



Proceedings

of the Marine Safety Council
January - February, 1995
Vol. 52, No 1

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of Transportation

United States
Coast Guard



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Photo by CDR Tom Tansey.

Rear cover: The cargo ship *Balsa 37* after collision reported by NTSB (p 3).
Photo courtesy of Aerial Innovations, Inc.

Facing the issue of RoRo safety

By RADM James C. Card

What has been described as the worst seagoing disaster in Europe since World War II occurred on September 27, 1994, in the Baltic Sea. The passenger/RoRo/cargo ferry M/V Estonia capsized and sank stern first in 250 feet of water, killing more than 900 passengers and crew. Approximately 145 people escaped from the rapidly sinking ship and survived the effects of hypothermia in 46-degree water before being rescued.

Registered in Estonia, the 15,556 gross-ton vessel was about 23 miles off the southern coast of Finland, and only 50 miles into its 230 mile voyage from Tallinn, Estonia, to Stockholm, Sweden. At the time of the casualty, seas were up to six meters and winds were more than 80 kilometers-per-hour.

Cause

Passengers and crew reported seeing water rush into the cargo deck through the bow door. This rapid ingress quickly overwhelmed the vessel's bilge pumps, resulting in a 30-degree list and loss of power to the main engines.

There were reports that marine surveyors had questioned the material condition of the bow door before the departure of the *Estonia* from port. After the accident, underwater robots filmed the wreck and it was indicated that a bow door locking mechanism failure may have allowed heavy waves to pound against the door, ultimately tearing it off.

As a precaution, Sweden and Finland ordered the owners of all similar ferries which call on their ports to weld bow doors shut until a board of inquiry has been completed.

RoRo design

Built in 1980 and classified as a RoRo cargo-ferry, the *Estonia* was certified to carry 2,000 passengers and crew, 370 cars, 46 lorries and 70 trailers. It was constructed with one vertically swinging door, referred to as a "visor," and an internal vehicle ramp at the bow. Two doors with accompanying ramps at the port and starboard stern permitted quick on- and off-loading of passenger vehicles. The term "RoRo" stems from the vehicles' ability to roll on and off the vessels.

Safety experts are reexamining the stability of such vessels. RoRos and ferries have few transverse and longitudinal bulkheads to compartmentalize vehicle decks. Should water leak into a vehicle deck, it can surge back and forth, causing loss of stability. This is known as the "free surface effect." Water in the vehicle deck can build momentum and shift or topple cars and trucks. In a storm, vehicles may be carried to one side of a deck, further contributing to a vessel's capsize.

U.S. RoRo fleet

There are no United States-flag vessels designed like the *Estonia*. There are less than 20 United States-flag RoRos with enclosed vehicle decks, which are vulnerable to the "free surface" problem. United States RoRos are smaller with wider beams and without the high superstructures of European design. The majority of United States ferries, which operate on rivers or coastal waters, are constructed with a full-length vehicle deck open at the bow and stern.

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A typical United States passenger RoRo operates off the coast of Alaska.

IMO review

Free Enterprise in 1987 prompted the International Maritime Organization (IMO) to study RoRo safety. This casualty involved improperly sealed bow doors that caused flooding of the vehicle deck, loss of stability and capsizing.

In 1992, IMO developed damage stability standards to upgrade existing RoRo passenger ferries. All these vessels must be upgraded by October 2005.

After the *Estonia* tragedy, the IMO proposed a panel of experts headed by the chair of its Maritime Safety Committee to study RoRo ships. Particular attention will be paid to stability, construction and vessel operation. It is hoped that this review will be completed in time for a decision at the committee's May 1995 session.

- The IMO wishes to address these issues:
- bow/stern door water tightness of RoRo ferries;
- transverse and/or longitudinal bulkheads subdividing car decks;
- lifesaving systems, including egress;
- operational issues, including language barriers between crew and passengers (i.e., the crew spoke Estonian while most of its passengers spoke Swedish); and
- communication of safety problems in a timely manner.

The Society of Naval Architects and Marine Engineers is also reviewing RoRo passenger ferry safety. Goals include a thorough assessment of both the United States and Canadian fleets, and existing research on RoRo stability. Recommendations will be made to assist both governments and the International Maritime Organization in formulating appropriate policies. The Coast Guard fully supports these efforts.

Conclusion

A tragedy of this magnitude reminds us that we must be ever vigilant in detecting potential marine safety problems in design, construction, operation or maintenance. We are confident about the present safety of United States-flag passenger ferry/RoRo vessels. We share the concerns of European administrators and owners/operators, and have offered to assist in the international standards development.

Thorough investigations of marine casualties by appropriate agencies, and sharing lessons learned with regulatory bodies and industry representatives will help to prevent similar tragedies.

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RoRo vessel loads military cargo through stern door.

Photo by CDR Tom Tansley.

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United States passenger ferry/RoRos operate primarily in the Washington state ferry and Alaskan marine highway systems. Although the transportation department in Alaska operates eight passenger ferry/RoRo vessels, only the smallest, the 933-gross-ton *M/V Bartlett*, has a bow visor. This vessel is used only in protected waters. The largest, the *M/V Columbia*, is 3,946 gross tons and has one side and one stern door/ramp, a common design.

RoRo ships operated by the Military Sealift Command are important elements of our strategic sealift capacity. Some United States-flag RoRos are prepositioned with military cargo ready to respond instantly to an international crisis.

A Coast Guard survey of RoRo and ferry casualty records of United States-flag vessels and foreign-flag vessels within United States waters from 1981 to 1994, did not reveal any bow visor, door or side opening failures.

All United States-flag RoRos and ferries, or combinations, are regularly inspected by the Coast Guard, and must comply with federal regulations governing construction, stability and operations. During these inspections, all watertight closures such as cargo ports and similar openings in the sides of vessels below the weather decks are thoroughly examined to ensure water tightness and structural integrity. Hose tests are often conducted with special attention to all gaskets, knife edges, hinges, locking mechanisms, dogs and other securing devices. The American Bureau of Shipping also conducts initial and periodic examinations of all vessels requiring load-line certificates.



The integrated tug barge Seafarer/Ocean 255 after the collision with Balsa 37.

Photo courtesy of Aerial Innovations, Inc.

National Transportation Safety Board

“Go-team” goes after the cause

By Ms. Marjorie Murtagh

Early on the morning of August 10, 1993, three vessels approached the intersection of Mullet Key Channel and Egmont Channel in Tampa Bay, Florida. One was the Seafarer/Ocean 255, a 641-foot long integrated tug barge loaded with 235,000 barrels of mixed grades of petroleum including gasoline. The master of this vessel decided to overtake the CAPT Fred Bouchard/B. No. 155, another integrated tug barge loaded with 119,100 barrels of No. 6 fuel oil, and operating with only one of its two main engines on line. Both vessels were headed inbound in Egmont Channel.

In the meantime, the third vessel, the Balsa 37, a cargo ship carrying 6,000 tons of phosphate rock in bulk, was proceeding outbound in Mullet Key Channel, apparently unaware of the overtaking maneuver.

When the master of the Balsa 37 first sighted the green starboard sidelight of the Seafarer/Ocean 255, it was close to his starboard bow and too late for successful evasive action. At 5:45 a.m., the Balsa 37 collided with the Seafarer/Ocean 255 at mid-channel, according to eyewitness testimony. The starboard bow of the Balsa 37 struck the starboard bow of the Seafarer/Ocean 255, damaging the barge's starboard side for almost its entire length.

Frictional sparks from the collision ignited the unleaded gasoline that spilled onto the water surface. Fire spread around the bow and up to the main deck of the Seafarer/Ocean 255. The No. 6 starboard cargo tank was partially loaded with jet fuel, which created a large vapor-filled void. An enormous explosion blew the entire top of the tank into the air, landing on the after port side of the main deck.

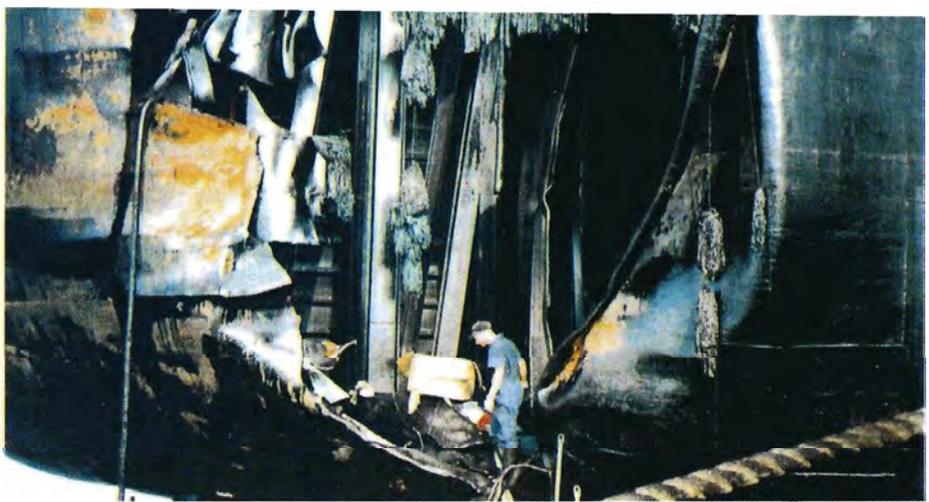
The Balsa 37 then veered out of control toward the CAPT Fred Bouchard/B. No. 155, rupturing the No. 1 port cargo tank. Oil from the latter barge spilled into Tampa Bay, spread out into Egmont Channel into the Gulf of Mexico. A subsequent shift in offshore winds reversed the oil slick's direction, blowing it toward the south shore of Egmont Key. Some of the surrounding beaches were severely polluted.

Within hours of the collision, members of the National Transportation Safety Board were leading a go-team to Tampa Bay to investigate the probable cause of the accident.

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*The No. 1 port cargo tank of the **CAPT Fred***

***Bouchard/B. No. 155** ruptured when hit by the **Balsa 37**.*



Continued from page 3

Background

The National Transportation Safety Board is an independent federal agency that determines the "probable causes" of aviation, highway, marine, pipeline and railroad accidents. The safety board promotes transportation safety through its recommendations.

In 1966, the Congress established the National Transportation Safety Board as an independent agency within the new Department of Transportation (DOT), which houses all federal transportation agencies.

In 1974, Congress made the safety board completely independent outside the DOT because, "no federal agency can properly perform such functions unless it is totally separate and independent from any other . . . agency of the United States." The board's independence is necessary for objective oversight, since DOT regulates and promotes transportation in the United States, and accidents may suggest deficiencies in the system.

The safety board is not authorized to regulate, fund or be directly involved in operating any mode of transportation. Therefore, it can oversee the transportation system, conduct investigations and make recommendations for safety improvements from a totally objective point of view.

The Independent Safety Board Act of 1974 authorizes the board to:

- conduct special studies on safety problems;
- evaluate the effectiveness of government agencies involved in transportation safety;
- evaluate the safeguards used in transporting hazardous materials;
- evaluate the effectiveness of emergency responses to hazardous materials accidents; and
- review appeals from airmen and merchant seamen whose certificates have been revoked or suspended.

The National Transportation Safety Board is comprised of five members nominated for five-year terms by the president and confirmed by the senate. Two of the members are designated by the president to be chairman and vice chairman for two-year terms.

Accidents

The safety board investigates major marine accidents on navigable United States waters and those involving United States merchant vessels in international waters. A major marine accident is one involving the loss of six or more lives, the loss of a self-propelled vessel of 100 or more gross tons, property damage estimated at more than \$500,000, or involving a serious threat from hazardous materials.

The National Transportation Safety Board also investigates marine accidents involving United States public and private vessels, those which are catastrophic or involve recurring problems.

Go-teams

A very visible aspect of an accident investigation is the safety board's "go-team," a group of individuals possessing a wide variety of skills. A go-team is sent out to a major accident within 24 hours after the board is notified. The team's size and make-up depend on the severity and complexity of the accident.

In marine accidents, go-teams may include an accident investigation manager, a marine operations specialist, a naval architect or marine engineer, a human performance specialist, a survival systems expert and, sometimes, metallurgists, meteorologists and hazardous materials specialists. Each expert oversees a variety of investigation specialists from industry and government.

Independent investigators (individuals, companies and associations) whose employees, products, activities or functions were involved in the accident, may be named parties to the investigation. The parties provide qualified technical personnel to actively assist in the field investigation. They are assigned to appropriate investigative groups under a safety board expert.

A National Transportation Safety Board member may accompany a go-team to the scene of an accident and a public affairs officer may be assigned to coordinate media activities.

The length of time a go-team remains on the accident site varies with the need, but, generally, a team's on-scene work is completed in seven days. This fact-finding stage may be extended if off-site engineering studies and/or laboratory tests are called for.



