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of the Marine Safety Council

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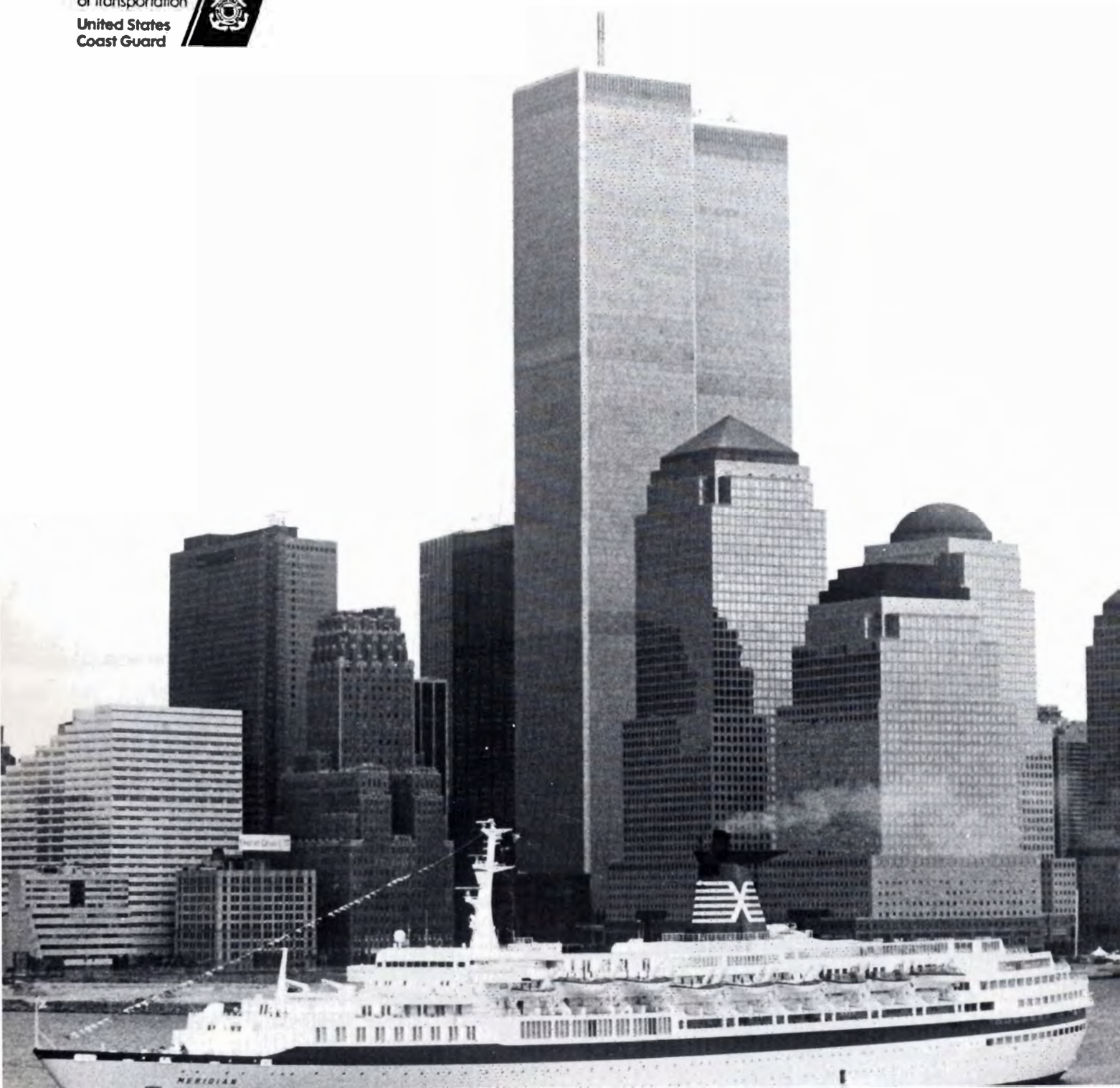
Special marine technical and hazardous materials issue

U.S. Department of Transportation
United States Coast Guard



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Proceedings

of the Marine Safety Council

March-April 1991 ***Vol. 48, No 2***

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Cover

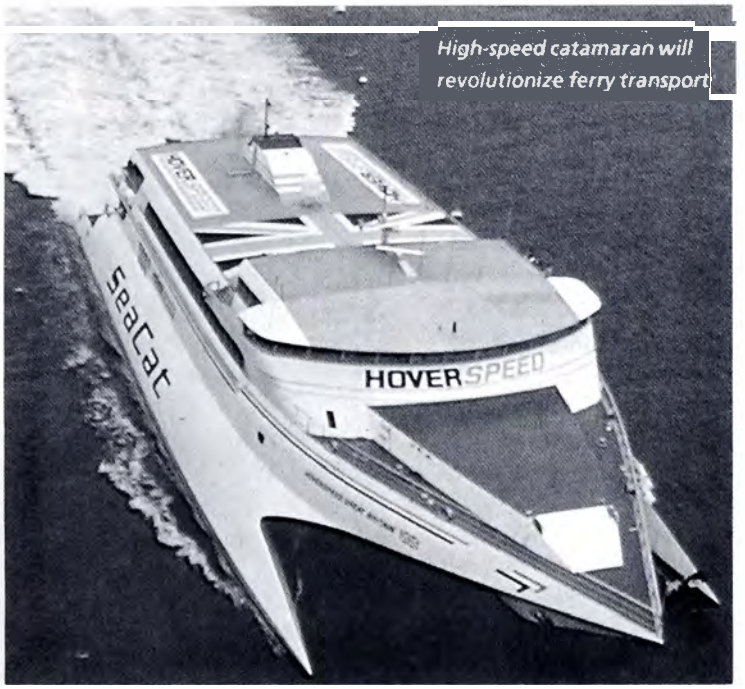
The Bahamian-flagged Celebrity Cruise Lines' passenger ship Meridian arrives in New York Harbor. Like all foreign-flagged vessels, it must meet acceptable international safety standards. ***(See page 8)***

Thank you.

Dear Readers:

Your response to the readership survey in the November-December 1990 issue of Proceedings was overwhelming! More than 1,000 replies arrived, are still coming and are still welcome. Results will be published in the next issue.

Thank you again for your cooperation.
Betty Murphy



High-speed catamaran will revolutionize ferry transport

Photo courtesy of Det Norske Veritas

Design marches on

CAPT Thomas E. Thompson

The future of the United States marine industry depends on the constant evolution of innovative naval architecture. Each new marine vehicle or platform must carry a larger payload more efficiently, perhaps in a more severe environment than ever before. At the same time, it must rely on less maintenance and a smaller crew to remain competitive in today's economic environment.

Pushing the envelope

An exciting element in the marine industry now is "pushing the envelope." It involves new high-tech designs, materials and construction techniques. (The "envelope" is the force of the wind, the waves and the infinite number of everyday hazards associated with marine transportation.)

The public demands protection of life, property and the environment, particularly in the commercial vessel industry. A miscalculation or lack of attention to detail could cause a setback to the entire marine industry.

Nevertheless, designs that today push the envelope will become the standards of tomorrow. Therefore, we all share an interest in the success of the high-tech side of the industry because of the benefit it will bring to the industry as a whole.

Safety

The Coast Guard is statutorily charged with administering maritime safety on behalf of the people of the United States. To fulfill this mandate, the Coast Guard monitors safety aspects of commercial vessels from "birth" to "death."

New vessels are constructed to standards established through the regulatory process. Often standards set by the American Bureau of Shipping and the American Society of Mechanical Engineers, along with the Safety of Life at Sea (SOLAS) conventions established by the International Maritime Organization (IMO) and the Marine Oil Pollution Conventions are referenced directly or adopted in the United States Code of Federal Regulations. The Coast Guard normally participates in the development of these standards.

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Unfortunately, published standards always lag behind current design practices, because standards by nature must be based upon experience and time-proven concepts. Consequently, the safety review process continuously applies established standards to current designs.

Organization

The Coast Guard's Office of Marine Safety, Security and Environmental Protection is supported by a staff of marine engineers, naval architects, chemical and electrical engineers assigned to the Marine Technical and Hazardous Materials Division (MTH) and the Merchant Vessel Inspection and Documentation Division (MVI)

By encouraging industry participation in maintaining up-to-date technical policies, and by participating in the development of industry standards, the Coast Guard leverages its limited capabilities and budget to a leadership status recognized around the world. This is demonstrated by the numerous resolutions passed by the IMO which began as United States position papers written by Coast Guard staff.

Pollution abatement

MTH , under the general direction and supervision of the chief of the Office of Marine Safety, Security and Environmental Protection, assures that commercial vessels and marine structures are designed according to federal safety and pollution abatement standards. This includes the evaluation of design plans and specifications, and the development of policies and technical directions concerning vessel safety, hazardous cargo and deepwater port safety.

In addition, MTH represents the United States in discussing these matters internationally through the IMO and other organizations. For example, MTH provides delegates to six IMO subcommittees and presents United States position papers on technical issues affecting vessel safety, hazardous materials transportation by water and pollution abatement.

Other MTH responsibilities

MTH also develops rules and regulations for transporting, handling, loading, discharging, stowage and use of chemicals, explosives and other dangerous cargoes.

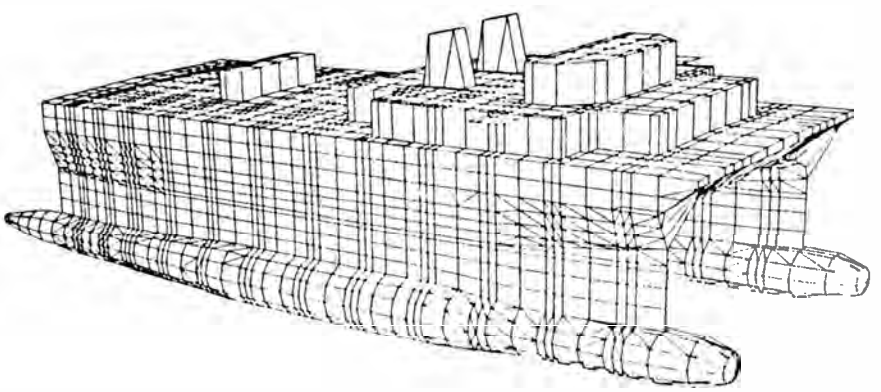
Other regulatory development programs include commercial fishing vessel safety, structural fire protection, stability and load lines. marine electrical and engineering systems, ship structural standards and safety engineering.

To fulfill their responsibilities, MTH staff members participate in professional societies, and international and national standards-making organizations.

MTH also provides direct policy and technical program support to the Marine Safety Center and other groups authorized to perform plan approval, equipment and systems approval, stability review and load-line assignments.

This issue of *Proceedings* provides news on the latest, most important MTH policies and/or innovations, along with insight into the day-to-day activities of the four branches.

Capt. Thomas E. Thompson is the chief of the Marine Technical and Hazardous Materials Division of the Coast Guard's Office of Marine Safety, Security and Environmental Protection.

