional appearance as Commandant of the U.S. Coast Guard. He became the 19th Commandant on May 31, 1990.

"Virtually every aspect of the Coast Guard is confronted with unprecedented challenges," continued the new Commandant before the Subcommittee on Coast Guard and Navigation of the House Merchant Marine and Fisheries Committee on June 7, 1990.

Balance

Discussing the Coast Guard's role in the four challenges of illegal drugs, the environment, maritime safety and national security before the Congressional committee, ADM Kime emphasized the importance of "balance, " which he said was his watchword for the Coast Guard.

"There will be a greater balance shown among our operating missions, as well as between our support functions and our operating missions," he stated, affirming his belief that the secret to the Coast Guard's success is a "unique combination of humanitarian service and military readiness.

"No other service or agency can make that claim," he continued. "Enforcing our nation's laws and treaties, protecting life and property at sea, preserving our marine natural resources and the environment, and promoting our national security interests -- those are the Coast Guard's contribution to the nation's well-being.

"From our newest recuit to our oldest 'old salt,' each of us takes pride in our traditional role as the lifesavers. Search and rescue -- the opportunity to save a life -- will always hold a special place in our hearts."

Winding up his statement to Congress, ADM Kime praised the men and women of the Coast Guard, "who day after day give 100 percent of themselves. They are knowledgeable, dedicated and perform daily with a can-do attitude.

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"In return, " he continued, "they deserve the best support we can provide. They must have access to adequate housing, proper medical care and other family suppport services. Our people need to be well trained and given safe, modern equipment to do their jobs.

Mature leaders

"We are no longer simply the lighthouse keepers or the ten small cutters built by Alexander Hamilton in 1790," concluded the new Commandant. "We are viewed as mature leaders at home and abroad, serving the interests of the United States in many ways."

The Commandant

ADM Kime was nominated to take command of the Coast Guard when he was commander of the Eleventh Coast Guard District, headquartered in Long Beach, California. At the same time, he served as the commander of the Central California Sector of the U.S. Maritime Defense Zone, Pacific, and as coordinator of the Pacific Region of the Office of National Drug Control Policy.

Previously, the admiral was chief of the Office of Marine Safety, Security and Environmental Protection at Coast Guard headquarters in Washington, D.C., a combination of two offices he had previously directed. In this position, he also headed the U.S. delegations to the International Maritime Organization's (IMO) Maritime Safety Committee and the Marine Environmental Protection Committee.

ADM Kime became chief of the Office of Marine Environment and Systems in 1984,the year he was promoted to flag rank. The following year, he was named chief of the Office of Merchant Marine Safety,

From 1982 through 1984, he was assigned as chief of the Operations Division of the Seventh Coast Guard District in Miami, where he directed the day-to-day operations in the Coast Guard's drug interdiction effort in the Caribbean.

Deputy chief of the Office of Marine Environment and Systems at Coast Guard headquarters in 1981, ADM Kime was commanding officer of the Marine Safety Office in Baltimore, Maryland during the previous three years.

In 1977, he completed his studies at the Industrial College of the Armed Forces as a distinguished graduate, and was assigned to headquarters as assistant chief of the Merchant Marine Technical Division.

He also served as the head of the U.S. delegation at two sessions of the Design and Equipment Subcommittee at IMO, and the general coordinator of the U.S. delegation to the International Conference on Tanker Safety and Pollution Prevention in London in 1978.

A 1951 graduate of Baltimore City College, ADM Kime graduated from the U.S. Coast Guard Academy in 1957. He received a master of science degree in naval architecture and marine engineering, along with the professional degree of naval engineer from the Massachusetts Institute of Technology in 1964.

His first tour of sea duty was aboard the Coast Guard Cutter CASCO in the late 1950s, before he assumed command of the LORAN Station Wake Island in 1960.

Assigned to Coast Guard headquarters shortly thereafter, ADM Kime served as the principal U.S. negotiator at the IMO in London during the drafting of the IMO codes for liquefied gas ships. During the 1960s, he supervised the structural design of the Coast Guard's Polar Star-class icebreakers, and also served as the first engineering officer aboard the cutter BOUTWELL.

ADM Kime is a registered Professional Engineer, a member of Tau Beta Pi, Signa Xi, ASNE and SNAME.

His decorations include the Coast Guard Distinguished Service Medal, the Defense Superior Service Medal, the Legion of Merit, five Meritorious Service Medals, the Coast Guard Commendation Medal and Achievement Medal, three Commandant's Letter of Commendation Ribbons, two Coast Guard Unit Commendation Ribbons and the Coast Guard Meritorious Unit Commendation Ribbon.

Born in Greensboro, North Carolina, ADM Kime grew up in Baltimore, Maryland. He is married to the former Valerie Jean Hiddlestone of Pontardulais, South Wales, United Kingdom.

Fire aboard *Mega Borg*

PA3 Mark Sedwick

Firefighting boats attack the flaming Mega Borg with massive amounts of water from all angles.

Photo by PA3 Howard J. Holmes

At approximately 11:30 p.m., June 8, 1990, a violent explosion ripped through the Norwegian tanker *Mega Borg,* killing two crew members, and leaving two others missing and feared dead. The blast left the stern of the 853-foot vessel ablaze about 57 miles southeast of Galveston, Texas, in the Gulf of Mexico.

Mega Borg contained about 38 million gallons of raw crude oil when the explosion ignited the fire, which was to last more than six days. The world's largest oil spill could have occurred if the blaze had not been controlled.

At the time of the mishap, *Mega Borg* was transferring its light Angolan crude oil cargo to the Italian tanker *Framura*. Fortunately, *Framura* was not damaged and none of its crew members were injured.

Mega Borg survivors abandoned ship, mostly aboard a crew boat. A Freeport, Texas, hospital treated and released 17 crew members and admitted two. The captain and chief engineer boarded the Coast Guard cutter *Cushing*.

Coast Guard efforts

Cushing arrived at the scene an hour and a half after the explosion was reported, and started fighting the fire. The cutter, however, was only able to make passes, spraying water and foam.

Shortly, the cutters *Buttonwood, Point Spencer, Steadfast* and *Valiant* joined *Cushing*. *Steadfast* assumed command and maintained communications between the fire fighting operation and the Marine Safety Office (MSO) in Galveston.

Initially, Coast Guard personnel from MSO and Group Galveston and Galveston-based cutters shouldered the brunt of the work. Soon more than 500 active-duty and reserve Coast Guard personnel arrived in the Galveston area.

The Atlantic and Pacific Area Strike Teams brought people and equipment from across the country. MSOs throughout the Gulf states sent people to assist Galveston.

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Patrol boat Point Monroe helps drag collection boom through oily water around Mega Borg.
Photo by PA3 Howard J. HOlmes

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CAPT Thomas C. Greene, commanding officer of MSO Galveston, was the federal on-scene coordinator responsible for ensuring that the fire fighting and oil recovery operations went smoothly.

Owners take over

CAPT Greene had the authority to declare a federal take over,but found this step unnecessary when the owners of *Mega Borg* assumed responsibility.

The fire burned out of control until June 12, when fire fighters from a salvage company hired by the American agent for *Mega Borg* were able to tame the blaze. The fire was declared extinguished on June 16.

Oil clean up

Coast Guard and salvage company officials estimated that 3.9 million gallons of crude oil escaped from *Mega Borg*. Because of its lightness, most of the oil burned or evaporated. Skimming vessels recovered 378,420 gallons of oil and water by June 18.

The U.S. Navy answered the Coast Guard's request for assistance by providing 12 skimmers and 6,000 feet of containment boom to help protect the Texas shoreline.

The Coast Guard cutter *Salvia* worked with Navy skimmers seven miles from the shore in the Sabine Pass area to attack the leading edge of the oil sheen.

The Mexican goverment also aided the operation by sending the high-seas skimmer *Eco Pemex* to the area.Basically two hulls held together by a hinge at the stern, the *Eco Pemex* splits down its center to collect the oil. The vessel picked up more than 63,000 gallons during its first day of service.

The U.S. Environmental Protection Agency, the National Oceanic and Atmospheric Administration, along with Texas state and local government officials formed a regional response team to help oversee the collection of oil and placement of containment booms to deflect oil which evaded clean-up efforts near the tanker.

Two methods

The clean-up operation became a testing ground for two methods of pollution cleanup. A contractor hired a commercial aircraft to drop 11,300 gallons of dispersant to try to break up the oil and assist the natural evaporation process. Scientists will evaluate the effect of the dispersant on the water and marine life.

Damage to Mega Borg 's superstructure was extensive from fire and the immense heat of over 1,000 degrees for more than 150 hours. Crew living quarters were reduced to twisted steel hulks.

Photo by PA3 Howard J. Holmes

Aerial view of Mega Borg fire fight. *Photo by PA1 Chuck Kalnbach*

A bio-remediation process sponsored by the Texas Land Commission was also tested. Oil-eating bacteria were spread over sections of the oil sheen. The bacteria convert the oil into a fatty substance that can be eaten by marine life.

