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SEE PAGE 56 for details on YOUR *Proceedings* ISSUE.

Proceedings

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May-June 1994 *Vol. 51, No 3*

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Front cover photo: Port of New Orleans, Louisiana.
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The ever changing - ever growing port of Los Angeles/Long Beach, California.

Changes and challenges
A time to reflect . . .

By RADM A. E. "Gene" Henn

As one comes to the end of a tour, it is appropriate to remember ones roots . . . reflect on where we are and assess where we are going. Rather than focus on a specific marine safety program or activity as we have done in previous issues of *Proceedings*, the articles herein are "snapshots" of ongoing activities and new initiatives.

Those of us who have been involved in maritime safety and protection of the marine environment for most of our lives recognize that if there is anything constant in the marine industry, it is change. However, the challenges and issues we face now are not that much different than those faced by RADM William "Mike" Benkert more than 20 years ago. The focus and approach that he established set the tone and the model of what we pursue today.

Several new initiatives were undertaken in response to new mandates from congress and the administration. The Oil Pollution Act of 1990 presented the Coast Guard and industry with enormous challenges. The Coast Guard has moved quickly to implement the act, which has brought major changes to the industry.

Regulations to implement the Commercial Fishing Industry Vessel Safety Act of 1988, became effective in 1991. The equipment and drills required by these regulations have already been credited with saving the lives of several crews.

The hazardous materials incident on the *Santa Clara I* demonstrated the need to strengthen our focus on poor ship management practices on foreign flag cargo vessels and the failure of many shippers to follow the hazardous material shipping regulations. Consequently, we expanded our port state control program and will soon implement a new container inspection program.

The Passenger Vessel Safety Act of 1993 requires that many charter vessels be inspected by the Coast Guard. We are now working closely with the charter industry to assure their vessels meet safety standards appropriate for commercial operation and help them comply with the act's regulations.

The repercussions from the tragic accident involving the AMTRAK *Sunset Limited* and the towboat *Mauvilla* in Mobile, Alabama, coupled with several other incidents on towing vessels are just beginning to be felt as the congress and the Coast Guard consider new rules and regulations to revise operator licensing and equipment requirements on towing vessels.

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Looking back on the past three years of my service as chief of the Office of Marine Safety, Security and Environmental Protection, there have been significant changes.

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Quality revolution

The quality revolution has not only arrived, it has been welcomed by the recent adoption of the International Safety Management (ISM) Code by the International Maritime Organization (IMO), and the move by many arms of the industry to obtain International Organization for Standardization (ISO 9000) certification. They include all the major classification societies, many shipyards and equipment manufacturers, and several vessel owner/operators.

A total quality management (TQM) philosophy and system has been fully implemented within the Coast Guard. TQM tools and principles are now applied to all new Coast Guard initiatives, strategic reviews and program policy revisions. These principles form the foundation for the office's new five-year business plan developed in response to the recommendations of Vice President Albert Gore's National Performance Review and meeting the Government Performance and Results Act of 1993.

Maritime reform

Maritime regulatory reform initiatives are gaining momentum. In response to the president's call for maritime policy reform, the Coast Guard prepared a white paper recommending ten initiatives. Five deal with the leveling of the playing field for our maritime industry with respect to competing internationally, and five concern manning and licensing issues. We are moving swiftly to implement these recommendations.

We have completed a comprehensive comparison of Coast Guard regulations to the Safety of Life at Sea (SOLAS) Convention and classification rules of the American Bureau of Shipping. We are accepting more foreign standards and materials. We are developing third party delegations to simplify the plan-approval process and reduce redundant inspections.

We are continuing to build a consensus with industry and labor to develop legislation to permit manning and licensing reform. We are also streamlining the regulatory development process itself to use public and advisory committee input more effectively and to reduce the time needed to implement new congressional mandates and international convention requirements.

Safety net

The fabric of the layered safety net concept, consisting of vessel operators, class societies, flag and port states is being strengthened and woven more tightly. IMO's new ISM code recognizes that the primary responsibility for vessel safety rests with the crew and owner, and establishes a framework for the safe management and operation of ships.

At the urging of the United States, IMO created a new Flag State Implementation Subcommittee to address the problems that both flag and port states have in implementing IMO conventions. The subcommittee has developed uniform guidelines for delegating responsibilities to class societies and other organizations authorized to act for administrations. This effort is complemented by IMO's technical cooperation program and the Coast Guard's marine safety training and assistance teams, which help developing countries.

To facilitate the role of the United States as a port state, the Coast Guard has strengthened the foreign vessel boarding program and established a port state information exchange computer bulletin board system to provide public access to segments of our vessel inspection data base.

Human element

The role of the human element in insuring safety and preventing marine casualties continues to receive wide recognition. IMO has undertaken a major review of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers and is shifting its focus by developing operational guidelines for existing ships, in addition to requirements for new vessels only.

Domestically, a national working group is determining the direction of the Coast Guard's marine licensing program as we move into and beyond the year 2000.

As I prepare to assume new duties, I do so with tremendous pride in the Coast Guard's marine safety, security and environmental protection programs, and in what the Coast Guard and industry *together have accomplished.*

I also leave with a certain melancholy feeling. My roots are firmly established in the Office of Marine Safety, Security and Environmental Protection. I will always consider this job the best in the Coast Guard.

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A familiar face returns to Coast Guard headquarters

The commandant selected RADM James C. Card to relieve RADM A. E. "Gene" Henn as the next chief of the Office of Marine Safety, Security and Environmental Protection. RADM Card has extensive experience in the marine safety and environmental protection programs, including three assignments at headquarters.

For the last two years, RADM Card was commanding officer, Eighth Coast Guard District, New Orleans, Louisiana. A native of Melrose Park, Illinois, he is a 1964 graduate of the Coast Guard Academy.

Following sea tours aboard cutters Winona, Dexter and Barataria, RADM Card attended the Massachusetts Institute of Technology, earning two masters' degrees, one in naval architecture and the other in mechanical engineering. He graduated from MIT in 1970.

From 1970 to 1985, RADM Card was a naval architect at Coast Guard headquarters; marine inspector at MSO Baltimore, Maryland; chief of the Ship Design Branch of the Marine Technical and Hazardous Materials Division; and commanding officer of MSO St. Louis, Missouri.

A 1986 graduate of the Industrial College of the Armed Forces, RADM Card was chief of the Merchant Vessel Inspection and Documentation Division from 1986 to 1988. He was commanding officer of MSO/ Group Los Angeles/Long Beach, California, from 1988 to 1990. He then became chief of operations for the Eleventh Coast Guard District. The following year he served as chief of staff at the Thirteenth Coast Guard District in Seattle, Washington. He was selected for promotion to rear admiral in August 1991.

His awards include the Legion of Merit, Meritorious Service Medal with three gold stars. Coast Guard Commendation Medal, and Coast Guard Commandant's Letter of Commendation Ribbon with one gold star.

The legacy lives on . . .

(April 24, 1923 - December 14, 1989)

RADM "Mike" Benkert was larger than life

By LTJG Pamela Zearfoss

When Admiral J. William Kime became commandant of the Coast Guard on May 30, 1990, he began his acceptance speech by recognizing the honored guests. The first was RADM William "Mike" Benkert, who was truely there in spirit.

Larger than life

When people recall Mike Benkert, they do so with a smile. He was larger than life...respected and admired by all who worked with him. Indeed, his enthusiasm, stamina and love of life was contagious.

He led the Coast Guard to heights they never could have reached without him. In fact, Mike Benkert is considered by many to be the father of the Coast Guard's marine safety and environmental protection mission.

RADM A. E. "Gene" Henn, today's chief of the Office of Marine Safety, Security and Environmental Protection and tomorrow's vice commandant, calls Mike Benkert "the yardstick by which we all try to measure ourselves, recognizing that we'll never reach his stature."

Public servant

Mike Benkert always maintained an excellent working relationship with industry. For example, when he was commanding officer of the marine inspection office at San Diego (1959-1962), he began to implement the small passenger vessel (subchapter T) regulations, which cover a wide variety of vessels from inland and ocean charter boats to large excursion vessels and ferries. Many complicated issues were involved, including the enforcement of stricter licensing and vessel inspection standards.

Mike Benkert committed himself and his crew to many nights of hard work to arrive at policies that were both fair to industry and uncompromising on safety. Small passenger vessel inspections were conducted at night so as not to interfere with normal daytime business hours.

His high regard for and partnership with industry foreshadowed the Coast Guard's total quality management (TQM) practices. As the first major overhaul of small passenger vessel regulations begins and new legislation requiring the inspection of a large number of previously uninspected charter boats is carried out, the Coast Guard will strive to follow Mike Benkert's lead.

Taskmaster

In the late 1960s, when he was the officer in charge of marine inspection in New York, new legislation on fire safety standards came into effect, forcing a number of famous passenger ships, including the *Queen Mary*, out of service due to the fact that for the first time, tough new fire safety requirements applied to existing passenger vessels. Mike Benkert held many meetings with representatives of industry to resolve sensitive issues while implementing the legislation in the United States.