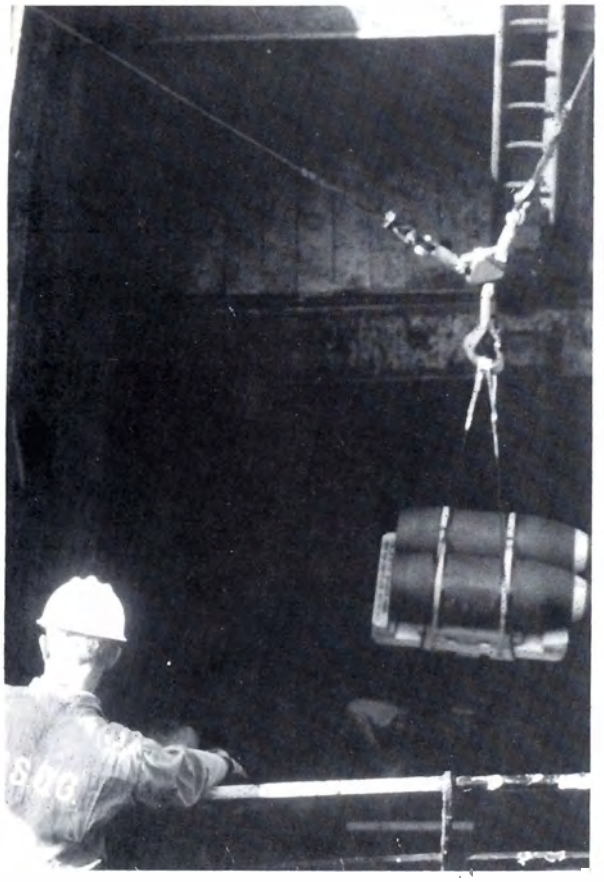


Twin-hull (SWATH) vessel design.

Finite element drawing, courtesy of the American Bureau of Shipping.

Control of hazardous materials

CDR Gordon Marsh



Coast Guard supervisor oversees the loading of munitions on a cargo vessel.

The policies and regulations concerning waterborne transportation safety of hazardous materials are developed by the Hazardous Materials Branch of the Marine Technical and Hazardous Materials Division. The branch has three sections specializing in packaged cargo, bulk cargo and hazard evaluation.

Packaged cargo

The packaged cargo staff is the primary point of contact for field units, industry and the public on technical and policy matters concerning domestic and international transportation of packaged hazardous materials by vessel.

Regulations governing the transportation of packaged hazardous materials by vessel include those found in Title 49 of the Code of Federal Regulations (CFR), and the International Maritime Dangerous Goods (IMDG) Code.

The packaged cargo staff's three-year effort of planning and support for the Defense Department's "Operation Steel Box" is an example of the section's expertise. This top-priority project involved the transport of chemical weapons from European storage

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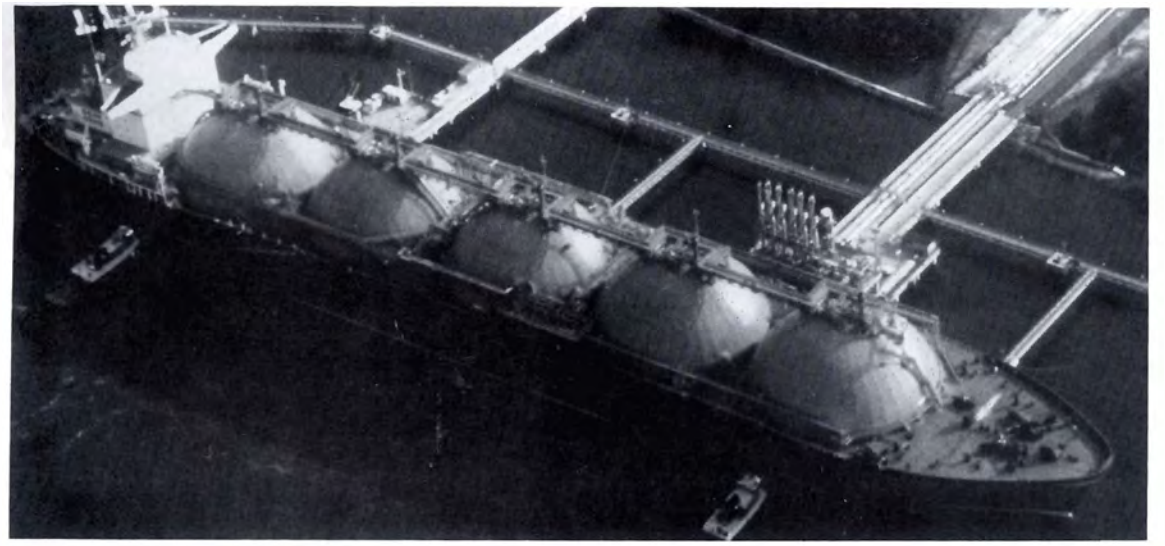
Liquified natural gas vessel arrives at off-loading terminal for cargo delivery



Coast Guard Emergency response team checks abandoned drums for chemical hazards.

Continued from page 3

facilities to Johnston Atoll in the South Pacific, where they were to be destroyed. The Coast Guard helped assure safe road, rail and vessel movements. The extensive, careful planning resulted in an extremely smooth operation. In 1990, two fully loaded vessels reached their destination safely and without incident.

Bulk cargo

This section provides technical assistance on bulk transportation of hazardous liquids, solids and liquefied gases. It also conducts conceptual reviews of vapor recovery systems, and novel vessel and tank designs.

The bulk cargo section issues regulations to ensure that bulk hazardous materials are shipped and handled safely in ways that protect the environment. These regulations are contained in Title 46 of the CFR.

As an example, the 1990 amendments to the Clean Air Act of 1970 require marine vapor control systems to be used for volatile organic compound emissions from tank vessels carrying oil and chemicals in bulk.

Working with the Coast Guard's Chemical Transportation Advisory Committee, this section conducted extensive research to develop new safety rules for marine vapor control systems. These rules were published on June 21, 1990.

New vapor control systems are presently being installed at major marine terminals in New Jersey, California, Louisiana and Texas. Tankship and tank barge owners are rushing to install the vapor collection systems needed for their vessels to link up to these installations.

Hazard evaluation

The hazard evaluation section classifies bulk liquid chemicals transported by tank vessels, and develops comprehensive occupational safety and health programs for merchant marine personnel. The section also does nearly all interim safety and marine pollution evaluations for worldwide tanker shipments of new chemicals.

The section provides such technical support as the mathematical modeling of the dispersion of water insoluble chemicals and dense gases, ammonia spill modeling, the maintenance of cargo file products in the Marine Safety Information System and the maintenance of the Chemical Hazards Response Information System documents and data base.

This section and the bulk cargo section work with the Coast Guard's Chemical Transportation and Towing Safety Advisory Committees in developing domestic and international bulk hazardous materials' standards. Advisory committee meetings are open to the public, and participation in projects and panels is not restricted to members.

Further information

For policy guidance or information concerning the transportation of hazardous materials over water, write to Commandant (G-MTH-1), Coast Guard Headquarters, or call (202) 267-1577

CDR Gordon Marsh is the chief of the Hazardous Materials branch of the Marine Technical and Hazardous Materials Division of the Coast Guard's Office of Marine Safety, Security and Environmental Protection.

Engineering accomplishments

Mr. Robert A. Landman and LCDR Roger M. Dent

To promote the safety of life, property and the marine environment in the areas of marine and electrical engineering is the mandate of MTH's Engineering Branch. Serving the marine and offshore drilling industries along with Coast Guard field activities, the branch is primarily responsible for developing standards and regulations in Title 46 of the CFR.

Publications

During the past two years, the Engineering Branch with its two sections on electrical and marine activities has published four final rule changes to 46 CFR, and one navigation and vessel inspection circular.

The goal of such regulatory efforts is to reduce the burden on industry and to ease the life of the field inspector by eliminating outmoded practices and antiquated standards.

Future notices of proposed rule making for electrical engineering regulations will further reduce the regulatory burden on industry by incorporating by reference many industry-accepted standards.

International activities

In recent years, the branch has submitted dozens of papers to the IMO, primarily the Subcommittee on Ship Design and Equipment. Many of its recommendations have been adopted and incorporated into SOLAS conventions.

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A Military Sealift Command (MSC) ship under construction. A memorandum of understanding betwen the Coast Guard and MSC ensures that MSC vessels are constructed and operated according to Coast Guard regulations.

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Issues under consideration by this subcommittee include aspects of double hulls and underpressure systems on tankers, emergency generator starting requirements, revision of SOLAS definitions, the use of ozone-depleting substances, and the use of plastics, fiberglass and other non-steel materials in piping systems.

In turn, the Coast Guard is adopting SOLAS standards in its regulations, thereby helping United States maritime industries to be as competitive as possible in global shipping and shipbuilding markets.

Human factor efforts

Two Engineering Branch papers concerning the application of human factor principles in the design, construction and operation of marine vessels were submitted for consideration to the IMO's Marine Safety Committee.

A recent collision involving a foreign-flagged cruise ship in a United States port emphasizes the need for further attention on the human element. Even though the engineering crew reported a propulsion-control problem to the bridge, the navigating officer brought the ship into a congested port without special precautions.

The branch addressed the problem by submitting a proposal to IMO's Sub-committee on Ship Design and Equipment to require a permanent means of communication between the navigating bridge and local stations for the control of the speed and direction of propulsion machinery.

Electrical efforts

The Electrical Section of the Engineering Branch is responsible for the acceptance of fire stop materials and fire detection systems. It also co-chairs the mobile offshore drilling unit (MODU) electrical working group sponsored by the International Association of Drilling Contractors to develop guidelines for the installation and operation of MODU electrical systems.

The section's involvement with the Instrument Society of America has lead to a proposal to change the hazardous area classification scheme in the United States. This will bring the current United States electrical practices more in line with those of the international community.

The Electrical Section also has written two recent final rules published in the Federal Register, which have updated or added new requirements in the automation of vital systems, and flashlights and floating electric water lights.

Participation of members of the Electrical Section on panels of the Society of Naval Architects and Marine Engineers has led to the drafting of guides for grounding shipboard electrical systems and diesel ship automation.

Marine activities

Boiler and machinery safety are vitally important issues to the Marine Section of the Engineering Branch.

The federal government has been heavily involved in marine safety since a paddle-wheel steamer was involved in the worst maritime disaster in the United States in 1865. A boiler in

A MODU being towed in the Gulf of Mexico. Cooperation between the International Association of Drilling Contractors and the Coast Guard has brought about regulations that maximize safety while addressing the needs of industry. (Photo courtesy of Sonat Offshore.)

the *Sultana* exploded, engulfing the entire ship in flames, killing more than 1,450 people, mostly Union veterans returning from southern prisoner of war camps following the Civil War.

To fulfill its mission, the Marine Section has worked for many years with the American Society of Mechanical Engineers (ASME) to assure that marine issues are adequately addressed in their boiler and piping codes. Due to these efforts, the Coast Guard has adopted the Boiler and Pressure Vessel Code and the Power Piping Code in its regulations, and accepts boilers and pressure vessels stamped with the ASME symbols.

The ongoing relationship between the Coast Guard and ASME has eliminated the need for Coast Guard shop inspection, saving over $1 million a year.

Alternative fuels

Recently the Marine Section became involved in a research project to develop requirements for alternative fuels for commercial vessels. The need for such requirements stems from increasingly tightened air quality standards and the demand for cleaner burning fuels to reduce vessel emissions.