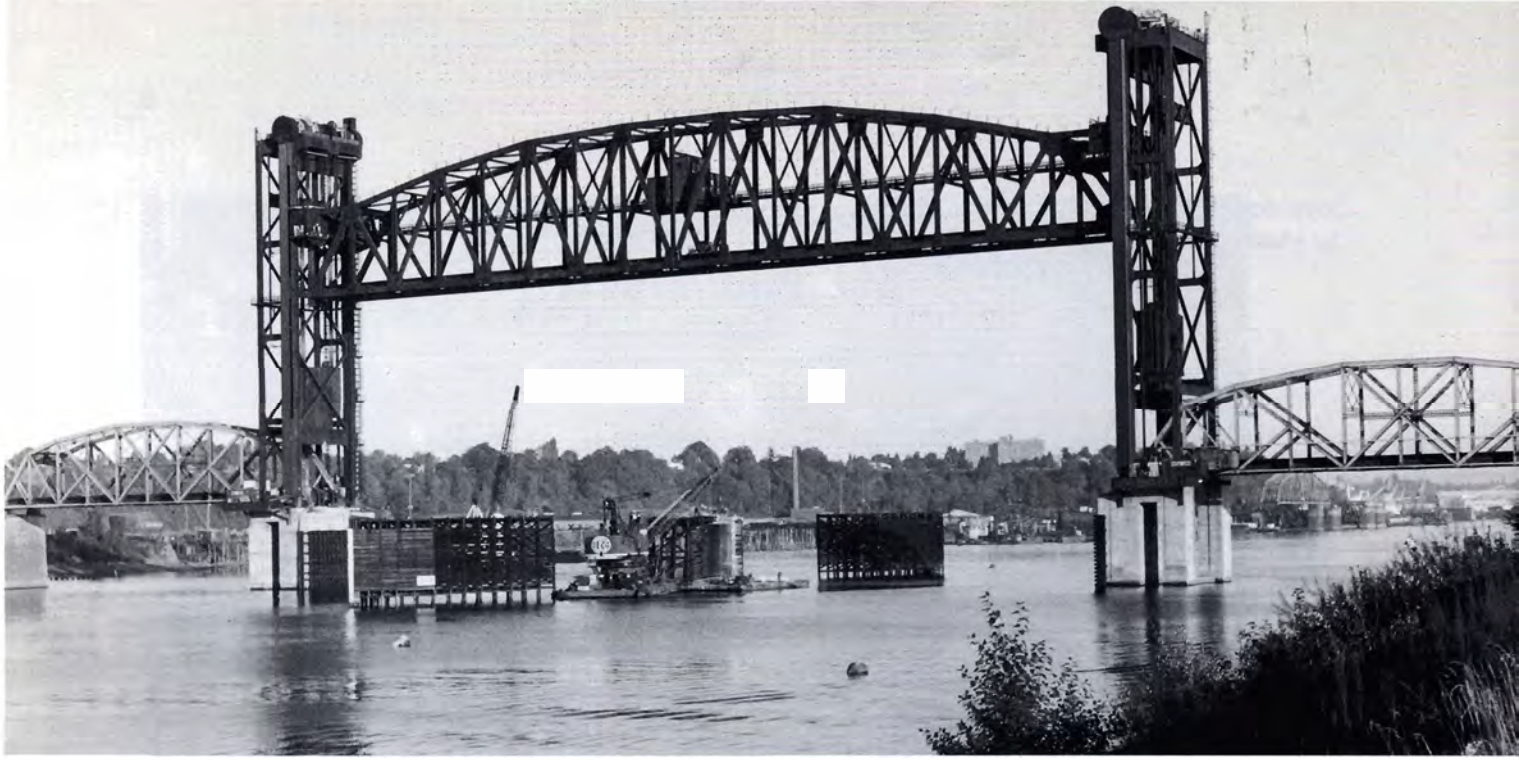
When there is no more oil for the oil-eating bugs, they die and become part of the food chain. Early indications are that the organisms had some effect, but further study is needed to determine how much.

Results

Personnel from MSOs Galveston and Port Arthur patrolled the beaches from the Galveston area to Holly Beach, Louisiana, looking for signs of oil. No traces were found on beaches on the Texas side. Tar balls found near Holly Beach were cleaned up by early July.

As of July 10, the case was officially closed. Thanks to cooperative efforts on all sides, any damage was fortunately negligable.

PA3 Mark Sedwick is a public affairs specialist assigned to the Eighth Coast Guard District, New Orleans, Louisiana.



Burlington Northern Railroad Bridge, Portland Oregon *Photo by Jacob Patnaik*

Bridges stay in Coast Guard

Nick Mpras

In December 1989, Admiral Paul A. Yost, Jr., then Commandant of the Coast Guard, decided that the Bridge Administration Program would remain with the Coast Guard, where it has been well run for more than 20 years.

Background

Starting in 1899, the Bridge Administration Program was managed by the U.S. Army Corps of Engineers. With the formation of the Department of Transportation in 1967, the Coast Guard became responsible for its management. The reason for this was to consolidate transportation-related programs under one department.

In 1987, The Coast Guard and the Corps of Engineers agreed to transfer the Bridge Administration functions back to the Corps. The transfer bill was introduced in the House of Representatives in May of 1988.

Initially supported by the House Merchant Marine and Fisheries Committee, the bill encountered significant opposition from the American Waterway Operators, other waterway users, the American Association of State Highway and Transportation officials, and members of the Senate.

The main reason for this opposition was that the bridge program is so important to the nation, and the Coast Guard is managing it so efficiently, it should stay where it is. Admiral Yost agreed.

Rationale

Bridges are necessary for land transportation, but are obstructions to marine traffic. The location of bridges, bridge navigation clearances and pier protection devices must be decided upon with the full consideration of the type of craft and cargo that travel underneath.

Concerned with the safe passage of vessels under bridges, the Coast Guard historically prescribes appropriate bridge lighting. Bridge configuration is directly related to the required type and location of the lighting.

Moreover, bridge administration is related to other Coast Guard programs associated with waterway safety. This includes the marking of

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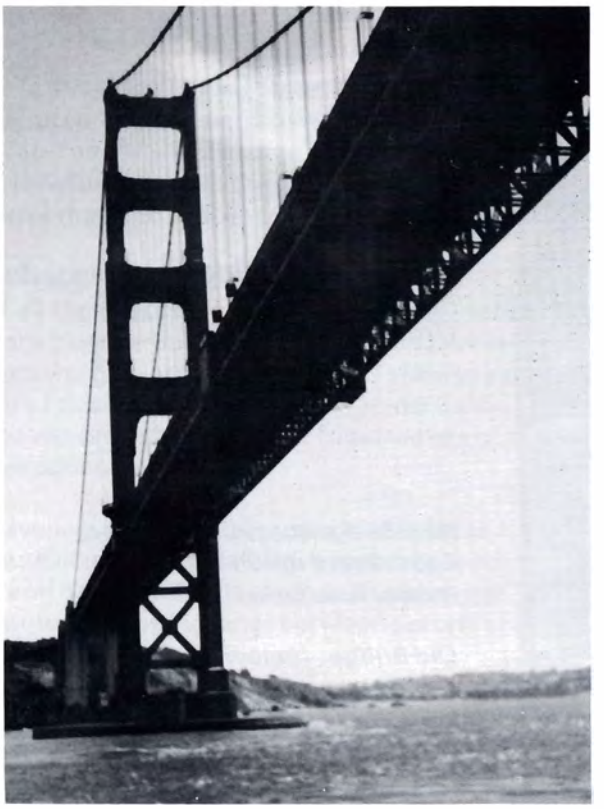

Golden Gate Bridge in San Francisco

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bridges, the investigation of accidents involving collisions with bridges and the marking of waterways for safe approaches to bridges.

All this boils down to the fact that the Coast Guard is the best equipped agency to manage the bridge program.

Objective

The goal of the Bridge Administration Program is to insure the safe and unencumbered passage of marine traffic on the nation's waterways by minimizing the inherently obstructive nature of bridges.

This objective is achieved by issuing permits for the construction and alteration of bridges, regulating the lighting of bridges, imposing other regulations concerning bridge operation and considering the effects of these actions may have on the human environment.

