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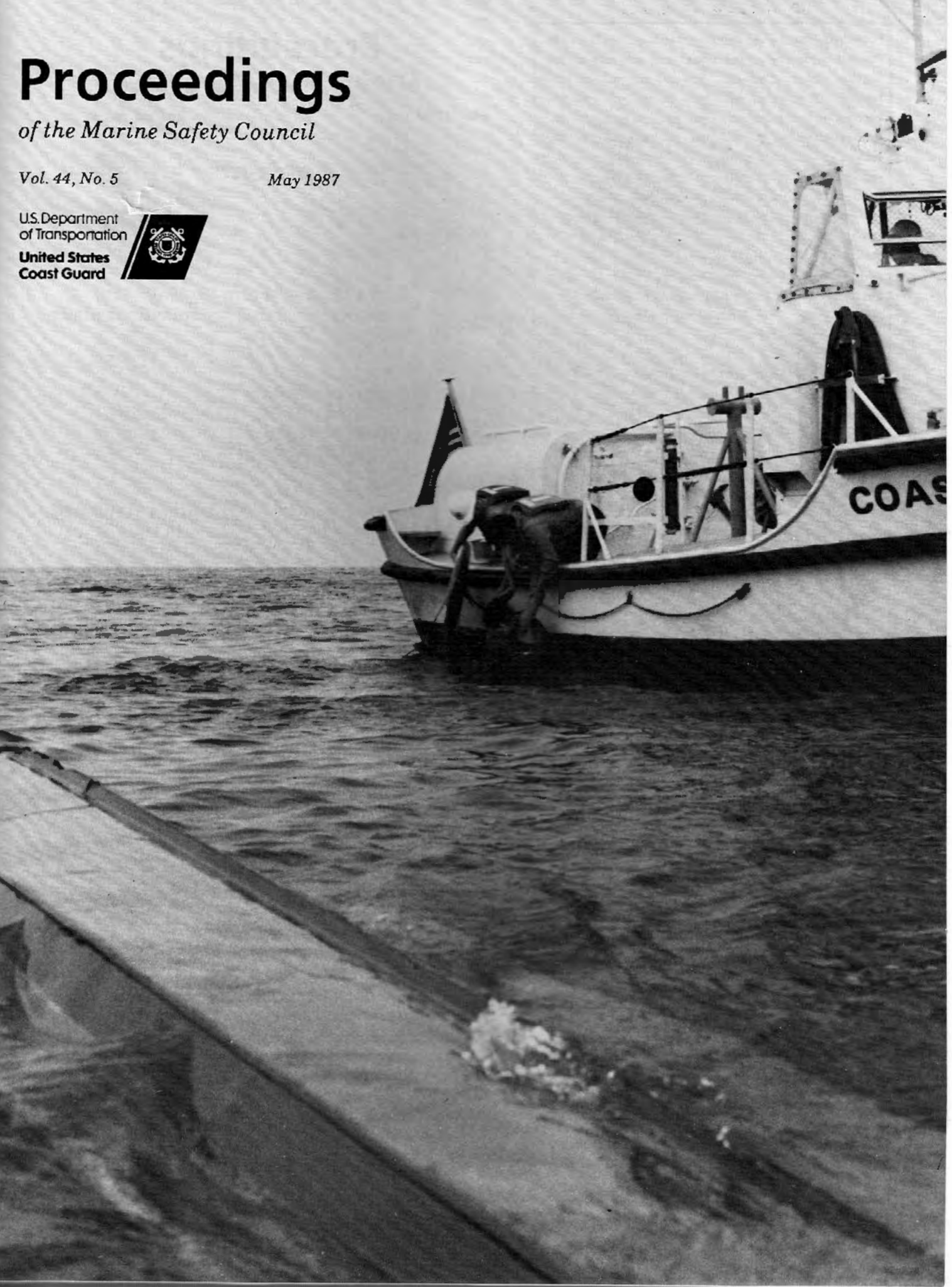

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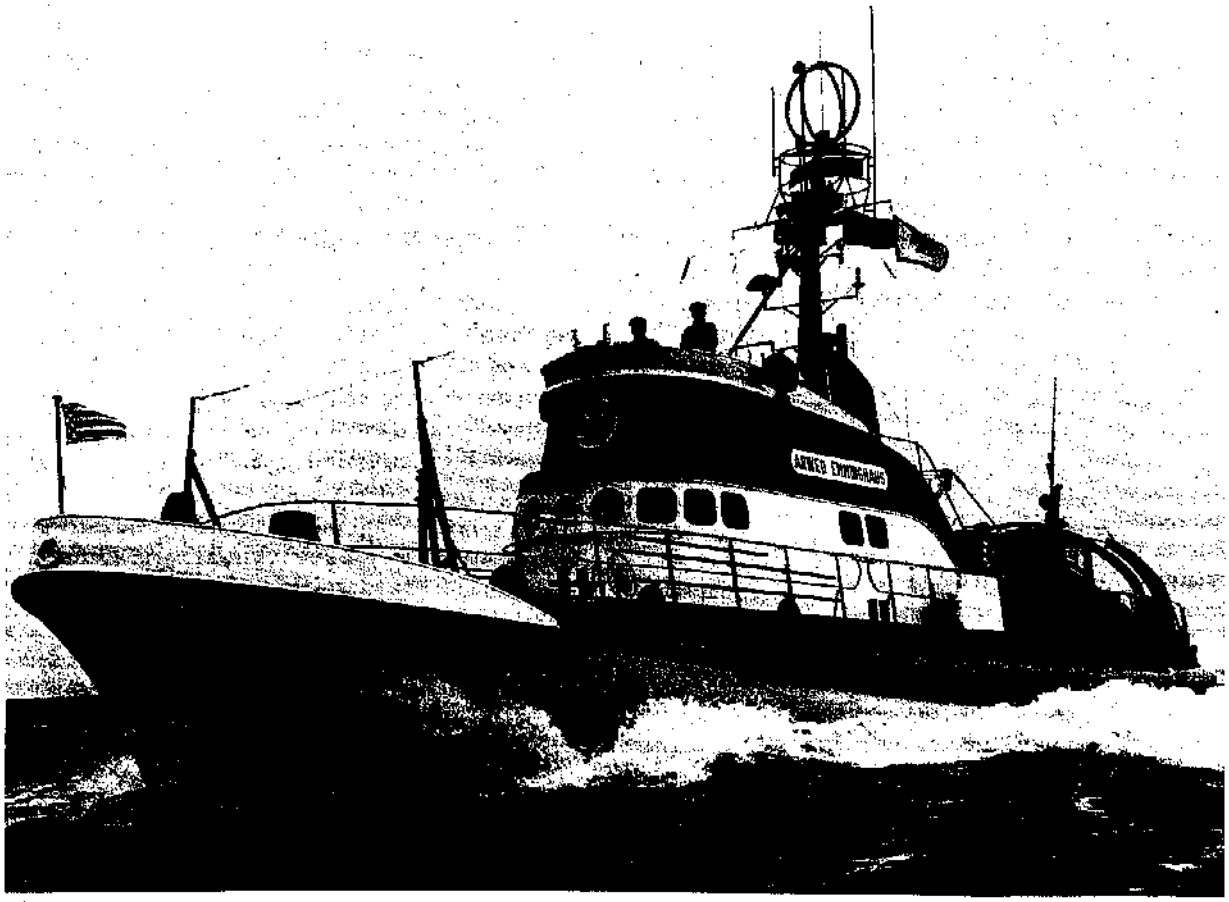
Cover

In the United States, the Coast Guard is responsible for maritime search and rescue. Here, the crew of a 44-foot Coast Guard vessel pulls a boater to safety. In the article entitled "Go Ye Must -- Return Ye May," author Victor A. Schlich discusses the development and activities of several lifesaving services throughout Europe. (Official U.S. Coast Guard photo)



The vessel **Arwed Emminghaus** of the Federal German Lifeboat Association. *(Photo courtesy of the author)*

"Go Ye Must -- Return Ye May"

Victor A. Schlich

Hurricane-force winds whistled around the granite cottages of tiny Mousehole, England, the night of December 19, 1981. Towering green waves crashed against the harbor walls of this port near Land's End.