Presently, the section is working with the Tidewater Regional Transit in Norfolk, Virginia, to convert two ferries to burn compressed natural gas instead of diesel fuel.

The Marine Section also has worked on the Coast Guard's ocean-going buoy tender oil recovery system and the acquisition of diver recompression chambers. Currently, the section is involved in a cost-reduction effort to replace the Coast Guard's coastal buoy tenders with vessels meeting commercial standards.

Further information

For more information on electrical, and marine issues and programs of the Engineering Branch, write to Commandant (G-MTH-2), Coast Guard Headquarters, or call (202) 267-2206.

Mr. Robert A. Landman is an electrical engineer and LCDR Roger M. Dent is a mechanical engineer with the Engineering Branch of the Marine Technical and Hazardous Materials Division of the Coast Guard's Office of Marine Safety, Security and Environmental Protection.

Naval architecture news

Ms. Patricia L. Carrigan and Mr. H. Paul Cojeen

The Naval Architecture Branch of MTH is concerned about the initial design of a ship from a regulatory point of view toward a minimum level of safety. Two branch sections cover stability and subdivision, and structures and load lines.

Stability/subdivision

The Stability and Subdivision Section develops stability standards for new or novel vessels.

Stability refers to a vessel's ability to always remain floating upright in the water. (A vessel is unstable if it is likely to capsize.)

Subdivision is the internal division of a vessel into separate watertight compartments to help keep a ship from sinking when its hull is pierced.

The section reviews the concepts for vessel designs for which existing standards do not apply because of novel arrangements or operations. (A tension leg platform is one such novel structure for which existing standards are not applicable.)

After a sufficient number of similar novel craft have undergone concept reviews, the section develops specific criteria, which can then be used to design future vessels.

The section reviews current stability regulations contained in Subchapter S of Title 46 of the CFR for necessary improvements and other changes. Appeals to the application of standards in this subchapter are also reviewed and answered.

(Subchapter S is now being updated to include new policies and correct editorial mistakes. A notice of proposed rulemaking should be published in the *Federal Register* this year.)

Structures/load lines

This section determines vessel structural standards and load line requirements that ensure an acceptable level of safety.

The structure of a ship holds the vessel together, supports its load and keeps the water out. Supporting structural members running from

IMO regulations ensure that foreign-flagged ships carrying U.S. citizens, such as the Royal Cruise Line's Bahamian-flagged Golden Odyssey (below), meet internationally accepted safety standards.

Coast Guard helicopter responds to a flooding cargo ship.

front to back of the ship must be strong enoughto keep waves from breaking the vessel. Those running from side to side primarily keep the shape of the ship and support its load. Load line standards define the amount of cargo a vessel may safely carry on a voyage.

The Structures and Load Lines Section also conducts concept reviews of novel vessels without accepted standards, and develops structural standards in cooperation with the American Bureau of Shipping, the major United States classification society. Once standards are developed, naval architects have specific criteria to follow for similar craft design.

The section also reviews current load line regulations in Subchapter E of Title 46 for needed improvements, and reviews and answers load line exemption requests.

(Subchapter E is currently undergoing a congressionally mandated update to clarify national and international load line practices. A notice of proposed rulemaking is being developed.)

IMO standards

The Naval Architecture Branch works through the IMO to develop international regulations, which ensure that foreign flag vessels meet acceptable safety standards while transporting people or cargo to and from different countries.

In the United States, these standards are particularly important in the pleasure cruise industry. Most large cruise ships going in and out of United States ports are under foreign flags. IMO standards ensure that these ships carrying United States citizens meet acceptable safety standards.

Currently, the branch is working through the IMO Subcommittee on Stability, Load Lines, and the Fishing Vessels Safety Subcommittee to establish international stability standards for double-hull tankers, passenger ships, dry cargo ships and open-top container ships, along with a mandatory intact stability code for all ship types and updated standards for dynamically-supported craft.

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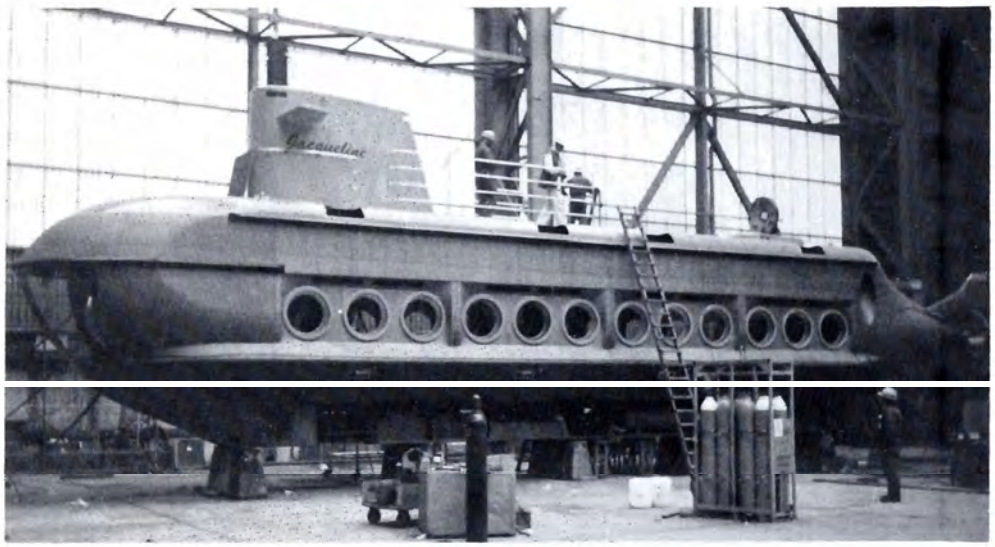

The passenger-carrying submersible -- a novel vessel currently being examined for stability by the Coast Guard's Naval Architecture Branch.

Continued from page 9

The first technical revisions to the 1966 International Convention on Load Lines and a protocol to the Torremolinos Convention for the Safety of Fishing vessels are also being developed.

Casualties

The Coast Guard investigates all serious vessel casualties and recommends improvements to prevent future accidents. The Naval Architecture Branch reviews investigation reports of casualties caused by instability or structural failures.

Recent stability casualties, including the British passenger vessel, *Herald of Free Enterprise,* the United States fish processor, *Aleutian Enterprise* and the small United States passenger ship, *Bronx Queen,* have had a discernible influence on current regulations and policies.

Most of the regulations published by the Coast Guard are direct results of lessons learned from casualties. They have greatly improved the safety of sea travel.

Research

As the maritime industry moves into the 21st century, many novel alternatives to tradition vessel designs, materials and construction techniques are emerging. For example, ocean sightseers are now going under water in new passenger-carrying submersibles.

The Naval Architecture Branch conducts and participates in industry research projects concerning vessel stability and structure. Continuing research is vital to ensure that all novel vessels are designed with adequate levels of safety.

Currently, the branch is overseeing research on the structural evaluation of double-hull tanker designs, evaluation and testing of fiber reinforced plastics, three-dimensional non-linear numerical hydrodynamics and the harmonization of damage-stability standards.

Further information

For information on the Coast Guard's naval architecture projects, write to Commandant (G-MTH-3), Coast Guard Headquarters; or call (202) 267-2988.

Ms. Patricia L Carrigan is a naval architect in the Stability and Subdivision Section of the Naval Architecture Branch and Mr. H. Paul Cojeen is chief of the Naval Architecture Branch of the Marine Technical and Hazardous Materials Division of the Coast Guard's Office of Marine Safety, Security and Environmental Protection.

Double-hulled tankers of tomorrow

Mr. William Hayden

Oil Pollution Act

On August 18, 1990, President George Bush signed Public Law 101-380, referred to as the Oil Pollution Act of 1990. This act requires that all new oil tankers be built with double hulls to protect the environment in case of grounding or collision.

IMO activities

Last November, IMO's Marine Environmental Protection Committee agreed to consider amending the "International Convention for the Prevention of Pollution from Ships, 1973/78" (MARPOL) to require double hulls on new oil tankers.

Subsequently, United States delegations to IMO submitted information and position papers supporting our commitment to appropriate technical subcommittees. In response to these submissions, several major United States oil companies conducted studies to determine the effects of the double hull requirements on their fleets.

One company researched the feasibility of retrofitting their 120,000-ton tankers with double hulls. Another company, experienced in operating double-hull vessels, designed a new 130,000-ton double-hull tanker.

With the permission of these companies, the Coast Guard submitted the results of their studies to IMO in order to bring this valuable information to international attention.

Design concern

One of the major concerns facing designers today is that double-hull tanker stability characteristics are significantly different from those of single-hull vessels.

The oil company study found that a double-hull tanker can better withstand raking-type damage, that is extensive low penetration of the outer hull. This raking damage only harms the outer hull, leaving the inner hull intact, thereby spilling no oil.

The most famous example of raking damage was inflicted on *Exxon Valdez* with well known consequences. Many other single-hull vessels have suffered the same type of damage after striking a reef or other submerged projec ion, which penetrates the hull like a can opener.

However, the stability of double-hull vessels could be critical during loading, because of the large number of slack tanks. Consequently, ballasting and loading operations must be accomplished with great care.

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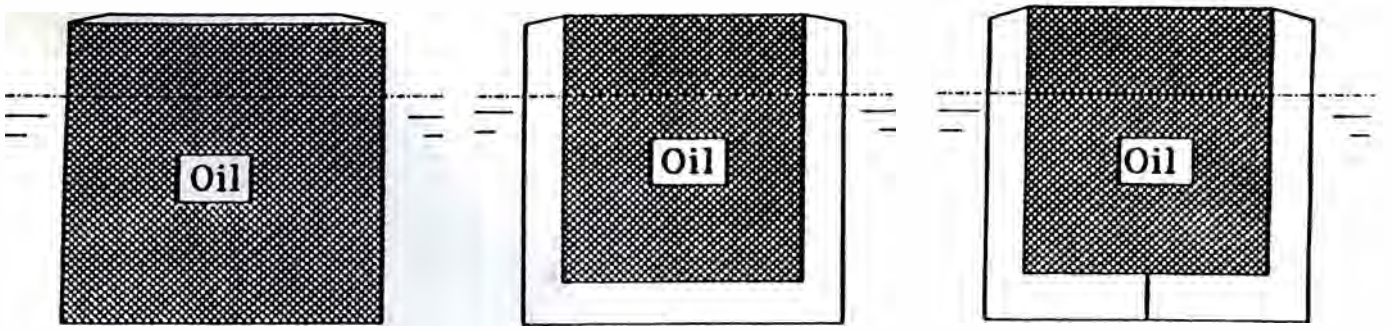
Cross section of tanker hull arrangements



Single hull **U-shaped double hull** **J-shaped double hull**

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U.S. position

Immediately following the IMO committee agreement in November. the Coast Guards' MTH and MVI divisions developed an action plan to seek the following goals at the IMO.

- **The Subcommittee on Stability and Load Lines, and on Fishing Vessels Safety** will develop a damage-stability criteria for raking damage for all double-hull tankers.

- **The Ship Design and Equipment Subcommittee** will recommend access and inspection procedures for double-hull tankers, as well as the proper application and maintenance of tank coatings.

- **The Fire Protection Subcommittee** will make recommendations concerning the risk of fire and explosions in double-hull ballast spaces.