He carried out the new fire safety standards rapidly by forming inspection teams and giving vessel owners ample time to make changes dictated by the standards. When owners would not comply in a timely manner, Mike Benkert was heard to say, "You've been goofing off long enough and, by God, you are going to do it." He was willing to help those who made an effort, but could be hard nosed when he felt there was foot dragging.

The international passenger vessel industry is again going through major changes following through on the 1992 fire safety amendments to the Safety of Life at Sea (SOLAS) convention. And again, the Coast Guard continues to follow Mike Benkert's lead both when it is time to be tough and when it is appropriate to compromise.

While overseeing marine inspection in New York, Mike Benkert conducted a special industry day on Governors Island, during which he fielded many complaints about Coast Guard inspectors and their competency. He responded with flair and without apology. He even got one critic to admit that he knew Mike Benkert's personal phone number by heart, adroitly diffusing the situation with laughter.

Mount Benkert

The admiral particularly relished the sea duty he served early in his career. He enjoyed having a concrete mission to perform, knowing he could get it done with a loyal crew behind him.

His last vessel command was on the *Eastwind* in the middle 1960s. The first charting of the Antarctic was begun during his command of the polar icebreaker. He became so familiar with the contours of the region that, years later, when questioned about a recent ship grounding there, he drew a "chart" of the area from memory on the back of a McDonald's napkin.

A mountain in Antarctica was named in his honor, "Mount Benkert," because of his work in the area. The marine safety office in Boston, where the *Eastwind* was homeported, is also dedicated to him.

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Big brother

Because of his wisdom, patience and thoughtfulness, Mike Benkert was often recognized as a big brother or a favorite uncle. He once described his personality as "volatile," yet he always directed his energy and criticism towards work not individuals. He once grabbed a file of papers requiring his signature out of the arms of an officer and threw it against a bulkhead. Two hours later, he had signed it all, called the officer back and acted very graciously.

It was widely known that his interest in his peers and subordinates was personal as well as professional, and he formed friendships that outlasted business relationships.

He liked to get right at the heart of a problem by contacting the people involved. He was extremely meticulous about his work and that of others. It was universally agreed that he could spot a typo at 50 feet.

Mike Benkert absorbed concepts and details of complicated subjects, recalling the essentials long after other people had forgotten the topics. Once en route to London, he was given a draft of a comprehensive environmental impact statement to review on the plane. As soon as he arrived, he express mailed it back to Washington "with the blood of red ink all over it." He was a voracious reader.

Rear admiral

When he was appointed rear admiral in 1971, Mike Benkert was designated chief of the newly created Office of Marine Environment and Systems. This office was formed by then commandant, Admiral Chester R. Bender, to carry out the mandate of the Council on Environmental Quality for the Coast Guard to be the principal agency responsible for coping with oil pollution. In this capacity, Benkert oversaw maritime law enforcement, port safety, maritime pollution control and aids to navigation. The establishment of this office began a new era of protecting the environment from people, instead of safeguarding people from the environment. His ideals foreshadowed the environmental protection philosophy embodied by the Oil Pollution Act of 1990 (OPA 90).

Achievements

RADM Benkert was awarded the Legion of Merit in 1973 for the contributions he made as chief of the Office of Marine Environment and Systems. Under his guidance, the Coast Guard assumed responsibility for programs under the Federal Water Pollution Control Act, and the Ports and Waterways Safety Act which led to the installation of vessel traffic systems in major United States ports.

He also led a national task force in developing a policy for consideration at an International Maritime Organization (IMO) Conference on Pollution of the Sea by Ships. This policy was carried over in the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL). This policy serves as the basis for Coast Guard enforcement and control of pollution from all vessels entering United States ports.

Mike Benkert's last vessel command was on the Eastwind, shown breaking the ice in the Antarctic.

IMO delegate

Appointed chief of the Office of Merchant Marine Safety in 1974, Mike Benkert represented the United States as a delegate to the IMO, and helped develop the 1974 SOLAS Convention, the 1977 International Convention for the Safety of Fishing Vessels, and the 1978 Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

As alternate head of the delegation to the Tanker Safety Pollution Prevention Conference in London, he directed all technical negotiations and paved the way for congressional passage of the Port and Tanker Safety Act of 1978. Mike Benkert continued to advocate the safety standards set forth in this act, ensuring that they were implemented worldwide through the IMO. The Coast Guard continues this advocacy, seeking international acceptance and solutions to the congressional mandates of OPA 90.

Stamina!

Mike Benkert met international and domestic challenges, and successfully raised international safety standards due to stamina! He was convinced that stamina (always with an exclamation point!) was the secret of his success. This stamina(!) was demonstrated by his 44 visits to Capital Hill during a two-year period, long days of negotiating terms of complex treaties at IMO in London, and tackling diplomatic conferences four months apart while still completing work at home.

In 1978, Mike Benkert was awarded the Distinguished Service Medal for his work on IMO committees and his success in meeting maritime pollution prevention objectives.

Grass roots interest

Notwithstanding his imposing presence on the international scene, Mike Benkert still retained his appreciation for grass roots problems. While chief of the merchant marine safety office, he agreed to see an unlicensed merchant seaman who wished to discuss the suspension of his document with someone in authority. Following the meeting, the seaman told an officer in the elevator that he really felt good about the meeting and that someone (an admiral no less) had really listened to his problem.

Mike Benkert could communicate eloquently with audiences and individuals. He had an amazing warm way with people and really cared.

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"He had an amazing warm way with people and really cared."

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Safety after retirement

Mike Benkert retired from the Coast Guard in 1978, and went on to serve as president of the American Institute of Merchant Shipping. He continued focusing on marine safety and pollution prevention as the key spokesman for the organization, which represented 30 companies that owned and operated more than 200 United States-flag tank, bulk, chemical and liquefied gas carriers.

He also served as the United States flag industry representative on the executive committee of the International Chamber of Shipping and was elected vice chairman in 1982.

He continued promoting safety and a clean environment, serving as chairman of several committees of the Marine Board of the National Academy of Sciences. Devoting long hours and incredible energy gratis, Mike Benkert never lost his touch uniting labor and management in a productive, positive manner.

The Swiss philosopher Jean Jacques Rousseau wrote, "To live is not merely to breathe, it is to act; it is to make use of our organs, senses, facilities, of all those parts of ourselves which give us the feeling of existence. The man who has lived longest is not the man who has counted the most years, but he who has enjoyed life most."

RADM William "Mike" Benkert (April 24, 1923 - December 14, 1989) certainly enjoyed life, and touched and inspired many other lives in the process. He lived by principles of lasting value and imparted those values to others. He inspired loyalty and love. He is remembered with fondness.

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Five-year business plan empowers field units

By CDR Tom Curelli

Historically, Coast Guard operations from prevention to response have been guided by national performance standards established by Congress and the current administration. Early port safety and environmental protection performance standards were derived from a broad study by the Rensselaer Polytechnic Institute in 1976. The ever changing maritime environment, however, quickly outgrew the scope of this study.

In 1992, the Office of Marine Safety, Security and Environmental Protection surveyed individuals who have a vested interest in, but are not direct recipients of marine safety services for a comprehensive program assessment. More than 2,000 responses were collected from Coast Guard headquarters and field offices, other federal and state agencies, maritime unions and training institutes, classification societies, foreign flag vessels and congress.

Most evident in the results of the survey was that centralized management was undercutting field focus on program goals and limiting its ability to function. Clearly, a change in the way of doing business was a must.

"-- letting those closest to the risk manage the risk -- "

Decentralization

Minimizing detailed management of field activities — letting those closest to the risk manage the risk — was the first order of business. This is consistent with Vice President Gore's federal government performance review and subsequent presidential memoranda on streamlining the bureaucracy, ordering more delegation of authority, decentralization and employee accountability.

On January 1, 1994, the Coast Guard changed its internal approach to business. Instead of detailed mission performance standards, field personnel will have broad discretion to select actions from their own "toolboxes" to meet program goals.

Operational formula

The business plan goes by a simple formula to achieve a desired result:

set goals >>>> empower >>>> manage risk >>>> measure

SET GOALS >> **Performance goals will establish achievement standards, independent of methods of achievement.**

EMPOWER >> **Clear measurable goals will pave the way for delegation of authority. Only activities required by law, treaty or regulation, or national harmony, will be directed by headquarters.**

MANAGE RISK >> **The business of the Coast Guard is risk management. Actions will be taken based on their effectiveness in reducing risk.**

MEASURE >> **Measurements will be taken at many levels. Processes will be measured for improvements. Goal achievements will be measured for a constant focus on successful results. Cost-effectiveness will be measured to justify costs and demonstrate value.**

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Goals

The Coast Guard's mission is to protect the public, the environment and United States economy by preventing and mitigating marine incidents. The strategic goal of marine safety and security efforts is to eliminate deaths, injuries and economic losses in commercial and military marine transportation.

Measurable five-year goals are to:

- **reduce deaths and injuries from marine casualties by 20 percent;**
- **prevent passenger vessel casualties with major losses of life;**
- **improve the safety record of commercial fishing from its present rating of "most hazardous;"**
- **remove competitive disadvantages from Coast Guard regulatory and compliance programs without sacrificing safety;**
- **eliminate substandard commercial vessels from United States waters;**
- **deter acts of terrorism through increased security in United States ports during periods of known threats; and**
  improve security at United States ports to expedite deployment of forces.