The bow of the Balsa 37 was heavily gouged and the starboard side damaged for almost its entire length, before the vessel veered out of control, and collided with the CAPT Fred Bouchard/B. No. 155.



Laboratories

The National Transportation Safety Board operates its own technical laboratories to support field investigators with unbiased analysis.

For example, the engineering services laboratory can “read out” the “black boxes,” which provide profiles of aircraft during the often crucial last minutes of flight. Similar techniques are applied to marine course recorders taken from ships following accidents.

Materials laboratory engineers and metallurgists analyze components from all modes of transportation. State-of-the-art equipment, such as scanning electron microscopes and X-ray machines document anomalies found during investigations and determine causes of failures.

Hearings

Following an accident, depositions may be taken, or the board may hold a public hearing to gather more information or to air significant safety issues. A board member presides over the hearing and witnesses provide technical testimony under oath.

Every effort is made to conduct the hearing promptly and as close as possible to the site of the accident.

Final report

After the fact-finding stage, the findings are analyzed. A detailed narrative accident report is prepared on the investigation findings, analysis and probable cause.

After an investigation, the accident report is presented to the full safety board for discussion and approval at a public meeting conducted at the Washington, D.C. headquarters.

Recommendations

Safety recommendations are generally included in the final accident report, but may be issued at any time during an investigation. The board designates the person or party to take action on each recommendation, describes the action, and clearly states the safety need to be satisfied.

Although the recommendations are not mandatory, the Congress requires DOT to respond to them within 90 days. If an agency refuses to comply with the recommendation, the response must detail the reasons for the refusal.

The National Transportation Safety Board also asks other government and private agencies to respond within 90 days. The acceptance rate of recommendations is high.

Conclusion

Since its inception in the late 1960s, the National Transportation Safety Board has investigated numerous marine accidents, prepared reports and developed recommendations that have brought about major changes in the marine industry. In order to successfully fulfill its mandate, the safety board needs the full cooperation of all parties involved in a casualty. This includes ship owners and operators, crews, private agencies and government regulators. The National Transportation Safety Board is working to assure success through continuous cooperative outreach activities.

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Emergency safety drills



Seaman practices using fire extinguisher.



Crew suits up for emergency drill.

cut fishing vessel casualties



Immersion suit training greatly increases survival chances after a casualty.

Photo by Mr. Ernest Mansvel.



Accidents like this happen all too often.

Photo by Mr. Tom Schornak.

“I’m now going to assume I’m going to sink someday, rather than think I’m bombproof.”

By Mr. Jerry Dzugan

*The crew of the Alaskan crab vessel had tried to get around Column Point in southeastern Alaska to the crab grounds for at least 24 hours. Steep seas, 60 to 80-knot winds and icing conditions, however, kept the **Angela Marie** jogging near the point, waiting for the elements to settle down enough to make a run for it to the crab grounds.*

The seas were getting rougher, so the skipper decided to turn back toward protected waters. With the seas pushing them back to port, the crew resigned themselves to layover and to wait out the weather.

Suddenly, one ... two ... three waves broke over the stern, settling it down in the water. For a long moment, the crew waited for the deck to clear. But it became apparent that the stern deck was submerged and was not going to recover. The crew went into action.

One crew member shouted forth a MAYDAY, and the others scrambled to break out the immersion suits as the stern went under. All crew members made it out of the vessel into the cold, rough February seas. Unfortunately, one crew member did not have time to don an immersion suit and two others got water in their suits. These individuals were soon helped, however, by a piece of floating false deck and the liferaft, which popped up and inflated. The crew was rescued by a Coast Guard helicopter after an hour in the sea.

Several of the crew members had taken drill instructor training, and it was their performance which was critical to the survival of the crew.

Another vessel participating in the May 1994 black cod opening in the Gulf of Alaska started taking on water. After a Coast Guard helicopter dropped de-watering pumps, a crew member started to cut off the end of the discharge hose, not knowing that this would disable the pump. The skipper, having just completed a drill instructor course, knew the hose should not be cut and stopped the crew member in time. This enabled them to save the vessel, crew and even the load of fish.

Six vessels were lost in a period of ten days in mid-February in Alaska’s cold, rough waters, yet no lives were lost. Most of the vessels had an important element in common — crew members on board each vessel were trained drill instructors and had conducted emergency drills regularly.

Training

The Commercial Fishing Industry Vessel Safety Act of 1988 required vital safety and survival equipment to be carried on board all United States fishing vessels, fish tenders and processing vessels. The act also required crew orientations, safety instructions and drills.

As of September 1, 1994, individuals conducting drills were required to be trained in effective drill conducting or have a 100-ton or higher license. The orientation, instruction and drill requirements are considered important since having safety equipment on board does not necessarily mean that the crew knows how to use it. This has been demonstrated through investigations of many fishing vessel casualties, including the *Aleutian Enterprise*, *Wayward Wind*, *Uyak II* and *Massacre Bay*. In each of these cases, survival equipment was on board, but not used effectively because of the crews’ lack of training to do so.

Although holders of 100-ton or higher licenses are considered qualified to conduct drills, there is nothing in the licensing process that trains them. The courses that are approved by the Coast Guard take crews through a series of emergency drills on the type of vessel they will be working on. The goals of the courses are to teach skill competencies rather than how to pass a written test.

Fatality trends

Carrying lifesaving equipment on board vessels and training crew members in its use through conducting emergency safety drills resulted in a downward trend in fishing-related fatalities in Alaska in 1993. The fishing vessel fatality rate that year decreased by nearly one half of the previous six-year-average (from 35 to 18 fatalities a year in 1993). This trend has continued thus far into 1994 as well.

A study is currently underway to determine the fatality rate among both trained and untrained fishing crews in Alaska. This should accentuate the importance of training to the fishing fleet.

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EQUIPMENT + TRAINING + ATTITUDE = SURVIVAL

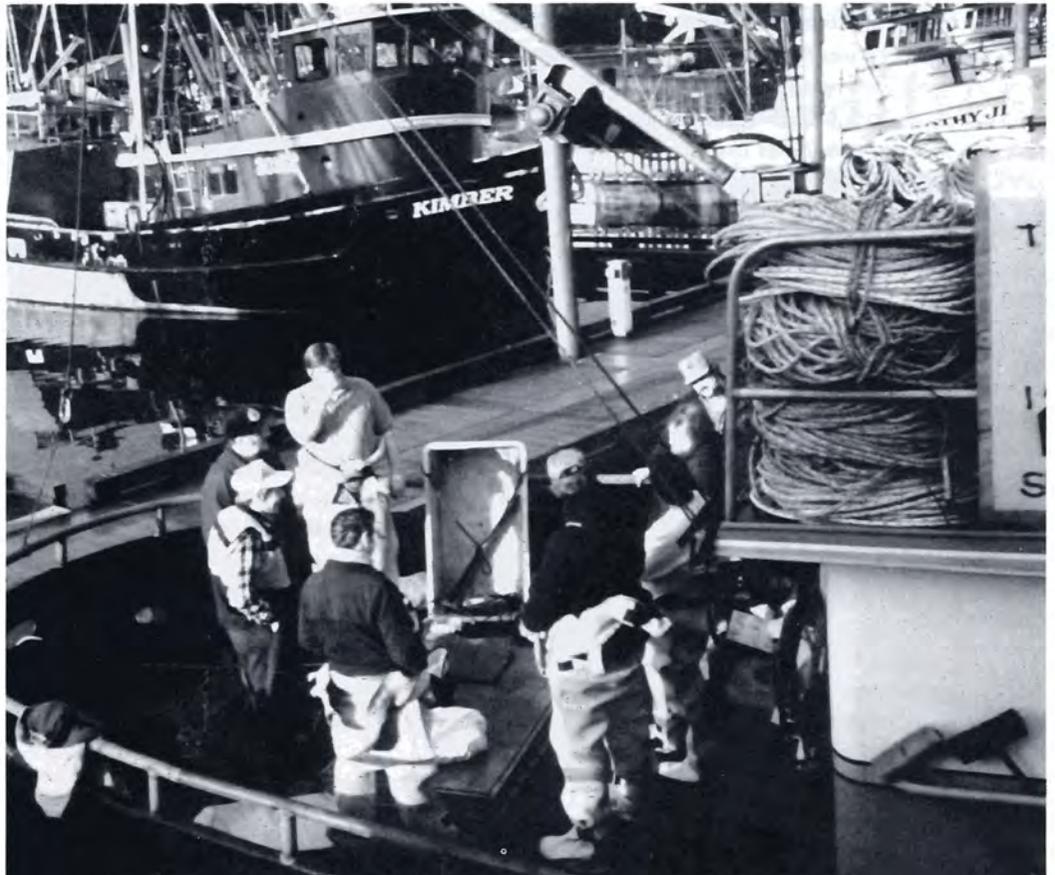
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Attitude

EQUIPMENT + TRAINING + ATTITUDE = SURVIVAL. Regulations can prescribe safety equipment and training, but cannot change attitudes. All too often regulations have negative effects on attitudes in the commercial fishing fleet.

The negative attitudes are partly due to the fact that the costs of mandated equipment are particularly hard to meet for many members of the fishing industry. At this time, low fish stocks, poor prices, international competition and over capitalization have put many fishing fleets on the brink of financial ruin. In addition, many individuals feel "over regulated" as to when, where and how much they can catch. (Imagine how any small private business would feel if restricted to sell for only a 48-hour period in June and another in September, and couldn't sell more than 100 units in each time period.

Drill instructor trains crew members in the use of immersion suits.



Now the industry is faced with additional regulations that could cost up to \$10,000 per boat.

Training, however, has demonstrated a positive effect on attitudes and obtaining equipment. An independent survey conducted on the Alaska Marine Safety Education Association's training network in Alaska determined that more than 58 percent of its members bought additional safety equipment after going through training.

There is much evidence of attitudes changing. "I am going to change the way I run things on board my boat," or "I didn't know what I didn't know." These comments were often heard by participants of a course after it was completed.

Perhaps the most definitive demonstration of positive attitudes was the number of fishing boats conducting drills on the west coast. For the past two seasons, many fishing vessels have been observed conducting drills before they set out. This was rarely the case before the drill instructor course was introduced.



*Prevent casualties:
be prepared with
on-board fire-fighting
drills.*

Research

Little research has been conducted in the United States on the relationship of training and safety drills on surviving marine casualties, but there has been some in Europe. One Norwegian researcher, Professor Lars Weisaeth, has been studying the effects of training on survivability of personnel in maritime and industrial accidents for 30 years. He maintains that the amount of personnel training in the use of safety equipment is a vital factor in crew survivability. The important decisions made in an emergency are often based on what has been learned in training.

Conclusion

The training has helped prevent casualties as well as increase survivability. This is more difficult to quantify, except that vessel losses went down by about 50 percent in 1993 in Alaska.

More vessel operators are now anticipating problems rather than reacting to them. One vessel owner said after training, "I'm now going to assume I'm going to sink someday, rather than think I'm bombproof."

It is a change of attitude more than anything else that has had a positive effect on commercial fishing safety over the last several years.



Unless otherwise noted, all photographs accompanying this article are by Mr. Jerry Dzugan. Mr. Jerry Dzugan is the director of the Alaska Marine Safety Education Association, Box 2592, Sitka, Alaska. 99835. Telephone: (907) 747-3287.

Fall between vessels is fatal

By Mr. Thomas J. Pettin

In early 1990, a Gulf Coast pilot was reaching for a ladder, trying to board a sulfur carrier from a pilot boat in Tampa Bay off the west coast of Florida, when he suddenly fell between the two vessels. Persons aboard the pilot boat immediately tried to rescue him, but he disappeared beneath the water.

“ . . . multiple severe blunt traumatic injuries due to the victim being struck by a propeller . . . while attempting to transfer to a ship from a transport vessel,” was the official cause of death cited in the Coast Guard investigation report.

Before the casualty

The boatswain on the sulfur carrier had rigged a ladder on the starboard side of the vessel for the pilot to board around midnight. Deeply laden to the maximum draft of 12 feet, the carrier ran at “slow ahead” when the pilot boat came alongside. The wind was blowing at about 20 knots from the northeast, the seas were from four to six feet and the tide was ebbing at about two knots.

There hadn't been any specific requests or instructions made of the master of the sulfur carrier by the pilot prior to the attempted boarding, nor had any come from the master. The vessel calls frequently at the port.

In an attempt to make a lee for the pilot boat, the sulfur carrier master ordered a course change of 20 degrees to the right. Due to the rough seas, the pilot boat was pitching and rolling as it drew alongside the sulfur carrier. The pilot planning to board proceeded alone with a radio over his shoulder onto the foredeck of the pilot boat. The pilot boat operator was at the controls and a pilot who had just disembarked from the sulfur carrier was standing nearby.