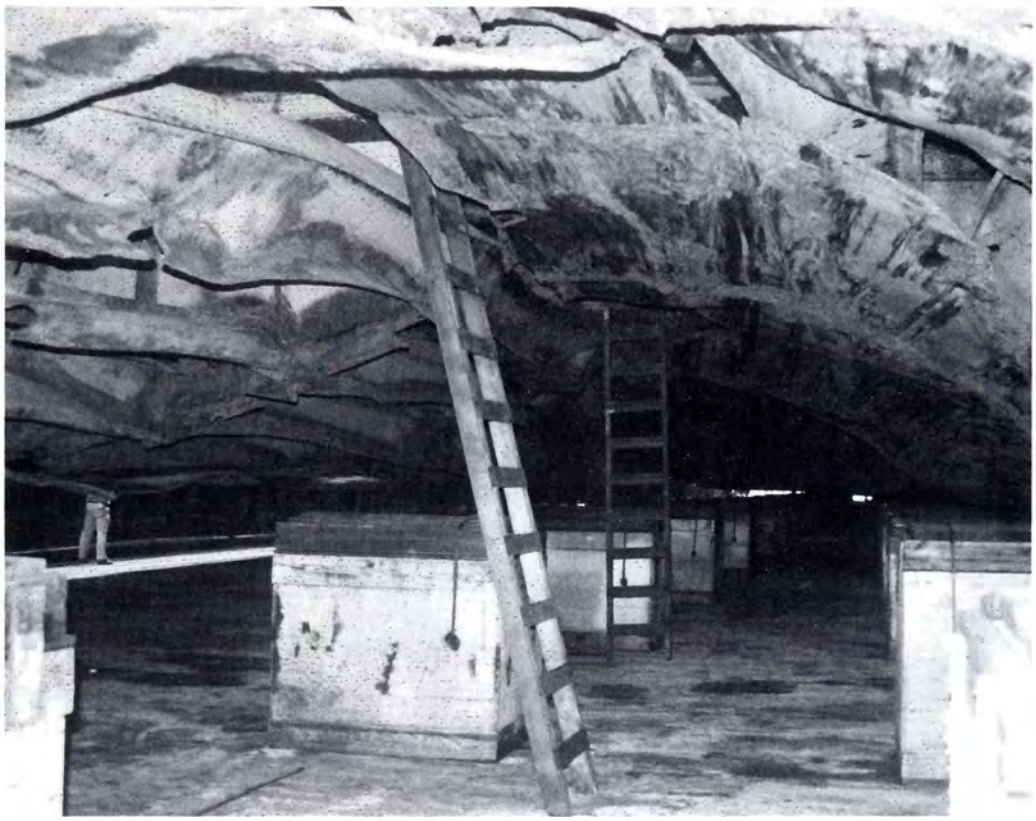
- **The Marine Environment Protection Committee** will approve amendments to the MARPOL convention for double hulls, including minimum double-hull dimensions, allowable oil outflow, tank sizing and all the other recommendations mentioned above.

- **The Maritime Safety Committee** will approve the work of the Subcommittees on Stability and Load Lines, and on Fishing Vessels Safety, and Ship Design and Equipment on damage stability, access and inspection procedures.

Conclusion

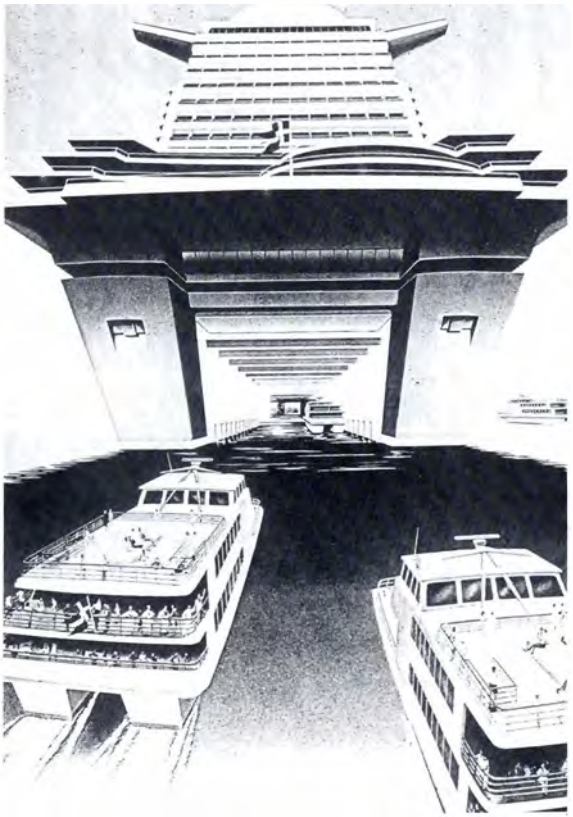
The efforts of several tanker companies, the IMO committees and subcommittees, and the Coast Guard, are aimed toward the goal that all new oil tankers throughout the world will have double hulls, thereby assuring a far safer and cleaner environment.

Mr. William Hayden is an engineer with the Naval Architecture Branch of the Marine Technical and Hazardous Materials Division of the Coast Guard's Office of Marine Safety, Security and Environmental Protection.



Raking damage inflicted on the hull of Exxon Valdez.

Phoenix World City



Safe ships of the future

LT Ron Lokites

The Coast Guard often must evaluate vessels of unusual design or with innovative features that require detailed study. Since current safety regulations are based upon conventional designs, their direct application to novel vessels may be unreasonable or inappropriate.

The Ship Design Branch of MTH evaluates unusual projects in their conceptual stages to ensure that the overall degree of safety is not less than the minimum attained by requirements applicable to conventional craft.

Ship design engineers develop standards and provide technical support regarding fire protection on all vessels operating from United States ports. The engineers are particularly concerned with passenger submersibles, fixed ballast, vessel reflaggings, vessel maneuverability, classification society oversight and technical rules, and dynamically-supported craft.

Floating city

Phoenix World City best exemplifies Coast Guard involvement in the seagoing leisure trade of tomorrow.

Still on the drawing board, the vessel will be at least three times the size of the largest passenger vessel afloat today. It will be nearly one-quarter mile long, almost 100 yards wide and will have 21 decks. Its unique hull will have a conventional bow, but a catamaran stern.

Phoenix World City is designed to carry a total of 8,000 passengers and crew members. Accommodations will primarily consist of three hotel towers. Amenities will include village squares, a "downtown" Rendezvous Plaza and a "Main Street" with galleries, bistros, sidewalk cafes, night clubs and theaters.

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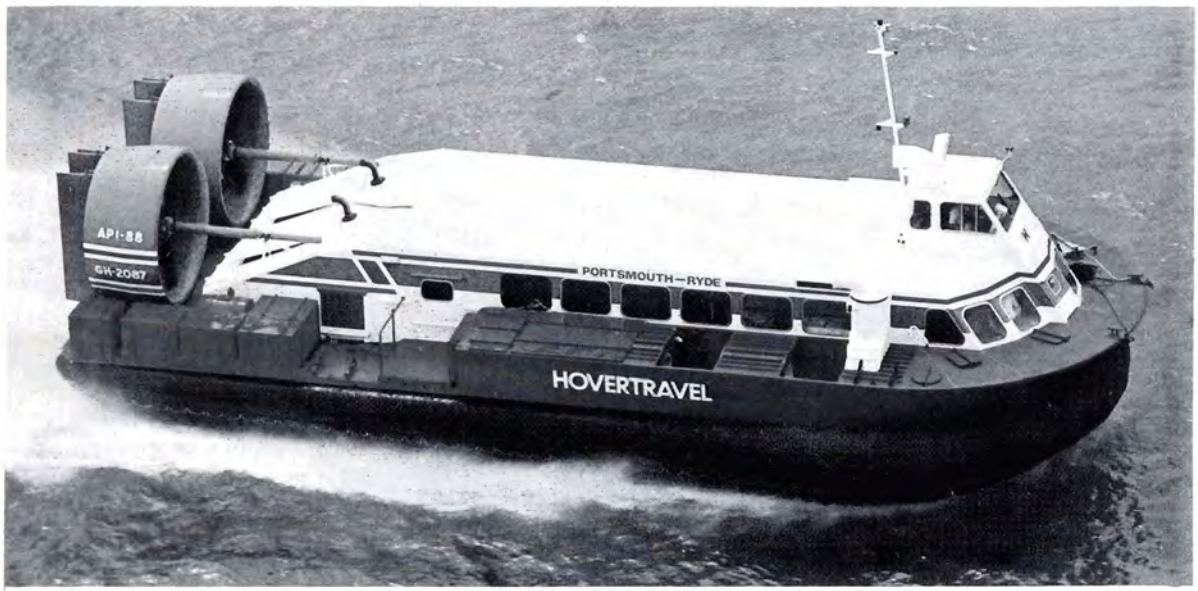

A hovercraft "flows" on a cushion of air.

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Fire protection

Fire protection engineers in the Ship Design Branch are concerned with avenues of escape available to passengers and crew from all areas of the vessel, as well as the adequacy of the fire detection and suppression systems.

Safety standards for these areas are found in the requirements of the 1974 SOLAS Convention with the 1978 protocol and the 1981/1983 amendments, and the regulations in Title 46 CFR. None of these standards, however, were established for a vessel like *Phoenix World City*.

The size, configuration and capacity of this vessel present unique challenges for fire protection concerns. For example, the ship is designed with a five-story marina in the stern between the hulls. There are four 400-passenger daycruisers (air-ride catamaran vessels) docked in the marina. Passenger safety must be assured during potentially dangerous exercises, such as refueling and getting the vessels underway.

A unique approach to fire safety, a water-curtain system, was proposed for the "streets" of the "downtown" area. A curtain of water, however, does not comply with SOLAS requirements for adequate fire protection.

In addition, the current design for *Phoenix World City* calls for the entire "downtown" area to be encased in a three-story prismatic-shaped glass facade framed in stainless steel.

The designers are sometimes sent back to the drawing board after fire protection engineers have reviewed such dramatic new seagoing concepts.

More challenges

An unusual class of vessels claiming the attention of the ship design engineers is the dynamically-supported craft. The class includes hydrofoils, surface-effect ships and air-cushion vehicles (ACVs).

The ACVs, a craft with a significant portion of its weight supported on a cushion of air, presents a variety of challenges to be met to attain a degree of safety on a par with conventional craft.

Because of the small size of most ACV designs, they have generally been classified as small passenger vessels. Therefore, they would fall under 46 CFR regulations, although many facets of their construction and operation are not covered by these standards.

The ACV does not have a standard displacement hull. When it is up "on cushion," there are no rudders or propellers in the water for steerage and propulsion. In many ways, the vessel is more like an aircraft in this phase of its operation. (British and Canadian authorities require the vessels to comply with aviation standards in their waters.)

In instances such as this, Coast Guard engineers must be innovative in their approach to new safety design standards.

Submersibles

To further illustrate the diversity of engineers in the Ship Design Branch, they also develop and oversee the application of passenger submersible standards.

The Coast Guard was actually working on safety policies for submersibles in the late 1960s through the 1970s. Due to the inherent risks of underwater operations, standard certification procedures were needed. The American Bureau of Shipping (ABS) issued such a guide in 1968, with the Navy following suit a few years later.