The overall goal in marine environmental protection is to eliminate damage from marine transportation. The five-year goals are to:

- **reduce the amount of oil and chemicals entering the water from maritime sources by 20 percent;**
- **reduce the plastics and garbage entering the water from maritime sources by 20 percent;**
- **reduce the number of major and medium oil spills by 50 percent;**
- **eliminate substandard tankers from United States waters;**
- **increase the amount of spilled oil removed by 20 percent; and**
- **reduce the time oil remains in the water by 20 percent.**

Investments

Major Coast Guard investments during the next three to five years will be in five mission areas. They are:

1) **port state control,**
2) **human factors,**
3) **fishing vessel safety,**
4) **tank vessel incidents of national significance, and**
5) **quality management.**

Activity priorities

The Coast Guard's five-year goals can be achieved by a variety of operational developments. Field activities are categorized as preventive and responsive. By no means exclusive of each other, these are complimentary elements of a complete program.

Nowhere are the implications of the change in Coast Guard business conduct more pronounced than in the responsibilities and relationships between headquarters program managers and field operational units. The principal focus of program managers will be field support through participation instead of direction.

Field priorities will be generated at the unit level based on local strategies for reaching goals. Program managers at headquarters will measure and evaluate field achievements of performance goals and provide a clearinghouse, sharing successful practices nationwide.

The basic measurement for a successful evaluation will be program effectiveness. Processes will be measured to identify and improve daily activities. Goals will be measured to evaluate incremental changes in results over specific time periods.

Conclusion

The business plan for the Office of Marine Safety, Security and Environmental Protection provides a responsive, productive safety program to the maritime community. It allows local field units to call the shots in deciding the best routes to take to achieve the five-year goals. This will bring about a safer, cleaner, more secure environment in record time for the marine industry throughout the United States.

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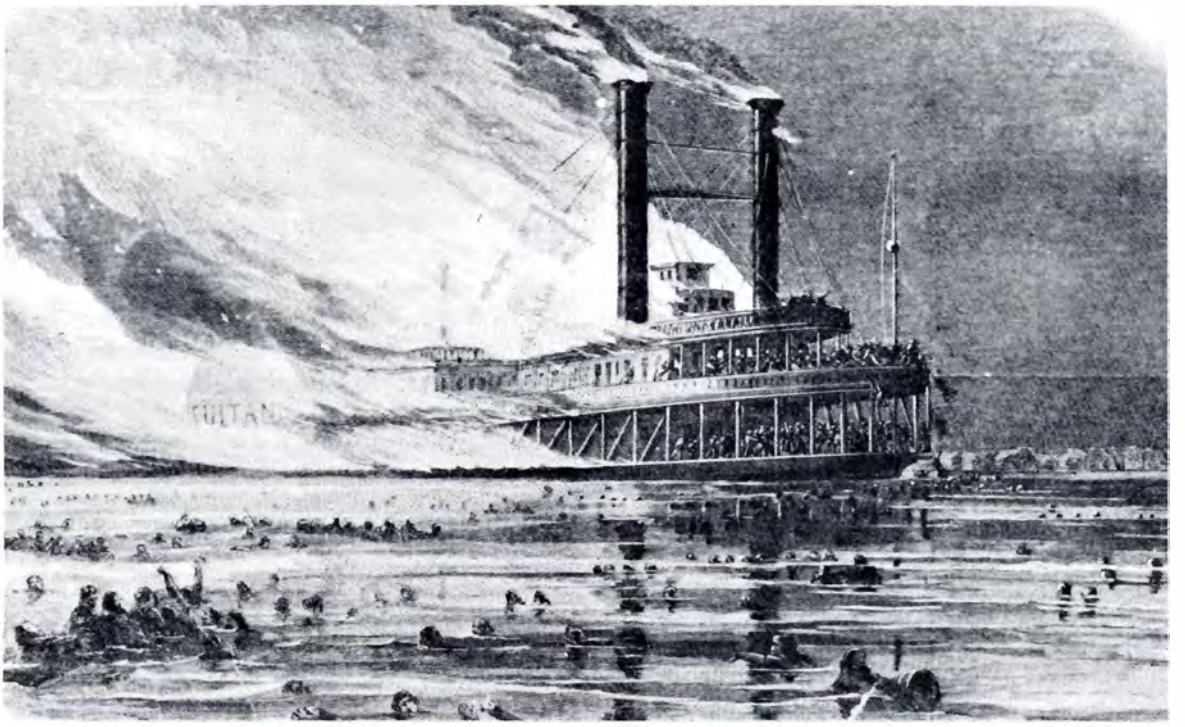
Regulatory reform marches on

By CDR James A. Stamm

The current Coast Guard emphasis on maritime regulatory reform is not a new initiative. It is a major step in an evolution of the regulatory process begun long ago.



On April 27, 1865, the worst maritime disaster in United States history took place. The paddle-wheel steamer Sultana embarked with 2,376 passengers from Memphis, Tennessee, up the Mississippi River to Cairo, Illinois. About 2 a.m., a boiler exploded and the vessel caught fire. The Sultana was soon engulfed in flames and burned to the waterline. More than 1,450 people perished.

Photograph courtesy of the Steamship Historical Society, University of Baltimore.

It began with boilers

Initially, the need for a safety regulatory agency was prompted by boiler explosions on river boats in the last century. This spawned numerous regulations dealing with the design, construction and operation of boilers and related machinery.

Since then, domestic maritime regulations have increased in response to other equipment or structural failures causing loss of life, injury or property damage. Historically, these regulations have been issued either in reaction to shipboard casualties or to implement congressionally mandated requirements.

Toward self-regulation

The Coast Guard is moving away from detailed, prescriptive requirements in the Code of Federal Regulations (CFR) to acknowledge industry's ability to develop its own safety standards. Indeed, the Coast Guard has long encouraged industry to become more self-regulated by getting involved with domestic standard-making bodies, including the American Society of Mechanical Engineers, the American National Standards Institute, the American Society for Testing and Materials, the National Fire Protection Association, the Underwriters' Laboratories and the American Bureau of Shipping (ABS). The Coast Guard actively assists technical committees of these groups to draft and revise relevant codes and standards.

Over the years, as various sectors of the industry have demonstrated the self-discipline and knowledge to regulate themselves, they have been given larger roles to play in compliance and enforcement.

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"There is a need to assist the United States maritime industry to become more competitive on a global scale . . .

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In 1936, ABS rules were incorporated into federal regulations as the standard for vessel structure.

In 1960, Underwriters' Laboratories' standards were adopted in the regulations as the United States-approved requirements for fire extinguishers.

In 1965, Underwriters Laboratories' standards for listing and labelling of personal flotation devices used on recreational boats were adopted and replaced existing requirements in the CFR. (In 1983, this personal flotation device ruling was extended to include all commercial vessels.)

In 1968, the American Society of Mechanical Engineers Code was adopted as the design standard for pressure vessels and boilers.

In 1972, Navigation and Vessel Inspection Circular (NVIC) 2-72 allowed for less than a full review of structural drawings approved by ABS on classed vessels.

In 1979, 46 CFR part 159 initiated the program of turning to independent laboratories for inspection and testing of equipment under subchapter Q.

In 1982, a memorandum of understanding was signed with the ABS, and NVIC 10-82 delegated plan review and inspection for new construction and major modification projects to ABS. Current Coast Guard regulatory reform efforts encourage further delegation of functions to the maritime industry.

In 1985, 46 CFR parts 52 and 54 were revised to allow professional engineers to certify boilers and pressure vessels in lieu of Coast Guard plan review and shop inspection.

In 1988, 46 CFR part 62 allowed manufacturers to self-certify compliance with design requirements for equipment used in vital system automation.

In 1990, 46 CFR part 63 was amended to allow manufacturers to self-certify compliance with American National Standards Institute standards for control systems of automatically-fired auxiliary boilers.

In 1992, NVIC 10-92 allowed the commanding officer of the Marine Safety Center in Washington, D.C. to accept the review and certification of a United States-registered professional engineer or the ABS that a required plan submittal meets the regulations.

Reform goals

Maritime regulatory reform efforts have four basic goals.

1) To implement the layered safety net concept outlined by the commandant.

For too long, the Coast Guard has assumed the burden of being the sole party responsible for vessel safety. The safety net concept identifies and prioritizes the parties who now share this responsibility — namely, the vessel's owners and operators, the classification societies, the insurance underwriters, the flag state administration and the port state administration. New domestic programs and specific International Maritime Organization (IMO) initiatives will ensure all parties recognize and fulfill their roles in vessel safety.

2) To harmonize domestic regulations and standards with international convention requirements and standards.

There has long been a need to consolidate, eliminate duplication and recognize more foreign and international standards without fear of compromising safety.

3) To provide United States flag state compliance options to United States owners and operators, and reduce vessel construction and inspection costs.