Witnesses reported that when the pilot was preparing to board the sulfur carrier, he held onto a waist-high steel pipe railing of the pilot boat with both hands until he reached for the ladder. At that point, the boat came down the top of a wave and the pilot did not have a tight enough grasp to remain on the ladder. As he fell, he managed to grab the pilot boat's gunwale. A second pilot got to within four feet of the victim before he let go of the gunwale and slipped out of sight between the vessels.

The second pilot then yelled to stop the engines, and the boat began drifting down along the side of the ship toward the stern. Fearing that the pilot boat would slip under the sulfur carrier's stern, the operator briefly applied full power.

The sulfur carrier master immediately ordered all engines stopped when informed of the pilot's fall. An intensive search went on for the body, which was sighted several days later by fishermen and recovered by the Coast Guard.

Apparent cause

The apparent cause of the casualty was the boarding pilot's failure to gain a sufficient grasp on the ladder as the pilot boat came down from the top of a wave. Possible contributing factors were the negative effect of spray from the bow of the pilot boat on the pilot's grip on the ladder, his vision (he wore glasses) and his footing on the embarkation deck which did not have nonskid padding.

The pilot was not wearing a personal flotation device, which may have prevented his sinking below the surface of the water. Such a device or a type IV pilot coat may have also prevented him from being drawn down into the propeller, which killed him instantly.

The pilot was reported to have been in good physical condition and was very experienced in boarding ships on pilot ladders. The sea conditions had been discussed by the pilot and the boat operator just before the accident.

The Pilot's Association policy states that the pilot is always in charge of the boarding operation. It is also standard procedure for the pilot to direct the vessel being boarded to provide a lee if conditions warrant it.

The pilot boat operator was experienced and the ladder rigging on the carrier was standard for the prevailing weather conditions and the draft of the vessel. The ladder itself was in good condition and complied with design specifications of the International Convention for the Safety of Life at Sea (SOLAS) part V, rule 17. The lighting was sufficient.



A tug lying alongside a merchant ship sets the same scene for the tragedy described.

The fact that the pilot was not wearing a personal flotation device was not unusual. Few of them do, although new devices now available do not severely restrict movement. It is clearly a maritime industry standard that persons at risk of falling overboard should wear personal flotation devices. Some companies require all individuals boarding vessels to wear them, and provide them to boarders who don't have them.

Conclusion

This kind of needless tragedy is repeated all too often. In this case, some personal safety precautions and common sense could have prevented this casualty. A common cause in accidents like this seems to be a lack of awareness of the hazards involved.

A simple error in judgment was responsible for this accident. Vessel maneuvers, wind and current forces and propeller wash from other vessels can dangerously affect the stability of a vessel. Mariners are cautioned to familiarize themselves with their vessel's stability under all kinds of conditions and use common sense when making judgment calls.

The Coast Guard strives to reduce fatalities and injuries through awareness and preventive measures. We want all mariners to know how incidents such as this can be prevented.

This vessel casualty is filed by the Marine Safety Office, Tampa, Florida, under the case number MC90001211.

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Crabbing takes COLOSSAL CARE

By Ms. Clara Nutter

Stamina, endurance, mettle, grit, heart and care are demanded in the art of commercial crabbing on the high seas. It also takes special training and seamanship to operate dangerous equipment, prepare bait, fill bait jars and sort crabs.

Handling crab pots requires tremendous skill. Made of steel webbing, crab pots typically weigh as much as 450 pounds empty and measure six feet by six feet by three feet. They are called "six-bys." There are even larger pots which are used frequently. They measure from seven to eight feet, and weigh up to 800 pounds empty.

Crab pots rest on the ocean floor some 300 to 600 feet below to collect their bounty. They are connected to the surface by a 5/8-inch line secured to a set of pot buoys, which are usually made of Styrofoam and air-filled neon orange plastic. When filled, a pot is winched to the surface bulging with up to 1,000 pounds of crabs, craned aboard and guided into storage racks.

In heavy seas, these enormous pots could easily crush a crabber, so care must be taken at all times. Also, an individual could get entangled in a line and pulled overboard.

Man overboard!

Shortly after midnight on a calm November night in 1992, everything seemed to run smoothly in strangely still waters of the Bering Sea. A seasoned seven-man crew on a 490-ton crabber was setting crab pots.

The chief engineer, who also helped out on deck, had just prepared and baited a "seven-by." As he waited for it to be launched overboard, he moved to the bait box to prepare another pot. After dodging a full incoming pot being loaded on a launcher by crane, he turned his back and heard the heart-stopping words, "man overboard!"

Minutes earlier, the captain had peered down from the wheel house to the deck and observed that the seventh pot of a 20-pot string was ready to be launched. A deckhand was at the rail with his hand on the launch controls waiting for the captain's orders.

Checking his position on navigation equipment, the captain noted that the vessel was far enough distant from the last pot to launch another. He pushed the button, signaling to the deckhand to launch the pot. After hearing the pot go over the rail, the captain marked his position. Glancing over the deck, he saw the deckhand sliding over the launcher with a line wrapped around his legs.

Instantly, the captain began search and rescue procedures. He put the vessel into hard astern and put the rudder over to starboard.

Another deckhand tried to grab the victim, but the force of the pot was too strong to hold him, and he fell over the rail.

Afraid that the vessel might hit the man overboard, the captain put the ship into full ahead to move the stern away from the line that was still going over the side. He then transmitted the vessel's position and declared "man overboard" to attract other boats in the vicinity.

By the time the vessel returned alongside the pot and began to haul it back on board, there was no sign of the deckhand in the line or around the vessel. He was never to be seen again.

The captain made a slow turn to starboard while all hands searched for signs of the victim. Visibility was good. There were no swells or wind. Within five minutes two other vessels had arrived on the scene, and 12 more were enroute.

"... commercial fishermen ... must execute extreme caution and pay strict attention to the smallest details during all tasks aboard their vessels."

The cause

Unknown to the captain, the unfortunate deckhand had trouble with the line attached to the pot going over the rail. He didn't have a good grip on it with his hands, so he tried to kick it over the rail with his foot. The line caught his foot and dragged him over the rail.

What apparently happened was that he did not put the line over the top of the pot as he was trained, so as to prevent his legs from getting tangled in the line. This deckhand was an experienced fisher-

man," maintained the captain, "and was trained according to the proper method of launching the pot and line. Up until the time of the accident, the crewman showed himself to be a good deckhand and performed his duties well."

Conclusion

Not only must commercial fishermen receive intense training in safety measures, they must execute extreme caution and pay strict attention to the smallest details during all tasks aboard their vessels. They must remember the lessons they have learned and apply them well and always.

Ms. Clara Nutter is a marine safety analyst in the Safety Evaluation Branch of the Marine Investigation Division.

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Marine environmental protection award is launched

By LTJG Geoff Warren

The Coast Guard is moving ahead with a stellar award program - the new "William M. Benkert Marine Environmental Protection Award." This premier national award recognizes sustained environmental excellence and outstanding achievements in marine operations. It is named in honor of RADM William M. Benkert (1923-1989), a distinguished Coast Guard officer known for the depth of his leadership and vision in marine environmental protection.



William M. Benkert Award

This annual award recognizes achievements that extend far beyond compliance with industrial and regulatory standards. More than just a symbol of excellence, the award provides an avenue for creative exchanging of ideas and innovations which may benefit all society. It also lays out a road map for organizations to assess their management strengths and weaknesses in environmental protection compliance as they proceed through the application process.

The purpose of the award is to increase compliance with environmental laws and regulations by rewarding environmentally conscious operators. It illustrates the Coast Guard belief that recognition is an effective management tool.

The William M. Benkert Award will increase public awareness of the importance of protecting the marine environment and its delicate ecosystem; encourage innovations in operations, maintenance, training, cargo handling, refueling and other industrial activities; and provide a means to share successful techniques.

Categories

Four award categories have been established to benchmark fair and equitable standards of competition for organizations engaged primarily in either the operation of vessels or facilities. Vessel operations must be headquartered and facilities must be based within the United States. The categories are:

- **VESSEL OPERATIONS**
 - **large companies** with more than \$50 million gross annual earnings and more than 250 employees, and
 - **small companies** with less than \$50 million gross annual earnings and less than 250 employees.
- **FACILITY OPERATIONS**
 - **large companies** with more than \$5 million gross annual earnings and more than 50 employees, and
 - **small companies** with less than \$5 million gross annual earnings and less than 50 employees.

To apply for this award, an organization submits a letter of self-nomination. When (and if) this is approved, an award application

package containing information on environmental protection achievements and activities upon which the Coast Guard can judge the overall commitment and accomplishments for up to three previous calendar years is submitted by the company. This package will also include award category validation data, a summary of the company's history and services.

Organizations will be evaluated in the following categories:

- environmental management programs
- technology/process/work methods innovation
- environmental education and communications
- environmental partnerships and alliances

The selection process begins in January and concludes in July each year with the presentation of the award. The first award will be presented in July 1995 by the commandant in a formal awards ceremony at Coast Guard headquarters in Washington, D.C.

Brochures and information on the award application process can be obtained at marine safety offices and captains of the port throughout the country.

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Preparing for license exams

By Mr. Brant Houston

As an individual operating in exam preparation school for 22 years, I would like to comment on issues raised by LT Gerard Achenbach and Mr. Frank Flyntz in the July-August 1994 edition of *Proceedings*. Both addressed procedures for issuing Coast Guard licenses — LT Achenbach from the vantage point of a candidate who had recently taken the chief mate test, and Mr. Flyntz from his perspective as acting chief of the Merchant Vessel Personnel Division, which administers the Coast Guard's examination procedures.

LT Achenbach expressed reservations about the validity of the examination process in determining mariner qualifications. Like most license candidates preparing for an exam, he reviewed the verbatim Coast Guard test questions in "Q&A" books and computer disks. He passed his test with very high scores, yet his experience prompted him to ask, "I wonder if I learned anything that would make me a better mariner?"

It is a fair question, indicating that LT Achenbach has more than the "average intelligence" he credits himself with. The chances are good that he did learn some nuggets of information that would make him a better mariner, even if it came from memorizing answers to endless quizzes.

What LT Achenbach apparently learned before taking the exam, however, is the most revealing comment on the process. He realized, as do most mariners, that, "the best way to prepare for (the exam) is to memorize questions, rather than study theory or gain first-hand experience." Consequently, he chose to use his study time most effectively by focusing his efforts directly on the questions.

Again, he demonstrates his intelligence by quickly coming to a conclusion that took our organization 15 years to reach. When students come to an exam preparation school, they do not ask, "will you help me become a competent second mate?" They express their wishes succinctly in a forthright manner, "will you help me pass the test easily, cheaply and quickly?"

As a customer-driven company, we have responded to this question with a range of products and services, including the computer disks and textbooks that LT Achenbach used to study for his exam.

We also agree that the system needs improvement. When the Coast Guard database was first published, we argued for frequent changes of randomized tests to keep the process from being subverted by schools that would focus only on the minute percentage of questions that currently appeared on the exams.

We welcome changes that make applicants responsible for knowing the entire database rather than selected exam modules.

As an active participant in industry advisory committees, standards of training and watchkeeping working groups and trade organizations, we know that current licensing methods are changing. We look forward to the day when the licensing process produces a "competent mariner," rather than an "able test taker."

This improved process will come with a price, however. It is much less expensive to give a person the knowledge needed to pass a test "easily, cheaply and quickly," than to impart the skills required to be proficient in a wide range of tasks.

There are extremely encouraging signs that industry is recognizing the value of skills-based training. As more companies provide the leadership and motivation for their employees to be trained to a level of competency beyond what is required to merely pass the test, bona fide training organizations will be ready to provide the services they seek.

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In answer to Mr. Houston, the Coast Guard is indeed establishing more realistic up-to-date methods to determine a mariner's knowledge. "Licensing 2000 and Beyond," a report described in the May-June 1994 issue of *Proceedings*, contains many recommendations to improve the licensing program which will be implemented in the very near future.

The Merchant Vessel Personnel Division is reviewing several proposed training courses to replace all or part of the written examination. Another "Licensing 2000 and Beyond" recommendation under review is a practical demonstration of skills in lieu of testing.

Copies of "Licensing 2000 and Beyond," are available upon request from the Merchant Marine Examination Branch of the Merchant Vessel Personnel Division (G-MVP-5).

Mariner documents step into 21st century

By Mrs. Justine Bunnell

A brand new merchant mariner's document began distribution at ten regional exam centers on October 17, 1994. The other seven centers were issuing the new documents by December 1, 1994.