Specifics

Specific functions of the program include:

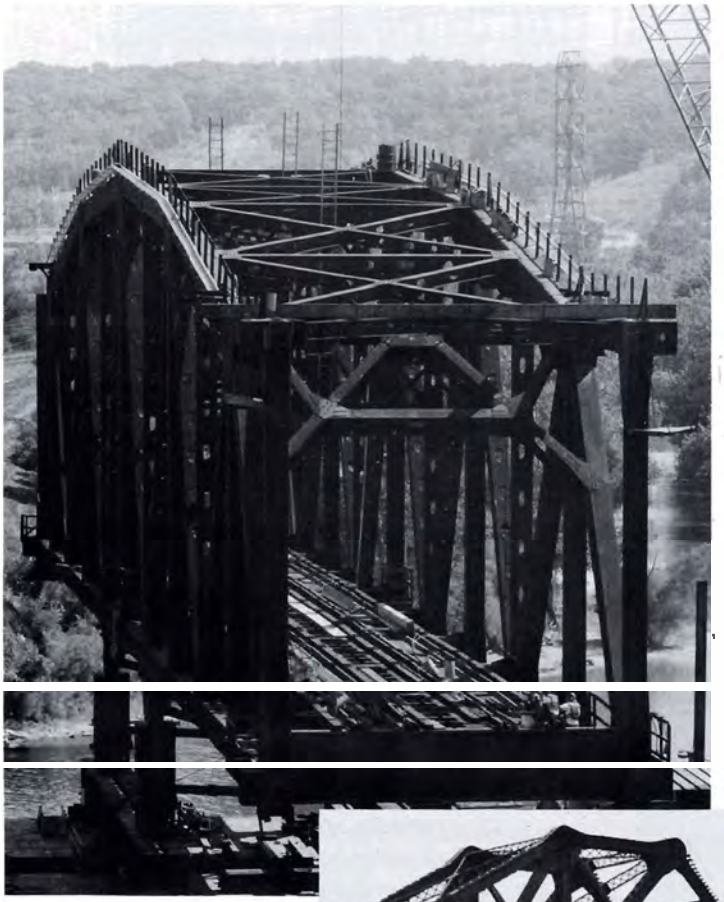
1) **Administration of the bridge-permitting authority.**
The Coast Guard approves the location and plans of bridges and causeways in or over the navigable waters in the United States.

2) **Administration of the alteration of obstructive bridges.**
The Coast Guard investigates any significant bridge complaints and conducts detailed investigations on all bridges which appear to be unreasonable obstructions to navigation. Once a bridge has been determined to be unreasonably obstructive, it is ordered to be altered or removed to meet the reasonable needs of navigation.

3) **Administration of drawbridge regulations.**
The Coast Guard reviews requirements of water and land transportation in response to complaints as to the operation of drawbridges. Regulations for drawbridge operation are established, amended or revoked as characteristics and uses of waterways change, or as the public interest, health or safety may require.

4) **Lights and signals.**
The Coast Guard prescribes lights and other signals to be displayed from bridges in or over the navigable waters of the United States for the safety of nighttime navigation on the waterways. The law requires that bridge owners maintain such lights and signals at their own expense.

5) **Removal of unlawfully-constructed bridges.**
Bridges which have been constructed in a manner which does not provide for the reasonable needs of navigation on the waterways may be required to be modified or removed. Bridges which are abandoned and are not used for transportation are also required to be removed.



Illinois River Bridge
Peoria & Pekin
Union Railway Co.

New Bridge constructed by the Coast Guard in 1984 -(Left)
Photo by Jacob Patnaik

Old Bridge - (Below)

Nick Mpras is the assistant chief of the Bridge Administration Division, Office of Navigation Safety and Waterways Services.

Ice patrol is 76

Neal Thayer

Since 1914, the United States Coast Guard has operated the International Ice Patrol, which locates and tracks icebergs near the Grand Banks of Newfoundland in the North Atlantic and warns mariners of iceberg threats.

Icebergs

Of all the peacetime hazards of the sea, none are more treacherous than icebergs. Pried loose from the glaciers of Greenland by the rise and fall of tides, icebergs drift west across Baffin Bay and are carried south in the frigid waters of the Labrador current.

Traveling as long as two years and as far as 1,500 nautical miles, the icebergs eventually reach the Grand Banks and drift south to threaten the east-west shipping lanes between Europe and the major ports of the northeast United States and Canada.

Some of these floating mountains of glacial ice are more than 300 feet tall, several hundred feet long and can last for weeks, even in the warm waters of the Gulf Stream. The International Ice Patrol commonly tracks icebergs at the same latitude as Philadelphia, and there have been sightings as far south as Bermuda and as far east as Ireland.

The Grand Banks, however, contain the greatest threat of all. The prevalence of fog and severe storms, added to the accumulation of icebergs, make this one of the most dangerous marine areas in the world.

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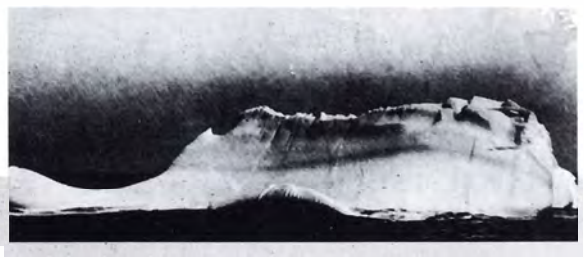
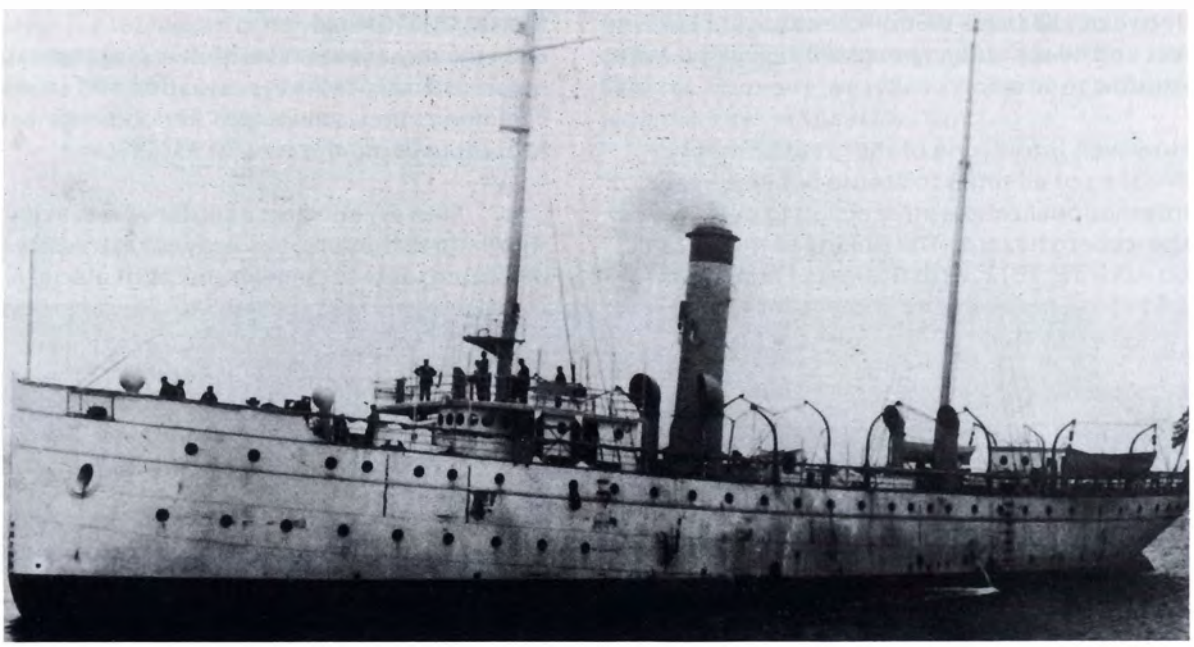
The iceberg that was believed to have sunk the Titanic in 1912 lead to the ice patrol with the revenue cutter Seneca at work in 1914.





Right: PBAY-"Liberator," was the first dedicated ice patrol aircraft in 1946.

Right: PBY-5A "Catalina," flew first ice patrol flight in 1946.

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Early disasters

The history of navigation prior to the turn of the century reveals a large number of casualties caused by icebergs around the Grand Banks.

In 1833, *Lady of the Lake* sank with a loss of 70. Between 1882 and 1890, 14 vessels were known lost and 40 seriously damaged by ice in the North Atlantic.

However, it took one of the greatest marine disasters of all times to arouse public demand for international cooperative action to deal with the iceberg hazard. The sinking of *RMS Titanic* on April 15, 1912, with the loss of more than 1,500 lives provided the impetus for strong remedial measures.

SOLAS

In 1914, 13 maritime nations held the first Safety of Life at Sea (SOLAS) conference. In addition to setting standards for lifeboats and other safety equipment, and establishing the first marine radio-telegraph procedures, the SOLAS agreement created an iceberg patrol in the North Atlantic, near where the *Titanic* went down.

Beginning with the early patrols of the Revenue Cutters *Seneca* and *Miami*, the International Ice Patrol has searched the area of the Grand Banks for icebergs, sending out daily broadcasts of the boundaries of their hazard to mariners.

Modern Menace

Even the newest vessels with their sophisticated radar systems, precision navigation and satellite communications equipment find icebergs just as hazardous as did the crew of *RMS Titanic*.

Only 1/60th as reflective of radar waves as a ship's superstructure, icebergs are extremely difficult to detect. Smaller pieces of glacial ice, called "growlers," may only stick up a few feet above the surface of the water, yet weigh hundreds of tons.