The Coast Guard should take advantage of changing business practices to leverage available resources and more effectively satisfy regulatory responsibilities and, at the same time, assist the maritime industry to become more globally competitive.

4) To develop a balanced flag state and port state enforcement program.

The majority of substandard vessels entering United States ports are under foreign flags, yet a disproportionate amount of time is spent regulating United States vessels.

. . . by shifting emphasis from domestic regulations to international codes and standards."

Actions

To accomplish these goals, maritime regulatory reform efforts will:

work with international bodies to improve the scope and content of international regulations and standards, and harmonize them with our domestic regulations, emphasizing the human factor as a major safety concern;

work with the IMO to improve the enforcement of standards by other flag states;

actively seek common ground between CFR requirements and those of class society rules and/or international conventions;

eliminate CFR requirements which are not essential for safety;

accelerate the development and incorporation of industry consensus standards into the CFR;

expand Coast Guard acceptance of alternative domestic, foreign and international standards;

shift the emphasis from prescriptive standards to performance-based standards, where appropriate;

- delegate additional duties to class societies;
- start compliance and oversight programs which recognize modern business practices incorporating quality systems;

realign Coast Guard resources to achieve the proper balance between flag and port state enforcement activities; and

develop alternative compliance options to take advantage of new business practices for owners and operators to better guarantee safe construction and operation.

Benefits

The major benefits to industry are alternative compliance options, reduced regulatory burden and improved ability to compete in the world shipping market.

The major benefit to the Coast Guard will be the ability to take some scarce resources from flag state activities and apply them to port state enforcement. Risk-based management techniques will be used to determine the correct balance of resources.

Conclusion

The timing is right to recognize and adopt more international standards for ship construction, operation, testing and inspection; to harmonize domestic and international standards; to eliminate domestic regulations which are redundant and to delegate more functions to third parties. There is a need to assist the United States maritime industry to become more competitive on a global scale by shifting emphasis from domestic regulations to international codes and standards.

For regulatory reform efforts to succeed without reducing the overall safety level, it is crucial that the Coast Guard maintain adequate program control and staff expertise. Training and oversight programs are critical elements to achieve this. Future training must cover international codes, conventions and standards. In addition, there will be a need for a working knowledge of risk-based assessment methods, and oversight and auditing techniques.

For resources to adequately cover the truly critical safety systems and activities, routine, low-risk functions must be assumed by the operators or delegated to third parties. An active, well-defined oversight process will permit the Coast Guard to gain expertise in these areas and have the freedom to concentrate on the new leading-edge concepts and technologies, thereby maintaining leadership in the world maritime community.

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Coast Guard gets expert advice

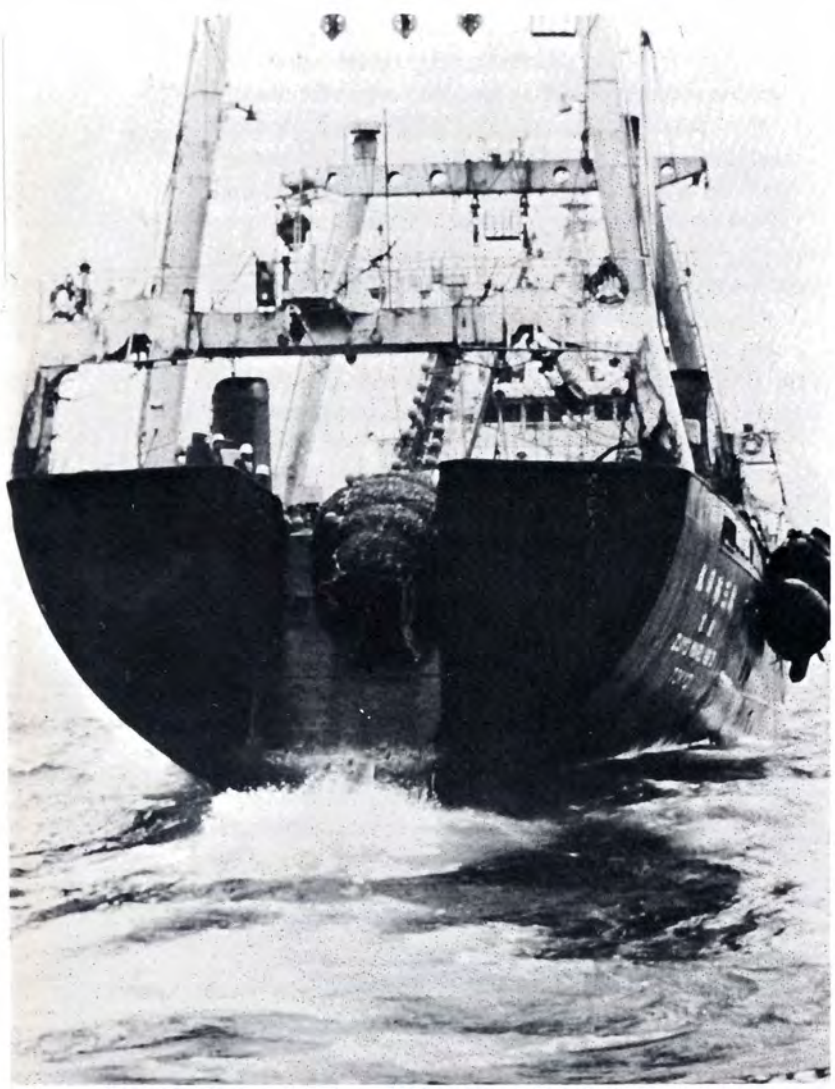
By Ms. Jo Pensivy

Advisory committees play a vital role in informing and consulting federal officials of industrial events, issues, policies, programs and problems. Five such committees provide the Office of Marine Safety, Security and Environmental Protection with valuable insight concerning important maritime industries.

Comprised of technical experts, managers and veterans of the industries they represent, these committees also advise the Coast Guard commandant and the secretary of the Department of Transportation on:

- water transportation of hazardous materials in bulk;
- commercial fishing industry vessel safety;
- merchant mariner personnel, training, qualifications, documentation and fitness standards;
- offshore mineral and energy industry safety issues; and
- shallow-draft inland and coastal waterway navigation and towing safety.

The advisory committees meet at least annually, usually at Coast Guard headquarters. Notices of scheduled meetings are published in the *Federal Register*. With few exceptions, committee meetings are open to the public.



Commercial Fishing Industry Vessel Advisory Committee

Established in January 1989, the Commercial Fishing Industry Vessel Advisory Committee makes recommendations on issues relating to the safe operation of commercial fishing vessels.

Presently, work groups are reviewing 46 CFR part 28, requirements for commercial fishing industry vessels. They are developing and recommending changes to the regulations by clarifying and amplifying areas identified by the committee.

Another work group is revising the Navigation and Vessel Inspection Circular (NVIC) 5-86, *"Voluntary Standards for United States Uninspected Commercial Fishing Vessels."* The group is particularly concerned with drafting an easy-to-understand section on stability for vessels under 79 feet.

There are 17 members of the Commercial Fishing Industry Vessel Advisory Committee. They include ten representatives of the commercial fishing industry, one naval architect/marine surveyor, one vessel equipment manufacturer, one from commercial fishing vessel training, one underwriter and three from the general public.

The membership term is three years, during which time a limited number of members serve consecutive terms. Committee members serve without compensation, although travel reimbursement and per diem is provided.

Committee meetings are conducted annually in various parts of the country. Subcommittees meet to discuss specific issues on an as-required basis.

Merchant Marine Personnel Advisory Committee

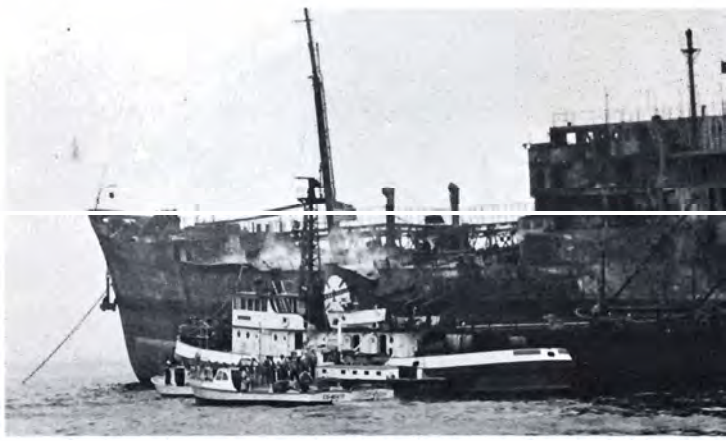
One of the Coast Guard's major responsibilities is to ensure that mariners serving on United States vessels possess the necessary knowledge and skill to perform safe vessel operations. The Coast Guard issues licenses, certificates and documents to qualified merchant seamen employed on commercial vessels.

When the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) was adopted by the IMO, the Coast Guard developed and implemented regulations to ensure that United States mariners meet or exceed all international standards.

The Coast Guard has also issued regulations on drug and alcohol use, and is involved in efforts to implement sections of OPA 90 dealing with crew member qualifications.