The new merchant mariner's document is plastic, the size of a credit card and similar in appearance to the existing document. There are two new features. One is the smaller size and the other is a magnetic stripe, also like on credit cards. The stripe allows the electronic transfer of the mariner's name and social security number on the card to a shipping company or a union's personnel database. (It does not permit you to use the card to charge merchandise, however. This is where the merchant mariner's document and the credit card part company.)

Neither shipping companies nor unions can change any information on the magnetic stripe. Only designated Coast Guard personnel at regional exam centers can revise this data.



LCDR Tom Watkins, chief of the regional examination center in Baltimore, Maryland, demonstrates the automation of the new merchant mariner's document, while Mrs. Justine Bunnell looks on.



Mr. Frank J. Flyntz receives the first new merchant mariner's document from LCDR Watkins.

Automation to come

The Coast Guard continues to develop software to allow the shipping industry and unions to automate shipping articles and certificates of discharge, electronically transmit certificate of discharge data to the Coast Guard, and maintain additional company/union-related data such as training and vacation records. This software should be available shortly after January 1, 1995.

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Mariner's Seabag

Ocean and near-coastal licenses any gross tons

Stability knowledge is tested on the master's and chief mate's license examinations in a separate test module with 15 questions. Each question is worth two grading points, which are combined with the score of the general module's 70 one-point questions. This increased point value emphasizes the importance of stability, along with the difficulty of the questions in the overall weight of the examination. (There is at least one question in each test on bending moments.)

The two exams are similar, but the one for the master may include complex questions on damage stability that are not contained in the chief mate's license examination.

During the exam, the license applicant must use the Stability Data Book to develop answers to some questions. Developed by the Coast Guard and available through the Government Printing Office, this book has three sections: one contains general diagrams including a floodable length curve, hydrostatic tables and stability curves; the second reproduces part of a stability book for a mariner-class vessel and the third reproduces a stability book for a tank ship.

The stability test questions for the prospective second mate are included in the deck safety module. While not as complex as those for the chief mate, the questions require the applicant to demonstrate a sound understanding of the basic principles of stability and the use of the tables. Some of the questions are based on the first section of the Stability Data Book.

Questions for the prospective third mate are also found in the deck safety module. Designed to reveal a good grasp of the basics of stability, these questions do not require any mathematical solutions.

Revised vision waver standards

In June 1994, the Coast Guard relaxed the standards for uncorrected vision. Previously, vision waivers were only given to mariners whose uncorrected vision was no worse than 20/400. This standard is now 20/800, **provided that corrected vision is at least 20/40 (20/50 for engineers).**

Mariners with uncorrected vision of 20/400 or worse must have snug-fitting retaining straps on their glasses to keep them from falling or getting knocked off. All mariners with vision waivers must have spare glasses aboard ship at all times.

Document renewal

Requirements for renewing merchant mariner documents and certificates of registry took effect on October 27, 1994, as mandated by the Oil Pollution Act of 1990. The requirements are similar to those for license renewal.

Mariners can renew their documents or certificates by visiting one of the Coast Guard's 17 regional examination centers or by contacting them by mail. Mariners should contact a center for instructions and necessary forms.

Documents with expiration dates, expire on the date shown. Older documents issued without expiration dates will expire on the date issued in the year shown in the table below. Mariners may renew their documents as early as 12 months before expiration. Mariners cannot sail under the authority of an expired document, but can renew the document up to 12 months after expiration. If it has been expired for over a year, the mariner may have to repeat the original examinations or take an approved course to show continued professional competence.

Licensed mariners are encouraged to renew their documents at the same time as their licenses to eliminate duplication of effort and fees. Certificates of registry are renewed in the same way as documents.

EXPIRATION YEAR					
1999	1998	1997	1996	1995	
ISSUE YEAR					
1989	1988	1987	1986	1991	1990
1984	1983	1982	1981	1986	1985
1979	1978	1977	1976	1981	1980
1974	1973	1972	1971	1976	1975
1969	1968	1967	1966	1971	1970
1964	1963	1962	1961	1966	1965
1959	1958	1957	1956	1961	1960
1954	1953	1952	1951	1956	1955
1949	1948	1947	1946	1951	1950
1944	1943	1942	1941	1946	1945
1939	1938	1937		1941	1940

1992 and 1993 license statistics

DECK DEPARTMENT

Type of license		Issues	Endorsements	Failures	Renewals
Master ocean AGT*	1992	166	50	2	615
	1993	115	33	2	666
Master near coastal AGT	1992	6	1	0	30
	1993	7	4	0	24
Chief mate ocean AGT	1992	84	71	1	154
	1993	117	56	3	194
Chief mate near coastal AGT	1992	1	2	0	3
	1993	1	1	0	0
Second mate ocean AGT	1992	229	44	4	184
	1993	175	30	1	214
Second mate near coastal AGT	1992	1	1	0	4
	1993	2	1	0	0
Third mate ocean AGT	1992	378	44	13	402
	1993	319	22	10	373
Third mate near coastal AGT	1992	4	3	1	7
	1993	9	3	2	9
Master ocean or near coastal NMT** 1600 GT	1992	367	249	18	723
	1993	403	240	13	935
Mate ocean or near coastal NMT 1600 GT	1992	153	81	12	108
	1993	138	73	10	124
Master ocean or near coastal NMT 500 GT	1992	61	127	15	443
	1993	63	119	5	449
Mate ocean or near coastal NMT 500 GT	1992	16	29	3	86
	1993	18	24	1	61
Master ocean or near coastal NMT 200 GT	1992	94	123	17	257
	1993	84	104	10	462
Mate near coastal NMT 200 GT	1992	183	32	9	18
	1993	147	24	11	46
Master near coastal NMT 100 GT	1992	2,153	442	96	5,095
	1993	2,039	415	70	4,620
Master uninspected fishing industry vessel	1992	62	65	1	155
	1993	59	41	0	184
Mate uninspected fishing industry vessel	1992	68	23	1	23
	1993	45	21	0	25
Master MODU***	1992	2	3	6	5
	1993	0	0	0	4
Mate MODU	1992	15	1	0	5
	1993	0	0	0	0

* any gross tons ** not more than *** mobile offshore drilling unit

DECK DEPARTMENT

Continued

Type of license		Issues	Endorsements	Failures	Renewals
Master Great Lakes and inland AGT	1992	11	10	1	30
	1993	7	8	0	48
Master inland AGT	1992	19	10	1	150
	1993	26	16	2	200
Mate Great Lakes and inland AGT	1992	1	8	3	30
	1993	5	8	0	63
Master Great Lakes and inland NMT 1600 GT	1992	2	2	0	4
	1993	7	4	0	3
Mate Great Lakes and inland NMT 1600 GT	1992	1	1	0	1
	1993	3	1	0	1
Master Great Lakes and inland NMT 200 GT	1992	2	5	3	2
	1993	1	5	0	5
Mate Great Lakes and inland NMT 200 GT	1992	3	2	0	1
	1993	3	0	0	1
Master Great Lakes and inland NMT 100 GT	1992	166	50	28	560
	1993	412	88	20	574
Master inland NMT 100 GT	1992	1,283	123	53	1,820
	1993	1,254	116	36	1,634
Offshore installation manager	1992	28	7	0	5
	1993	69	4	0	26
Barge supervisor	1992	19	7	0	28
	1993	23	7	0	216
Ballast control operator	1992	15	4	0	0
	1993	18	0	0	3
First class pilot	1992	80	372	2	838
	1993	78	337	2	924
Operator uninspected towing vessel	1992	329	89	30	1,729
	1993	330	130	28	3,486
Second class operator uninspected towing vessel	1992	48	4	7	25
	1993	49	4	2	29
Operator uninspected passenger vessel	1992	1,152	54	63	2,201
	1993	1,230	67	30	2,624
Master liftboat	1992	1	6	2	3
	1993	1	0	0	0
Assistance towing endorsement	1992	792	95	15	182
	1993	1,271	142	14	318
TOTALS:	1992	7,993	2,240	407	15,926
	1993	8,528	2,148	272	18,545

Continued on page 20

ENGINE DEPARTMENT

Type of license		Issues	Endorsements	Failures	Renewals
Chief engineer motor	1992	211	119	3	617
	1993	189	112	4	548
1st assistant engineer motor	1992	85	40	4	93
	1993	88	30	1	81
2nd assistant engineer motor	1992	109	49	4	103
	1993	123	39	2	93
3rd assistant engineer motor	1992	198	33	6	370
	1993	142	33	3	282
Chief engineer steam	1992	74	24	2	257
	1993	64	29	0	164
1st assistant engineer steam	1992	70	18	1	137
	1993	66	11	0	108
2nd assistant engineer steam	1992	127	10	2	220
	1993	112	16	0	177
3rd assistant engineer steam	1992	152	13	3	116
	1993	111	10	2	132
Chief engineer steam or motor	1992	66	7	1	280
	1993	55	21	2	325
1st assistant engineer steam or motor	1992	46	8	1	76
	1993	35	21	2	82
2nd assistant engineer steam or motor	1992	94	7	1	63
	1993	85	9	2	81
3rd assistant engineer steam or motor	1992	412	7	1	544
	1993	346	5	1	378
Chief engineer ocean	1992	83	57	1	415
	1993	95	61	5	409
Chief engineer near coastal	1992	55	6	1	42
	1993	47	3	0	52
Assistant engineer	1992	109	31	2	70
	1993	91	34	4	71
Designated duty engineer	1992	231	59	8	28
	1993	204	69	17	99
Chief engineer uninspected fishing ind. vessel	1992	51	32	2	116
	1993	32	21	0	108
Assist. engineer uninspected fishing ind. vessel	1992	19	9	0	11
	1993	21	7	0	66
Chief engineer MODU	1992	5	0	0	5
	1993	5	0	0	8
Assistant engineer MODU	1992	1	1	0	3
	1993	0	0	0	0
TOTALS:	1992	2,198	530	43	3,566
	1993	1,911	518	43	3,204

RADIO OFFICER and CERTIFICATES OF REGISTRY

Type of license		Issues	Endorsements	Failures	Renewals
Radio officer	1992	33	1	0	169
	1993	13	0	0	152
Chief purser	1992	12	0	1	1
	1993	13	0	0	0
Purser	1992	6	0	0	1
	1993	5	0	0	2
Senior asst. purser	1992	2	0	0	0
	1993	2	0	0	0
Junior asst. purser	1992	13	0	1	1
	1993	13	0	0	1
Medical doctor	1992	17	0	0	0
	1993	16	0	0	0
Professional nurse	1992	8	1	0	1
	1993	4	0	0	2
Surgeon	1992	8	1	0	1
	1993	4	0	0	2
TOTALS:	1992	99	3	2	174
	1993	70	0	0	159

SUMMARY 1992 and 1993 LICENSE TRANSACTIONS

		Issues	Endorsements	Failures	Renewals
Deck department	1992	7,993	2,240	407	15,926
	1993	8,528	2,148	272	18,545
Engine department	1992	2,198	530	43	3,566
	1993	1,911	518	43	3,204
Radio and staff officers	1992	99	3	2	174
	1993	70	0	0	159
TOTALS:	1992	10,290	2,773	452	19,666
	1993	10,509	2,666	315	21,908

Nautical Queries

January - February 1995

The following items are examples of questions included in the third assistant engineer through chief engineer examinations, and the third mate through master examinations.

ENGINEERING

1. Current-measuring instruments must always be connected in _____.

- A. series with a circuit
- B. parallel with a circuit
- C. series-parallel with a circuit
- D. delta with the shunt

2. If there is no pressure drop across the superheater in a steaming boiler, _____.

- A. it is a normal condition the drum safety valve is about to lift ahead of the superheater safety
- B. there is no steam flow through the super heater
- C. the feedwater temperature is too low
- D. it is a normal condition the drum safety valve is about to lift ahead of the superheater safety

3. Feedwater is deaerated to prevent _____.

- A. cavitation in the feed pump
- B. corrosion in the boiler
- C. loss of system vacuum
- D. all of the above

4. The phenomenon called "shrink" causes an apparent drop in the water level of a steaming boiler. It is caused by a/an _____.

- A. collapse of steam bubbles
- B. excessive formation of steam bubbles
- C. sudden decrease in steam pressure
- D. rapid increase in feed rate

5. A multimeter can be used to directly measure _____.

- A. watts
- B. field flux
- C. current
- D. any of the above

6. Camshafts are usually driven by timing gears or _____.

- A. push rods
- B. chain drives
- C. rocker arms
- D. flywheels

7. A flapper valve, also known as a beam valve, frequently employed in refrigeration compressor discharge valves, is designed to _____.