Formed under extreme pressure and often thousands of years old, the glacial ice is a hard, glass-like substance, described as "metamorphic rock that floats." **In face of this danger, the only truly effective safety measure for shipping is to avoid iceberg-laden waters whenever possible.**

Ice Patrol

Except for the years of the two world wars, the International Ice Patrol has operated each iceberg season since 1914. The patrol is required by law to cover only the ice regions of the North Atlantic Ocean through which the major trans-Atlantic shipping passes.

The present patrol operation is conducted mainly by iceberg reconnaissance flights deployed to Newfoundland one week out of two throughout the iceberg season, which usually runs from February to early July.

Using sophisticated airborne radar-supported ice observers, the patrol's C-130 aircraft are able to visually search an area the size of Pennsylvania each day. However, the patrol can only cover the outer portion of the icebergs when they are widely dispersed.

Using the information collected during these flights, along with that provided by Canadian reconnaissance flights and shipping reports, a patrol produces a daily computerized picture of iceberg behavior in its area. This knowledge is relayed to mariners twice daily during the iceberg season via "Limits of All Known Ice" broadcasts.

Iceberg science

Keeping track of known icebergs in the vast North Atlantic is not easy. Tracking individual icebergs is a lot like an ocean-going shell game, particularly when they are masked by bad weather, carved by waves into smaller icebergs and carried along by complex currents.

The International Ice Patrol uses a combination of applied oceanography, computer-driven drift and melt models, and satellite-tracked drifting buoys to improve its odds at the game.

The patrol has conducted oceanographic research in its region throughout its history. The knowledge gained helps predict capricious behavior of icebergs in one of the most complex systems of currents in the world.

Whether searching the fog with "eyeballs and fingertips" in the old *Miami* or using today's sophisticated tracking systems, the patrol's record has been perfect. There hasn't been a single collison between vessel and iceberg in the designated "safe area" since the *RMS Titanic*.

Neal Thayer is Chief of the Science Branch of the Ice Operations Division of the Coast Guard Office of Navigation Safety and Waterways Services. Formerly, he was an operations officer with the International Ice Patrol.

Iceberg dwarfs 269-foot icebreaker USCGC Westwind

MASSPORT honored by Commandant

Admiral J. William Kime, Coast Guard Commandant, presented a public service commendation to the Massachusetts Port Authority (MASSPORT) in Boston on July 3, 1990 for its longtime sponsorship of the Coast Guard's Port Safety Industry Training Program.

MASSPORT Maritime Director Anne Aylward accepted the citation, which credited the agency with being one of the first port authorities in the country to participate in the program.

The Port of Boston through MASSPORT has sponsored ten Coast Guard officers in the safety training program since its inception in 1975.

Training

Port Safety Industry Training is a six-month, advanced, specialized program. It is designed to provide Coast Guard officers with an understanding of the complexities involved in operating a port, and how regulatory agencies affect the maritime industry.

A participant is assigned to one of ten port authorities throughout the country, The person is considered to be on loan from the Coast Guard, and does not replace an employee.

Training includes such areas as the roles of agents, forwarders, jobbers and brokers; port inspections; trade development; custom brokering; public relations; port planning; legislation; port security and safety; environmental affairs; computer applications; labor relations and activities of associated agencies.

Ports sponsoring the program are Baltimore, Boston, Hampton Roads, Houston, Jacksonvile, New Orleans, Los Angeles/Long Beach, Philadelphia, San Francisco and Seattle.

Seattle Award

ADM Kime recently approved a similar public service commendation to recognize the long-time participation of the Port of Seattle in the Port Safety Industry Training Program.

Fourteen Coast Guard officers have completed their six-month training during the past 16 years of sponsorship by the Port of Seattle. Many of these graduates have advanced to management positions in the Port Safety and Security Program.

For information on eligibility, assignments and application procedures, contact LCDR Deac Jones at FTS 267-0507 (G-MPS-3).

The USS CONSTITUTION is escorted by Coast Guard vessels at the Port of Boston, July 4, 1990.

Photo by Rick Booth

MAN OVERBOARD

Thomas J. Pettin

The following is an eyewitness account of a man overboard incident in the Bering Sea by the master of the fishing vessel.

"I being the operator of the vessel at the time of the accident will convey to you the events as they happened before my eyes.

"The boat's crew were checking crab pots that had been set the previous day. As I looked out onto the deck from the wheelhouse, I saw the guys all start to scramble and point off the port stern, at which time I ran over to the port side to see "Will Jones" in the water 40 to 50 feet off the port stern.

"I ran out the door and grabbed the life ring located just outside the starboard door. I ran to the stern and threw the ring to Will. It landed withing 10 feet of him. Will seemed to be floating high in the water. He didn't seem to be struggling to keep afloat, but he didn't seem to swim towards the life ring. He saw me throw the ring, as he was looking at me. I yelled to Will to hold on as I would be right there.

"I then went back into the wheelhouse to turn the vessel around. I told the crew to get a second life ring ready. I kept an eye on Will the whole time as I turned to the starboard." Weather conditions at the time consisted of northwest winds at about 25 mph with eight-foot seas and swells, and temperatures outside 28 to 30 degrees.

"We approached Will's starboard side to within 15 to 20 feet. Another crewmember threw the ring to Will and it landed withing two feet of him. Will didn't make any effort to reach for the ring. I yelled down for someone to jump in and grab him. No one on deck took any action so I yelled again.

"We were drifting and the crew was trying to get the ring to Will, but to no avail. I yelled for a relief for I was at the wheel. I am a good swimmer and would try to get to Will. I knew and felt Will was in trouble as he was very incoherent. He wasn't making any effort to grab for the ring or swim toward the boat. His arms were just laying on top of the water in front of him.

"He was having trouble keeping his head up by this time. As soon as I was relieved at the wheelhouse, I ran outside and down the deck. I was barefoot and wearing a long-sleeved T-shirt and sweatpants. Will was now between 40 to 50 feet from the boat. I dove in.

"I got ahold of Will and had to hold his head up out of the water. He was really getting weak. He didn't make any attempt to hold on to me or help me swim towards the boat. I kept on talking and yelling to him to help me swim. He was totally oblivious to anything I said.

"It was like he was in a total daze. I rolled him onto his back and held him head up, swimming the best I could towards the boat. When I was about 10 feet away, I told the guys on deck to hurry and get us a ring. I told Will I was going to let go of him to get the ring and for him to hold on. I would be right back.

"As I let go, I yelled for the guys to keep an eye on him so they could tell me where he was at. I got to the ring and turned around. I couldn't see Will. I asked if the guys could see him. They said they couldn't. The crew began pulling me in with the ring.

"I notified the Coast Guard on our radio and several fishing vessels began assisting in the search for Will. The time frame of the whole incident seemed like a long time, but was probably about six or seven minutes.

"When I got aboard, I went into the shower to try and warm up my fingers and toes, which I believed were frozen. They really hurt the longer I was inside.

"We searched til dark. Will will be missed by all -- family, friends and fellow shipmates."

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"Will Jones" is missing and presumed dead. The official cause cited in the investigation was that the victim slipped overboard while securing crab pots on deck. A contributing cause was that the victim was not wearing a lifejacket while working in rough seas.

Hypothermia

What Will succumbed to is an insidious killer called hypothermia, a condition in which a person's body loses heat faster than it can produce it, causing a drop in the inner core body temperature. Water need only be colder than a victim to set hypothermia in motion. It need not be icy. A person who is intoxicated, wet and/or improperly dressed can become hypothermic in 70-degree weather.

By nature's choice, your body's core temperature is 98.6 degrees Fahrenheit. Your regulatory system tries to keep this core temperature constant, despite variations in outside temperatures.

Body heat loss is a gradual process and varies with physical condition, weight, age and sex. It also varies with the amount and type of clothing worn, whether a person has been drinking and whether a person has been thrashing about or staying still.

There are levels of cold exposure where the body must have help in maintaining its core temperature. Clothing does not warm the body, it insulates. The body is warmed by its own heat production. Body heat trapped between layers of clothing warms the body.

If the water is cold, in time, the body becomes unable to regulate and compensate for heavy heat loss. Serious trouble in the form of plunging body temperature soon follows. Clothing, even though wet, will still slow down the rate of body heat loss.

A suddon plunge into cold water can cause rapid or an uncontrollable rise in breathing rate, resulting in an intake of water into the lungs. In cold water, a person may experience violent shivering and great pain in the limbs. These natural body reflexes are not dangerous. Pain won't kill you, but heat loss will.

Rules to follow

To preserve body heat in cold water, remain as still as possible. This is why a lifejacket is essential. **Remember to always wear a lifejacket when you have to go on deck for any reason in poor weather.** A lifejacket helps you conserve energy, allowing you to concentrate on getting out of the water rather than staying afloat. **This is a rule which should never be broken.**

If possible, avoid walking on an open deck, especially in poor weather conditions. If you end up in cold water, minimize body heat loss by keeping on clothing. Do not try to swim unless you are trying to reach a nearby boat.