The Merchant Marine Personnel Advisory Committee, established in January 1992, is the newest committee. Concerned with merchant vessel personnel regulations, the committee deliberates on entry-rating requirements, training for sea service, the use of training simulators, certification of instructors, examination requirements, drug-testing and alcohol-abuse programs, physical standards, the implementation of the STCW convention and OPA 90.

Three working groups have been set up. One is reviewing Coast Guard physical standards for mariners. The other two are reviewing the Coast Guard report, *"Licensing 2000 and beyond."* (See page 18 .)



Towing Safety Advisory Committee

Established in 1981, the Towing Safety Advisory Committee (TSAC) advises the Coast Guard on issues relating to the safe operation of towing vessels and barges. It assists in developing domestic regulations and forming United States positions at IMO meetings.

TSAC currently is involved in the regulation of tug/barge passenger vessel combinations, certification of passenger barges carrying recreational vehicles while in river service, and developing training standards for entry-level personnel.

TSAC has 16 members: seven from the barge and towing industry; one from the offshore mineral and supply vessel industry; two from port districts, authorities or terminal operators; two from maritime labor; two from shippers and two from the general public. Membership terms are staggered, with each term expiring two years from the date of appointment. Meetings are conducted usually twice a year at the call of the secretary. Special meetings are held as necessary.

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Chemical Transportation Advisory Committee

Members of the Chemical Transportation Advisory Committee (CTAC) are all experts and managers in the chemical transportation field with broad experience and knowledge relating to tanker operation and design, chemical hazards and safety precautions and port chemical facility operations. They have contributed immeasurably to the safe transportation of bulk hazardous materials by water.

Among many accomplishments, CTAC submitted recommendations on marine vapor control to the Coast Guard in June 1989. The following October, the Coast Guard published a notice of proposed rulemaking for marine vapor control systems in the *Federal Register* based on these recommendations. The final rule was published in June 1990.

In October 1990, the Coast Guard submitted a paper proposing international requirements for marine vapor control systems to the IMO Subcommittee on Bulk Chemicals. CTAC contributed substantially to this paper.

Currently a CTAC subcommittee is reviewing and updating the chemical tank barge regulations (46 CFR part 151). A preliminary draft of proposed revisions has been circulated to the full CTAC membership for comments.

At its August 1993 meeting, CTAC agreed to reconvene its Subcommittee on Vapor Control Systems to discuss technical and safety issues associated with the use of the systems at tank vessel cleaning facilities. This meeting was scheduled for April 1994.

Items under consideration for future action by CTAC include fire fighting capabilities at barge terminals, revision of the Chemical Compatibility Table, and the applicability of the Oil Pollution Act of 1990 (OPA 90) to chemical tankships.

The members of this committee volunteer their services without charge or compensation for travel and accommodations.

For more information on CTAC see *Proceedings* special issue on hazardous materials, July-August 1993, Vol. 50, No. 4, page 46.

National Offshore Safety Advisory Committee

Established in 1988, the National Offshore Safety Advisory Committee (NOSAC) is concerned with public safety in outer continental shelf activities. It has served as a valuable tool of the Department of Transportation in developing regulations and policies affecting offshore-related industries. NOSAC has also been instrumental in refuting an erroneous perception that the Coast Guard does not heed industry or public opinions when implementing programs.

NOSAC work groups are reviewing the International Safety Management (ISM) Code in relation to offshore vessels. The committee also advises the Coast Guard on an overall strategy for offshore vessel inspection aspects of maritime regulatory reform initiatives.

In addition, the committee is reviewing rules on tonnage, lifesaving equipment, drug-testing procedures, accommodations, fire protection and work place safety of offshore facilities.

NOSAC has 14 members, most of whom have executive experience and technical expertise in the exploration and recovery of offshore mineral resources. Two members represent petroleum producing companies, two represent offshore drilling enterprises, two represent offshore supply vessel companies and two represent offshore operation employees. One member represents each of the following: offshore facility construction, diving services, geophysical services, pipelaying services, environmental protection groups and the general public.

NOSAC members serve for three-year terms or until the commandant appoints a replacement. The terms are staggered, so that about one-third of the terms expire each year. No more than half of the members with expiring terms may be reappointed.

Advisory committee executive directors

CFIVAC LCDR Mark Bobal
(G-MVI) - 202-267-1093

MERPAC CDR Scott Glover
(G-MVP) - 202-267-0221

TSAC CAPT Gordon Marsh
(G-MTH) - 202-267-2967

CTAC CDR Kevin Eldridge
(G-MTH) - 202-267-1217

NOSAC CDR Adan Guerrero
(G-MVI) - 202-267-1094

The Coast Guard solicits for members for all its advisory committees at least once a year in the *Federal Register*. Interested persons can obtain membership applications by contacting the executive director of a particular committee.

Information on all federal advisory committees is contained in annual reports to the president issued by the General Services Administration.

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The new way of navigating . . .

Licensing into the next century

By Mr. Stewart Walker

For four months starting in March 1993, an eight-member group of Coast Guard officers and civilian personnel determined the direction of the marine licensing program into and beyond the year 2,000. The group was charged by RADM A. E. "Gene" Henn, chief of the Office of Marine Safety, Security and Environmental Protection, to submit a report after reviewing all issues affecting merchant vessel manning. Completed in November 1993, the final report, *"Licensing 2000 and Beyond,"* calls for sweeping changes.

Need for changes

The latest electronic navigation marvels and vessel control systems are a boon to the mariner and increase the operational safety of the vessel. Today's sophisticated shipboard technologies, however, demand complex knowledge, skill and operating proficiency. Advanced navigational, propulsion and collision avoidance systems, and new safety requirements must be mastered. Mariners not only must know the use and limitations of new equipment, but be prepared to return to the basics if it fails.

Despite the technological changes, most mariners are still trained in traditional apprenticeship programs. They acquire experience and knowledge through sea service under the tutelage of seasoned mariners, before being tested by the Coast Guard. Although basic skills and knowledge were successfully transferred in the past by this method, today's complex requirements demand a more sophisticated approach.

Testing

The method of determining professional qualifications of mariners has changed little since the early 1900s. The mariner demonstrates knowledge of a wide variety of subjects by passing a written test. (A multiple-choice format replaced the essay in the mid 1970s.)

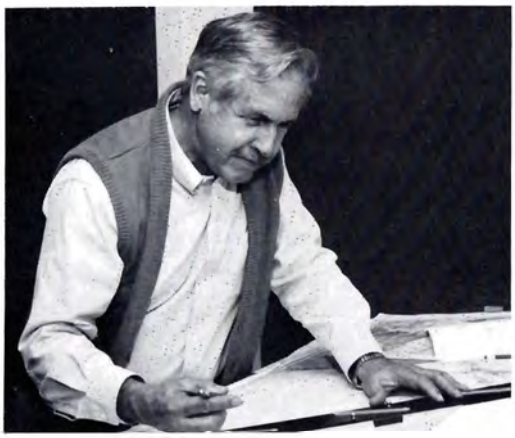
A frequent universal complaint has been that, while the written exam challenged the mariner's knowledge, it didn't address his or her practical skills. No formal schooling was required until the mid 1970s, when the completion of a radar training course became mandatory for some deck officers.

Revisions to the licensing regulations in 1987 only added formal training requirements for cardiopulmonary resuscitation and first aid. With the exception of a limited number of required training programs, little has changed inrequired training methods through this century.

International standards

Despite this age of advanced vessel construction and operational systems, most documented casualties continue to be caused directly by personnel failure. Acknowledging this trend, the maritime community convened an international conference on training and certification of seafarers at the IMO headquarters in London, England, in 1978. Attendees at this conference drafted the International Convention on Standards for the Training and Certification of Watchkeepers.

For the first time, international standards were set for the knowledge and training required of mariners. Emphasis was placed on additional formal training in safety at sea to supplement the knowledge gained through traditional sea service.



. . . and the old.

Recommended improvements

"Licensing 2000 and Beyond" contains detailed recommendations for improvements in all licensing and certification procedures, including to:

assess computer-based training and testing systems for applicability to mariner training and certification; (this includes research and development for desktop computer training programs stressing ship-handling, particularly for small vessels.)

develop and adopt principles for new computer-based systems and other training techniques to keep pace with changes in ship operations;

amend 46 CFR parts 10 and 15 to better align license requirements with actual competency needs;

strengthen oversight of courses through improved course approval criteria, increased monitoring, licensing of instructors and strong disciplinary actions against all who fail to maintain established standards;

increase the emphasis on formal training instead of seatime experience as a measure of competency;

adopt new methods for competency verification, including skill demonstrations, effective use of simulators and improved tests;

revise the upper level license structure and requirements to better match skills and knowledge with the needs of special vessels;

emphasize casualty prevention through leadership and vessel management training; and

establish qualified ratings which match competency requirements with performance expectations based on the needs of modern merchant vessels.

While these recommendations were made by individuals experienced in marine safety, they were from Coast Guard perspectives. As the maritime viewpoint was vital to the report's validity, it was submitted to the Merchant Marine Personnel Advisory Committee. (See page 15 for details on this committee.)

At a December 1993 meeting, this committee formed two working groups to review the recommendations of *"Licensing 2000 and Beyond,"* and comment on their suitability for adoption. The groups were to have reported by April 1994.