Mr. Schlich served with the U.S. Navy before and during World War II. Now a retired newspaper editor, he makes his home in South Portland, Maine.

This article is reprinted with permission from *Professional Mariner* magazine, Vol. 1, No. 2.

A red flare rent the black sky, casting an eerie pall over town and harbor. Inside the cottages and in the local pubs, telephones fought to be heard. A ship was in distress off the Cornwall coast, and help was needed urgently.

Within minutes nine men, all volunteers, clambered aboard the diesel-powered, unsinkable lifeboat **Salomon Browne**, ready to battle the sea. Coxswain Trevelyan Richards spotted 43-year-old Nigel Brockman and his 17-year-old son Neil among the nine. Trevelyan thumbed young Neil ashore. "One member of each family is enough on a night like this," he explained.

At sea the **Salomon Browne** managed to rescue four crewmen from the coaster. Overhead, but unable to help, was LCDR Russell Smith, a U.S. Navy helicopter pilot, who later recalled, "I have some 2,000 hours of flying, and those were the worst conditions I've ever come across. To go out in that kind of weather, the lifeboatmen must have been very, very brave."

The crew of the **Salomon Browne** and the men they rescued never returned. The raging sea claimed them all. A message sent from Mousehole the next day underlines the volunteer lifeboatman's grim devotion to duty. It said simply: "A reserve lifeboat is already on the way, and another eight men are prepared to go out if the need should arise."

Heroic Volunteers

Fortunately, such a disaster does not happen often, although Great Britain's Royal National Lifeboat Institution (RNLI) answers upwards of 3,000 calls for help each year and mans some 200 stations. The RNLI is all-volunteer, except for a handful of administrative personnel and a mechanic on each lifeboat. Its $30-million annual budget is raised through private donations and public contributions. There is no government funding.

That is the way it has been since March 1825, when it was organized at the behest of Sir William Hillary. He lived at Ft. Anne on the Isle of Man. Ft. Anne overlooks Douglas Bay and, during the ferocious winter of 1822, Sir William watched 12 ships tear themselves apart on the rocks. In fact, he personally led many rescue operations.

Consequently, in 1823 Sir William wrote his eloquent Appeal to the British Nation in which he proposed organization of a national lifeboat service composed of volunteers. The RNLI was formally organized at a London meeting in March 1824, presided over by the Archbishop of Canterbury under the patronage of King George IV. The innovative proposal came at a time when coastal residents were just beginning to feel the responsibility to rescue shipwrecked sailors instead of simply looting the battered wrecks left behind by stormy seas.

Britain's first lifeboat was a converted fishing boat stationed at Bamburgh on the Northumberland coast in 1786. Four years later, Henry Greathead of South Shields built the first craft specifically designed as a lifeboat. His famous **The Original** served 40 years and rescued hundreds of shipwrecked sailors.

When Hillary's RNLI was born, the handful of local lifeboat societies joined forces with it.

The Movement Spreads

Raging seas, powered by gale winds, drove the frigate **De Vreede** ashore off Der Helder in Holland on October 14, 1824. Crew members clung desperately to the disintegrating rigging as they signaled for someone to rescue them. Seven fishermen from Huisduinen set out in a fishing boat.

The first trip was successful, and part of the frigate's crew was brought ashore. Others remained on board waiting. The second trip took off all the rest, but the fishing boat capsized, and all but one man drowned. The dramatic rescue attempt seized the imagination of all Holland.

Within a month, two lifeboat services were established in The Netherlands, one based in Amsterdam, the other at Rotterdam. They have since become one, called the Royal North and South Holland Lifeboat Institution. Like Britain's RNLI, it too is financed entirely through public subscription and staffed by volunteers.

Weary of hearing about seamen lost in the stormy North Sea off his home port at Emden, Georg Breusing organized a volunteer lifeboat service there. Four years later, in 1865, he was joined by Adolph Bermpohl and Arwed Emminghaus, and together they established the Federal German Lifeboat Association.

Today, the service operates in both the North and Baltic Seas. One-third of its 250 men are full-time, paid staff and serve aboard the offshore rescue ships. The others are volunteers who man lifeboat stations and the smaller inshore rescue craft. All expenses are paid through private funds and donations.

Each winter the Norwegian Lifeboat Society's "White Fleet" patrols the nation's jagged coast, rendering assistance to mariners in trouble. The service began in 1893 with one lifeboat, named after a skilled shipbuilder. Despite his non-Nordic name, Colin Archer was born at Larvik, Norway, after his Scottish parents had migrated there. Archer made his reputation a a master shipbuilder with the polar exploration ship **Fram**. Such explorers as Roald Amundsen, Fridtjof Nansen, and Otto Sverdrup

commanded the **Fram** on her voyages to the North.

Archer's first lifeboat became the prototype for the "White Fleet," which now numbers 37. That boat, the **Colin Archer**, served for 40 years, came to the aid of 1,600 ships, and rescued 4,500 seamen and fishermen.

The Norwegian Lifeboat Society was financed through voluntary contributions during most of the years since 1893. Today, however, it also receives government funding.

Sweden has a lifeboat service, too, although it is but a cog in that nation's Sea Rescue Service. The Swedish Society for Saving Shipwrecked Persons was founded in 1907 by private citizens and shipowners. It is 100-percent privately financed and headquartered at Gothenburg.

A Grim Toll

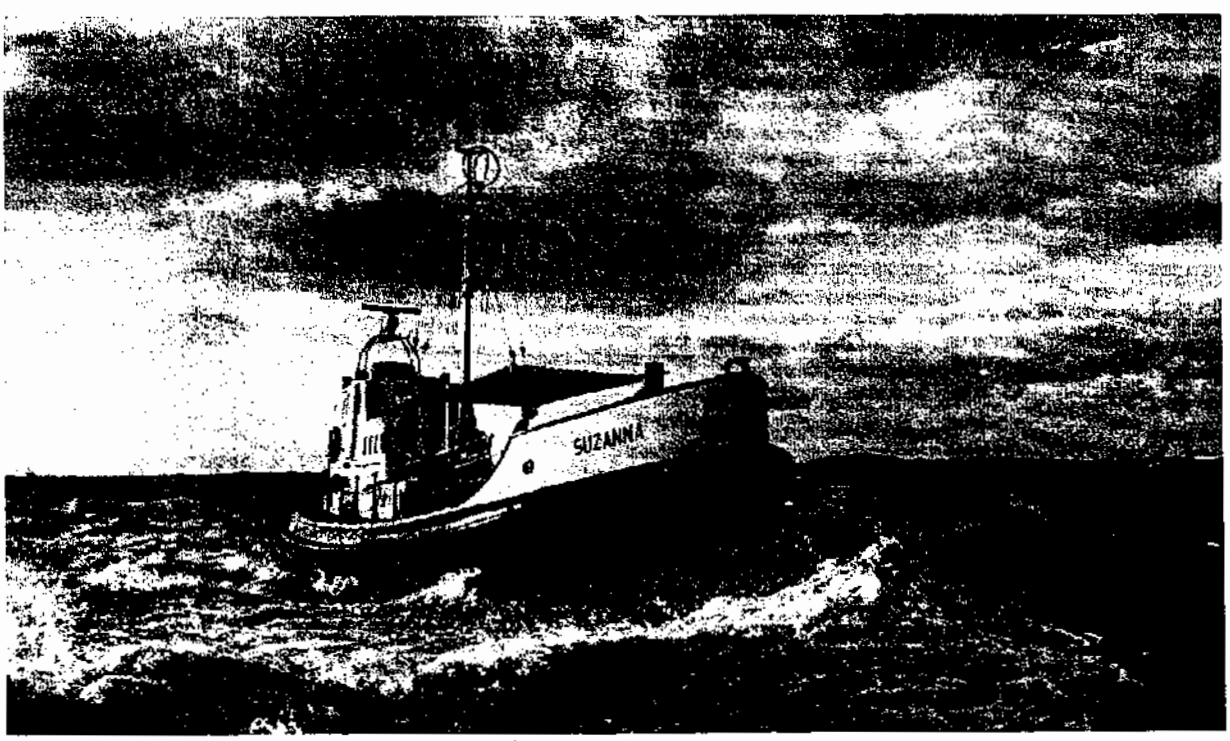
In the beginning, lifeboat services concentrated their efforts along the coast because their craft were small. Often, they had to be hauled into the sea by men or horses and then rowed to the rescue scene. As the vessels improved in design and grew in size, their service area widened.