If you are awaiting rescue, assume a heat-escape-lessening position to conserve body heat. Hold your knees to your chest and wrap your arms around your legs in a sort of floating fetal position. This will help keep the trunk of your body from losing heat.

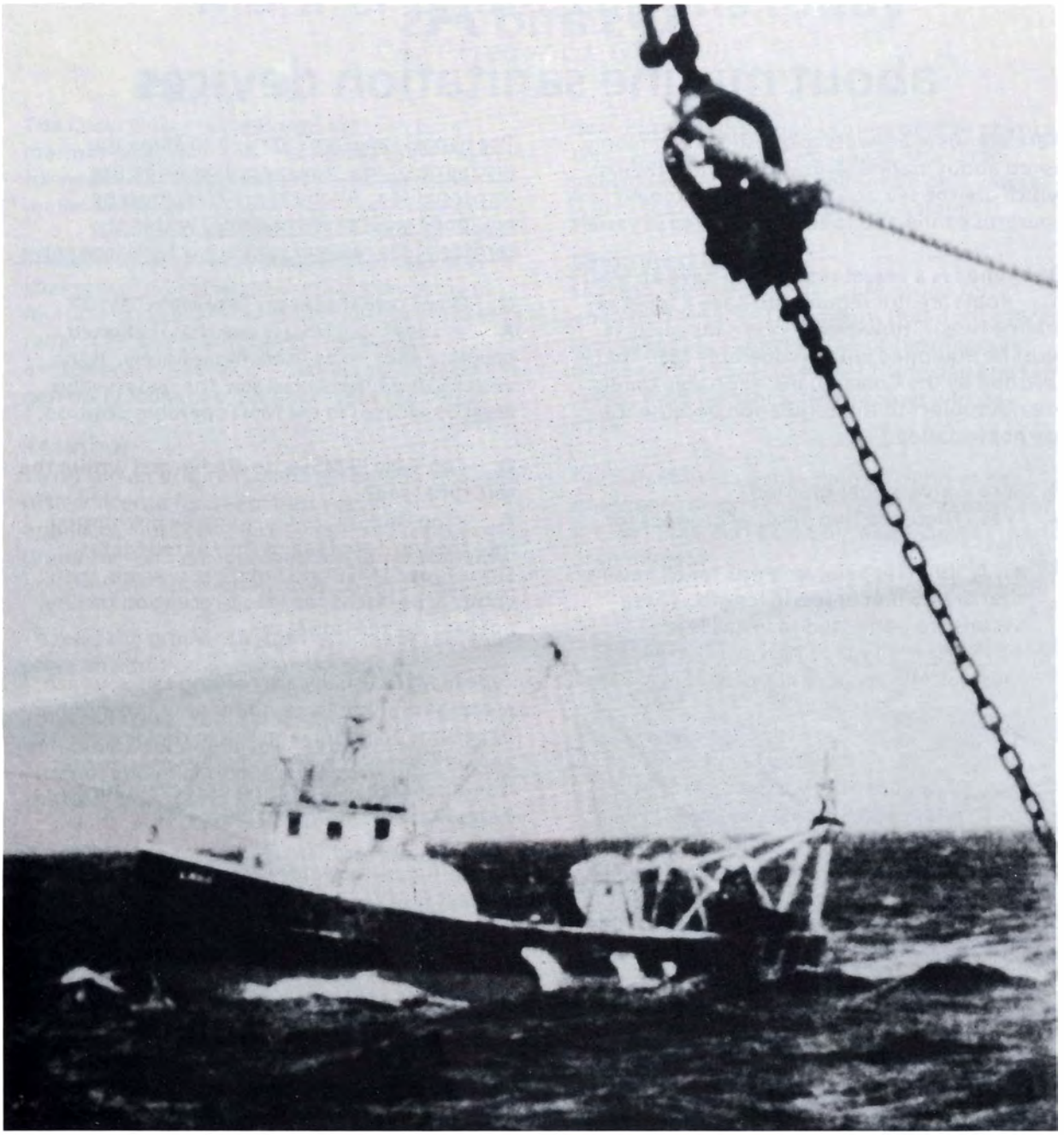
It is important to remember that you are not helpless. Research shows that in water 40 - degrees Fahrenheit, a normally dressed person has a 50 percent chance of survival after two hours of exposure.

Conclusion

The loss of body heat is probably the greatest hazard to the survival of a person in open water. Water takes heat away from the body about 25 percent faster than air. An awareness of the potential hazards and being prepared for the possibility of a fall or submersion into cold water is the factor which will determine your chances of survival.

This account is part of the official record of the casualty case. (Ref: U.S. Coast Guard G-MMI-3, case MC89002159.) The names and dates were changed to protect the confidentiality of those involved. However, except for minor editing, the original account remains much the same.

Thomas J. Pettin is a program analyst in the Coast Guard's Marine Safety Evaluation Branch, Office of Marine Safety, Security and Environmental Protection.



This photograph shows "Will Jones," the man overboard described in this article, beside the fishing vessel from which he fell.

Qs and As about marine sanitation devices

Here are some answers to questions commonly asked about marine sanitation devices (MSDs), which are the sewage treatment or holding tank aparatus connected to toilets installed in vessels.

Q. When is a vessel required to have an MSD?
A. Boats are not required to have a toilet or marine head. However, if one is installed, it must be equipped with an operable MSD that is certified by the Coast Guard. (Portable toilets are not subject to this regulation because they are not installed.)

Q. Are waivers ever granted?
A. Yes. There are two possible grounds for waivers.

1) A "blanket" waiver exists for all vessels that are 65 feet or less in length. These vessels are permitted to install less cumbersome Type I MSDs. Larger vessels must install Type II or III MSDs.

2) A waiver may be issued to vessels which demonstrate that their size and electrical power supplies or other limitations make them unsuitable for MSD adaption. However,this waiver still prohibits the discharge of raw sewage into the territorial sea.

Q. Is the regulation enforceable outside the territorial sea?
A. Title 33, Code of Federal Regulations, Part 159, indicates that the MSD regulation applies to all vessels with installed toilets. However, jurisdiction is limited to the three-mile limit of the territorial sea. Therefore, the regulation can only be enforced within the territorial sea.

Q. Are bypass valves permitted to circumvent MSDs?
A. A "Y" or bypass valve that allows untreated sewage to be discharged overboard, circumventing a certified MSD, is permitted. However, within territorial waters, it must be disabled by locking it shut, using a wiretie or removing the handle. This disabling is considered sufficient to ensure that the MSD is operable and, therefore, in compliance with the law. The bypass valve is permitted to allow the discharge of raw sewage only outside the territorial sea. An installed toilet must be equipped with a certified MSD within the territorial sea, with or without a discharge valve.

Q. What constitutes an "operable" MSD?
A. An operable MSD is one that is aligned properly and can be used immediately. If the vessel is in the territorial sea, the bypass valve must be secured in the MSD operable position.

Q. Can Type III MSDs be discharged within the territorial sea?
A. In no case can raw sewage be discharged into the territorial sea of the United States. Since Type III MSDs do not treat sewage, they can only be dischaged into a reception facility, not into the territorial sea.

Type III MSDs usually are holding tanks, which are large enough to accommodate the number of persons on board, and retain raw sewage at ambient temperatures and pressures. (Note: Non-discharge incinerating or recirculating systems are often Type III units.)

For further information about MSD regulations, contact G-MVI-1 at (202) 267-1464.

MSD Types

Type I is a sewage treatment device, permitted on vessels under 66 feet long.

Type II is a more advanced sewage treatment device permitted for use on all size vessels.

Type III, commonly called a holding tank, is designed to prevent the overboard discharge of sewage. (Some incinerator and recirculating MSDs are Type III units.)

Mariner qualifications today

CAPT Frederic J. Grady III

The Coast Guard has determined merchant mariner qualifications in much the same manner for nearly 40 years. It may be time for some major alterations.

There have been some modifications, such as changing the professional exam from essay to multiple choice, and requiring special training in radar, CPR and fire fighting. With these exceptions, however, the requirements have generally remained the same since the 1950s.

Training

To obtain an original unlimited deck or engineer officer license for deep draft vessels, an applicant must have three years' sea service or graduate from an approved maritime academy and pass the appropriate Coast Guard exam.

To raise the grade of a license, an applicant must serve an additional year of sea duty.

The Coast Guard does not require any minimums for nor have any control over the amount and quality of training afforded during the necessary sea duty.

In addition, many applicants' "professional study" consists mainly of attending private "cram courses" or reading material designed to help in passing the exam.

Rating duration

Applicants may be certified as licensed mariners after completing a license renewal exercise or documenting their employment in positions associated with vessel operations.

Individuals holding unlicensed ratings never have to demonstrate any evidence of continued proficiency once their rating is obtained. They are good for life, unless suspended or revoked for cause.