Copies of *"Licensing 2000 and Beyond"* are available upon request. Contract Mr. Perry Stutman, Merchant Marine Examination Branch, Merchant Vessel Personnel Division, Coast Guard headquarters.

Anyone wishing to comment on the report may write to CDR Scott Glover, executive director, Merchant Vessel Personnel Advisory Committee, Merchant Vessel Personnel Division.

Mr. Stewart Walker is the chief of the Merchant Marine Examination Branch of the Merchant Vessel Personnel Division.

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Keeping 350 training courses *ON COURSE*

By Mr. Mark Gould

All too often personnel error plays a major role in vessel sinkings, collisions and other marine casualties. It can be failing to perform correct procedures or taking improper corrective action that causes accidents to happen. In most cases, good mariner training helps minimize incorrect actions leading to potential casualties.

Three recent studies identify training as a major factor in maritime safety. The studies are: "Crew Size and Maritime Safety," by the National Research Council; "Tanker Navigation Safety Standards," contracted for by OPA 90; and "Licensing 2000 and Beyond," by the Coast Guard. *(See page 18.)*

"Licensing 2000 and Beyond" recommended to, "... place significantly increased emphasis on approved courses, and other more formalized methods of training and de-emphasize seatime ... as the principal guarantor of competency."

Approved courses

Before 1980, the Coast Guard only offered a handful of approved courses, mainly those specifically required by law. Today there are nearly 350 approved courses on a wide variety of subjects.

The Coast Guard approves training for one of three reasons. The course is:

- required by regulation,
- allowed to substitute for an examination, or
- allowed to substitute for a portion of the sea service required for a license or merchant mariner's document.

Required courses include radar, fire fighting, first aid and CPR. Those substituting for examinations include flashing light and life boat practical. The most common reason for approving a training course is to reward graduates with partial sea service credits.

Oversight

The Coast Guard conducts an oversight program to ensure that the courses are in continuous compliance with their approval letters. *"Licensing 2000 and Beyond"* strongly supported increased oversight. The report recommended that the Coast Guard ". . . strengthen oversight of approved courses by . . . improving and increasing monitoring of courses . . . and taking strong disciplinary actions including revocation against courses, schools and instructors who fail to meet the established standards."

The report also noted that " . . . until such time as the quality and integrity issues surrounding approved courses are resolved, no further move toward reliance on such courses should be contemplated."

The United States considers training program oversight to be critical in complying with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

Until recently, neither the Merchant Vessel Personnel Division of the Office of Marine Safety, Security and Environmental Protection nor the 17 Coast Guard regional exam centers conducted a systematic oversight program. During the last quarter of 1993, however, the Merchant Vessel Personnel Division audited approximately 20 courses. A variety of discrepancies were discovered, including:

- examinations were misgraded, resulting in students passing who should have failed;
- sections of approved curricula were omitted;
- students were taught from curricula which had been revised without Coast Guard approval; and
- instructors not accepted by the Coast Guard taught approved courses.

The most significant finding of this effort was that Coast Guard headquarters could not oversee nearly 350 courses on its own. Help was needed from field personnel.

In September 1993, senior officers at a regional examination center training and evaluator course volunteered to oversee all Coast Guard approved courses. The Merchant Vessel Personnel Division is training the inspectors and other marine safety office personnel in oversight procedures.

Audits

The backbone of the oversight program is periodic audits of approved courses. The audits are either announced, unannounced or customer surveys. In an announced audit, Coast Guard auditors identify themselves to the course giver and inform them of their purpose. In most cases, the course offerer or conductor does not receive advanced notice of an announced audit. In an unannounced audit, the auditor attends the course anonymously. The customer survey consists of regional examination center personnel interviewing individuals who have taken a course and received course completion certificates to determine if the course was conducted according to approved curriculum.

Announced

In conducting an announced audit, the auditor completes a physical plant inspection, class audit and student records check.

On a plant inspection, the auditor will ensure that the facility is well maintained, accommodating students in a safe, comfortable environment that is conducive to learning. Equipment used in hands-on training is tested for its working condition.

The intent of the class audit is to ensure that the course is taught in accordance with approved curriculum and that the instructor has been accepted by appropriate Coast Guard authorities. If only a portion of a course can be audited, the auditor interviews students to determine how the remainder was conducted in his or her absence.

The records audit is the most comprehensive portion of the audit. School records are reviewed to check their compliance with regulations and the course approval letter. The following items are also reviewed:

- adherence to approved curriculum;
- instructor acceptability;
- paperwork, including classroom attendance sheets and written examinations;
- grading of written examinations; and
- reports of any practical tests.

When the process is completed, the auditors discuss inspection results with school representatives. This is followed by a formal inspection letter to the school. Discrepancies are listed in the letter and the school is given adequate time to correct them.

Unannounced

The unannounced audit covers the same ground as one that is announced. The only difference is that neither the auditor nor the time frame of the audit was identified.

Customer survey

Customer survey audits are used mostly in lower priority courses. Applicants for mariners' documents who submit certificates of completion from approved courses are interviewed to determine if the courses are taught according to approved curriculum and the instructors have been accepted by the Coast Guard. These are informal queries and applicants are assured that the surveys have no effect on license or document applications.

Conclusion

Traditionally, the role of the Coast Guard in the licensing process has been that of quality assurance of the individual mariner with little regard for the process by which he or she acquires competence. This focus is rapidly evolving to involve close scrutiny of the training process.

This comprehensive focus will result in improved mariner competence only with an aggressive oversight program. The Merchant Vessel Personnel Division will provide thorough guidance to the field by ensuring that the program is consistently administered by the 17 regional examination centers.

The key to excellence in maritime courses is the oversight audit. The key players, however, will be all Coast Guard marine safety personnel throughout the country. These men and women will ensure that the courses are top quality by maintaining close liaison with those who offer them.

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Safety nets protect passenger vessels

The passenger vessel Azure Sea gets checked for safety in dry dock.

By LT Brian Peter

The United States is primarily a port state. Approximately 95 percent of the country's passenger cruise trade, 95 percent of cargo import and 75 percent of crude oil pumped ashore involve foreign flag vessels. Thousands of vessels which regularly visit United States ports are inspected by flag administrations from more than 55 different governments.

To protect its citizens and the environment, each port state is authorized to verify that provisions of several international conventions are met by examining foreign flag vessels. These examinations and any actions, such as detaining foreign vessels, are stipulated in control provisions of the conventions.

The United States exercises its international convention authority by conducting control verification examinations, tank vessel examinations, certificate of compliance, letter of compliance and freight vessel exams on a variety of vessels. All foreign vessel examinations are part of the control verification program, which minimizes casualties and pollution.

Admiral J. William Kime, commandant of the Coast Guard, has clearly articulated the role of the port state through a "safety net" illustration. The Coast Guard, according to Kime, views the protection of life, property at sea and the environment as a layered series of safety nets stretched out below the entire marine industry. The final layer is the port state.

The strength of the final layer lies in the control provisions of the international conventions and the control verification examination program.

International partner

The United States is signatory to numerous conventions promoting safety and pollution prevention. The earliest port state control provisions were adopted by England's Parliament in 1875. This legislation required that all vessels have a circle with a horizontal line marked on the side to prevent overloading. Board of trade surveyors were empowered to detain any vessel with this mark submerged. This legislation evolved into the International Convention on Load Lines in 1966. Article 21 of this convention contains the same basic control procedures in dealing with overloaded vessels as the 1875 legislation.

The sinking of the *Titanic* in 1914 prompted maritime nations to consider safety measures beyond load limits. The first convention for the Safety of Life at Sea (SOLAS) was adopted in 1929. Due to some ambiguous language dealing with port state authority, the United States did not ratify the treaty until 1934.

Port state authority to examine and detain ships not meeting convention provisions has been adopted in every SOLAS convention since 1934. Subsequent resolutions adopted by the International Maritime Organization (IMO) outline procedures for exercising port state authority.

The crew of the passenger ship ~~Scandinavian Dawn~~ musters for lifeboat drill.

Passenger ship safety

The roots of commitment of the United States Congress toward preventing substandard vessels from operating in territorial waters are deep. The reservations placed on the ratification of the 1929 SOLAS Convention for stronger port state authority demonstrated this commitment. This is especially true for passenger ships.

In 1965, a fire aboard the passenger vessel *Yarmouth Castle* killed 87 individuals. The passenger ships *Lakonia* and *Viking Princess* also suffered serious casualties in the mid-1960s. Consequently, the congress mandated in 1968 that all vessels accommodating 50 or more passengers must comply with fire safety amendments proposed to the IMO in 1966 to operate in United States waters. In 1969, marine inspectors boarded passenger vessels to enforce this requirement. The *Queen Elizabeth* and *Queen Mary* were among vessels which could not meet the new requirements, and therefore, could no longer board passengers from United States ports.