Heroism and tragedy are handmaidens in the lifeboat services. The worst year for the services was in 1981 when 15 men from three nations lost their lives in difficult rescue operations.

- One man was lost on the **Nicolaas Marius** as the Dutch lifeboat was attempting a rescue off Terschelling.
- The Danish **RF 2**, working to help a stricken fishing craft, was upended by a house-high wave, and all six crewmen were lost.
- Less than 3 weeks later, the Mousehole disaster claimed the lives of all eight aboard the Mousehole lifeboat.

More than 300 yachts from around the world entered the 1978 Fastnet Race. They were strung out along a line across the Irish Sea from Land's End to Fastnet Rock 150 miles away when the weather turned sour. Storm-force westerly winds gusted to hurricane strength.

Although most of the yachts managed to make harbor safely, many found themselves in trouble. For 36 hours crews and boats of the RNLI combed the angry seas. Thirteen craft



The Dutch rescue vessel **Suzanna**. *(Photo courtesy of the author)*

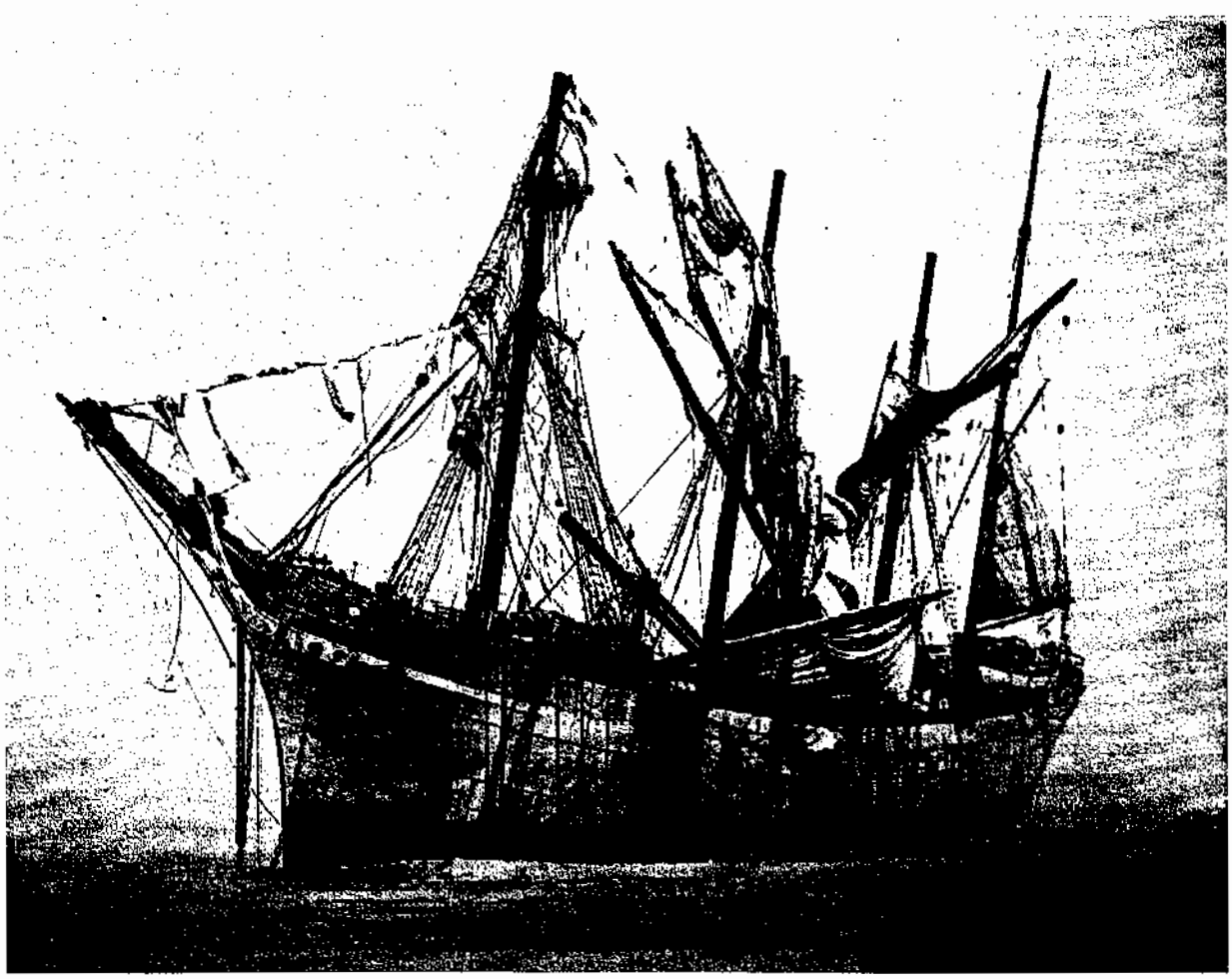
from stations around the Irish Sea participated in the effort; another 13 were put on standby.

Between them, the crews spent 170 hours fighting to successfully complete their rescue efforts. During the height of the storm, the lifeboat from the Baltimore station was at sea for 24 hours, the Court-macherry craft for 22 hours, and the St.Mary's lifeboat for nearly 21 hours.

Yet, despite the massive rescue operations, 19 yachtsmen died. Ironically, one was Peter Dorey of Guernsey, a member of the St. Peter Port Lifeboat's volunteer crew on the Isle of Man, who was a participant in the yacht race.

Crews of Great Britain's Royal National Lifeboat Institution sum up the mission of lifeboatmen around the world when they repeat a saying that goes back many years: "Go ye must -- return ye may."

Shipwrecks!



Built in England in 1890, the **Peter Iredale**, 287.5 feet long with a beam of 40 feet, was one of the larger ships of the day. On a voyage from Mexico to the Columbia River (between Oregon and Washington State), the vessel foundered in a heavy northwest squall on October 25, 1906. All hands were rescued, thanks to the U.S. lifesaving crew at Point Adams and Army troops garrisoned at Fort Stevens, Oregon, but the vessel itself could not be recovered and was abandoned. The rusting hulk of the **Peter Iredale** still lies in the sand in Fort Stevens State Park. *(Photo from the collection of William P. Quinn)*

Tragedy in the Bayou

The posted drilling barge Tonkawa capsized with a loss of 11 lives

LCDR James J. Vallone

On the clear, moonless night of May 20, 1985, the posted drilling barge **Tonkawa** was under tow by a flotilla of three towing vessels to West Lake Verette, Louisiana. The **Tonkawa** had been drilling in the shallow water marsh area known as Turtle Bayou. **Tonkawa** was under tow by the vessels **Sioux**, **Comanche**, and **Choctaw**. The transit from Turtle Bayou to West Lake Verette called for moving **Tonkawa** through the shallow waters of Turtle Bayou, Bayou Penchant, and the deeper water of Bayou Chene. For those not familiar with the waterways of southeast Louisiana, these bayous are composed of mud and grass bottoms and banks with a varying water depth of 3 to 20 feet. The complete transit was estimated to take approximately 40 hours.

On the evening of May 20, approximately half of the **Tonkawa** crew was resting or relaxing in the living quarters located on the topside pipe deck, forward. The other half of the crew was working on either the pipe deck or the mid-level machinery deck, preparing the barge for the next drilling location. For economic savings and to accommodate maintenance on equipment, the entire crew was kept on board for the transit to the new site. There was about a 10-knot wind from the southeast, the current was negligible, and the waters were calm. The crews of **Tonkawa** and her attending towing vessels were reasonably knowledgeable and experienced in mineral and oil exploration and in moving posted drilling barges like **Tonkawa**.