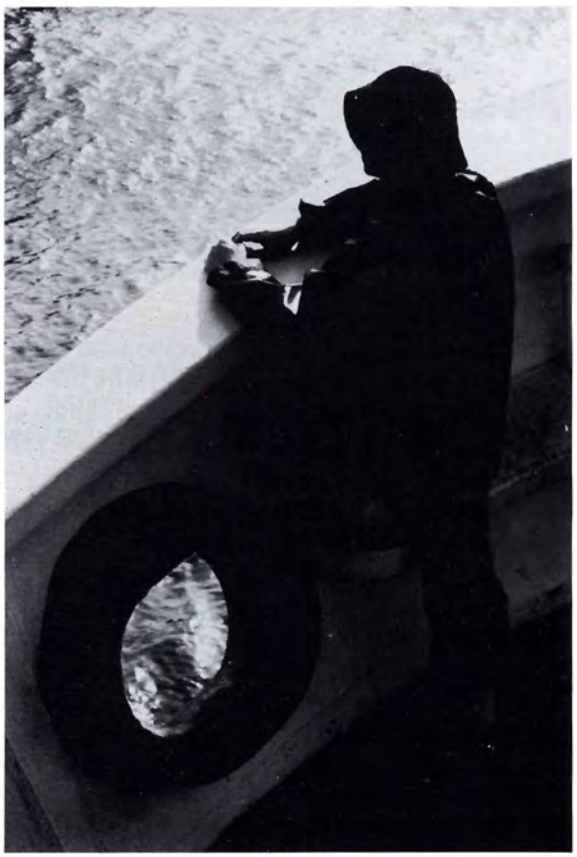
For example, an individual may obtain the rating of able seaman-unlimited at 22 years-of-age. Thirty years later, without having had to demonstrate continued professional or physical competency to the Coast Guard, this same individual may serve as helmsman on a vessel with a state-of-the-art steering system.

Unlimited licenses

Licenses, for the most part, are issued for unlimited service. That means that deck officers, including cargo officers, can obtain licenses which permit them to serve on any size and type vessel, from tankships to container and gas ships.

Also, an individual may gain all of his or her experience on one class of vessel, and then, for the first time, serve on a different class as master or chief mate.

Continued on page 18



Merchant seaman serves as lookout on the bow.

Merchant mariner takes his turn at the helm.

Continued from page 17

The same is true for licensed engineers. Most are issued licenses for vessels with unlimited horsepower with no consideration given to their class or installed equipment, such as cargo systems or engineroom automation.

Most engineering licenses are issued with steam or motor limitations. However, an individual may obtain an endorsement for the other type propulsion simply by making some voyages as an "observer" or by completing a course and passing the Coast Guard examination.

Most significant is the fact that mariners who have not been to sea in 15 or more years, but who have retained their licenses , may return to sea at any time to serve in safety sensitive positions without recertification.

RECOMMENDATIONS

1- **Restrict licenses and endorsements to the type and class of vessel on which individuals gained experience.**

2- **Require periodic refresher training, including simulator training for certain ratings.**

3- **Require specialized training for each step up the rating ladder.**

4- **Require basic training and skill demonstration before initial sea service.**

5- **Review officer skills by shipboard observation.**

6- **Require periodic renewal of unlicensed ratings based on recent experience or training in specialized skills.**

7- **Require physical standards for all mariners with endorsements for safety-sensitive positions at document issuance and renewal.**

8- **Require mariners without recent sea experience to serve aboard ship in a lesser capacity than authorized, sail as an observer, or obtain some combination of observer time and simulator training before being issued a renewal.**

CONSEQUENSES

1- **Significant increased costs for training, time-off-the job, and commuting and lodging.**

2- **Decrease in personnel available for each class of vessel.**

3- **Resulting smaller work force jeopardizing sea mobility during national emergencies.**

Engineer operates merchant ship at machinery control console.

Yesterday

This system of mariner qualifications served the industry well during the 1940s up through the 1960s, because:

- **-Vessel equipment, design and operations were similar.**
- **-Crews were twice as large as today.**
- **-Vessel systems were not as sophisticated.**
- **-In-port turn-around times were longer.**

Recently, labor unions have developed training programs to increase mariner qualifications, and companies have increased funding for training in skills such as fire fighting.

Today

At present, however, we are at a point where we must take steps to update our licensing and certification program to meet today's requirements for vessel safety and environmental protection.

It must be recognized that as the level of vessel sophistication increases and crew sizes decrease, the competence and physical condition of crews must meet higher standards than in the past.

Conclusion

A balance must be achieved between the need to insure maritime safety and environmental protection, and the need to encourage individuals to serve in the merchant marine while maintaining top skills and qualifications.

CAPT Frederic J. Grady III is Chief, Merchant Vessel Personnel Division, Office of Marine Safety, Security and Environmental Protection

Chemical of the Month

4/c Bressi

1, 2, 3 - Trichloropropane

Although not an everyday household item, 1, 2, 3 -trichloroproprane serves many useful purposes in the industrial community. It removes even the most disagreeable paint and varnish, as well as dissolves most oils, fats, waxes, chlorinated rubber and resins. It is a degreasing agent and a very strong solvent.

Produced mainly as a by-product of allyl chloride, 1, 2, 3 - trichloropropane was first worked with extensively by Kharasch, an American organic chemist. The first real reference to it was in the American Chemical Society Journal in 1939.

A colorless liquid with a very strong acid odor, trichloropropane can be identified by a number of names, including glycerol trichlorohydrin and allyl trichloride.

Highly toxic

When working around the chemical, do not inhale the fumes, absorb the liquid through the skin, ingest it or allow it near the eyes.

Trichloropropane is very toxic if inhaled and moderately toxic if absorbed through the skin. It acts as a skin irritant and a central nervous system depressant, and can cause liver injury.

Store trichloropropane well away from active metals, strong caustics and strong oxidizers. When working near it, shield your eyes and wear protective clothing.

A concentration of 75 parts per million will cause great discomfort in the lungs and throat in minutes. Be sure to use an adequate self-contained breathing apparatus when exposed to any fumes.

When 1, 2, 3 - trichloropropane is exposed to heat and flame, there is a moderate risk of fire. In case of a fire; use, water, foam, carbon dioxide or a dry chemical .

When heated, 1, 2, 3 - trichloropropane emits highly toxic fumes of chloride, so fire fighters should wear breathing apparatus. Also, the fumes react vigorously with oxidizing materials. Therefore, any such materials should be moved as quickly as possible out of the area.

When disposing of this chemical, first mix it with a combustible fuel and then incinerate it. Remove halo acids caused by the incineration with an acid scrubber.

The Coast Guard regulates bulk shipments of 1, 2, 3 - trichloropropane under 46CFR Subchapter O.

Caution

If eye contact is made with 1, 2, 3 - trichloropropane, flush immediately for a prolonged period of time. Skin that comes into contact with it should be washed immediately and thoroughly with soap. If inhaled, bring the person to a ventilated area as soon as possible and apply artificial respiration if necessary. If taken internally, administer large quanties of salt water and induce vomiting.

1, 2, 3 - Trichloropropane

Chemical name: 1, 2, 3 - trichloropropane

Formula: $CH_2ClCHClCH_2Cl$

Synonyms: Glycerol trichlorohydrin and allyl trichloride

Physical properties:

Boiling point:	156.17°C	313.1°F
Freezing point:	-14.7°C	58.5°F
Vapor pressure at 46°C (114.8°F):	10mmHg	

Threshold limit values (TLV)

Time weighted average:	10 ppm
Short term exposure limit:	not listed

Flammability limits in air

lower limit:	3.2% volume
upper limit:	12,6% volume

Combustion properties

flashpoint:	174°F
autoignition temperature:	579°F

Densities

vapor (air = 1):	5.0
density (at 25°C):	1.3888

Identifiers

CHRIS Code	TCN
Cargo compatibility group	36

Bressi was a Fourth Class Cadet at the Coast Guard Academy when this article was written as a special project in chemistry for LT Thomas Chuba.

New Publications

Chapman's Nautical Guides

Two new additons to Chapman's ongoing series of useful nautical books are : ***Chapman's Nautical Guides: Knots*** and ***Chapman's Nautical Guides: Boating Etiquette.***

In *Knots,* Brion Toss takes us on a journey through the world of useful knots for the everyday boater and mariner. Easy-to-follow, detailed instructions are accompanied by uncommonly clear illustrations by Gae Pilon.

The origins of the knots, along with their uses and relationships to one another is covered at length. The instructional technique is based on Toss' belief that an understanding of the origin and specific use of a knot is the key to remembering how to tie it.

Mixing the old with the new, Toss provides instructions on knot tying in ropes made of traditional hemp to those fashioned from the latest synthetics.

A section on fancy work and tips on rigging round out the volume, which should prove useful for anyone looking to improve their abilities with the "bitter end."

A well known rigger and nautical writer, Toss has sailed and raced everything from a 17th century trading vessel to high-tech racing boats. He is the author of *The Rigger's Apprentice.*

In *Boating Etiquette,* Queene Hooper Foster provides a very good guide on the do's and dont's of yachting conduct. The rendering of common courtesies on the water is something that most boaters think is strictly a matter of obeying the "rules of the road."