- A. feed discharge pressure to the suction line aid in hot gas defrosting
- B. pass liquid slugs
- C. equalize system pressure for compressor cycling
- D. equalize system pressure for compressor cycling

8. Diesel engine piston ring blow-by is usually caused by excessive ring clearance at the ring _____.

- A. back
- B. side
- C. gap
- D. bottom

9. If a diesel engine is warmed up, but white vapor is noted in the exhaust, this could mean _____.

- A. excessive cylinder lubrication
- B. lugging engine
- C. a leaking cylinder liner
- D. overloading of one cylinder

10. Before boring a blind tapered hole, it is a good shop practice to _____.

- A. use a tapered reamer
- B. drill to the large diameter of the taper
- C. bore a straight hole
- D. drill to the small diameter of the taper

DECK

1. The helm command, "nothing to the left," means do not _____

- A. use left rudder
- B. steer left of the ordered course
- C. steer right of the ordered course
- D. leave any buoys on the port side

2. The helm command, "left twenty," means _____

- A. change course 20 degrees to the left
- B. put the rudder left 20 degrees
- C. put the rudder hard left for the first 20 degrees of swing
- D. put the rudder left 20 and then ease back as the vessel starts swinging

3. The helm command, "steady as you go," means _____

- A. steer the course you are on now
- B. steer the course when the swing stops
- C. maintain the rate of swing
- D. don't allow the vessel to swing off course so much

4. The helm command, "check her," means _____

- A. test the steering control
- B. read the compass heading
- C. stop the swing using hard over rudder
- D. stop the swing using moderate rudder

5. Most recreational sailing craft have triangular sails and are said to be _____

- A. gaff rigged
- B. spinnaker rigged
- C. Marconi rigged
- D. square rigged

6. Information about temporary, short-term changes affecting the safety of navigation in United States waters is disseminated to navigational interests by the _____

- A. daily memorandum
- B. HYDROLANT or HYDROPAC broadcasts
- C. local notice to mariners
- D. summary of corrections

7. The difference between the DR position and a fix, both of which have the same time, is known as _____

- A. the estimated position
- B. set
- C. current
- D. leeway

8. Under the IALA-A Buoyage System, a green spar buoy with a triangular topmark would indicate that the buoy _____

- A. should be left to port when heading out to sea
- B. may be left close aboard on either side
- C. is on the north side of a point of interest
- D. is marking the preferred channel

9. The light list indicates that a light has a nominal range of 20 miles and is 52 feet high. If the visibility is 20 miles and your height of eye is 20 feet, at what approximate distance will you sight the light?

- A. 33.0 nautical miles.
- B. 20.0 nautical miles.
- C. 13.5 nautical miles.
- D. 8.5 nautical miles.

10. The name and hailing port of a documented commercial vessel is _____

- A. not required to be marked anywhere on the vessel
- B. required to be marked on both bows and on the keel
- C. required to be marked on the stern with the name of the vessel marked on both bows
- D. required to be marked on the keel and stern

ANSWERS ENGINEERING

1-A, 2-C, 3-B, 4-A, 5-C, 6-B, 7-C, 8-C, 9-C, 10-C.

DECK

1-B, 2-B, 3-A, 4-C, 5-C, 6-C, 7-B, 8-A, 9-C, 10-C.

*If you have any questions concerning
Nautical Queries, please contact G-MVP-5.
Telephone: (202) 267-2705.*

Diuron

Used as a herbicide, diuron can be found as a white odorless powder. The solid is not flammable, but releases poisonous gas upon combustion. Diuron is only slightly soluble in water.

Herbicide

First used in 1954 for aquatic weed control, diuron belongs to the class of phenyl urea pesticides. It is used at low application rates to control broadleaf and grass weeds in crops such as sugarcane, pineapple, grapes, cotton and peppermint.

At higher application rates, diuron is used as a general weed killer. It is more persistent, and, therefore, preferred in areas of heavy precipitation and/or lighter soil. For this reason, crops such as wheat, barley, citrus, vineyards, bananas, pineapple and cotton, as well as noncrop areas, are treated by this pesticide.

Hazards

The herbicide is both an environmental and physical hazard. In bodies of water, diuron in low concentrations is very poisonous to fish. In higher concentrations, it is harmful to waterfowl. With time, its environmental persistence causes a marked accumulation in fish tissues.

During handling, wear personal protection equipment, such as gloves, boots, apron or coveralls, and safety glasses or face shield.

Inhalation of the herbicide irritates the nose and throat. Contact with the eyes or skin also causes irritation. Diuron is suspected of affecting DNA, making it a potential mutagen capable of altering genetic material.

Exposed individuals should be taken to fresh air and a doctor summoned. Eyes should be flushed with water for at least 15 minutes, and skin washed with soap and water. Wash contaminated clothing before reuse. If diuron is ingested, give two glasses of water and induce vomiting. Call a doctor immediately.

Classifications

Diuron is listed as an OSHA hazardous chemical, and a CERCLA hazardous substance included in section 311 (b)(4) of the Clean Water Act with a reportable quantity of 45.4 kilograms (100 lbs.).

When packaged in quantities of 100 pounds or more, it is regulated by the Department of Transportation (DOT) as a class 9, packaging group III material with the proper shipping name of "environmentally hazardous substances, solid, n.o.s. (diuron)." (It is not regulated by the DOT in lesser quantities, and is not regulated under the IMDG code.)

Diuron

Chemical name:	Diuron
Formula:	$C_9H_{10}N_2OCl_2$
Synonyms:	Dichlorfenidim; N-(3,4-diclorophenyl)-N, N-dimethyl urea; 3-(3,4-diclorophenyl)-1, 1-dimethyl urea
Description:	White to tannish white odorless powder or granular
Physical properties:	
Boiling point:	N/A [decomposes at temperatures of 356-374°F (180-190°C)]
Melting point:	316-318°F (158-159°C)
Vapor pressure:	3.1×10^{-6} mm Hg @ 50°C
Water solubility:	42 mg/L @ 25°C
Combustion properties:	The material is a non-flammable solid. However, under severe dusting conditions, it may form explosive mixtures in air.
Densities:	
Specific gravity:	1.48
Bulk density:	36 lb/ft ³ (loose); 42 lb/ft ³ (packed)
Threshold limit values:	
Time weighted average:	10 mg/m ³
Short-term inhalation limit:	None
Identifiers:	
CHRIS code:	DIU
CAS registry number:	330-54-1
DOT ID number:	3077
U.N. Class:	9

Kathleen Zygmunt was a first class cadet at the Coast Guard Academy when this article was written under the direction of LCDR Richard B. Gaines for a class on hazardous chemicals.

This article was reviewed by the Hazardous Materials Branch, Marine Technical and Hazardous Materials Division, Office of Safety, Security and Environmental Protection.

Telephone: (202) 267-1577.

Final rule

CGD 94-008, Documentation of vessels (46 CFR part 67) RIN 2115-AE83 (September 30).

The Coast Guard is amending its vessel documentation regulations. The amendments clarify the vessel documentation regulations by restating the citizenship requirements for trusts to reflect the Coast Guard's policy; by correcting an existing cross-reference error regarding mortgagee consent for exchange of certificates of documentation; by implementing statutory requirements concerning the endorsements on certificates of documentation for dredges and towing vessels; and by making other minor technical amendments.

DATE: This rule was effective October 31, 1994.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters, 2100 Second Street, S.W., Washington, D.C. 20593-0001, between 8 a.m. and 3 p.m. Monday through Friday, except federal holidays. Telephone: (202) 267-1477.

For further information, contact: LCDR Don M. Wrye, Vessel Documentation and Tonnage Survey Branch, Merchant Vessel Inspection and Documentation Division. Telephone: (202) 267-1492.

Final rule

CGD 93-030, Shipboard oil pollution emergency plans (33 CFR part 151) RIN 2115-AE44 (October 7).

The Coast Guard is requiring all United States flag oil tankers of 150 gross tons and above, to carry approved shipboard oil pollution emergency plans. The regulations also require foreign oil tankers of 150 gross tons and above, and other foreign ships of 400 gross tons and above to carry evidence of compliance with regulation 26 when in navigable waters of the United States. The regulations implement the requirements of regulation 26 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the protocol of 1978, as amended (MARPOL 73/78). The purpose of regulation 26 is to improve response capabilities and minimize the environmental impact of oil discharges from ships.

DATE: This rule was effective October 7, 1994.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters on workdays. Telephone: (202) 267-1477.

For further information, contact: LCDR Duane (Mike) Smith, Policy Contact, Marine Environmental Division (G-MEP-2). Telephone: (202) 267-2611. This telephone records messages 24 hours a day.

Notice of termination

CGD 83-026, Fire protection regulations (46 CFR parts 30, 31, 32, 34, 35, 70, 72, 76, 77, 78, 90, 95, 190 and 193) RIN 2115-AB36 (October 14).

This rulemaking project was initiated to align Coast Guard regulations with the requirements of the International Convention for Safety of Life at Sea (SOLAS) 1974, as amended. It has been overtaken by the Coast Guard's broader Maritime Regulatory Reform effort. Therefore, the Coast Guard is terminating further rulemaking under docket number 83-026.

For further information, contact: Mr. Albert Kirchner, Marine Technical and Hazardous Materials Division. Telephone: (202) 267-0168.

Notice of proposed rulemaking

CGD 85-205, Inflatable liferafts (46 CFR parts 159 and 160) RIN 2115-AC51 (October 18).

The Coast Guard proposes to completely revise its regulations for the approval and servicing or inflatable liferafts, and to add provisions for the approval of inflatable buoyant apparatus. These changes are intended to implement the 1983 amendments to the International Convention for the Safety of Life at Sea, 1974 (SOLAS 74/83), add provisions for approval of a new "Coastal Service" liferaft for use on certain uninspected fishing vessels, introduce requirements for the stability of inflatable liferafts, and reduce direct Coast Guard involvement in liferaft production and servicing inspections. The proposed rule would bring Coast Guard-approved liferafts into compliance with SOLAS 74/83, improve the seaworthiness of approved inflatable liferafts, and increase manufacturer flexibility in scheduling liferaft inspections while reducing the associated burden on Coast Guard personnel resources.

DATE: Comments must be received by February 15, 1995.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 85-205), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays.

Telephone: (202) 267-1477. Comments on collection-of-information requirements must be mailed also to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, N.W., Washington, D.C. 20503, ATTN: Desk Officer Coast Guard.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

A copy of the material listed in "Incorporation by Reference" of this preamble is available for inspection at room 1404, Coast Guard headquarters.

For further information, contact: Mr. Kurt J. Heinz, Survival Systems Branch, Merchant Vessel Inspection and Documentation Division (G-MVI-3). Telephone: (202) 267-1444.

Request for comments

CGD 93-091, Numbering of undocumented barges (33 CFR chapter 1) (October 18).

The Coast Guard is considering various options regarding the initiation of a rulemaking project to establish a mandatory numbering system, as required by law, for undocumented barges over 100 gross tons. In order to identify and consider the potential impacts such a requirement may have on the federal government, the individual states and the commercial barge industry, and to develop practical barge identification numbering system alternatives, the Coast Guard is requesting comments from interested and affected individuals and entities early in the process. The numbering of undocumented barges will allow identification of owners of barges found abandoned and help to prevent future marine pollution from abandoned barges.

DATE: Comments are requested by January 17, 1995.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 93-091), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

For further information, contact: Mr. Carlton Perry, project manager, Auxiliary, Boating and Consumer Affairs Division. Telephone: (202) 267-0979.

Interim final rule

CGD 90-071a, Overfill devices (33 CFR parts 155 and 156) RIN 2115-AD87 (October 21).

The Coast Guard is issuing an interim final rule establishing minimum standards for overfill devices and requiring phased-in installation and use of devices on the cargo tanks of certain tank vessels that carry oil or oil residue as primary cargo. Regulations addressing minimum standards for and concerning the use of overfill devices are required by the Oil Pollution Act of 1990. The purpose of the interim rule is to reduce the likelihood of spills when oil is loaded as cargo.

DATES: This rule is effective on January 19, 1995. Comments must be received by January 19, 1995.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 90-071a), Coast Guard headquarters or delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477. Comments on collection-of-information requirements must be mailed also to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, N.W., Washington, D.C. 20503, ATTN: Desk Officer Coast Guard.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

For further information, contact: LCDR Jeff Brager, Compliance and Enforcement Branch, Merchant Vessel Inspection and Documentation Division. Telephone: (202) 267-1464.

Notice of availability

CGD 94-066, Differential global positioning system, Pacific corridor region; environmental assessment (October 24).

The Coast Guard has prepared a Programmatic Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for implementing a Differential Global Positioning System (DGPS) Service in the Pacific Corridor Region of the United States. The EA concluded that there will be no significant impact on the environment and that preparation of an Environmental Impact Statement will not be necessary. This notice announces the availability of the EA and FONSI and solicits comments on them.

DATE: Comments must have been received by November 23, 1994.