Suddenly, and without warning for most, shortly after entering Bayou Chene at 11:30 p.m., **Tonkawa** capsized rapidly to starboard in about 20 feet of water, instantly trapping and killing 11 crewmen.

The causes of this unusual accident, and more significantly, the lessons that can be learned and retained for the future, are most important to mariners and to the oil and mineral industry. As the readers of this article will observe, errors and inattention to details can create an accident of tragic proportions on a quiet, unobtrusive backwater bayou as serious as any high seas calamity.

Background and Data

Tonkawa was built in 1981 especially for inland mineral and oil exploration in waters not exceeding 22 feet in depth. This type of drilling vessel was designed for the shallow water areas of southeast Louisiana and Texas where the marshy terrain cannot support a normal land rig and where the waterways are much too shallow for conventional drill ships. **Tonkawa** is a non-self-propelled barge of 1,941 gross tons, 209 feet in length, with a breadth of 54 feet and a depth of 12.9 feet. **Tonkawa's** construction is of a rake bow, box stern design with a submersible hull, capable of becoming bottom-bearing, a mid-level machinery deck, and a topside pipe deck. On the pipe deck, a hinged drilling derrick is raised at the drilling location and lowered to the length of the pipe deck when in transit. **Tonkawa** was designed as a self-contained

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The capsized **Tonkawa** on May 22, 1985. *(Official U.S. Coast Guard photo)*

drilling barge with its own generators, fuel supply, drilling equipment, drilling mud processors, potable water and stores supplies, and living quarters.

On location, the barge hull's ballast compartments are flooded with water, submerging the hull unit until it becomes bottom bearing. This in turn creates a stable platform for drilling which is accomplished through the keyway (a space located in the stern of the vessel). Posted drilling barges of this type are common in the shallow water confines of southeast Louisiana where drilling for minerals is often accomplished in waters ranging from 3 to 10 feet in depth.

The hull of **Tonkawa** is divided into 20 compartments (7 on the port side and 7 on the starboard side). Additionally, there are six centerline compartments. On the port and starboard sides, four each of the seven compartments are used for ballast. These ballast tanks can be used for stability while under tow or to submerge the hull unit at the drilling site. When submerging the hull unit, the ballast tanks are flooded with water from the surrounding marsh or bayou. Each of the eight ballast tanks is equipped with an external sea chest and a 10-inch gate valve to control the ballasting of the tanks. Operation and gauging of this ballasting is performed manually by actuating a handwheel located on the machinery deck and by using a gauging tape. The ballast tanks are pumped or jetted mechanically and operated from the pumproom.

As a non-self-propelled barge, operated exclusively in inland waters as a drilling unit, **Tonkawa** was not required to be inspected or certified under any existing Coast Guard regulations. **Tonkawa** was documented for Coastwise Trade and had been inspected and classified by the American Bureau of Shipping (ABS) as an ABS+A1 Barge Drilling Unit. ABS had reviewed the operations manual for **Tonkawa** as a key element in the authorization of a Loading and Environmental Criteria (LEC) for the vessel. This LEC determined the parameters for the safe and prudent operation of the **Tonkawa** regarding the rim, ballast, loading, and vessel stability. **Tonkawa's** operations manual expressly prohibited the flooding or the counterflooding of the ballast system while underway. To minimize any adverse free-surface effect of the ballast water, the operations manual further required the ballast tanks to be either completely dry or pressed full. The operations manual further required that extensive stability calculations be performed prior to transit. The stability

calculations were required to ensure that the **Tonkawa** as loaded and ballasted for transit could in fact complete the trip safely.

The Transit and Preparations

When the **Tonkawa** departed Turtle Bayou earlier that morning at about 11:00 a.m., all drill pipe, drill collars, drilling mud, and attending unsecured equipment had been removed from the barge to other barges to facilitate what was hoped to be a smooth transit through the shallow bayous. It is noteworthy that approximately 220,000 pounds of powdered drilling mud (barite) was retained on the vessel in storage tanks located on the machinery deck. There were three centerline storage tanks. The barite was stored in the center and starboard tanks. An 80,000-pound blowout preventer "stump" was also kept on board on the port side, aft on the machinery deck.

It was known and anticipated that in many spots **Tonkawa** would actually have to be dragged through the bayous because of the shallow depths. To further facilitate a trim that would enable **Tonkawa** to be towed without unduly fouling her bow, **Tonkawa's** supervisors ballasted the No. 4 port and starboard ballast tanks with 3 to 4 feet of water. The waters of Turtle Bayou were 3 to 6 feet in depth, Bayou Penchant 5 to 9 feet, and Bayou Chene approximately 20 feet. During the transit, **Tonkawa** often scraped bottom and the side banks of the narrow bayous. All seemed to go as scheduled until the flotilla had executed a successful starboard turn into Bayou Chene from Bayou Penchant. At that time, the trailing towing vessel **Choctaw** noticed that the **Tonkawa's** starboard stern quarter was awash. **Tonkawa** was advised by radio of this event, and a duty supervisor investigated and observed the deck awash with 8 to 10 inches of water. Before any further corrective action could be taken, the **Tonkawa** capsized quickly to starboard in 10 to 15 seconds. Immediate rescue assistance was provided by the attending towing vessels and the local marine traffic. Further assistance was provided by Coast Guard units from Port Safety Detachment (PSD) Berwick, Air Station New Orleans, Coast Guard Marine Inspection Office New Orleans, and Marine Inspection Detachment, Morgan City. Various state and local agencies also provided rescue assistance.

Initial Reaction to Possible Causes

Immediately following the casualty, the Commander, Eighth Coast Guard District, convened a one-man formal investigation to inquire into the circumstances of the casualty under the provisions of 46 CFR Subpart 4.07. Originally, the investigation focused on the possibility that the **Tonkawa's** hull had been damaged due to the fact that the vessel had been dragged through shallow portions of the bayous and marshes in many instances during the transit. A major problem in obtaining quality information was the fact that most of the supervisors and duty personnel in charge of the key operations had been killed in the accident. With the help of PSD Berwick and the Army Corps of Engineers, it was learned that the waterways through which **Tonkawa** transited were uniformly composed of mud and grass bottoms with no natural or artificial obstructions to navigation. An underwater hull survey of the capsized posted drilling barge confirmed that no external damage had been done to the **Tonkawa**.

Eventually, some solid leads began to develop in the investigation. The operators of the **Comanche** indicated that they had notified **Tonkawa** by radio at about 8:00 p.m. on May 20 to advise that **Tonkawa** had a 1- to 1.5-foot port list. A supervisor from the **Tonkawa** replied to **Comanche** that the port list "would be corrected when we get to Bayou Chene." At about 10:30 p.m., **Tonkawa** called **Comanche** by radio and requested an estimated time of arrival for Bayou Chene. **Comanche** replied that the flotilla would complete the transit of Bayou Penchant and would reach the 20-foot-deep waterway known as Bayou Chene at about 11:00 p.m. In fact, the flotilla did enter Bayou Chene at approximately 11:00 p.m., on schedule.

A second underwater survey of the **Tonkawa** was ordered to determine the condition of the ballast tanks and the gate valves and sea chests. These were probed by divers from the exterior of **Tonkawa** with rods. The divers worked in near zero visibility in the brown, soup-like bayou bottom. Careful probing and gauging discovered the No. 3 starboard ballast valve to be in a completely open position. Expert examination of the valve determined that the valve had not malfunctioned and that it would have had to have been opened by human force from the machinery deck at the handwheel

location. Calculations determined that it takes approximately 24 minutes to flood **Tonkawa's** No. 3 starboard ballast tank through the 10-inch gate valve.