After major fires aboard the *Scandinavian Sea* in 1984 and *Scandinavian Sun* in 1985, it was determined that a stringent examination program for foreign passenger vessels was still needed. As recent as March 1993, the General Accounting Office recommended to congress: "*that inspectors performing cruise ship safety examinations receive formal SOLAS training and that the Coast Guard develop a cruise ship safety program management component, as part of the inspector module of the marine safety network project, to allow it to consistently document and analyze the results of cruise ship safety examinations.*"

Exam requirements

Guidance for Coast Guard officers and the maritime industry for implementing the control verification examination passenger ship program is in Navigation and Vessel Inspection Circular (NVIC) No. 1-93, dated January 21, 1993. This includes plan review and examination requirements. The latter are separated into three categories: **initial, annual and quarterly**.

Initial examination

The initial examination establishes the foundation for future exams throughout the life of the vessel. The IMO recognizes the importance of these examinations in the annex of resolution A.466 (Procedures for the Control of Ships) adopted on November 19, 1981. Section 1.3 of the annex states: "*The [following] control procedures should be regarded as complimentary to national measures taken by administrations of flag states in their countries and abroad, and are intended to assist flag states administrations in securing compliance with convention provisions in safeguarding the safety of crew, passenger and ships.*"

The resolution also recognizes that it may be difficult for administrations to exercise full and continuous control over some ships entitled to fly the flag of its state if they do not regularly call at a port of the flag state. This applies to a majority of over 140 cruise ships operating out of United States ports.

The initial exam is in three phases. The first phase is the concept review, which addresses interpretative issues before the vessel reaches the final design stages. Owners are encouraged to submit plans as soon as possible before steel is laid down.

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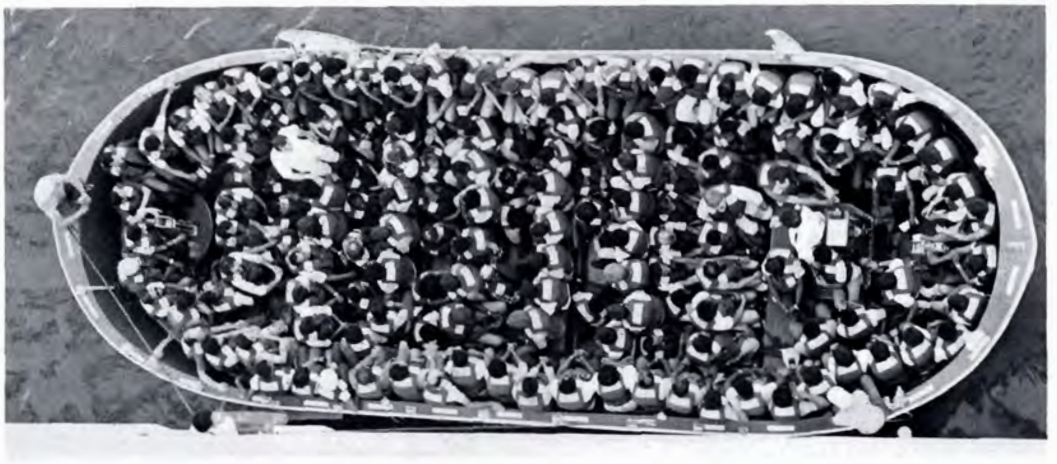
The second phase is the plan review, conducted by the Coast Guard's Marine Safety Center six months before the vessel's first port of call in the United States. The plan review identifies areas that may need closer examination and provides the reference for future control verification exams. Plans reviewed include fire control, lifesaving system, means of escape and general arrangement. Overall structural fire protection of the vessel is reviewed at this time and verified on board during the actual exam.

The final phase is the actual examination, which can take up to four days for large, complex, state-of-the-art vessels. A team of marine inspectors board the vessel either abroad or at the first United States port, and examine it against the reviewed plans. The examination areas include lifesaving, active and structural fire protection, engineering systems, and navigation safety and pollution prevention regulations.

Quarterly examination

The quarterly exam focuses on crew training by witnessing emergency, damage control and abandon ship drills. The basis for this exam is in IMO resolution A.681(17), adopted on November 6, 1991. This resolution was passed in response to a fire on board the *Scandinavian Star,* which killed 158 persons. The IMO acknowledges: "*the need for port states, not only to monitor compliance at all times with applicable maritime safety and pollution prevention standards, but also to include in their endeavors an assessment of the ability of ships' crews in respect of operational requirements relevant to their duties, especially with regard to passenger ships and ships which may present a special hazard.*"

An annex of the resolution defines the authority for port states to observe fire and abandon-ship drills to determine how familiar the crew is with the equipment and emergency procedures. It may include checking the muster lists, determining the ability of key crew members to communicate with each other and other ship personnel. It may also cover the operation of emergency power systems, auxiliary steering systems, bilge pumps, fire pumps and other emergency equipment. Equipment gone over during an annual exam may be checked again in a quarterly exam if necessary.



***Fantasy* crew tests lifeboat capacity.**

Training manuals, logs, emergency instructions and muster lists for emergency drills are all reviewed. Fire and abandon ship drills are witnessed to determine the crew's ability to carry out the emergency instructions.

Annual examination

The annual exam focuses on fire fighting, lifesaving, emergency and engineering systems. It is conducted to ensure that the vessel has maintained equipment, and that no changes have been made since the initial or last annual exam.

More innovations

The control verification examination program continues to introduce innovations such as overseas examinations of foreign passenger ships, and the implementation of a three-day training course in SOLAS theory and regulations.

With these developments, the safety net will grow stronger and stronger.

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Information sharing identifies weak safety nets

By LCDR Jack Cline

A great deal of information is collected about vessels during the course of Coast Guard marine safety operations. Much of it is stored in the Marine Safety Information System, an automated system that allows marine safety offices to retrieve historical data and to submit current information about specific vessels. This system is the primary information-sharing method used by the Office of Marine Safety, Security and Environmental Protection.

Some of this vessel data is proprietary, available only to the Coast Guard. But many facts are releasable to the public. The challenge is to separate the releasable information and provide it to the public efficiently.

Safety nets

Maritime safety can be likened to a series of safety nets intended to keep a ship, its passengers, crew, cargo and operating environment out of harm's way. The primary net is the safety management structure provided by the vessel owner and operating company. The second net is the classification society working with the vessel underwriters. The third is the flag-state administration and the final net is the port-state.

In theory, if the first three safety nets are functioning properly, the port state should not find many deficient vessels. If a large number of vessels with problems slip through the first three nets, there may be problems with the nets. The best way to mend them is to provide information identifying the weak links.

To provide releasable vessel information to the public from the Marine Safety Information System, the Coast Guard created the Port State Information Exchange.

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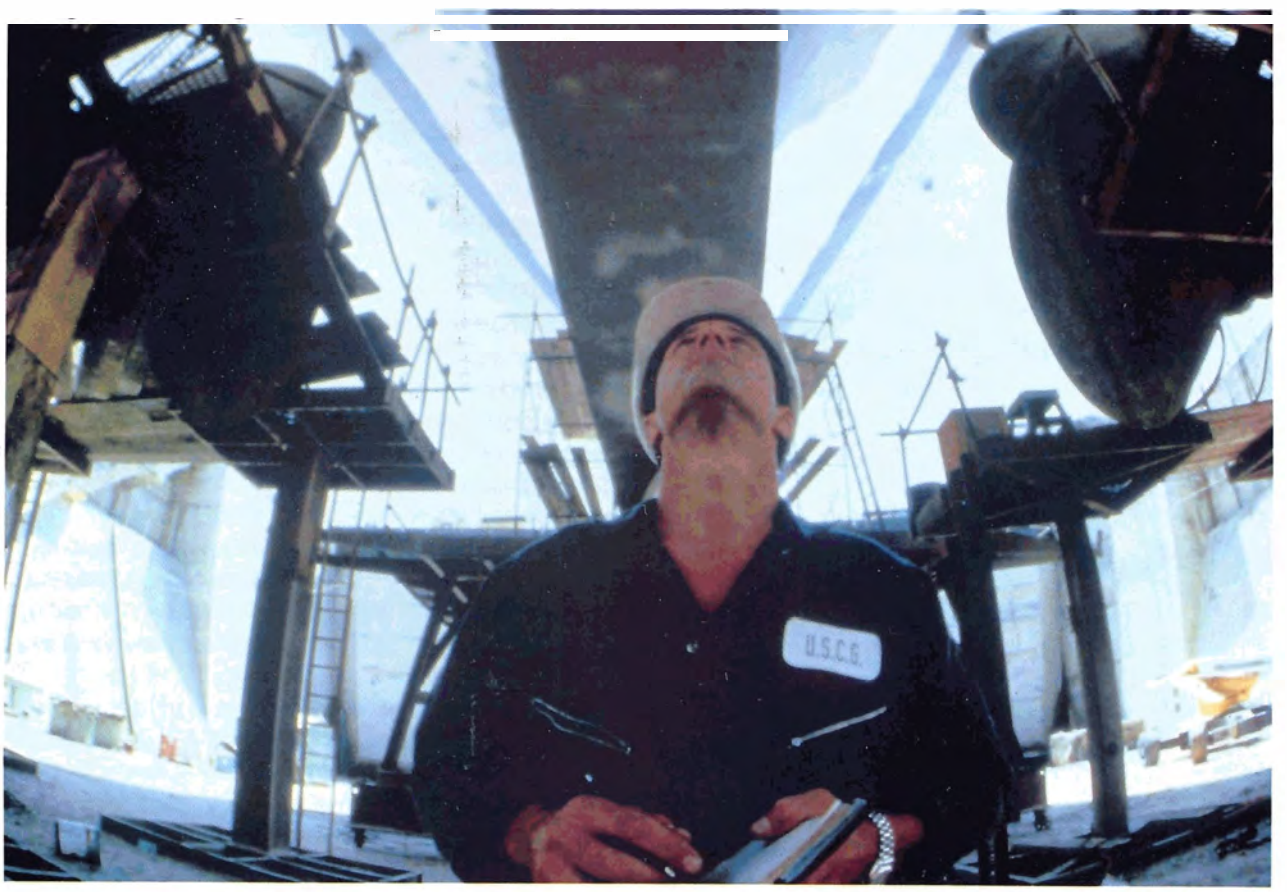
Data gathered during Coast Guard inspections is stored in the Marine Safety Information System.