The book is not a Miss Manner's lecture, but a useful guide for dealing with crowded harbors, dockside etiquette, proper observances of colors, ship's routines, radio manners and even a segment on racecourse conduct.

There is much wit and humor to be found throughout the book, along with useful appendixes covering common mistakes and misused terms. A seasoned yachtsman or interested guest would find this book a handy tool.

An accomplished sailor, Mrs. Foster is one of the first women members of the New York Yacht Club. She has edited *Waterway Guide* and *Chapman Piloting.*

Chapman's Nautical Guides: Knots is priced at $14.95, and *Chapman's Nautical Guides: Boating Etiquette is $13.95.*

Both volumes were published on June 22, 1990 by Hearst Marine Paperback, 105 Madison Avenue, New York City, New York 10016.

Nautical Rules of the Road

The third edition of *Nautical Rules of the Road* includes the amendments to the international rules and annexes, and inland annexes effective in November 1989, along with the proposed changes to the inland rules expected to be approved by Congress in 1990.

The material is simple enough for the boater or recreational sailor, and technical enough for the professional dealing with Coast Guard exams.

Differences and similarities between the international and inland rules are clearly highlighted. A section on lights and shapes includes figures and tables to help simplify the requirements. This new edition also features 150 Coast Guard examination questions on Rules of the Road, as well as suggested study methods.

Nautical Rules of the Road , third edition, is available wherever nautical books are sold, or may be ordered directly from Cornell Maritime Press, Inc., P.O. Box 456, Centreville, Maryland 21617. The price of the book is $19.00.

Keynotes

Notice

CGD8 90-06, Vessel Certificates and Exemptions under the International Regulations for Preventing Collisions at Sea (72 COLREGS) (May 14)

ACTION: Notice of granting of certificates of alternative compliance to vessels.

This notice lists commercial vessels granted Certificates of Alternative Compliance by the Commander, Eighth Coast Guard District, since October 17, 1988.

This notice lists vessels which, due to their special construction and purpose, cannnot comply fully with certain provisions of the International Navigation Rules for Preventing Collisions at Sea (72 COLREGS) without interfering with the vessel's special functions.

The intent of this notice is to advise the mariner of those vessels that have been granted Certificates of Alternative Compliance.

The effective date is May 14, 1990. For further information, contact LCDR Robert L. Knapp, USCG, c/o Commander, Eighth Coast Guard District (mvs), Hale Boggs Federal Building, Room 1341, 501 Magazine Street, New Orleans, LA 70130-3396, (504) 589-6271.

Notice

CGD 90-031, Loran-C Mid-Continent Expansion Project Transmitter Station Antenna Positions (May 16)

ACTION: Notice

This notice publishes the transmitter antenna position survey data for the Loran-C Mid-Continent Expansion Project.

For further information, contact LTJG Roger Barnett, U.S. Coast Guard Headquarters, Radio-Aids Applications and Developments Branch

Supplementary Information: The Loran-C Mid-Continent Expansion Project is a joint USCG/FAA project that closes the present gap in Loran-C coverage in the mid-continental area of the United States. This project will meet the FAA's requirements for aviation use of Loran-C in the National Airspace System.

To close the gap in Loran-C coverage, the USCG is expanding the Great Lakes Loran-C chain and creating two new Loran-C chains. The Great Lakes chain (GRI 7980) is expected to begin providing expanded Loran-C coverage in Decemeber 1990.

The two Loran-C chains will be the North Central U.S. and the South Central U.S. chains. The South Central chain (GRI 9610) is expected to be operational in December 1990. This date does not include the Las Cruces, N.M. station which is expected to be operational in April 1991.

The North Central chain (GRI 8290) is expected to be operational in April 1991.

Proposed Rule

46 CFR Part 146, Research and Special Programs Administration (Docket No. HM-204A; Notice No. 90-7) RIN 2137-AA 10 (May 21)

Transportation of Military Explosives by Vessel; Revocation of CFR Part.

ACTION: Notice of proposed rulemaking

The USCG and RSPA propose to revoke 46 CFR part 146, which contains requirements for the transportation and stowage of military explosives on board vessels. This action is being done concurrently with a separate notice of

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proposed rulemaking under RSPS Docket HM-204, Notice 90-6. This revocation would eliminate outdated requirements and requirements which overlap or conflict with the proposals in Docket HM-204.

Dates: Comments must be received on or before July 16, 1990.

Addresses: Written comments should be submitted to the Dockets Unit, Research and Special Programs Administration, U.S. Department of Transportation, Washington, D.C. 20590-0001. Comments should identify the docket number and be submitted, if possible, in five copies.

If confirmation of receipt of comments is desired, include a self-addressed stamped postcard showing the docket number (i.e., Docket HM-204A). The Dockets Unit is located in Room 8421 of the Nassif Building, 400 Seventh Street, S.W., Washington, DC 20590-0001. The public docket may be reviewed from 8:30 a.m. to 5 p.m., Monday through Friday, except holidays.

For further information, contact Mr. Carl V. Strombom, Standards Division, Office of Hazardous Materials Transportation, RSPA, Department of Transportation, 400 Seventh Street, S.W., Washington, D.C. 20590-0001, (202) 366-4488, or Mr. Frank K. Thompson, Office of Marine Safety, Security and Environmental Protection, (G-MTH-1), U. S. Coast Guard Headquarters, 2100 Second Street, S.W., Washington, D.C. 20593-0001, (202) 267-1577.

Notice

CGD 90-035, Memorandums of Understanding with the American Bureau of Shipping; Plan Review and Inspection of Vessels under Construction and Tonnage Measurement of Vessels; Guidelines (May 22)

ACTION: Notice

The American Bureau of Shipping (ABS) and the U.S. Coast Guard (USCG) have signed a new Memorandum of Understanding (MOU) to set forth guidelines for cooperation between ABS and the USCG in the area of plan review and inspection of vessels under construction and the tonnage measurement of vessels. This MOU incorporates appropriate features of previous MOUs which are cancelled. The MOU does not add to or reduce the scope of previously delegated functions. However, it more clearly defines the responsibilities of the parties.

Dates: This MOU was effective April 11, 1990.

For further information, contact LCDR Stephen L. Johnson, Ship Design Branch, Office of Marine Safety, Security and Environmental Protection, (202) 267-2997.

Final Rule Correction

CGD 88-033, Appeal Procedures and Coast Guard Organization (46 CFR Part 147, RIN 2115-AD00 (May 24)

ACTION: Final rule: correction

The Coast Guard is correcting an amendatory instruction and section number which appeared in rule document 88-033 (FR Doc. 89-28461) published on Wednesday, December 6, 1989 at 54 FR 50374.

For further information, contact LCDR Don M. Wrye, Office of Chief Counsel, (202) 267-1534.

Notice

CGD 90-034, Commercial Fishing Industry Vessel Safety Act of 1988 Implementation (May 24)

ACTION: Notice of acceptance of organization for commercial fishing industry vessel casualty data compilation

The Coast Guard, in implementing the Commercial Fishing Industry Vessel Safety Act of 1988, has recognized the Marine Index Bureau as a qualified party that has knowledge and experience in the collection of statistical insurance data. The act authorizes delegation to such a party of authority to compile statistics concerning marine casualties from insurers of commercial fishing industry vessels. Although regulations requiring insurers of such vessels to report casualty data, as authorized by the act, are not yet final, the Coast Guard encourages those insurers to voluntarily report casualty data to the Marine Index Bureau.

For further inforamtion, contact Mr. Douglas Rabe (G-MMI), Room 2406, U.S. Coast Guard Headquarters, 2100 SEcond Street, S.W., Washington, DC 20593-0001, (202) 267-1430.

Final Rule

CGD 87-089, Cargo Gear Inspection and Testing Intervals, (46 CFR Parts 31, 71 and 91) RIN 2115-AD03 (May 25)

ACTION: Final rule

The Coast Guard is amending its regulations on the interval for inspection and testing of cargo gear. This change extends the interval to five years from the presently required four years. This action is taken to be consistent with standards of many other countries, so as to not place United States flag vessels at a competitive disadvantage by requiring more frequent inspection.

Effective Date: June 25, 1990

For further information, contact LCDR Stephen L. Johnson, Ship Design Branch, Office of Marine Safety, Security and Environmental Protection, (202) 267-2997.

Notice

Commercial Fishing Industry Vessel Advisory Committee (May 29)

ACTION: Request for applications

The U.S. Coast Guard is seeking applications for appointment to membership on the Commercial Fishing Industry Vessel Advisory Committee established by the Coast Guard as required by the Commercial Fishing Industry Vessel Safety Act of 1988.