The Pieces Finally Come Together

The events that precipitated the casualty were gradually and painstakingly pieced together through tedious investigation and with the aid of trim and stability calculations conducted by the U.S. Coast Guard Eighth District Merchant Marine Technical Branch. The evidence and testimony of witnesses indicated that the following scenario probably occurred on May 20, 1985, on board **Tonkawa**:

At approximately 10:30 p.m., the senior motorman (in charge of ballast control) was relieved by a motorman with considerably less experience. In fact, he had been on board only a couple of weeks. The relief was probably instructed to ballast the No. 3 starboard ballast tank until the list was corrected when **Tonkawa** reached Bayou Chene at 11:00 p.m. It was logical to wait until the 20-foot depth of Bayou Chene was reached before commencing ballasting since such an operation in the shallower waters of Bayou Penchant or Turtle Bayou could foul the sea chest and the gate valves with bottom mud and grass. Through either miscalculation or inattention, the No. 3 starboard ballast tank was completely flooded, creating a highly unstable situation for the **Tonkawa**. This situation was even further aggravated by the earlier partial ballasting of the No. 4 port and starboard ballast tanks with 3 to 4 feet of water. This was also confirmed by the divers who discovered that amount of water in those respective ballast tanks. This ballasting created a significant and dangerous free-surface effect in the vessel.

The technical examination of **Tonkawa's** trim and stability data indicated that the loaded condition of **Tonkawa** in conjunction with the

Aerial view of the capsized **Tonkawa** in Bayou Chene. *(Official photo, U.S. Coast Guard Eighth District)*

Tonkawa's lower hull unit and machinery deck are partially visible as salvage vessels begin operations. (Official photo, U.S. Coast Guard Eighth District)

ballasting conducted in violation of the operations manual generated a calculated distance of center of gravity (KG) exceeding the maximum allowable limits. A plot of the righting arm curves indicated that the **Tonkawa** would have been operating with an approximate 1-degree port list until the No. 3 starboard ballast tank was intentionally flooded by **Tonkawa** personnel. At that time, a 10-degree starboard list was calculated; however, it was unlikely that the **Tonkawa** would remain at this equilibrium point due to an insufficient amount of positive righting energy. The calculations indicated that the **Tonkawa** was much more likely to continue past the 10-degree equilibrium point and continue to heel to starboard until finally capsizing.

Important Lessons To Be Learned

The proximate determined cause of the capsizing of Tonkawa was the flooding of No. 3 starboard ballast tank. The ballasting of No. 4 port and No. 4 starboard ballast tanks with 3 to 4 feet of water prior to the transit was a contributing cause. An additional contributing cause was the failure of the owner/operator to provide knowledgeable management personnel on board **Tonkawa** capable of performing the required trim and stability calculations which were set forth in the vessel's operations manual.

Substantial time, thought, and expertise went into determining the LEC and the provisions for the **Tonkawa** operations manual. Under the specific mandate of the manual, safe transit of the vessel could be readily accomplished by conducting the required trim and stability calculations and by following the explicit prohibitions against partial ballasting while underway. Why was the operations manual ignored in this case? Perhaps the personnel were lulled into complacency by the innocuous nature of the shallow, placid, backwater bayous. Perhaps an attitude existed that it was a waste of time to perform such calculations unless transiting in open, deep, unprotected waters. Perhaps the old oil-patch tradition of "doing things by the seat of one's pants" overtook common sense and attention to details. Whatever the reason(s), failure to comply with the operations manual proved to be fatal to 11 crewmen on board the **Tonkawa**.

The inland mineral and oil industry must be diligent in keeping all personnel informed of the importance of vessel stability, regardless of the locale or the waterway. Personnel must be drilled in emergency procedures for inland waters as well as for high-seas operations. Finally, consideration should be given to moving vessels such as the **Tonkawa** with a reduced maintenance crew whenever possible.

The ultimate lesson to be learned from this tragedy is that the underlying principles of vessel stability are immutable and do not differ in deep or shallow waters, with few exceptions. Maritime and industry personnel must realize that proper vessel loading, ballasting, and exact calculations are factors that *interact* and are *interdependent*. Ignoring one or more of these factors can, as we have seen, lead to fatal consequences.∎

Coast Guard Participation in the Development of Shipbuilding Standards

Thomas M. Nolan

The U.S. Coast Guard is actively participating on the American Society for Testing and Materials (ASTM) Committee F-25 on Shipbuilding. ASTM is a nonprofit management system for the development of voluntary, full-consensus standards. This Committee is developing a body of national shipbuilding standards which address the design, construction, installation, and testing of numerous shipboard systems and components.

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Committee F-25 on Shipbuilding was established in 1978 and is responsible for ASTM standards related to the marine industry. The 275-member committee has developed 50 standards presently serving the marine industry with an additional 100 draft standards and specification in various stages of development.

F-25 is divided into two types of subcommittees, Technical and Administrative, as follows:

Technical Subcommittees

F25.01	Materials
F25.02	Coatings
F25.03	Outfitting
F25.04	Hull Structure

F25.07	General Support Requirements
F25.10	Electrical, Electronics, and Automation
F25.11	Machinery
F25.13	Piping Systems
F25.14	Insulation

Administrative Subcommittees

F25.90	Executive Subcommittee
F25.91	Long Range Planning
F25.93	Terminology
F25.94	Navy Documents Conversion

The Coast Guard's participation on ASTM Committee F-25 on Shipbuilding is in direct support of Office of Management and Budget Circular A-119, which promotes the adoption of voluntary standards. The investment of time needed to support this Committee and the National Shipbuilding Standards Program is far outweighed by the significant benefits in improved productivity and manufacturing technology provided to the marine industry by these standards.

Standards currently being developed by the joint efforts of the Coast Guard and ASTM with specific impact on Coast Guard regulations deal with the following: fiberglass pipe, engineroom automation, electro-hydraulic steering gear, watertight doors, mechanically attached pipe fittings, fuel oil meters, piping system materials, quick disconnect couplings, steam drains, strainers, expansion joints (Metallic, non-metallic, ball, packed), steel construction tolerances, smoke/fire detection systems, firestops, PFD lights, whistles (COLREGS) flashlights, lifeboat searchlights, and elevators (marine). These standards and others which are being developed will be proposed for incorporation by reference into Title 46 of the Code of Federal Regulations. The goal of the Coast Guard is to streamline and/or eliminate regulations, eliminate the need for the Coast Guard affidavit system, simplify plan review, place the responsibility for product quality and testing on the manufacturer, and enable Coast Guard inspectors to determine product acceptability through product marking.

Industry participation is important and encouraged. The Committee welcomes recommendations on where standards would be useful. Direct participation on the various subcommittees is encouraged by the subcommittee chairmen. Information regarding membership can be obtained from Mr. D. A. Marangiello, Chairman, Committee F-25 on Shipbuilding, ASTM, 1916 Race Street, Philadelphia, PA 19103

If you have any questions about the Coast Guard's participation on Committee F-25 on Shipbuilding, contact the Engineering Branch of the Marine Technical and Hazardous Materials Division at Coast Guard Headquarters, (202) 267-2206.

Maritime Notes

Leading Fishing Ports

New Bedford, Massachusetts, and Cameron, Louisiana, were the leading fishing ports in the United States for 1986, reports the National Oceanic and Atmospheric Administration (NOAA).

For the fourth consecutive year, New Bedford topped all other cities in the values of the fish landed, the Commerce Department agency said.

Fish and shellfish worth $106 million were landed in New Bedford in 1986, up slightly from $103 million in 1985. The Louisiana port of Dulac-Chauvin was second in value with $71 million worth of fish landed.

Cameron, Louisiana led other cities in terms of volume, with 617 million pounds, down from 674 million pounds in 1985. Most of the landings were low-value but industrially important menhaden.

Two Texas ports saw dramatic shifts in landed value in 1986. Brownsville-Port Isabel's landings went from $50 million in 1985 to $69 million last year, and Aransas Pass-Rockport's landings jumped from $43 million to $60 million during the same period.

ABS Rules for Building and Classing Steel Vessels, 1987

The introduction of requirements for vessels that transport motor vehicles, and a sharper focus on the technologies of marine diesel engines and ice-strengthened hulls are among the changes included in the 1987 edition of the American Bureau of Shipping (ABS) *Rules for Building and Classing Steel Vessels*.

The classification society, which marks its 125th anniversary this year, updates and expands these *Rules* on an annual basis to provide marine engineers, naval architects, and shipowners with world-recognized standards for the design and construction of all types of marine vessels. Some changes found in the 1987 edition are listed below:

- The addition of Section 26 which gives general requirements for the classification + A1 Vehicle Carrier. These requirements are for vessels designed for the transport of motor vehicles, and characterized by multiple vehicle-carrying 'tween decks. Although they are generally fixed, portable 'tween decks are also acceptable.