It wasn't until 1986, when a British Columbian company put together a serious proposal to build a passenger-carrying submersible, that Coast Guard certification was needed. While the construction of the vessel had to meet ABS rules, it had to demonstrate a level of safety equal to that of a similar-sized surface passenger-carrying vessel for Coast Guard certification.

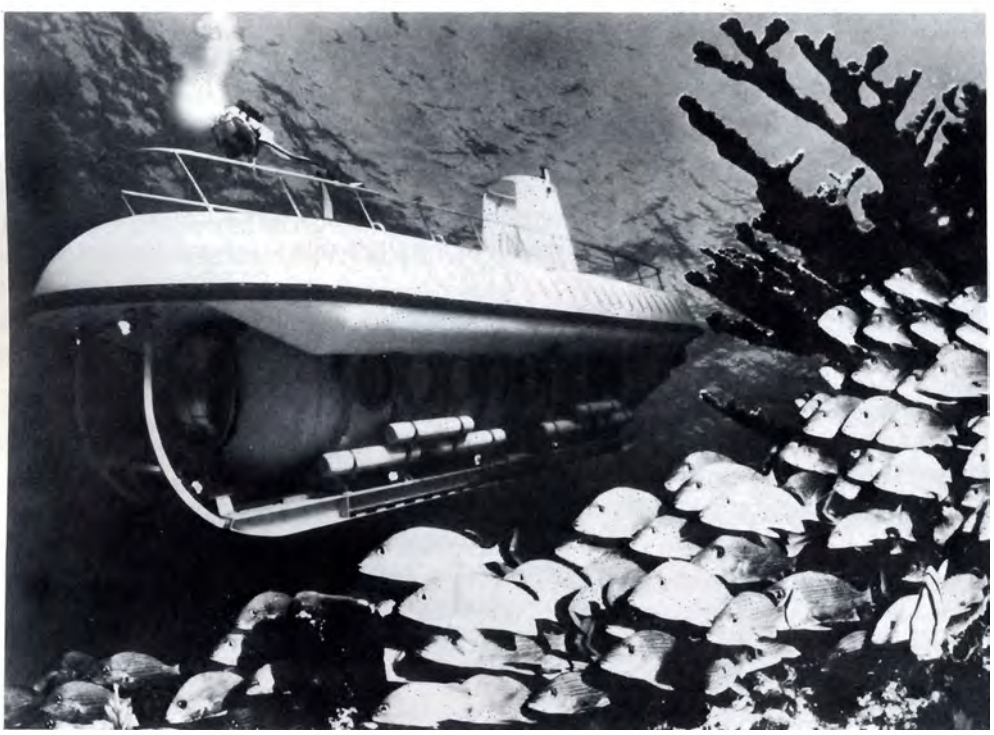
There are important aspects of submersible operation not addressed by Coast Guard regulations covering conventional watercraft. These include life-support and emergency systems, breathing-gas standards and reserve supplies, and emergency surfacing capability.

These and other items, including dive-site limitations and lifesaving-equipment requirements, and training manuals had to be addressed before the Coast Guard could certify these passenger-carrying submersibles. A navigation and vessel inspection circular is coming out shortly to fill this void.

Further information

For information on these and other ship design projects, write to Commandant (G-MTH-4), Coast Guard Headquarters; or call (202) 267-2997.

LT Ron Lokites is an engineer with the Ship Design Branch of the Marine Technical and Hazardous Materials Division of the Coast Guard's Office of Marine Safety, Security and Environmental Protection.



Passenger submersible explores the beauty of the undersea world.

How safe is commercial fishing?

CDR Mike Rosecrans

With a casualty rate of up to seven times the national average, commercial fishing has long been recognized as one of the most hazardous occupations in the United States. In a recent five-year period, more than 100 fatalities were attributed to commercial fishing activities every year.

An estimated 31,000 documented vessels and 100,000 smaller, undocumented vessels make up the United States fishing fleet. Most of these vessels are small, operated by three or four individuals.

Some relatively new vessels, capable of catching and processing large quantities of seafood, are large with many crew members, some of whom are processing line workers.

Safety efforts

The Coast Guard has studied safety problems in the fishing industry since the 1960s. In the mid-1980s, a task force on fishing vessel safety was headed by MTH.

Task force efforts produced a circular, "Voluntary Standards for United States Uninspected Commercial Fishing Vessels," which provided guidance on a wide range of safety problems in the commercial fishing industry.

The task force also helped the North Pacific Fishing Vessel Owner's Association to produce a prototype safety manual for the fishing industry. The manual covers numerous topics from vessel stability to first aid and rescue procedures. It also provides safety checklists.

Similar safety manuals have since been published for the Gulf and Atlantic coast fishing industries. The circular and the manuals were well received, but the industry casualty rate did not significantly improve.

Casualty causes

As in other parts of the marine industry, the majority of commercial fishing casualties are caused by human error or poor judgment. Other contributory factors include the age and condition of some vessels, insufficient safety equipment, and a harsh environment compounded by economics that lead fishing crews to risk going out in marginal weather.

The most common casualties involve sinking and capsizing fishing vessels. A rogue wave, leaking hull, improper vessel loading, shifting cargo or a combination thereof can bring this about.

Most capsizings happen quickly, and untrained crew members don't always know how to use available safety equipment. In any event, once a person is in the water, hypothermia can quickly lower body temperatures to a fatal level. A recent vessel sinking resulted in nine fatalities.

Safety Act

Public concern over the high commercial fishing casualty rate prompted Congress to pass the Commercial Fishing Industry Vessel Safety Act of 1988. This act required a comprehensive set of safety regulations applicable to all fishing industry vessels to be developed. MTH assumed this task.

Safety equipment and design features required by the act depend on the area of operation, the number of individuals on board and, to a certain extent, the size of the vessel. Many of the regulations only apply to vessels that have undergone modifications, while others require all vessels to install certain safety equipment.

MTH, in cooperation with other Coast Guard divisions, is almost finished producing the first set of regulations.

The 1988 act also requires the Coast Guard to submit a plan for licensing operators of documented fishing vessels along with two studies to Congress. The studies are to recommend hull and machinery requirements for unclassified fish-processing vessels, and whether or not an inspection program should be set up for fishing vessels.

This dramatic Coast Guard rescue of a crew member of a sinking fishing vessel occurred in 1969. Unfortunately, improper loading still causes similar accidents today.

Advisory committee

The act provided for the establishment of a 17-member commercial fishing industry vessel advisory committee to furnish advice and recommendations to the Secretary of Transportation and Congress concerning safety, equipment, operational procedures, insurance and personnel qualifications.

MTH provides the executive secretary for the committee, which represents all facets of the industry. Thus far, the committee has met four times to discuss many issues concerning the act. The group is expected to continue to make valuable recommendations on ways the Coast Guard can effectively promote an increased awareness of the importance of safety in the commercial fishing industry.

The Coast Guard will increase its contact with the fishing industry by appointing dedicated fishing vessel safety coordinators in the district offices and at headquarters. Additional personnel will be assigned to the Marine Safety Offices to work with industry representatives to stress the importance of safety, help develop safety programs and enforce the regulations.

Training

While drafting the safety regulations, the advisory committee noted that most commercial fishing personnel have never been trained in survival procedures or the use of survival equipment. Many industry members feel that such training should be encouraged at all levels in order to make significant safety improvements.

This philosophy is embodied in the Coast Guard's inspection and licensing programs for commercial vessels, and will undoubtedly received increased attention in the years to come.

Further information

For further information on Coast Guard efforts concerning fishing vessel safety, please write to Commandant (G-MTH), Coast Guard Headquarters, or call (202) 267-2960.

CDR Mike Rosecrans is executive secretary of the Commercial Fishing Industry Vessel Advisory Committee, as well as project manager for the safety regulations, all under the direction of the Marine Technical and Hazardous Materials Division of the Coast Guard's Office of Marine Safety, Security and Environmental Protection.

The front line

Every year, nearly 16,000 commercial vessel plans flow through the Marine Safety Center, a separate Coast Guard headquarters command located in downtown Washington, D.C.

At this hub of activity, a highly qualified staff of 46 Coast Guard officers and civilians review and critique machinery, electrical arrangement, structural and stability plans, for new construction, conversion and reflagging of all but the smallest Coast Guard-certified vessels.

The reviewers communicate directly with designers and shipyards, as well as local Coast Guard inspectors during the plan review process. Their aim is to make sure that design deficiencies are identified before a vessel is constructed. For conventional vessels, the process usually involves checking the numerical calculations and comparing the construction plans with the regulatory requirements.

Organization

The Marine Safety Center is divided into three divisions: Hull, Engineering and Cargo. Comprehensive plan submittals often are split between the appropriate divisions.

The Hull Division reviews hull structure, stability, arrangements and structural fire protection. Engineering specializes in piping systems, electrical systems, automatic controls and pressure vessels. And the cargo reviewers handle cargo segregation and containment requirements for chemical, liquefied gas and petroleum product ships and barges.

Keeping pace

The Marine Safety Center has kept pace with advancing technology in handling the latest innovations in marine construction and operations.

Whether reviewing plans for a tension-leg well platform, a passenger-carrying submersible, a high tech/high speed passenger vessel or a modern fish processor, the center provides up-to-date expertise in fulfilling its mission.

Designs for this tension-leg platform were reviewed by the Marine Safety Center.

Further information

For more information on the activities of the Marine Safety Center, write to Commanding Officer, Marine Safety Center, 400 Seventh St., S.W., Washington, D.C. 20590-0001; or call (202) 366-6480

Cargo bureau helps Coast Guard

LCDR Ronald R. Borison

The Coast Guard is the primary enforcer of stowage regulations for hazardous material on seagoing vessels. This responsibility, however, is shared with the National Cargo Bureau, Inc., a not-for-profit, membership organization.

Regulations

Regulations for the carriage of hazardous materials are found in Titles 46 and 49 of the Code of Federal Regulations (CFR) and the International Maritime Dangerous Goods Code.

Part 176 of the 49 CFR, "Carriage by Vessels," authorizes the National Cargo Bureau, Inc., (NCB) to assist the Coast Guard in carrying out its hazardous materials enforcement program.

Origins

Grain ships capsizing due to shifting cargo and shipboard fires related to wet cotton or metal turnings spotlighted the growing need for qualified, objective surveyors to determine cargo stowage compliance with regulations.

In 1947, the explosion of two ammonium nitrate ships in Texas City, Texas, killed 450 people, making it emphatically clear that something must be done.

The NCB was established in 1952 to help ensure safe stowage, securing and unloading of cargo, and the safety of shipboard cargo handling gear aboard vessels.

The organization was formed by merging and expanding the inspection bureaus of the Board of Underwriters of New York, founded in 1820, and the Board of Marine Underwriters of San Francisco, founded in 1886.

The Coast Guard helped to establish the NCB to provide a privately-funded source of assistance in enforcing provisions of the International Convention for the Safety of Life at Sea (SOLAS) 1948.

Continued on page 20

What remained of Wilson B. Keene, a WWII liberty ship, after the Texas City disaster in 1947.

An NCB inspector examines a corrugated bulkhead on a bulk carrier. (Photo courtesy of NCB)

Continued from page 19

In 1960, the NCB was officially recognized by the Coast Guard and the Department of Labor as a cargo gear certifying agency. NCB's role expanded in 1967 to include container loading inspection services.