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Addresses: Copies of the EA and FONSI may be obtained by contacting LCDR George Privon at (202) 267-0297 [fax: (202) 267-4427]. A copy of the EA (less enclosures) is also available on the Electronic Bulletin Board System (BBS) at the Navigation Information Service (NIS) in Alexandria, VA (703) 313-5910. For information on the BBS, call the NIS watchstander at (703) 313-5900.

For further information, contact: LCDR George Privon, Radionavigation Division.
Telephone: (202) 267-0297.

Interim rule with request

for comments

CGD 94-041, Radar-observer endorsement for operators of uninspected towing vessels (46 CFR parts 10 and 15) RIN 2115-AE92 (October 26).

The Coast Guard is amending the rules that require a radar-observer endorsement. The amended rules will require radar training for licensed masters, mates and operators of radar-equipped uninspected towing vessels eight meters (about 26 feet) or more in length, either toward an endorsement or, in the short run, toward a certificate. The amended rules are necessary to ensure that vessels equipped with radar are manned by mariners with the skills and knowledge to operate them.

EFFECTIVE DATE: November 25, 1994. Comments must be received on or before January 24, 1995.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 94-041), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

For further information, contact: Mr. Robert Spears, Jr., project manager, Merchant Vessel Personnel Qualifications Branch, Merchant Vessel Personnel Division (G-MVP-3) between 9 a.m. and 5 p.m. workdays. Telephone: (202) 267-0224.

Notice of PREP area exercise schedule for 1995, 1996 and 1997

CGD 94-064, National Preparedness for Response Exercise Program (PREP) (October 26).

The Coast Guard, the Environmental Protection Agency (EPA), the Research and Special Programs Administration and the Minerals Management Service, in concert with the states, the oil industry and concerned citizens, held a workshop on May 19, 1994, to discuss the proposed Preparedness for Response Exercise Program (PREP) area exercise schedule and the scheduling process. This notice publishes the final revision of the area exercise schedule for 1995, 1996 and 1997, and solicits industry members to lead area exercises for 1995.

DATES: Industry members interested in leading industry-led area exercises should submit their requests to the Coast Guard or EPA on-scene coordinator (OSC) as soon as possible, but no later than six months prior to the proposed exercise date to ensure adequate planning time. Industry members should indicate the date and location of the exercise which they are interested in leading. Once the OSC has chosen an industry plan holder for an exercise, the OSC will contact the National Scheduling Coordinating Committee.

For further information, contact: Ms. Karen Sahatjian, Preparedness and Training Branch, Marine Environmental Division. Telephone: (202) 267-0746.

Request for applications

CGD 94-092, Chemical Transportation Committee (November 1).

The Coast Guard is seeking applications for appointment to membership on the Chemical Transportation Advisory Committee.

DATES: Completed applications and resumes should be submitted to the Coast Guard by February 3, 1995.

Addresses: Application forms may be obtained by writing to the Hazardous Materials Branch, Marine Technical and Hazardous Materials Division (G-MVP-1). Telephone (202) 267-1577.

For further information, contact: CDR Kevin J. Eldridge, executive director, or LT Rick Raksnis, assistant to the executive director. Telephone: (202) 267-1217 and fax (202) 267-4816.

Final rule; partial suspension of

regulation with request for comments

CGD 91-202, Escort vessels for certain tankers; partial suspension of effectiveness (33 CFR part 168) RIN 2115-AE10 (November 1).

On August 19, 1994, the Coast Guard published a final rule (59 FR 42962) requiring escorting of certain tankers in Prince Williams Sound, Alaska, and Puget Sound, Washington. The regulations were scheduled to go into effect on November 17, 1994. However, concerns were expressed to the Coast Guard that one requirement (the crash-stop criteria) may not be achievable without putting the escort vessels and their crews at serious risk. Because it was not possible to resolve this issue before November 17, the Coast Guard suspended the effective date of the criteria until there was an opportunity for more-detailed studies to be conducted and publicly reviewed.

EFFECTIVE DATE: 33 CFR 168.50(b)(2) scheduled to go into effect on November 17, 1994, in the final rule published at 59 FR 42962, August 19, 1994, was suspended as of November 17, 1994. Comments must be received on or before January 30, 1995.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 91-202), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

For further information, contact: Mr. Thomas Jordan, project manager. Telephone: (202) 267-6751 or fax: (202) 267-4624.

Reopening of comment period

CGD 92-065, Expanded hull identification number and new requirements for certificates of origin (33 CFR part 181) RIN 2115-AE37 (November 9).

In a notice of proposed rulemaking published May 6, 1994, the Coast Guard proposed amendments to the regulations concerning vessel hull identification numbers and new regulations requiring certificates of origin for new vessels offered for sale in the United States. Comments were required to be received by September 6, 1994. The Coast Guard has received comments from various parties opposing the proposed 19 character hull identification number and one comment from an association seeking an extension of the comment period. This notice reopens the comment period.

DATES: Comments must be received on or before January 9, 1995.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 92-065), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477. Comments on collection-of-information requirements must be mailed also to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, N.W., Washington, D.C. 20503, ATTN: Desk Officer Coast Guard.

For further information, contact: Mr. Alston Colihan, Auxiliary, Boating and Consumer Affairs Division. Telephone: (202) 267-0981.

Request for comments

CGD 88-103, Review of icebreaking resource requirements in the Great Lakes (November 9).

The Coast Guard is conducting a review of ice-breaking requirements in the Great Lakes and its seeking public comment. It may also hold a public meeting for additional input. The Coast Guard now provides ice-breaking services in the Great Lakes to support maritime commerce, respond to urgent search and rescue, and other emergency situations, and to prevent flooding caused by ice. It is interested in continuing to provide the appropriate level of icebreaking services, while also seeking to reduce costs.

DATE: Comments must be received by January 9, 1995.

Addresses: Comments may be mailed to the chief, Ice Operations Division, or may be delivered to room 1201A between 8 a.m. and 4 p.m. workdays.

For further information, contact: LCDR Robert Garrett, Icebreaker Facilities Branch, Ice Operations Division, Office of Navigation Safety and Waterways Services. Telephone: (202) 267-1460.

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Notice of termination

CGD 88-103, Controlling the hazard of asbestos in the industrial maritime environment (46 CFR part 197) RIN 2115-AD16 (November 14).

This rulemaking was initiated to revise and incorporate into regulation the guidance the Coast Guard has issued on exposure to asbestos aboard certain vessels and at outer continental shelf facilities and deep-water ports. The Coast Guard guidance was based on the Occupational Safety and Health Administration (OSHA) general industry asbestos exposure guidelines published in 1986. Since the advanced notice of proposed rulemaking was published for this Coast Guard rulemaking, OSHA has revised its asbestos exposure guidelines and issued industry-specific guidance for shipyard workers. This new OSHA shipyard regulation is a modified version of the 1986 OSHA standards and appears to be adaptable to shipboard application with minor modifications. This rulemaking project is terminated pending an investigation by the Coast Guard of the feasibility of applying the OSHA shipyard standards to shipboard use.

DATE: The rulemaking was terminated on November 14, 1994.

For further information, contact: LCDR Charles F. Barker, project manager, Standards Development Branch, Merchant Vessel Inspection and Documentation Division. Telephone: (202) 267-1181.

Request for comments

CGD 90-071, Tank level or pressure monitoring devices (46 CFR parts 30 and 32) RIN 2115-AD69 (November 15).

The Coast Guard was to have held a public meeting on December 9, 1994, to discuss implementation of the provision in the Oil Pollution Act of 1990 (OPA 90) which requires the establishment of minimum performance standards for tank level or pressure monitoring devices for tank vessels that carry oil. OPA 90 also requires the promulgation of regulations establishing, consistent with generally recognized principles of international law, requirements concerning the use of these devices. Public comment is sought with regard to both the establishment of minimum performance standards and the establishment of operating requirements for tank level and pressure monitoring devices for oil cargo tanks on tank vessels.

DATES: Written comments must be received by February 9, 1995.

Addresses: Persons who did not attend the public meeting may mail written comments to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 90-071), Coast Guard headquarters, or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477.

For further information, contact: Mr. Randall N. Crenwelge, project manager, OPA 90 staff (G-MS-A). Telephone: (202) 267-6740.

Request for applications

CGD 94-099, National Offshore Safety Advisory Committee (November 18).

The Coast Guard seeks applicants for appointment to membership on the National Offshore Safety Advisory Committee (NOSAC).

DATES: Completed applications and resumes should be submitted to the Coast Guard by August 3, 1995.

Addresses: Application forms may be obtained by writing to Commandant (G-MVI-4), Coast Guard headquarters.

For further information, contact: CDR Adan D. Guerrero, executive director, or Mr. Jim Magill, assistant to the executive director. Telephone: (202) 267-2307 and fax (202) 267-1069.

Notice of availability

CGD 94-098, Differential global positioning system, Hawaii region; environmental assessment (November 18).

The Coast Guard has prepared a Programmatic Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for implementing a Differential Global Positioning System (DGPS) Service in the Hawaiian region of the United States. The EA concluded that there will be no significant impact on the environment and that preparation of an Environmental Impact Statement will not be necessary. This notice announces the availability of the EA and FONSI and solicits comments on them.

DATE: Comments must have been received by December 19, 1994.

For further information, contact: LCDR George Privon, Radionavigation Division. Telephone: (202) 267-0297.