- A section of the *Rules* for internal combustion engines focuses specifically on new requirements for the cantlings of diesel engine crankshafts. These requirements are the result of international studies on this subject and allow for consideration of details of the manufacturing procedures to assure crankshaft reliability.

- The *Rules* concerning internal combustion engines also address industry concern that the use of a fewer number of cylinders and long stroke engines may result in designs with excessively highs stresses in the barred range on some vesssels. To deal with these concerns, ABS *Rules* now specify a maximum stress for this condition.

- Part II of Section 29 details ice-strengthening requirements which are in agreement with the "Finnish-Swedish Ice Class Rules" (1985) developed for ships trading in the northern Baltic in winter. Vessels constructed with special strengthening to one of the ice classes described here will be distinguished in the Record by the words "Ice Strengthening," and followed by Class 1AA (1985), 1A (1985), 1B (1985), 1C (1985) to indicate the type of strengthening adopted. All vessels so designated are to be self-propelled, equipped with radiotelephone (VHF), and in compliance with other applicable sections of the *Rules*.

- The 1987 *Rules* draw attention to special consideration of the effect of sloshing loads on the strength requirements for wide tanks on oil-carrying vessels, and for dry cargo vessel holds partially filled with water ballast or liquid cargoes.

- Damage to bilge keels can lead to shell-plating fracture. To protect against this potentially critical occurrence, requirements added to the *Steel Rules* call for fitting doublers between the bilge keel and the shell.

Copies of the 1987 editon of the ABS *Rules for Building and Classing Steel Vessels* are available from the American Bureau of Shipping, Book Order Section, 45 Eisenhower Drive, P.O. Box 910, Paramus, NJ 07653-0910. The price in U.S. dollars is $50 in the United States and $55 elsewhere. Shipping and handling costs are included.

Davis Offers Change to Shipbuilding Fund

Scaling down the scope of a federal ship financing fund is the idea behind a bill introduced in mid-March by Congressman Bob Davis, Republican Vice-Chairman of the Committee on Merchant Marine and Fisheries.

The legislation would amend Title XI of the Merchant Marine Act of 1936, which provides federal loan guarantees for the construction of U.S. vessels, so that oil drilling rigs, inland barges, and related offshore service vessels would no longer be eligible to participate in the program.

Originally created in 1938, the Title XI program was intended to help the U.S. maritime industry by providing needed funding for expansion of the U.S. fleet.

Beginning in 1970, the scope of the program rapidly expanded to provide loan eligibility to such sectors of the maritime industry as inland barges, oil drilling rigs, and related offshore marine services. Even with the expansion, the Title XI program, sustained through a revolving fund, remained self-supporting, that is, until 1981, when several factors combined to put the program in the red.

A general slump in the U.S. maritime industry, the fall in oil prices, and over-capacity in the barge industry all resulted in a series of loan defaults now totaling about $2 billion.

"It is sad to see a program to which many of us pointed with pride in auch trouble," Davis said. "If we are going to be able to keep the Title XI program going, we have to make these changes."

Notice of Withdrawal: Surplus Equipment

The Maritime Administration is withdrawing a notice of proposed rulemaking which was published in 1983. The regulations would have established procedures for MARAD to make excess or surplus vessels, shipboard equipment, and other marine equipment available to the U.S. Merchant Marine Academy, state maritime academies, and a number of nonprofit training institutions that have been jointly approved for training by MARAD and the U.S. Coast Guard.

MARAD said in a Federal Register notice withdrawing the proposal that the present method of coordinating with the General Services Administration in obtaining property from other agencies "serves program needs in nearly every case."

Further information is available from Arthur W. Friedberg, Director, Office of Maritime Labor and Training, Maritime Administration, 400 Seventh Street, SW, Room 7302, Washington, DC 20590; telephone (202) 366-5755.

USNI Announces Military Database

The U.S. Naval Institute (USNI), a professional association for Navy, Marine Corps, and Coast Guard officers, has scheduled its military database to go on-line in June 1987.

According to Jim Barber, Executive Director of USNI, the database will provide unclassified information on all the military forces of the world.

The database will include information on the organization, force strength, weapons, and equipment of the armed forces of the United States and the Soviet Union at first. Information on the armed forces of other nations will be phased in during the first year of the project. The information will be updated continually so that users of the database will always have access to the most current information available. The information will be accessible through a telephone modem and personal computer.

The database is being developed under the direction of Norman Polmar, a naval analyst and author who edits two reference books, *Guide to the Soviet Navy* and *The Ships and Aircraft of the U.S. Fleet*. Polmar also writes a montly column on the Soviet and U.S. navies for USNI's monthly magazine, *Proceedings*.

For more information on the USNI Military Database, conact Norman Polmar at (703) 553-0208.

Updated MARAD Report: Foreign-Flag Ships Owned by U.S. Companies

The Maritime Administration has updated as of July 1, 1986, its report, "Foreign-Flag Merchant Ships Owned by U.S. Parent Companies."

The report includes foreign-flag, oceangoing merchant ships of 1,000 gross tons and over owned by U.S. parent companies located and incorporated in the United States either by direct ownership or through foreign subsidiary companies. Excluded are ships owned by U.S. citizens through foreign companies which have no relationship to a company located and incorporated in the United States.

Copies of the report may be obtained from the Maritime Administration, Office of Trade Studies and Subsidy Contracts, Room 8121, 400 Seventh Street, SW, Washington, DC 20590.

Lessons from Casualties

All Oils Are Not Created Equal

The Coast Guard has on file another report of the loss of a lifeboat resulting from a failure of the handbrake of its lifeboat winch to stop the weight of the boat during its lowering. This took place in August 1986 during an abandon-ship drill on a 1972-built tanker the reporting form CG-2692, signed by the master of the vessel, tells the story following:

"1040 -- Sounded abandon ship signal (drill). Crew mustered at boats. Painters led out, plugs in place, manropes rigged. No.1 boat lowered to embarkation deck and triced alongside. Frapping lines passed and secured. Tricing pendants released. All personnel clear of boat. Frapping lines slackened. Boat lowered to main deck level. As boat approached main deck level, the brakeman was ordered to stop lowering the boat. The brake was applied but the lowering mechanism would not stop lowering the boat. The brake lever was worked on and off several times and additional force was applied to the brake lever to no avail. The boat lowered itself to the water immediately streaming aft, tearing the sea painter thwart out of the boat. the boat was now being towed at 15 knots by the bat falls and the davits. Attempts to pull the boat back aboard the ship were not successful due to the speed of the ship and the fact hat the forward fall wire had jumped off of the winch drum onto the drum shaft. The ship's way was being taken off. the boat heeled over, taking on water, and shearing into the hull of the ship. The impact crushed the hull of the boat. After all way was taken off the ship, the remains of the forward section of the boat were still attached to the falls. This was released and sunk. Resulting damage: loss of No.1 lifeboat and gear, severe damage to lifeboat falls, possible damage to lifeboat davits..."

Following disassembly of the No.1 lifeboat winch after the casualty, its over-riding clutch (the mechanism centered on the inside of the handbrake drum) was forwarded to the manufacturer for examination. From the available evidence, the clutch manufacturer attributed this non-holding failure to the presence of improper lubrication oil within the clutch.

This casualty, with lube oil as the culprit, has much in common with an earlier case discussed in the September 1985 issue of this magazine. In the previous case, all evidence as to the cause of a handbrake failure pointed to a combination of (1) improper lubrication and (2) low temperature. But in this most recent case, there is a major difference; the failure of the brake to hold the load took place at a temperature of 52°F.

Personnel charged with the job of maintaining lifeboat winches should be aware of the importance of correct lubrication for over-riding clutches. The Proceedings article mentioned above dealt with the workings of these clutches and the part played by lube oil in their satisfactory operation. Information about this lubrication can be found in the manuals produced by the winch manufacturers for the shipboard maintenance of their equipment; these are worthy of a careful reading.