The cargo bureau now has offices on the Atlantic, Pacific and Gulf coasts, as well as in the Great Lakes ports.

Today's role

The NCB is authorized to assist the Coast Guard in the following activities:

- Inspecting vessels for suitability for loading hazardous materials.
- Examining stowage of hazardous materials.
- Recommending stowage requirements for hazardous materials' cargo.
- Issuing certificates of loading stating that the stowage of hazardous materials is in accordance with the requirements of 49 CFR Part 176, 46 CFR Part 146 and 148.

A certificate of loading issued by the NCB may be accepted by the Coast Guard as prima facie evidence that cargo is stowed according to the regulations.

The basic enabling mechanism for the authority of the NCB was Executive Order 12234, which was updated most recently on September 3, 1980.

Joint effort

In view of the Coast Guard's limited resources and the necessity for effective hazardous materials' compliance, the assistance of the NCB is essential. It allows Coast Guard personnel to be deployed more efficiently and eliminates costly duplication of effort.

It is not the intent of the Coast Guard to require that shipping companies use the services of the NCB, although the bureau is retained by many companies to oversee hazardous cargo operations at no cost to the Coast Guard.

The integrity of the Coast Guard's hazardous materials' program is maintained by oversight as necessary, including random spot check verifications. Both the Coast Guard and NCB believe that this oversight is needed to derive the maximum benefits from the joint effort.

International action

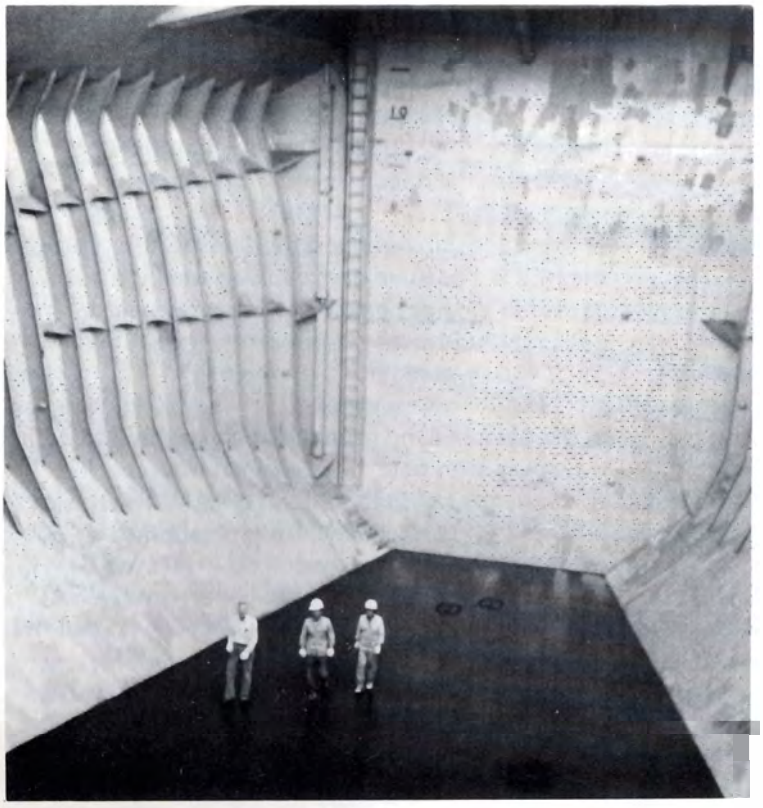
In 1965, the International Maritime Organization (IMO) issued a Code of Safe Practice for Bulk Cargoes, which warns of hazards from carrying ore concentrate cargoes in bulk.

This was followed in the same year by the International Maritime Dangerous Goods Code, which sets forth recommendations for the safe carriage and marking of commodities having potentially dangerous properties.

Both of these actions were brought about by the NCB's active participation with the Coast Guard on preliminary working groups, such as the United States Panel on Bulk Cargoes.

Central data bank

The NCB maintains an up-to-date file on the properties and hazards of commodities, along with the rules and regulations for loading and shipping them. This information is readily



Bulkheads dwarf NCB inspectors as they check a bulk carrier cargo hold for cleanliness. (Photo courtesy of NCB)

available in all NCB offices. NCB also published and distributes booklets on the proper stowage of intermodal containers and the proper loading of grain.

In addition, the bureau developed a self-study course in ship's stability, which is available to interested maritime industry personnel. Another self-study course on hazardous materials and dangerous goods as ocean shipments was designed for the maritime industry's safety needs.

Container inspections

Ocean carriers and other clients regularly contract the NCB to inspect or survey containerized shipments of packaged hazardous materials before they are loaded aboard ship in many United States ports.

The carriers demonstrate a strong sense of responsibility by their frequent insistence upon verification before loading that hazardous materials are properly stowed, segregated and secured in freight containers, and that the containers have been labeled correctly and conspicuously.

The NCB's copyrighted container inspection report form contains regulation-compliance verifications, as well as regular "for-the-record" items such as name of client, vessel, voyage, ports of call, container numbers etc.

For example, when packaged hazardous materials are involved, the form verifies that the proper shipping names, hazard classifications and package hazard labels are in accordance with Department of Transportation regulations, or those issued by the IMO in its International Maritime Dangerous Goods Code.

Securing cargo

The most frequent reason for rejecting containerized ocean shipments of hazardous materials is inadequate cargo securing, according to the NCB.

Current regulations covering securing hazardous cargo are found in the 49 CFR, Part 176. "Carriage by Vessel," section 76. It stipulates that, among other requirements, "all packages in the transport vehicle or container must be secured to prevent movement in any direction."

Continued on page 22

Continued from page 21

Future joint efforts

Since the early capsizing of grain ships and the dreadful nitrate explosion in Texas City in 1947, the Coast Guard and the NCB have evolved into a effective cooperative force in assuring safe cargo stowage.

Inspections of regulated cargoes, such as grain, ore concentrates and dangerous substances, are expected, not only to continue, but expand.

IMO will continue refining and applying the codes that cover such cargoes internationally. And the NCB will continue to cooperate in these efforts, while representing the Coast Guard in monitoring and certifying loading in the United States.

During the 1980s, sea pollution by oil and other viscous substances has been a matter of increasing national and international concern. While the NCB has not yet been directly involved in spill control and abatement activities, it is likely to be called upon for assistance in the near future. The NCB has stated that it is ready to aid in any area of pollution control when the Coast Guard sees the need.

The relationship between the Coast Guard and the NCB is a positive one, evolved through years of mutual goals and respect. Both agencies are dedicated to the safe transport of hazardous cargoes by water.

In the complex and ever changing marine transportation field, the Coast Guard must continue to rely on the efforts of such agencies as the NCB to effectively fulfill its regulatory responsibilities.

LCDR Ron Borison is chief of the Port Operations Branch of the Port Safety and Security Division of the Coast Guard's Office of Marine Safety, Security and Environmental Protection.

An oil fire in a Texas City warehouse area was caused by the dreadful 1947 nitrate explosion.

Chemical of the month

1/C Gary Duermit

Morpholine

Commonly used as a solvent and rubber accelerator in industry, morpholine is classified as an amine, which is flammable, toxic and, in some cases, corrosive. However, morpholine is more stable than most amines.

A colorless, oily liquid with a fishy, ammonia odor, morpholine has the chemical formula $(CH_2)_4ONH$. It is also known as tetrahydro-1,4-oxazine, diethylene imidoxide, diethylene oximide and diethylene oxide.

Flammable

Morpholine has a boiling point of 128.2°C (262°F), and a low flash point of 38°C (100°F), which makes it quite flammable. It also has an autoignition temperature of 310°C (590°F).

A morpholine fire should be extinguished with a water fog, alcohol foam, dry chemical or carbon dioxide. All fire parties should be provided with full body and respiratory protection.

Heavier than air, morpholine vapors may travel some distance to the source of ignition and flashback. If ignited in an enclosed area, the vapors may explode.

Toxic

Morpholine vapor is very toxic, and extremely irritating to the eyes, nose and throat. If inhaled, it may cause nausea, headache or difficulty in breathing. A victim should be moved to fresh air and given artificial respiration if breathing stops.

Liquid morpholine causes severe burns to the skin. All contaminated clothing should be removed and areas of contact flushed thoroughly with water.

The liquid is also extremely irritating to the eyes. If contact is made, the eyes should be flushed with plenty of water for at least 15 minutes.

Swallowing morpholine liquid may cause kidney and liver damage, No matter how small the amount of exposure, medical attention should be obtained as quickly as possible.

If the victim is conscious, have him or her drink water or milk, and induce vomiting. If the victim is unconscious or having convulsions, do nothing except keep him or her warm.

Spillage

In the event morpholine liquid is spilled, all possible sources of ignition should be shut off immediately. Face shields, rubber gloves and plastic aprons should be worn to mop up spillage. Plenty of water should be used.

Ventilate the area of spillage well to evaporate the remaining liquid and dispel vapor. It is recommended to call the National Response Center at 800-424-8802.

Requirements

When shipping morpholine, an ambient temperature is sufficient. There are no requirements on an inert atmosphere. Venting should keep air circulating through the storage area.

A flammable liquid libel must be affixed to shipping containers of morpholine.

Applicable Coast Guard bulk regulations for proper storage of morpholine are found in Subchapter O of 46 CFR.

The International Maritime Organization has assigned morpholine to class 3.3 in the IMDG code.

Continued on page 24

Morpholine

Chemical name: Morpholine

Formula: $(CH_2)_4$ ONH

Synonyms: Tetrahydro-1,4-oxazine, diethylene imidoxide, diethylene oxide and diethylene oxide.

Physical properties:

Boiling point:	128.2°C	262°F
Freezing point:	- 48°C	23.4°F
Vapor pressure:		
20°C (68°F)	7.0 mm Hg	
46°C (115°F)	0.8 mm Hg	

Threshold limit values:

Time weighted average:	20ppm, 70 mg/m^3
Short term exposure limit:	30ppm, 105 mg/m^3

Flammability limits in air:

Lower flammability limit:	1.8% volume
Upper flammability limit:	10.8% volume

Combustion properties:

Flashpoint:	38°C, 100°F
Autoignition temperature:	310°C, 590°F

Densities:

Vapor (air = 1):	3.0
Specific gravity (at 20°C):	1.00

Identifiers:

U.N. number	2054
CHRIS Code	MPL
Cargo compatibility group	7 - aliphatic amines

Continued from page 23

Gary Duermit was a first class cadet at the Coast Guard Academy when this article was written as a special project in chemistry for LT Thomas Chuba

Nautical queries

March-April 1991

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. An oil separator is a device used to remove oil from the _____

A. liquid refrigerant.
B. receiver.
C. gaseous refrigerant.
D. expansion valve.

2. When two AC generators are being paralleled, the breaker should be closed with the synchroscope pointer moving in the _____ _____the 12 o'clock position.

A. slow direction just before.
B. fast direction just after.
C. fast direction just before.
D. slow direction just after.

3. In a coil-type water-tube, forced-circulation auxiliary boiler _____

A. steam is recirculated through heating coils in the boiler.
B. hot water flashes to steam in the flash chamber (accumulator).
C. unevaporated feedwater is lost through the atmospheric vent.
D. response to steam demand is slower than in a fire-tube boiler.