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1-94	Marking of Life Preservers and PFDs (G-MVI-3)	Jan 21
1-92 CH-2	Implementation of Lifesaving Equipment Requirements for Commercial Fishing Vessels (G-MVI-3)	Mar 4
2-94	Guidance Regarding Voluntary Compliance with the International Management Code for the Safe Operation of Ships and for Pollution Prevention (G-MVI-4)	Mar 15
1-63 CH-1	Notes on Inspection and Repair of Wooden Hulls (G-MVI-1)	May 19
3-94	International Maritime Organization Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks on Board Ships [IMO Resolution A.748(18)] (G-MTH-1)	May 26
4-94	Elimination of Coast Guard Plan Review for Non-Critical Engineering Systems and Cargo Barges (G-MTH/G-MS-C)	Jun 21
15-91 CH-1	Critical Area Inspection Plans (CAIPS) (G-MVI-1)	Jul 11
5-94	Requirements for Vessels Carrying Bulk Grain Cargo (G-MTH-3)	Jul 13
6-92 CH-1	Implementation of the Benzene Regulations of title 46 CFR part 197 (G-MVI-1)	Aug 2
6-94	Guidance for Issuing International Oil Pollution Prevention Certificates under Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78) (G-MVI-2)	Aug 3
7-94	Guidance on the Passenger Vessel Safety Act of 1993 (G-MVI-1)	Sep 30
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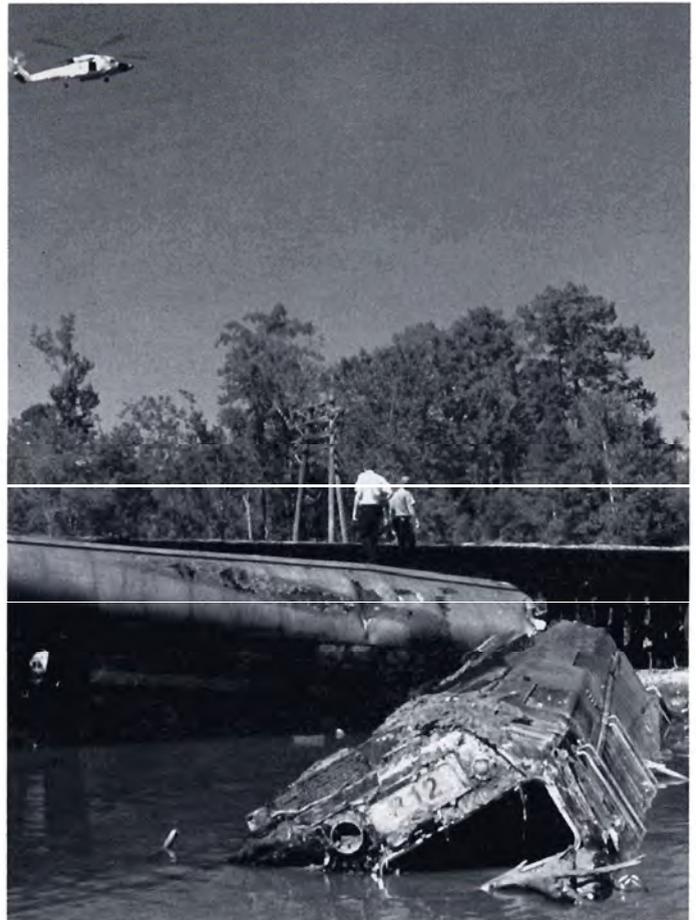
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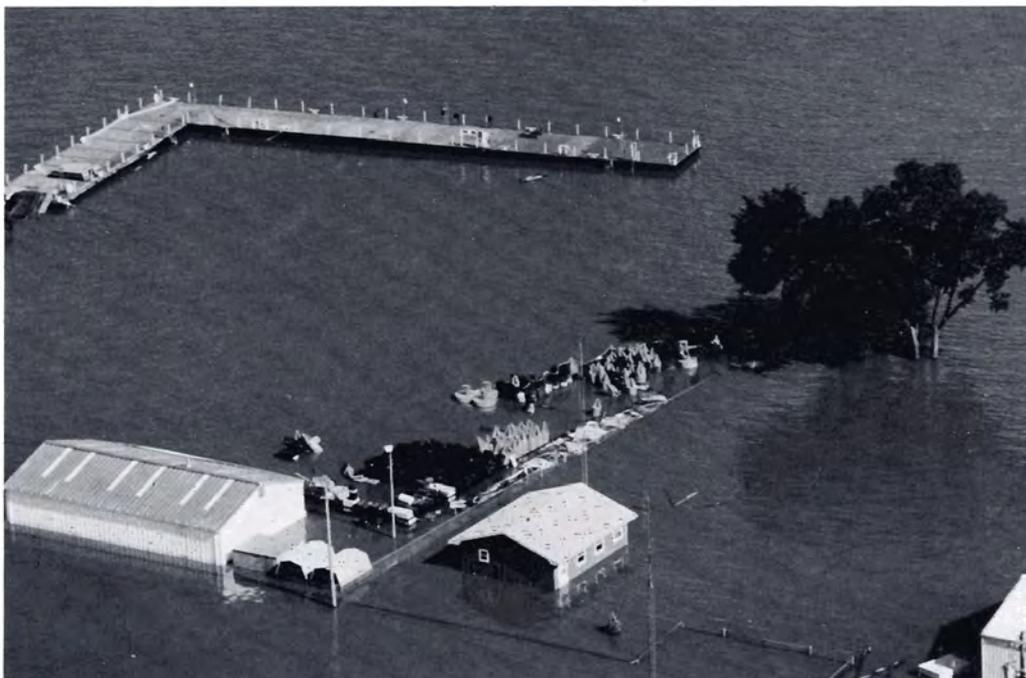
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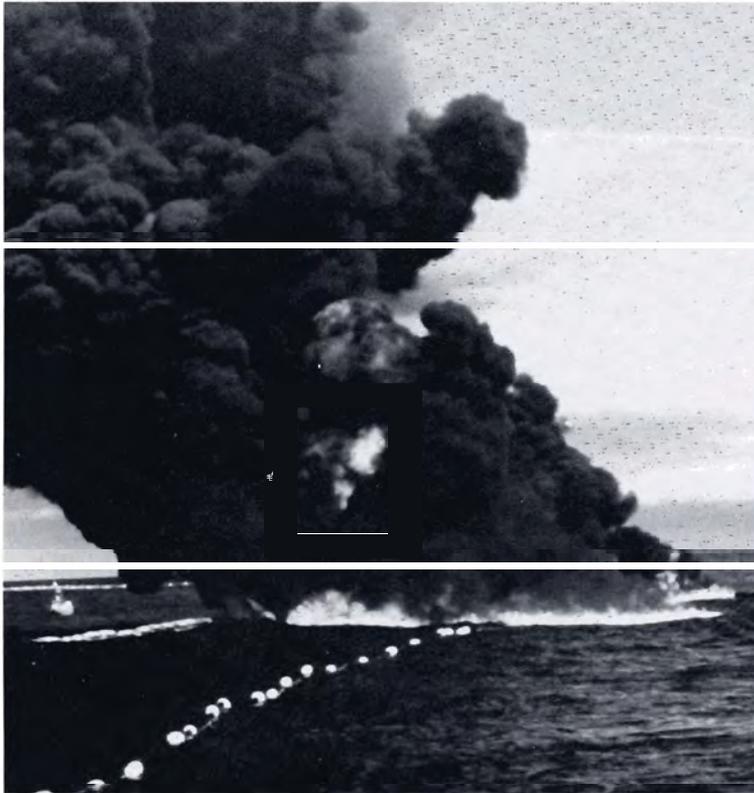
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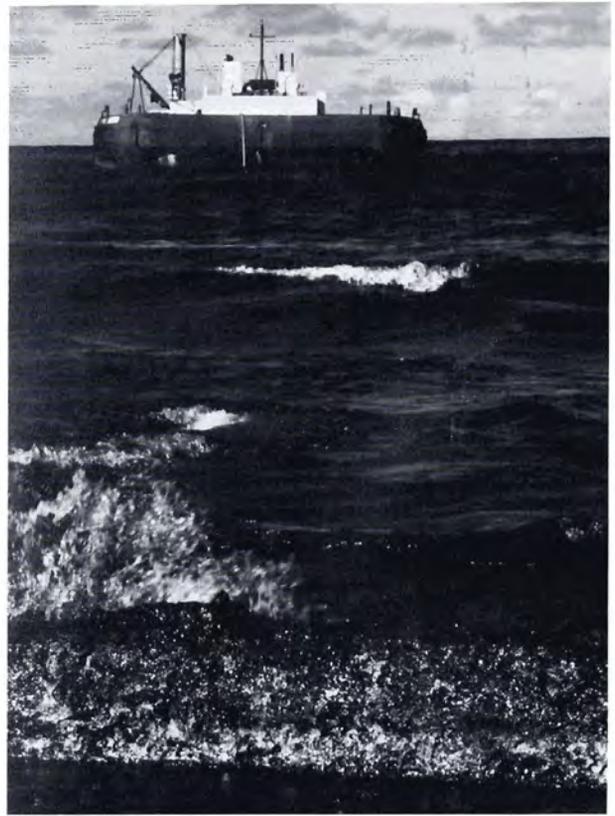
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Offshore industry benefits economy and environment (11-12/94 -- p 46-47)

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Oil Industry International Exploration and Production Forum

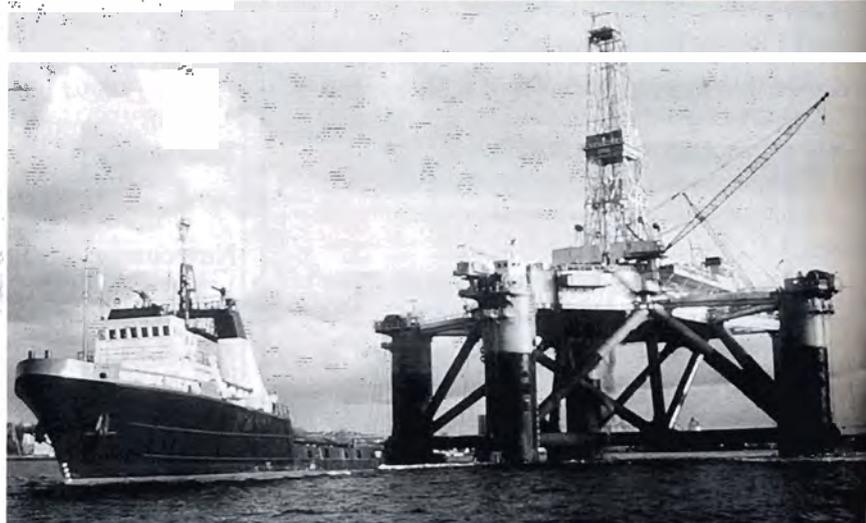
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MARPOL 73/78 How did it come about? (3-4/94 -- p 7)



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VADM William F. Rea III, USCG (ret) receives coveted ABS "Shep Award" (7-8/94 -- p 27)

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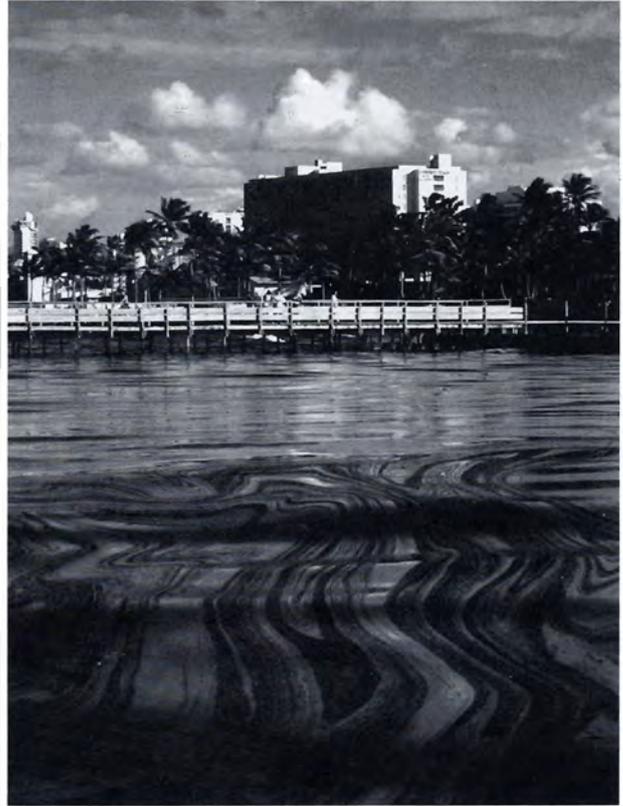
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- Controlling aquatic pests in the Great Lakes*
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- Hazardous substances must be covered by response plans* (3-4/94 -- p 24-25)
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- Marine safety law gets more aggressive*
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- Riverboats play "musical chairs" on western rivers (5-6/94 -- p 27 and 29)*

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- Riverboats play "musical chairs" on western rivers (5-6/94 -- p 28)*

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- Riverboats play "musical chairs" on western rivers (5-6/94 -- p 29)*

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- Five-year business plan empowers field units (5-6/94 -- p 10)*
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*Five-year business plan empowers field units
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"Response to Marine Oil Spills"

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"Review of Marine Safety Issues Relating to Uninspected Towing Vessels"

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*Like a sip from a fire hose . . . too many offshore
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*To the seafarer . . . safety is a way of life
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Commercial fishermen and Coast Guard look at some things differently (11-12/94 -- p 40)

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Riverboats play "musical chairs" on western rivers (5-6/94 -- p 28)

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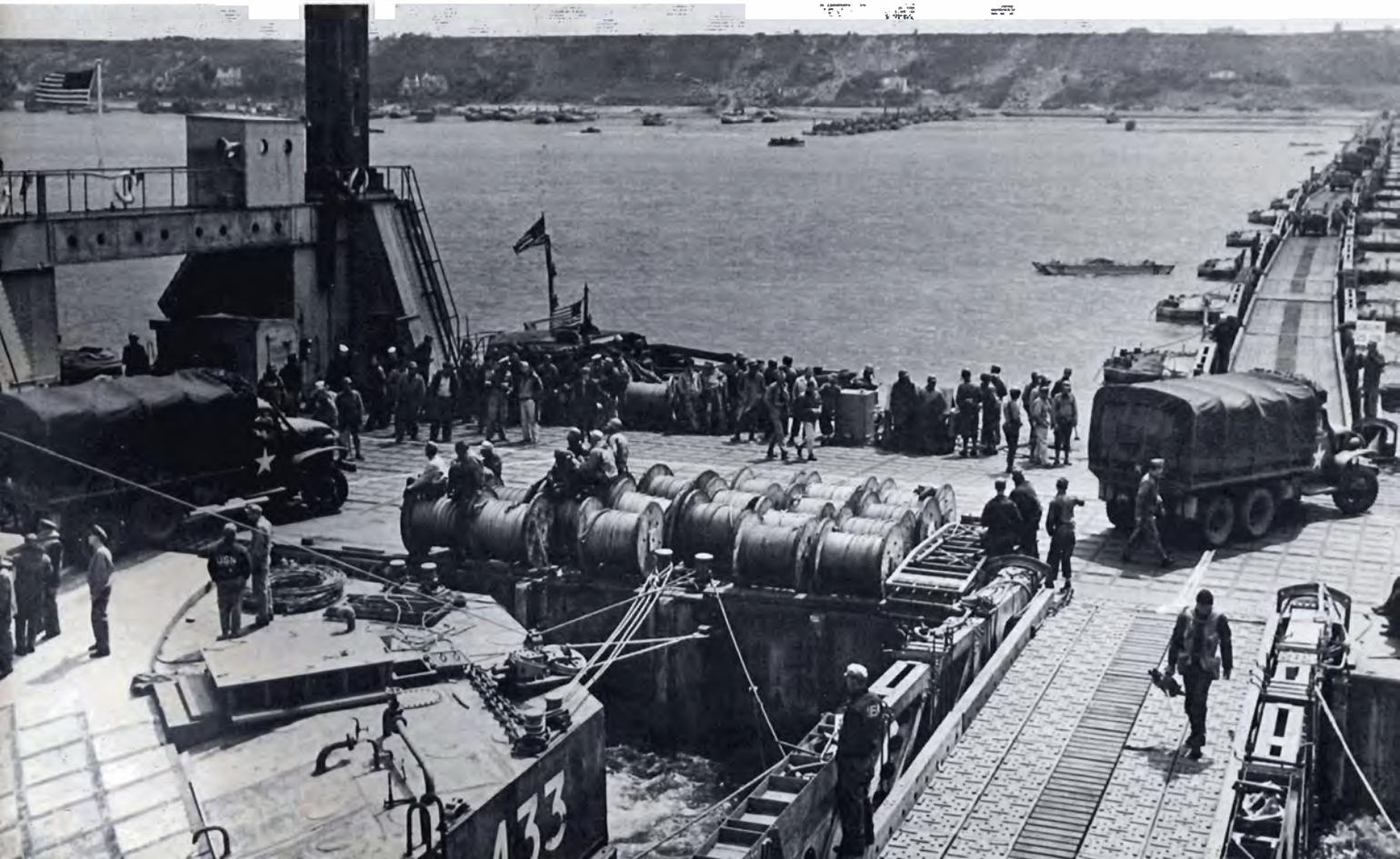
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Vetting weeds out unacceptable risks

By LCDR David L. Lersch

According to Webster's dictionary, vetting means, "to appraise or examine expertly." Today's soaring pollution liability costs and operating expenses have made cargo owners and charterers more risk conscious about the vessels they hire. Vetting programs designed to assess a vessel's fitness for service before a contract is signed, have become more and more common as shippers seek to reduce costs and liability.