Life safety equipment is often the court of last resort for seafarers. Lives may depend on proper maintenance and repair. Attention to detail can save lives.

National Safe Boating Week

June 7 - 13, 1987

Letters to the Editor

I received some extremely interesting letters recently, two of which appear below. My thanks to all the readers who have written in the past few months.

Dear Editor:

I was very much interested in the article "Man Overboard Recovery Systems" in the February 1987 issue of the *Proceedings*. As a former Maine Maritime Academy professor teaching seamanship, I was quite surprised at a few, what I consider to be, inaccuracies contained in the article.

To begin with, the cordage used to construct the net is referred to as being "5/8-inch diameter line," whereas line is properly referred to by circumference, and in this case would be 2-inch line. The photograph on page 33 does not show the wire topping lift nor the forward and after vang guys.

The most outstanding error, which could be misleading to any seamanship student, is the reference to "gun tackle," whereas a luff tackle is shown in the photo. I suppose it might be considered of little importance that the lower block is referred to as the "moving" block as it is properly called the movable block.

To operate the rig, one would apply a force to the hauling part of the tackle as Knud Jensen is doing in the photo shown on page 33 and not "overhaul* the tackle" as mentioned in the article.

With the above exceptions, which might not even be noticed by some, the article is very informative.

Louis S. Hathaway
Yankeetown, FL

(*To get the rig into operating position, one would slack off on the hauling part of the tackle and thus lower the outboard portion into the water, but this is not "overhauling" the tackle in a true interpretation of the term.)

Mr. Milton Daniels, coauthor of the article in question, responds to Mr. Hathaway's concerns:

By the tenets of seamanship, Mr. Hathaway has it right on all counts. Riesenberg's Standard Seamanship *bears him out on the "luff tackle"; it's "movable" (not moving) block; and that the "overhauling" of a tackle occurs when its blocks are separated during slackening in contrast to the hoisting with the tackle described in the article.*

If traditional nomenclature is to apply, there is another error in the article's use of the term "boom tackle." On sailing ships running before the wind, boom tackles are led forward from sail booms (in opposite pulling direction to their sheets) in order to prevent the booms from "...slamming over if taken aback by a shift of wind or direction of the vessel" (Riesenberg).

But as to the size of the material used in the net, the writers of the article do not see "5/8-inch diameter line" as erroneous, although it is admittedly not the traditional way of seamen for giving the size of a line by circumference. Although manufacturers include both circumference and diameter in their catalogs for the description of a fiber line, perhaps Riesenberg is again of help on this point: "...rope sized, as used at sea, refer to the circumference, unless otherwise stated." So on that basis, if the use of the diameter for describing the line was an aid to the readers' understanding of the recovery net, then the lapse from tradition in the Proceedings *would appear to have been permissible.*

That much said, the writers are pleased that their modest effort was the object of such close attention.

Dear Editor:

As a merchant seaman, I've always been curious about the origins of the "Foreign Articles" we sign as crew members aboard an American merchant vessel before it departs on a foreign voyage. I've never met anyone yet who could shed any light on this subject or explain

why U.S. seamen are still required to sign them in peacetime. They are outlined in 46 CFR 14-01-1.

J. G. Rettke
Marinette, WI

To find the information you requested, I checked with Coast Guard Historian Dr. Robert Scheina, with Marine Consultant Charles Dana Gibson, and with David Hansen, a Coast Guard consultant involved with licensing matters.

The foreign articles were one of the first laws passed by the new U.S. Congress in 1790. The articles were passed for the protection of seamen in an attempt to prevent impressments, shanghais, and other types of forced service aboard ships. Basically, the articles spelled out the conditions of the voyage, i.e., duties the seaman would have to perform, food and payment he would receive, destination and length of voyage, etc. It was thought that by requiring seaman to sign the articles, cases of abduction for sea duty could be halted. However, because many illiterates of the era used an "X" as their legal signature, and because an X could be signed (or forged) under the influence of any substance used by would-be captors to intoxicate seamen, this signing process didn't fully stop involuntary sea duty. As a further safeguard, then, the signature had to be witnessed by a shipping commissioner, and later this witnessing duty passed to the Coast Guard or civilian Coast Guard agents. Just recently, in the last 5 years or so, this responsibility was returned to the master of the vessel.

In times of war, the government will often refuse to disclose the destination of a vessel for security reasons, stating instead that the vessel will be on a voyage from port of origin to port of destination. There is no difference, though, in foreign articles signed in times of war or of peace. The foreign articles are simply a contract between a master and crew for the understanding and protection of all parties.

Thanks for asking a question which allowed me to broaden my own knowledge.

New Publications

World Class Sailing, *by Gary Jobson and Martin Luray. Hearst Marine Books, 105 Madison Avenue, New York, NY 10016. Price: $18.95.*

World Class Sailing is an anecdotal recounting of Gary Jobson's experiences in the sport of sailing. It is a distillation of all the wisdom and knowledge that Jobson has picked up over his years as a competitive sailor. In it, he tells of racing in the America's Cup, the Newport-Bermuda race, and the Maxi Worlds. His stories are filled with enough adventure and drama to intrigue both sailors and nonsailors. Also, Gary provides valuable tips on racing both big and small boats.

Jobson has participated in the growth of American sailing as its best-known competitive sailor, a television commenator, a lecturer, and the author of eight books on the sport. Martin Luray is a sailing journalist and associate editor of *Sail* magazine. He is the author of several books and a former editor of *Rudder* magazine.

Basic Research on the Introduction of Welding Robots to Commercial Shipbuilding, *by the Maritime Administration. National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Order number: PB87-14329/AS. Price: $24.95.*

The Maritime Administration has announced the availability of a technical report entitled *"Basic Research on the Introduction of Welding Robots to Commercial Shipbuilding."* The research was conducted by the Massachusetts Institute of Technology under MARAD's University Research Program.

Ordering information for the publication is shown above.

Chemical of the Month

Michael J. Eagle

Phosphorus

White phosphorus, also known as yellow phosphorus, has many common uses. It is used in manufacturing phosphoric acid and other phosphorus compounds; as an additive to semiconductors, incendiaries, and military pyrotechnics; and in rodenticides and fertilizers. It is also used as a flame retardant for plastics, fibers, gasoline, and lubricating oil additives.

Phosphorus (white) is a dangerous chemical which should never be allowed to contact the human body. With short-term exposure to white phosphorus, severe breathing difficulties may occur. If actual contact is made with the body, white phosphorus may ignite, producing severe skin burns with blistering. Death is probable.

Long-term exposure to white phosphorus may cause "phossy jaw." Swelling of the jaw, toothaches, loosening of the teeth, and destruction of the jawbone may occur. Bones may also become brittle and break easily. Death is likely.

If white phosphorus is swallowed, vomiting and abdominal pain may occur. The symptoms may go away after 24 hours, but they will most likely return after a brief period. Death from these symptoms is also likely.

If white phosphorus gets into the eyes, flush them with a large amount of water and seek medical help immediately. Severe eye damage may occur.

Transportation of white phosphorus by air is forbidden due to the dangers that exist in case of accident. Transportation by sea is allowed, but special provisions must be taken.

If white phosphorus is to be shipped dry, it must be hermetically sealed in a metal drum of a maximum gross volume of 250 liters. Usually the drums are filled with white phosphorus in the liquid state, and then it is allowed to solidify.

The preferred method of shipping white phosphorus is in water. There are three methods that can be used. The first is in glass bottles, packed with cushioning material together in a wooden box with a maximum weight of 75 kilograms. The second is in cans, packed in a wooden box, also with a maximum weight of 75 kilograms. The final method is in metal drums which can hold up to a maximum of 250 liters. All of the containers must be hermetically sealed.

In the event of a spill or leak, the following procedures should be followed. Persons involved in cleanup should wear rubber gloves, protective coverings, a suitable breathing apparatus, and large face shields to avoid all contact with the spilled material. The spill should first be covered with wet sand to keep it away from the air (white phosphorus is capable of spontaneous combustion). The sand must be kept wet by spraying water on it, making sure not to spread the chemical. The white phosphorus then can be scooped up into buckets and allowed to solidify. It can then be disposed of in a secured sanitary landfill.