4. For large main propulsion turbines, the most commonly used turbine thrust bearing is the _____.

A. pivoted segmental shoe.
B. overhung turbine wheel
C. self-aligning shell.
D. self-oiling sleeve.

5. Diesel engine air-starting valve timing is controlled by _____

A. engine operating speed.
B. an air manifold.
C. a hydraulic distributor.
D. individual cams and valve gear.

6. Coast Guard regulations require refrigerated spaces that can be locked from the outside, but not opened from the inside, to have an audible alarm which rings _____.

A. in the wheelhouse.
B. in the galley.
C. at the exit from the refrigeration compartment.
D. where a person is regularly employed.

7. A characteristic of a wound-rotor induction motor with a high resistance rotor winding is _____

A. low-starting torque.
B. high-starting torque.
C. high speed.
D. low-starting voltage.

8. Make-up feedwater is brought into an operating feed system via the _____

A. main feed pump.
B. auxiliary feed pump.
C. feed booster pump
D. vacuum drag line

Deck

1. The dividing meridian between zone descriptions +7 and +8 is _____

A. 105° W
B. 112°30' W
C. 117° W
D. 120°30' W

Continued on page 26

Continued from page 25

2. Which of the following statements about the Flinders bar of the magnetic compass is correct?

A. It compensates for the error caused by the vertical component of the earth's magnetic field.
B. It compensates for the error caused by the heeling of a vessel.
C. It compensates for quadrantal deviation.
D. It is only needed in equatorial waters.

3. What descriptive term indicates that the dimension is measured from the inner face of the shell or deck plating?

A. Molded
B. Register
C. Tonnage
D. Effective

4. You are enroute from Puerto Rico to New York. A hurricane makes up and is approaching. If the wind veers steadily, this indicates that your vessel is _____.

A. in the dangerous semicircle.
B. in the navigable semicircle.
C. directly in the path of the storm.
D. in the storm center.

5. Naval authorities would NOT give orders about which of the following, when the vessel is under control of the Naval Control of Shipping Organization?

A. Visual communication at sea.
B. Rescue operations.
C. Diversions.
D. Schedules for loading cargo.

6. You are underway in the North Sea on course 142°T when you sight a buoy bearing 105°T. The buoy's white light has a characteristic of continuous very quick flashing. To ensure that your vessel remains in the vest navigable water, you would _____.

A. continue on course and ensure that the bearings change to the left.
B. pass between the buoy and another buoy showing a fixed white light.
C. alter course to port and pass the buoy close aboard to either side.
D. alter course to port and pass north of the buoy.

7. You are underway in mid-ocean when you hear a distress message. The position of the sender is 150 miles away. No other vessel has acknowledged the distress. Your maximum speed is five knots and, due to the seriousness of the distress, you cannot arrive on time at the scene to provide effective assistance. What action should you take?

A. Do not acknowledge the distress message.
B. Send an urgency message about the distress.
C. Use the signal MAYDAY RELAY and transmit the distress message.
D. Transmit a message as though your vessel was in distress.

8. There are two advantages to the Scharnow turn in a man overboard situation. One is that it saves distance along the track line when compared to the Williamson turn. The other is that _____.

A. It is usually the fastest of man overboard turns.
B. It can be used in both the immediate action and the delayed action situations.
C. In fob, if the turn is started as soon as the man goes over, the vessel will be at the point where he went over when the turn is completed.
D. It returns the vessel to the original trackline on a reciprocal course.

Answers

Engineer
1-C; 2-B; 3-B; 4-A; 5-D; 6-D; 7-B; 8-D
Deck
1-B; 2-A; 3-A; 4-A; 5-D; 6-D; 7-C; 8-D

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

New publications

March - April 1991

Two new editions of *Chapman's Nautical Guides* recently appeared on maritime book store shelves. They are titled: *Emergencies at Sea* and *Communications Afloat.*

Emergencies at Sea

The latest addition to *Chapman's Nautical Guides, Emergencies at Sea,* by Sid Stapleton, deals with the darker side of the wonderful world of yachting -- disaster.

A 20-year veteran sailor, Stapleton takes the reader on a step-by-step "training course" on what to do when disaster strikes at sea. He covers firefighting techniques, steering and power loss, heavy weather preparations and handling, hull damage repairs, and navigation and medical emergencies.

Such subjects as keeping a communications schedule, handling a helicopter evacuation from the deck of a sinking boat and abandoning ship correctly should interest any seagoing reader.

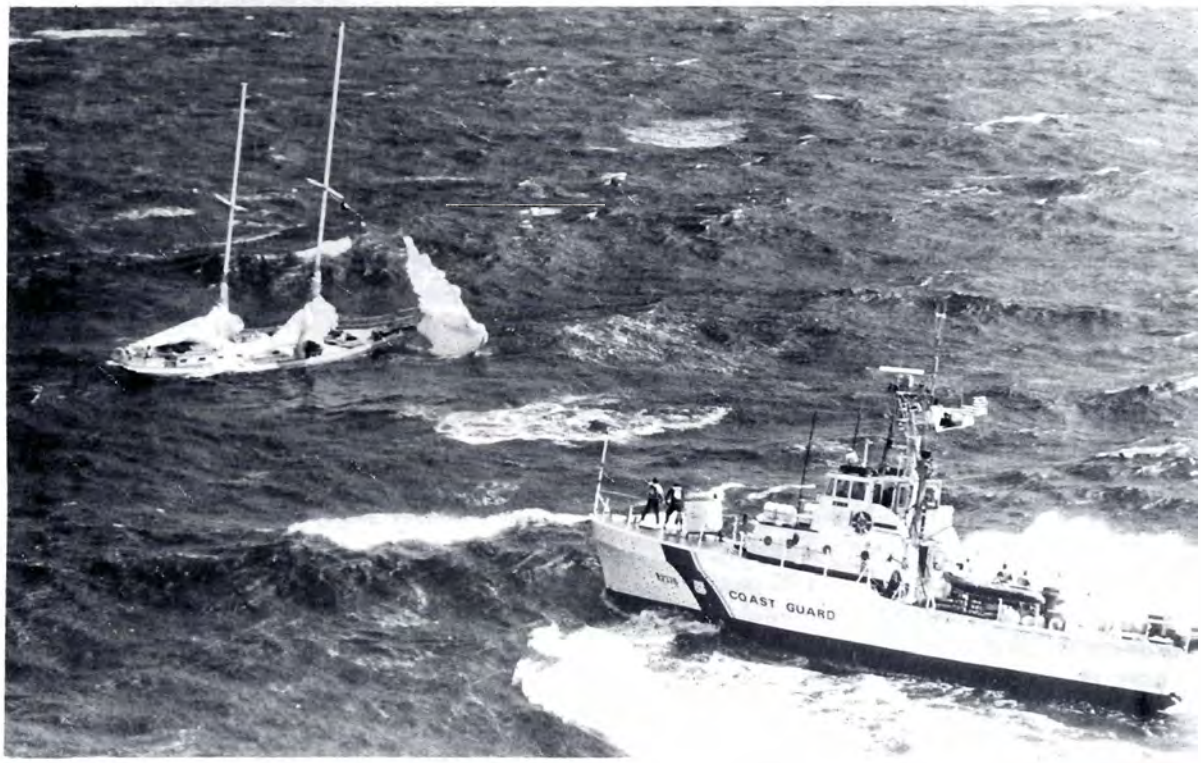
The information is up-to-date and presented clearly and concisely. In addition, there are plenty of helpful illustrations, charts and outlines of safety procedures.

Stapleton has extensive first-hand experience with all aspects of cruising, gained in voyages all over the world. He he is a contributing editor of *Motor Boating and Sailing* magazine.

Chapman's Nautical Guide: Emergencies at Sea costs $16.95 and is published by Hearst Marine Books, an affiliate of William Morrow and Co., Inc., 105 Madison Ave., New York, N.Y. 10016.

Continued on page 28

Coast Guard Cutter Point Harris assists Wizard of Bristol near Koko Head, Hawaii.



Continued from page 27

Communications Afloat

Elbert S. Maloney investigates the entire gamut of marine communications from Citizens' Band radio to signal flags, Morse code and on to satellite communications in Chapman's *Communications Afloat*.

Emphasizing the more common communication systems used on today's yachts and other watercraft, Maloney devotes several chapters of his book to VHF-FM radios. This is followed up by detailed discussions of radio operator licensing, station licensing, radio-telephone etiquette and installation of equipment.

For the world cruiser, information on single sideband, amateur radio and emergency radio equipment is of particular interest.

Knowing the proper method of communication for any situation or emergency is essential for safe boating, and this easy-to-use reference book is an excellent source.

Maloney also wrote Chapman's *Piloting, Seamanship and Small Boat Handling* and coauthored *Your Boat's Electrical System.*

Chapman's Nautical Guide: Communications Afloat, is also published by Hearst Marine Books. It is priced at $14.95.

Wooden boat repair

Anyone interested in composite or cold molded boat construction or restoration should read the latest booklet by Jan and Meade Gougeon, the pioneers of the WEST System (wood epoxy saturation technique for boatbuilding). *Wooden Boat Restoration and Repair* provides detailed new concepts, descriptions and illustrations, including many photographs, concerning the repair and restoration of any wooden vessel, not just those built by the WEST System..

Individuals who conduct small-passenger vessel hull exams should be interested in the diagnostic and repair techniques found in this 76-page booklet. Dry rot, scarfed joints, hull repairs, lapstrake and carvel planking repairs are discussed at length -- and in plain English.

One chapter is devoted exclusively to evaluating and inspecting a wooden boat, while another points out the limits of the wood and epoxy material. This is useful not only for the prospective buyer or restorer, but also for the marine inspector.

Considerable attention in this booklet is also devoted toward the safe applications of epoxy and other chemical products.

For a copy of *Wooden Boat Restoration and Repair,* send $2.25 to Gougeon Brothers, Inc., P.O. Box X908, Bay City, Michigan 48707.

Medical guide

The second edition of the *International Medical Guide for Ships* provides complete information and advice for non-medical seafarers faced with injury of disease on board ship. Published by the World Health Organization, this new edition has been completely revised and updated according to recent scientific and seafaring developments.

This 368-page edition features medical advice for ships carrying toxic chemicals, including first-aid treatment of poisoning, and an updated list of medicines and surgical supplies recommended for the ship's medicine chest.

Other new features include chapters dealing with pregnancy and women's medical problems, advice on the medical care of castaways and rescued persons, guidance in getting assistance in case of serious health problems at sea and an alert to diseases common to fishermen.

For easy reference, some 60 diseases and medical problems, ranging from abdominal pain to stroke and paralysis, have been selected and alphabetized in a single chapter.

New features and illustrations combine to make the book a thorough guide to the treatment of injured or sick seafarers, an excellent textbook for ship officers studying for a certificate in medical training, and a convenient teaching tool for life-saving procedures.

To obtain a copy of the *International Medical Guide for Ships,* send $48 to the World Health Organization, Distribution and Sales, 1211 Geneva 27, Switzerland. Major credit card numbers are accepted.

Keynotes

Proposed Rule

CDG 90-051, Double hull standards for tank vessels carrying oil (33 CFR Part 157) RIN 2115-AD61 (December 5)

ACTION: Notice of proposed rulemaking.