The committee acts in an advisory capacity to the Secretary of Transportation and the Commandant of the Coast Guard on matters relating to the safety of commercial fishing vessels

The applications will be considered for six expiring terms. The committee consists of 17 members as follows: Ten (10) members from the commercial fishing industry, who reflect a regional and representational balance, and have experience in the operation of vessels to which chapter 45 of title 46, United States Code, applies or as crew member or processing line worker on an uninspected fish processing vessel; one (1) member representing naval architects or marine surveyors; one (1) member representing manufacturers of equipment for vessels to which chapter 45 applies; one (1) member representing education or training professionals related to fishing vessel, fish processing vessel, fish tender vessel safety or personnel qualifications; one (1) member representing underwriters that insure vessels to which chapter 45 applies; and three (3) members representing the general public, including, whenever possible, an independent expert or consultant in maritime safety and a member of a national organization composed of persons representing owners of vessels to which chapter 45 applies and persons representing the marine insurance industry.

The six vacancies exist in the following categories: (a) fishing industry (four positions); (b) marine surveyor and (c) general public. The membership term is for three years. A limited portion of the membership may serve consecutive terms.

To achieve the balance of memberhip required by the Federal Advisory Committee Act, the Coast Guard is especially interested in receiving applications from minorities and women.

The members of the committee serve without compensation from the Federal Government, although travel reimbursement and per diem is provided. The committee normally meets in Washington, D.C., with subcommitte meetings for specific problems on an as-required basis.

Dates: Applications should be received no later than September 1, 1990.

Addresses: Applicants should write to Commandant (G-MTH), U.S. Coast Guard Headquarters, 2100 Second Street, S.W., Washington, D.C. 20593-0001.

For further information, contact Ms. Arlene Whittington, Marine Technical and Hazardous Materials Division (G-MTH), Room 1218, U.S. Coast Guard Headquarters, 2100 Second Street, S.W., Washington, D.C. 20593-0001.

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Final Rule

CGD 89-085, Fees charged for services performed by the Coast Guard (33 CFR Part1) RIN 2115-AD50 (June 13)

ACTION: Final Rule

The Coast Guard is removing regulations concerning fees charged for landings of aircraft at Coast Guard Air Station, Elizabeth City, N.C., for naval architecture and marine engineering computer program services, and for preapproval tests of certain Coast Guard-approved equipment. This action is necessary to make Coast Guard regulations accurately reflect current agency practices.

Effective Date: June 13, 1990

For further information, contact: LT Bruce D. Branham, Office of Marine Safety, Security and Environmental Protection (G-MTH-3), U.S. Coast Guard, Washington, D.C. 20593-0001, (202) 267-2988.

Proposed Rule Public Hearing

CGD 88-079, Commercial Fishing Industry Vessel Regulations (46 CFR Part 28) RIN 2115-AD12 (June 14)

ACTION: Notice of public hearings.

On April 19, 1990, the Coast Guard published in the Federal Register (54 FR 14924) a notice or proposed rulemaking to establish regulations that will implement the provisions of the Commercial Fishing Industry Vessel Safety Act of 1988. These regulations would apply to all commercial fishing industry vessels on the effective date of the regulations and would provide requirements for their equipment, design and operation. These regulations are intended to improve the overall safety of commercial fishing industry vessels. The notice indicated public hearings would be held.

Dates: The dates of the public hearings are July 11, 16, 17, 24, 26 and 28, August 1, 2, 6, 11, 13, 14 and 15, 1990.

Addresses: Public hearings on the proposed rules will be held in Corpus Christi, TX; New Bern, NC; St. Petersburg, FL; San Pedro and Eureka, CA; Seattle, WA; Elsworth and Portland, ME; New Bedford, MA; Sitka, Anchorage, Homer and Kodiak, AK.

For further information, contact: CDR Michael M. Rosecrans, Office of Marine Safety, Security and Environmental Protection (G-MTH-4/13), Room 1304, U.S. Coast Guard Headquarters, Washington, D.C. 20593-0001, (202) 267-2997.

Final Rule

CGD 88-057, Automatic auxiliary boilers; Revision of Requirements (46 CFR Parts 52, 54, 61 and 63) RIN 2115-AD11 (June 15)

ACTION: Final Rule

The Coast Guard is revising the requirements for automatic auxiliary boilers contained in 46 CFR part 63. The scope and applicability of part 63 is being clarified to minimize confusion, and industry consensus standards are being used to replace existing regulations where these standards provide an equivalent level of safety. Also, a specific safety provision is being added to reduce the possibility of an explosion during the postpurge cycle. The end result of this rulemaking is a reduction in costs and time delays for the approval process without compromising safety.

Dates: This regulation is effective July 16, 1990. The incorporation by reference of certain publications listed in this regulation is appproved by the director of the Federal Register as of July 16, 1990.

For further information, contact Mr. Randall N. Crenwelge, Marine Technical and Hazardous Materials Division, Office of Marine Safety, Security and Environmental Protection. (202) 267-2206.

Nautical Queries

July-August 1990

The following items are examples of questions included in the Third Mate through Master examinations and the Third Assistant Engineer through Chief Engineer examinations:

Engineer

1. Electric current is the flow of electrons through a conductor. The rate of this flow is measured in _____.

A. volts
B. amperes
C. coulombs
D. ohms

Reference: Lister, *Electric Circuits and Machines*

2. A thermocouple pyrometer is always used on large, main propulsion diesel engines to indicate the temperature of _____.

A. cooling water
B. fuel oil
C. exhaust gas
D. lube oil

Reference: NAVTRA 10625, *Diesel Engines*

3. The compressor in a refrigeration system is short-cycling on high head pressure with a sea water temperature of 72°F. In this situation, you should _____.

A. check cooking water flow through the condenser
B. purge condensable gases from the receiver
C. reset the thermostatic expansion valve
D. purge the high pressure side of the system

Reference: Shulters, *Marine Air Conditioning & Refrigeration*

4. While a vessel is underway, the low-pressure turbine, high-speed pinion is damaged and removed from the reduction gear train. Under these circumstances the main unit is capable of which maneuver?

A. Reduced speed ahead only
B. Reduced speed astern only
C. Reduced speed ahead and full speed astern
D. Reduced speed astern and full speed ahead

Reference: Osbourne, *Modern Marine Engineer's Manual, Vol. I*

5. When the cotton cover of a fire hose becomes oily or greasy, it should be washed using mild soap, fresh water, and _____

A. a soft-bristled brush
B. a holystone
C. a canvas wiper
D. cornstarch

Reference: MARAD, *Marine Firefighting, Prevention, and Safety*

Deck

1. The "inner bottom" is the _____.

A. tank top
B. compartment between the tank top and shell of the vessel
C. inner side of the vessel's shell
D. space between two transverse bottom frames

Reference: Hayler, American Merchant Seaman's Manual

2. Your longitude is 179 degrees 59' west. The LMT at this longitude is 23 h 56m of the 4th day of the month. Six minutes later your position is 179 degrees 59' east longitude. Your LMT and date is now _____.

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A. 00h 02m on the 4th
B. 00h 02m on the 5th
C. 23h 50m on the 5th
D. 00h 02m on the 6th

Reference: Bowditch, *American Practical Navigator*

3. You are carrying a packaged cargo of water reactive pesticide aboard your break bulk ship. Which of the following statements is true?

A. It must be stowed on deck, sheltered from seas and spray.
B. The shipping paper must state that it is "fungicide and herbicide."
C. It must be packaged in waterproof packages if the contents of the package weigh 30 pounds.
D. The individual packages must each be marked with the POISON label.

Reference: 49 CFR 173.1040

4. The margin plate is the _____.

A. outboard strake of plating on each side of an inner bottom
B. outer strake of plating on each side of the main deck of a vessel
C. plate which sits atop the center vertical keel
D. uppermost continuous strake of plating on the shell of a vessel

Reference: Baker, *Introduction to Steel Shipbuilding*

5. The height of eye correction is smaller than geometrical dip because of _____.

A. the angle between the horizontal and the line of sight to the visible horizon
B. index error
C. parallax
D. terrestrial refraction

Reference: Bowditch, *American Practical Navigator*

Answers

Engineer
1-B; 2-C; 3-A; 4-A; 5-A
Deck
1-A; 2-D; 3-C; 4-A; 5-D

If you have any questions concerning "Nautical Queries," please contact U.S. Coast Guard (G-MVP-5), 2100 Second St., SW, Washington, DC 20593-0001; telephone (202) 267-2705.

Tanker Safety Course

The Continuing Education Department of the U.S. Merchant Marine Academy in Kingspoint, New York will offer a four-day course on tanker safety from October 8 to 11, 1990.

Designed to satisfy the International Maritime Organization and industry training requirements for licensed personnel, the course is designed for deck and engine personnel as well as shoreside staff involved in the design, operation and maintenance of tankship fleets.

Topics of study include:

1. Inert gas systems
2. Crude oil washing operations
3. Cargo tank venting and vapor control
4. Enclosed space entry

Upon satisfactory completion of the course, participants will receive certificates of training for "inert gas systems" and "crude oil washing operations."

For information on costs and enrollment procedures, contact the continuing education coordinator at (516) 773-5120.