Current vetting programs combine extensive physical examination of the vessel with a review of its ownership history and casualty record to minimize risk potential.

Risk data

Charterers have many different methods of determining risk, as well as vetting ships. A helpful publication is the, "Guide to the Selection of Tankers," by Arthur McKenzie, published annually by the Tanker Advisory Center in New York. Established in 1974, this center is a private organization which evaluates and reports on tankers.

The advisory center compiles casualty and oil spill data to rank tankships exceeding 10,000 deadweight metric tons. Vessel age, ownership and name changes, along with the number of years an owner has been in business are considered when a ship is assigned a rating between one and five (five being the highest rating for the best and newest ships and one the lowest for older, poor performing vessels). The higher the rating number, the higher a ship's chance of performing well for the charterer. In 1994 alone, more than 3,400 tankers were evaluated by the center.

The Tanker Advisory Center does not physically inspect ships, but obtains specific inspection information from previous charterers, the Coast Guard, the Oil Companies International Marine Forum and other sources.

(London Salvage Association, once a major contributor of casualty data, no longer offers its information to the public. Tankship owners reporting accidents to this association to evaluate their claims pressured it to withhold all data from the public domain. The necessary omission of this data could lead to inflated ratings.)

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New data system

A newly available system of gathering and storing vetting inspection information was developed by the Oil Companies International Marine Forum, a worldwide voluntary association of oil companies dedicated to promoting safety and preventing pollution from tankers at oil terminals. Called the Ship Inspection Report (SIRE) program, it is a computer database of member companies' inspection reports, accessible to program members around the world.

Members send their inspection results to the forum's London office and the tankship operator. The latter has 14 days to make comments concerning these results before the report can be released. Inspector's reports and tankship operator's comments are available to requesting members.

PSIX

In October 1993, the Coast Guard launched its Port State Information Exchange (PSIX) system. This is an automated information system which can be accessed by anyone with a computer and modem (telephone (202) 267-4333, baud rate 2400 bps, VT100 emulation). It is intended for use by the maritime community and interested members of the general public.

The PSIX contains data on both United States and foreign vessels from the Coast Guard's Marine Safety Information System. The data includes vessel age, tonnage, dimensions, route and service, inspection status, the validity of its federally- and internationally-required certificates and documents, and the number and type of outstanding inspection deficiencies.

Using PSIX, a shipper can make more informed decisions about a particular vessel's record of compliance with federal and international requirements

One company's approach

Texaco Marine Services Company, an international tankship operating and chartering organization is one of many firms to emphasize vetting as a means to examine ships carefully and critically for faults or errors. The company has a three step vetting process performed by seasoned licensed masters, engineers and evaluators.

Three steps

Step one begins when a ship owner requests a vessel inspection to get approval to carry cargoes. A vetting research group is organized to study factors such as age, casualty history, credit rating, inspection records, crew training and chartering background. Upon completion of a satisfactory documentation review, the vetting group determines whether a ship may be permitted to make one voyage only, needs to be physically inspected prior to this voyage, or rejected.



Ships requiring an inspection prior to the voyage will proceed to step two, a physical inspection to verify seaworthiness and equipment condition. Ships permitted to make only one voyage must submit to a physical inspection before making additional voyages.

In addition to complying with flag state and International Maritime Organization (IMO) regulations, vetting inspectors check for adherence to standards prescribed by the Oil Companies International Marine Forum. The forum publishes books such as, "Inspection Guidelines for Bulk Oil Carriers and Gas Carriers" and "International Safety Guide for Oil Tankers and Terminals."

Once the inspection is completed and the results thoroughly evaluated, the vetting group meets to carry out step three. That is a review and scoring of all the factors and the physical inspection in the first two steps. If the combined factor score exceeds the minimum acceptable score, the ship qualifies to carry cargo for one year.

Conclusion

Minimizing risk is essential for any company in today's competitive business climate. It is especially important for shippers and carriers of oil or hazardous materials. Less risk can mean fewer delays in getting cargo to its destination, along with reduced likelihood of mechanical failures, cargo contamination, pollution incidents or casualties.

Vetting weeds out ships determined to be unacceptable risks to cargo owners or charterers. Most major oil companies that charter ships to carry their cargo have some form of vetting program. While each company has a somewhat different means of examining ships and determining risk, their programs can be quite discriminating. In one case last year, a charterer vetted more than 2000 tankships and rejected 30 percent of those requesting approval.

The key to accurate risk assessments is the availability of reliable and complete information. Worldwide sharing of inspection information, such as that provided by the Oil Companies International Marine Forum's SIRE program, the Tanker Advisory Center's guide, and computer networks like the Coast Guard's PSIX system can play a vital role in reducing the number of substandard ships sailing the seas.

Vetting inspection photographs were taken aboard the Star Westchester, a crude oil tanker.

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MSO Honolulu averts calamity

*Pacific and Atlantic Strike
Team members, clad in
level A exposure suits,
board the Astra Peak on
January 14, 1994.*

Photo by PA3 Cameron Hardy.



By LTJG William K. Capune

Terbufos, a highly toxic pesticide, leaked from an overturned drum on board a Liberian-flagged cargo ship when it ran into heavy seas west of Hawaii in January 1994. At the same time, a fire broke out in a hold of the ship, *Astra Peak*, which was sailing from Japan to Mexico. A semi-container ship, the *Astra Peak* has holds for break bulk cargo, with intermodal shipping containers on top of the cargo hatch covers.

The fire was quickly extinguished and no injuries were reported. The spilled pesticide, however, posed a deadly threat.



Terbufos

Considered one of the most dangerous pesticides known, pure liquid terbufos is extremely toxic, especially through skin contact. As little as 50 milligrams **contacting the skin can be fatal.**

The pesticide is an organophosphate material, that can cause serious nerve damage and even death should it come in contact with the human body. According to the chemical officer with the Coast Guard's Pacific Strike Team, "It can go right through your skin and into your blood, damaging the nervous system, and you die."

Summary of events

The fire occurred on January 4 in the upper deck of the number three hold on the port side. Smoke was noticed on the bridge and carbon dioxide was immediately discharged into the hold. The smoke stopped seven minutes later.

A copy of the dangerous cargo list was faxed to Marine Safety Office (MSO) Honolulu before the *Astra Peak* anchored off port on January 7. The Honolulu fire department and a HAZMAT team were notified and put on standby.

When the ship anchored outside the port, it was believed that the fire was out based on temperature readings of adjacent holds and vents for the number three hold. However, it was not absolutely certain whether the fire was entirely out, and how much hazardous material was involved.

In the same hold as the fire were flammable cyanide-based pesticides, potassium bromide (an oxidizer) and other hazardous materials. If the potassium bromide was involved, it would have supplied a large amount of oxygen and the carbon dioxide would not have extinguished the fire. It could be smoldering and might reflash if the hold was opened. If the pesticides were involved, they would break down into deadly gases that would still be in the hold. The hold had not been opened since the fire.

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Pacific Strike Team member helps teammate with protective gloves before boarding the Astra Peak.

Photo by PA3 Cameron Hardy.

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Three days after the vessel had anchored, it was reported that on top of the number three hold was a leaking shipping container packed with forty-nine 55-gallon drums of 80-percent pure terbufos. Why this leaking container was not reported earlier is unclear. Apparently the vessel's crew didn't know that the pesticide was that dangerous.

Because of the dangers of the spilled terbufos and the uncertainties of the fire, MSO Honolulu called in strike team members for assistance. Also two chemical contractors were hired for cleanup and overhaul.

Before the 531-foot ship could enter port, the Coast Guard captain of the port had to approve its safety, cleanup and chemical disposal plan. The *Astra Peak* stayed outside at anchorage until it was determined that the spill could be cleaned up safely in port.

Immediately after the *Astra Peak* arrived at Honolulu's pier 1, four Pacific Strike Team and two Atlantic Strike Team members boarded the vessel to assess damages from the fire and inspect the hazardous chemical spill.

(Strike teams are called to sites of hazardous spills to provide technical support and assist with evaluation, control and safety. They are specially trained to deal with hazardous chemicals.)

On this occasion, team members wore level-A exposure suits that include self-contained breathing apparatus. These fully encapsulated viton suits completely cover personnel, providing an airtight seal from head to toe. They are made of special chemical-resistant materials.

Before strike team members entered the container, they cut a hole in the top of it and videotaped the inside. "We wanted to make sure the drums weren't leaning against the door," said the chemical officer.

Once the team had an idea of what to expect inside the container, they entered and found one drum leaking terbufos and 11 that were questionable. The contents of these drums were transferred to new drums.

The team found the pesticide spill to be confined to the inside of the container and the deck area nearby. The members placed the leaking drum inside another larger overpack drum.

Findings

The team found that the fire, which was caused by safety matches rubbing together and igniting inside the number three hold of the *Astra Peak*, was completely out. They had taken the precaution, however, of flooding the hold with more than 12 tons of carbon dioxide to safeguard against a possible reflash.

Inside the leaking cargo-container, the team found a drum on its side which was one-third full of terbufos. This container, which stored drums stacked two-high, had leaked about 35 gallons of the pesticide onto the *Astra Peak's* deck.

The cause of the spill was improper dunnaging. The drums were stacked two high in the container. However, the top drums were not dunnaged or held in place, and did not entirely fill the container. Thus, they rolled around in the heavy seas, causing one to leak.

Conclusion

All the cargo containers were removed from the *Astra Peak*, except for the leaking one and the one underneath it. The chemical contractors began mop-up operations, assisted by ship engineers, chemists, the state department of health, the Environmental Protection Agency (EPA), the Center for Disease Control and the Honolulu Fire Department.

After the pesticide was cleaned up, the hold where the fire occurred was vented for 12 hours, while EPA technicians conducted air monitoring. After the hold was thoroughly aired out, it was inspected by personnel wearing protective clothing. It was learned that none of the hazardous materials were involved in the fire.

The burned matches and fire damage were removed, and after passing inspection, the *Astra Peak* got underway to Mexico.

Lessons Learned

You can never be too careful. A pesticide smell was noticed, but no one thought anything of it until the vessel's master reported the terbufos leak — three days after the *Astra Peak* anchored. (When crew members were questioned about the odor, they answered, "we did some cleaning and went on with our work.") **The lesson is that when you suspect something might be dangerous, don't proceed until you are sure it is safe.**



The Astra Peak is escorted into Honolulu Harbor on January 14.
Photo by PAS Cameron Hardy.

Another problem noted was an ineffective use of the joint command structure. More than once, a representative made an agreement which had to be reviewed because a senior member of the organization wished to reconsider the previous agreement. Also key organizations were sometimes not present at decision-making meetings, and later wanted to overturn a decision that was made, which caused delays. **In order for the joint command structure to operate efficiently, each agency involved must have a representative on scene for all major discussions. It should be the same person from start to finish, and he or she must be empowered to make decisions.**

On a positive note, MSO Honolulu discovered it could handle a major HAZMAT response in Hawaii with local contractors. Neither of the two clean-up contractors had had experience with a response of this magnitude nor had they worked together before. Despite these obstacles, they got the job done safely and effectively.

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