The U.S. Coast Guard regulates the transportation of white phosphorus according to the Code of Federal Regulations, Title 46, Subchapter O. The Department of Transportation has white phosphorus listed in Title 49, Subchapter C, of the CFR. The Environmental Protection Agency also lists white phosphorus in Title 40, CFR. White phosphorus is listed in the International Maritime Dangerous Goods Code as a Class 4.2 chemical.

Please note in the accompanying properties chart that white phosphorus does not have a cargo compatibility group listing. This is because of its high reactivity and unusual conditions of carriage. If compatibility information is needed for a shipment, you should contact Commandant (G-MTH-1), U.S. Coast

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Michael J. Eagle was a Fourth-Class Cadet at the Coast Guard Academy at the time this article was written. It was written under the direction of LCDR J. J. Kichner for a class in hazardous materials transportation.

Guard, 2100 Second Street, SW, Washington, DC 20593; telephone (202) 267-1577.

Chemical Name
Phosphorus

Formula
P_4

Synonyms
white phosphorus
yellow phosphorus

Physical Properties
boiling point: 279°C (535°F)
freezing pont: 44°C (111°F)
vapor pressure:
20°C (68°F) very low mmHg
46°C (115°F) very low mmHg

Threshold Limit Values
time-weighted average: .01 mg/m³
short term exposure limit: .03mg/m³

Flammability Limits in Air
lower flammability limit: .01% vol.
upper flammability limit: .01 % vol.
Note: Ignites spontaneously in air

Combustion Properties
flash point : ignites spontaneously in air
autoignition temperature: 30°C (86°F)

Densities
liquid (water = 1): 1.82
vapor (air = 1): 4.42

U.N. Number: 1381
CHRIS Code: PPW

Memorial Day

May 30, 1987

Nautical Queries

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

Engineer

1. The purpose of the reverse power relay in a ship's service alternator panel is to trip the circuit in the event of _____.

A. main circuit overload
B. high power transfer
C. generator overspeeding
D. alternator motorization

Reference: *Electrician's Mate 3 & 2,* NAVPERS 10546

2. In a naturally aspirated diesel engine, air intake is directly related to engine _____.

A. compression ratio
B. valve size
C. fuel pressure
D. cylinder clearance volume

Reference: Maleev, *Diesel Engine Operation and Maintenance*

3. Superheating of refrigerant takes place in which refrigeration system component?

A. Expansion valve
B. Evaporator
C. Drier
D. Receiver

Reference: Althouse, Turnquist, and Bracciano, *Modern Refrigeration and Air Conditioning*

4. Coast Guard regulations require that all power-actuated valves that do not close against spring pressure shall have an energy storage system. The energy storage system shall be capable of _____.

A. cross-connection to an alternate power supply
B. operating any valve independently
C. closing the boiler quick closing fuel valve
D. cycling all connected valves once

Reference: 46 CFR 56.50-60(d)(3)(i)

5. Which statement describes how the main turbine overspeed relay closes the throttle valve?

A. Excessive centrifugal force causes a spring-loaded weight to trip a valve latch
B. Excessive centrifugal force causes spring-loaded fly balls to actuate the control lever
C. Excessive speed causes an oil pump to deliver sufficient pressure to open a spring-loaded relay valve
D. Excessive speed causes an increase in lube oil control temperature which actuates a solenoid oil dump valve

Reference: Harrington, *Marine Engineering*

Deck

1. No person may serve as the person in charge of both the vessel and the facility during oil transfer operations *except* when

A. there is a ready access between the two.
B. the vessel and facility are immediately adjacent.
C. the person in charge as a rapid means of transportation between the two.
D. The captain of the port authorizes such procedure.

Reference: 33 CFR 156.115

2. On a vessel of 12,500 tons displacement, compute the reduction in metacentric height due to free surface in a hold having free water in the tank tops. The hold is 35 feet long and 50 feet wide. The reduction in metacentric height is

A. .55 feet
B. .10 feet
C. .14 feet
D. .20 feet

Reference: LaDage, *Stability and Trim for the Ship's Officer*

3. When displayed under a single-span fixed bridge, red lights indicate

A. the channel boundaries.
B. that vessels must stop.
C. the bridge is about to open.
D. that traffic is approaching from the other side.

Reference: CG 161

4. While adrift in an inflatable liferaft in hot, tropical weather

A. the canopy should be deflated so that it will not block cooling breezes.
B. the pressure valve may be periodically opened to prevent excessive air pressure.
C. deflating the floor panels may help to cool personnel.
D. the entrance curtains should never be opened.

Reference: Penso, *The Ship's Manual of the Inflatable Liferaft*

5. A vessel of less than 20 meters in length may display a basket as a dayshape when she is engaged in

A. trawling.
B. diving operations.
C. trolling.
D. all of the above.

Reference: International Rules, Rule 26; COMDTINST M16672.2A

Answers

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

If you have any questions regarding "Nautical Queries," please contact Commanding Officer, U.S. Coast Guard Institute (mvp), P.O. Substation 18, Oklahoma City, Oklahoma; telephone (405) 686-4417.

Keynotes

Notice of Grant of Exemption

CGD 87-004, Boating Safety; Ventilation Standard, Exemption (March 6)

The Coast Guard is granting an exemption to manufacturers of gasoline powered boats subject to the Ventilation Standard in Subpart K of Part 183 of Title 33, Code of Federal Regulations. An amendment to the ventilation regulations, which eliminates the current requirement for forward facing vents, becomes effective August 1, 1987. Many manufacturers want to begin building boats in compliance with the new relaxed standard prior to August 1, 1987. The effect of this exemption is to immediately relieve manufacturers of the need to continue building gasoline powered boats in compliance with the current Ventilation Standard prior to the effective date of the new relaxed standard. The effective date is March 6, 1987.

Final Rule

CGD 83-071, Mobile Offshore Drilling Unit Operating Manual Requirements (March 6)

These regulations amend the information required to be addressed in mobile offshore drilling unit (MODU) operating manuals. Investigative reports on the sinking of the MODUs **Ocean Ranger** and **Glomar Java Sea** recommended that the regulations for MODU operating manuals be more precise and arranged in a manner that is easily understood by operating personnel. The overall effect of these amendments will be to enable the operating manual to be more useful to operating personnel, particularly in an emergency. The effective date is June 4, 1987.

CGD 81-101, Pollution Rules for Ships Carrying Hazardous Liquids (March 12)

The Coast Guard is implementing Annex II of the 1978 Protocol to the International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL 73/78) with design and operating requirements for all ships that are oceangoing United States ships or are foreign ships and trading in United States waters, and that carry bulk cargo of noxious liquid substances. Annex II of MARPOL 73/78 will be effective on April 6, 1987. The requirements will control operational pollution and reduce the change of accidental pollution from ships carrying the cargoes. Effective date: April 6, 1987.

CGD 85-010, Control of Residues and Mixtures Containing Oil or Noxious Liquid Substances (March 12)

This final rule amends the pollution regulations. These amendments implement Annex II port and terminal and reception facility requirements of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, (MARPOL 73/78). Annex II of MARPOL 73/78, relating to the carriage of noxious liquid substances (NLS), comes into effect on April 6, 1987. These amendments will reduce the amount of residues and mixtures remaining in ships' cargo tanks, limit the amount of noxious liquid substances discharged into the sea, and ensure that ships experience no undue delay while waiting to discharge NLSs to a reception facility. The effective date is April 6, 1987.

Renewal

CGD 87-018, Towing Safety Advisory Committee; Charter Renewal (March 23)

The Secretary of Transportation has approved the renewal of the Charter for the Towing Safety Advisory Committee.

The Committee was established in accordance with Public Law 96-380 and was reauthorized by Public Law 98-557.

The purpose of this Committee is to advise the Secretary of Transportation on matters relating to shallow-draft inland and coastal navigation and towing safety.

U.S. Department
of Transportation

**United States
Coast Guard**

2100 Second St., S.W.
Washington, D.C. 20593