Pursuant to the Oil Pollution Act of 1990, the Coast Guard is proposing standards for double hulls on tank vessels carrying oil as cargo or cargo residue that are constructed or undergo a major conversion under contracts awarded after June 30, 1990

Additionally, the Coast Guard is proposing these same standards for double hulls on such vessels that are constructed or that undergo a major conversion under earlier contracts. The Act requires these vessels to have double hulls according to a timetable commencing in 1995.

This proposed rule provides the shipping and shipbuilding industries with standards in order to meet the double hull requirement. These standards are, to the greatest extent possible, based on existing domestic standards issued pursuant to the Port and Tanker Safety Act (1978) or international standards adopted by the Act to Prevent Pollution from Ships (1980), which implemented the provisions of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78).

DATE: Comments must be received by April 1, 1991.

ADDRESS: Comments may be mailed to the Executive Secretary, Marine Safety Council (G-LRA-1/3406) (CGD 90-051), U.S. Coast Guard Headquarters, 2100 Second Street, S.W., Washington, D.C. 20593-0001, or delivered to room 3406 at the above address between 8 am and 3 pm, Monday through Friday except federal holidays. Telephone (202) 267-1477.

The Executive Secretary maintains the public docket for this rulemaking. Comments will become part of this docket and will be available for inspection or copying at room 3406.Copies of navigation and vessel Inspection circulars are available from the Coast Guard Marine Safety Center (G-MSC), 400 Seventh Street, S.W., Washington, D.C. 20590-0001, telephone (202) 366-6483.

For further information, contact: Mr. Stephen M. Shapiro, Merchant Vessel Inspection and Documentation Division (G-MVI-2), telephone (202) 267-1181.

Final Rule

CGD 90-100, Bulk hazardous materials (46 CFR Part 153) RIN 2115-AC35 (December 6)

ACTION: Final rule.

The Coast Guard is amending its table summarizing the minimum requirements for the carriage of liquid, liquefied gas or compressed gas hazardous materials in bulk by tankship. These amendments assign additional carriage requirements, a higher Pollution Category, or both, to certain commodities already listed in the table.

The amendments, which have no effect on tank barges, are necessary to align the minimum requirements in the table with those approved by the IMO for inclusion in its chemical codes applicable to tankships. The amendments should result in a further reduction in maritime pollution from tankships.

EFFECTIVE DATE: January 7, 1991.

For further information, contact: Mr. Curtis G. Payne, Hazardous Materials, (202) 267-1577.

Continued on page 30

Continued from page 29

Final Rule

CGD 88-031, Documentation of vessels: controlling interest (46 CFR Part 67) RIN 2115-AC99 (December 12)

ACTION: Final rule.

The Coast Guard is amending its vessel documentation regulations regarding citizenship requirements for vessel-owning individuals or entities applying to document vessels or to qualify for certain trade endorsements.

The amended regulations implement the American control provisions of the Commercial Fishing Industry vessel Anti-Reflagging Act of 1987, and conform the controlling interest requirements for partnerships to those for corporations.

Other amendments will result in regulations which are more informative and will assist vessel owners in understanding the applicable citizenship requirements.

EFFECTIVE DATE: January 11, 1991.

For further information, contact: Mr. Thomas L. Willis, Chief, Vessel Documentation branch, Merchant Vessel Inspection and Documentation Division, Office of Marine Safety, Security and Environmental Protection, (202) 267-1492.

Notice

GD 90-070, Alternative compliance, inland navigation rules (33 CFR Part 89) (December 24)

ACTION: Notice of termination of exemption period.

This notice advises the public that the period of exemption from certain technical requirements for positioning of lights expired December 24, 1990, for inland waters and will expire March 1, 1992 for the Great Lakes.

Vessels built prior to implementation of the Inland Navigation Rules, and which have been operating under the exemption, are expected to be in full compliance by those dates.

An owner or operator of a vessel of special construction or special purpose, who believes an exception from the technical requirements for positioning of lights is warranted, must obtain a Certificate of Alternative Compliance prior to expiration of the temporary exemption.

DATE: Certificates of Alternative Compliance for inland waters should have been obtained before December 24, 1990.

For further information, contact: Mr. Edward J. LaRue, Jr., Acting Chief, Navigation Rules and Information Branch (G-NSR-3) at (202) 267-0416 for Navigation Rule interpretations, or LCDR Brian Salerno, Compliance and Enforcement Branch (G-MVI-1) at (202) 267-1464 for inspection or enforcement questions.

Notice

CGD 91-001, Safety and security zones (33 CFR Parts 100 and 165) (January 9)

ACTION: Notice of temporary rules issued.

This document gives notice of temporary safety zones, security zones and local regulations, which the Coast Guard must issue periodically for limited periods of time in limited areas.

Safety zones are established around areas where there has been a marine casualty or when a vessel carrying a particularly hazardous cargo is transiting a restricted or congested area. Special local regulations are issued to assure the safety of participants and spectators or regattas and other marine events.

DATES: The published list includes zones and regulations set between October 1 and December 31, 1990, and have since been terminated.

ADDRESS: The complete text of any temporary regulation may be examined at Room 3406, Executive Secretary, Marine Safety council (G-LRA-2), Coast Guard Headquarters, 2100 Second St., S.W., Washington, D.C. 20593-0001.

For further information, contact: Mr. Bruce Novak, Executive Secretary, Marine Safety Council at (202) 267-1477 between 8 am and 4 pm, Monday through Friday.

Proposed rule

CGD 90-054, Pollution-prevention requirements of Annex V of MARPOL 73/78 (33 CFR Part 151) RIN 2115-AD64 (January 9)

ACTION: Notice of proposed rulemaking.

The Coast Guard proposes to amend the rules that implement Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). This rulemaking is necessary since two amendments to the annex take international effect February 18, 1991.

This rulemaking would, as those amendments will, designate the North Sea as a Special Area under the annex and eliminate the current exemption for the loss of synthetic material incidental to the repair of fishing nets.

DATE: Comments must have been received by the Executive Secretary of the Marine Safety Council, Room 3406, Coast Guard Headquarters, by February 25, 1991.

The Executive Secretary maintains the public docket for this rulemaking. Comments will become part of this docket and will be available for inspection or copying at room 3406.

For further information, contact: LCDR David W. Jones, Project Manager, Office of Marine Safety, Security and Environmental Protection (G-MPS-3) ,(202) 267-0491, between 7 am and 3:30 pm workdays.

Notice

CGD 74-284, Fixed fire-extinguishing systems for pleasure craft and other uninspected vessels (46 CFR Parts 25, 26 and 162) RIN 2115-AA08 (January 9)

ACTION: Supplemental notice of proposed rulemaking.

The Coast Guard seeks to establish standards and procedures for approving gaseous-type fixed fire-extinguishing systems for pleasure craft and other uninspected vessels. Its current rules do allow certain fixed systems, but they are too complex and expensive for most such vessels.

The proposed rule will allow a greater variety of fixed systems, including several that are simple and inexpensive, and will therefore increase the convenience and economy of running most uninspected vessels.

DATE: Comments must arrive on or before March 11, 1991.

ADDRESS: Mail or deliver comments to Commandant (G-LRA-2, Room 3406) (CGD 74-284) Coast Guard Headquarters. Comments will be available for inspection and copying at the Office of the Marine Safety Council, room 3406, workdays, telephone (202) 267-1477.

For further information, contact: Mr. Klaus Wahle, Office of Marine Safety, Security and Environmental Protection, (202) 267-1444.

Interim rule as final

CGD 89-008, Documentation of vessels; recordation of instruments (46 CFR Part 67) RIN 2115-AD30 (January 10)

ACTION: Adoption of interim rule as final.

On October 12, 1989, the Coast Guard published an interim rule in the *Federal Register* (54 FR 41835) to implement those portions of Public Law 100-710, which amended and codified the Ship Mortgage Act of 1920. That legislation made substantive changes to the laws governing the recordation of instruments.

The interim rule implemented those portions of the law which were unequivocal, and provided for uniform application of the law by the Coast Guard's Vessel Documentation Offices. This rulemaking action adopts the interim rule as final with changes.

EFFECTIVE DATE: January 10, 1991

For further information, contact: Mr. Thomas L. Willis, Chief Vessel Documentation Branch, Merchant Vessel Inspection and Documentation Division, Office of Marine Safety, Security and Environmental Protection, (202) 267-1492. Normal office hours are between 7 am and 3:30 pm, Monday through Friday, except holidays.

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Applications

CGD 91-003, Towing Safety Advisory Committee (January 16)

CDG 91-008, National Offshore Safety Advisory Committee (February 4)

ACTIONS: Requests for applications.

The Coast Guard is seeking applicants for appointment to membership on the Towing Safety Advisory Committee (TSAC). This committee advises the Secretary of Transportation on rulemaking matters relating to shallow-draft inland and coastal waterway navigation and towing safety. Nine members will be appointed as follows: Four (4) from the barge and towing industry, reflecting a geographical balance; one (1) from the mineral and oil supply vessel industry; two (2) from port districts, authorities or terminal operators; and two (2) from the general public.

The Coast Guard is also seeking applications for appointment to membership on the National Offshore Safety Advisory Committee (NOSAC). This committee advises the Secretary of Transportation on rulemaking matters related to the offshore mineral and energy industries. Four (4) members will be appointed for terms commencing in January 1992.

To achieve the balance of membership required by the Federal Advisory Committee Act, the Coast Guard is especially interested in receiving applications from minorities and women. The committees will meet at least once a year in Washington, D.C. or another location selected by the Coast Guard.

DATE: Requests for membership applications for TSAC should be received by May 15, 1991: for NOSAC by July 31, 1991.

ADDRESS: Persons interested in applying should write to Commandant (G-MP-4), Room 2412, Coast Guard Headquarters.

For further information, contact: Ms. Jo Pensivy, Executive Director, TSAC and NOSAC (G-MP-4), Room 2412, Coast Guard Headquarters, telephone (202) 267-1406.

Notice of financial aid

CGD 91-006, Boat safety account of the Aquatic Resources Trust Fund; Availability of FY 1991 financial assistance (February 5)

ACTION: Notice of availability of FY 1991 financial assistance.

Pursuant to Title 46, U.S. Code, section 13103(c), the Coast Guard is seeking to enter into financial assistance agreements with national nonprofit public service organizations for national boating safety activities. The Coast Guard has FY 1991 funds to subsidize selected national boating safety activities, and seeks proposals for projects to promote boating safety on a national level.

DATE: Proposals must be submitted by April 1.

ADDRESS: Specific information on eligibility, proposal requirements award and financial administration procedures, and application packages may be obtained from Commandant (G-NAB-5) Coast Guard Headquarters.

For further information, contact: Mr. Ladd Hakes at (202) 267-0954.

AIDS -- CAUTIONS FOR TRAVELERS

The World Health Organization estimates that there are 350,000 cases of AIDs throughout 140 countries. In addition, there could be ten million people infected with the Human Immunodeficiency Virus (HIV), the responsible organism. They have no symptoms yet, but can transmit the deadly disease. Thus, travelers should take precautions while in foreign ports.

Avoid blood or blood-product transfusions, dental treatment, tattooing, ear piercing, acupuncture, barber shop shaving, manicures and pedicures. Also, do not share razors and toothbrushes, because they could be contaminated with the HIV virus, which could be passed on through an abrasion, however small.