Lifeboat inspection data is placed in reports of the Port State Information Exchange.

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Information exchange

The Port State Information Exchange is an automated system that provides specific vessel performance data to all interested parties in a simple, direct and timely manner. This allows every player in the maritime safety network the opportunity to be informed and to determine for themselves where the weak links are. Then the maritime community can influence deficient vessels to shape up or ship out.

Developed by the Information Management Division, the Port State Information Exchange resides on a SUN computer system and uses a relational database management system to prepare queries and reports. The data is extracted once each quarter from the Marine Safety Information System.

System use

The Port State Information Exchange is open to anyone with a suitable computer, modem and software. Access instructions are available from the Information Management Division upon request.

Once a user has logged into the system, he or she can request information on a particular vessel by entering its vessel identification number. (A United States flag vessel would have a Coast Guard document number like, "D111111," and probably a Lloyd's number like, "L111222." Either number may be used to locate a vessel.)

Once a vessel is located, the system will provide a report on it which can be displayed on a computer screen or transferred to the computer if the necessary software is available.

Data provided

Reports provided by the Port State Information Exchange contain three logical data sections. The first contains vessel particulars, including the name, primary and alternate identification numbers, flag, call sign, service, length, breadth, depth, tonnage, cargo authority and stability data.

The second section contains a summary of vessel contacts with the Coast Guard since January 1, 1989. Specific information includes an internal Coast Guard case number, dates of contacts, number of deficiencies noted, a brief description of the nature of the contacts and details about the deficiencies.

The third section contains a list of documents and certificates held by the vessel, and their dates of issue and expiration.

The information is updated quarterly.

Plans

The following items may be added to the Port State Information Exchange database by the end of 1994: search by vessel name, detailed deficiency facts and former vessel names where possible.

The Port State Information Exchange system will run for several years before it is replaced by the International Ship Information Database, which will contain vessel information from other countries as well as the United States. The Coast Guard is working with the IMO on a feasibility study for the development of this international system.

Conclusion

This information-sharing process allows all the maritime members throughout the world to identify weak areas in the fabric of the safety nets in the maritime safety network and repair them before serious harm can result. It will also enable players in the global maritime community to be more informed in their selection and use of vessels.

A prudent selection process will vastly improve the safety of ships, their crews, cargoes and operating environments. It will also cause owners of substandard ships to bring them up to par or send them to the scrap yard.

LCDR Jack Cline is assigned to the staff of the Program Support Branch of the Information Management Division.

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Riverboats play "musical chairs" on western rivers

By LCDR Michael L. Schafersman

Reminiscent of the days in the late 1800s when lofty steamers swarmed on western rivers, riverboats are again multiplying on the Mississippi and other major watercourses from Iowa to Louisiana.

"Less than 30 months ago, the riverboat market consisted of three casino boats in Iowa and now there are 22 in service, 31 under construction and 50 in design," according to Larry Pearson, publisher of *Passenger Vessel News,* in a January 1994 interview. And this may be just the beginning of an explosive growth of passenger vessel trade on western rivers.

Presently, riverboat gambling is legal in Iowa, Illinois, Mississippi, Missouri, Louisiana and Indiana, and legislation is pending in Texas, Ohio, West Virginia, Maryland and Virginia. Some industry representatives predict that there will be more than 200 riverboats in operation within the next few years.

Iowa

On April 1, 1991, the riverboat gambling industry was reborn in the state of Iowa. On that date, three vessels, the *President*, *Diamond Lady* and *Dubuque Casino Belle* initiated the new riverboat explosion. The *President*, a 3,000-passenger vessel built in 1924, was docked in Davenport. The 800-passenger *Diamond Lady*, built in 1991, was quartered in Bettendorf and the *Dubuque Casino Belle*, also built in 1991, accommodating 2,000 passengers, docked in Dubuque. The area dubbed itself, "the riverboat gambling capital of the world," a title to be lost in less than two years.

During 1991, two more vessels entered into Iowa's riverboat gambling market. The 600-passenger *Mississippi Belle II*, built in 1986, docked in Clinton and the *Emerald Lady,* an 800-passenger vessel which was built in 1991, went to Fort Madison. This would peak the Iowa riverboat gambling season.

In 1992, the state of Mississippi passed legislation permitting unlimited gambling on riverboats. Restricted by Iowa's $200 loss limit and the state's small population base, the *Diamond Lady* and *Emerald Lady* sailed south to a more lucrative market in Mississippi.

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There could be 200 riverboats in operation in the near future.

Photo courtesy of Elder Photographic, Inc.

The game of musical boats began. . .

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In January 1993, the *Sioux City Sue*, a 500-passenger vessel homeported in Sioux City, became the first gambling riverboat to operate on the Missouri River. In March of the same year, the *Dubuque Casino Belle* moved south to a new homeport of St. Charles, Missouri.

The casino gambling market is not lost in Iowa, however. Three new riverboats, smaller than the previous ones, are planned for proposed locations in Marquette, Dubuque and Fort Madison.

Illinois

In September 1991, Illinois entered the riverboat gambling arena with the *Alton Belle*, a 500-passenger vessel homeported in Alton. Two months later, the *Par-A-Dice*, a 1,200-passenger vessel commenced operation in Peoria. The following spring, an 800-passenger sternwheeler, the *Casino Rock Island* added to the casino fleet.

By the end of 1993, nine floating casinos steamed the rivers of Illinois. They included the *Silver Eagle*, *Players* (the first gambling riverboat on the Ohio River), *Northern Star*, *Empress I*, *Empress II* and *Casino Queen*. A tenth, the *Southern Star*, opened in Joliet in January 1994.

Illinois' experience with riverboats was much different than that of Iowa's. With the exception of the *Alton Belle*, which was replaced by a larger boat, no gambling vessel left its original homeport in Illinois. In November of 1993, a slow month for casinnos, 1.2 million people visited the state's nine riverboats.

Gulf Coast

Presently there are 17 floating casinos operating in the state of Mississippi. Only three, the *President Casino-Mississippi, Diamond Lady* and *Emerald Lady,* hold valid certificates of inspection. The remaining 14 are permanently moored structures, not subject to Coast Guard inspection requirements.

In November of 1993, Louisiana entered the market in a big way with the *Star Casino*, a 1,260-passenger riverboat moored in Lake Charles, and the *Players Riverboat Casino II*, a 1,600-passenger gambling vessel docked in New Orleans. Several additional vessels are planned for New Orleans in the near future.

Missouri

Presently, 21 companies have applied to the Missouri Gaming Commission for casino licenses. According to the *Kansas City Star*, the first-year attendance for the ten planned riverboats will be over 14 million passengers. There are currently three vessels — the *Argosy* (formerly the *Alton Belle Casino*), *Casino St. Charles* (formerly the *Dubuque Casino Belle*) and *Quad City Queen* — idled in Missouri awaiting approval to operate from the state gambling commission.

They may have to wait longer. In late January 1994, the Missouri State Supreme Court ruled that "games of chance" are prohibited by the state's constitution. Once again, the citizens of Missouri must approve riverboat gambling this time by a state constitutional amendment.

Safety inspections

From the perspective of a marine inspector, the explosion in the number of riverboats presents a tremendous challenge. Each one is unique. Some riverboats are designed and built in accordance with the small passenger vessel regulations in 46 CFR Subchapter T. Others are two piece units (integrated barges and tows), where the barge is inspected as a large passenger vessel under 46 CFR Subchapter H, and the towing unit is examined as an uninspected vessel. Finally, other riverboats are traditional large passenger vessels built and inspected under Subchapter H.

It must be noted that gambling riverboats are not classed by the American Bureau of Shipping. The Coast Guard is solely responsible for the inspection and plan review.

One of the proposed casinos for St. Louis, the *Admiral*, will be a permanently moored uninspected structure. Another, the *President*, built in 1924, is "grandfathered" from numerous current inspection regulations. Finally, to add to the array of regulatory combinations, the *President Riverboat Casino-Louisiana*, is an integrated riverboat (Subchapter H) and barge (Subchapter H), where the power unit is a 1,000-passenger vessel pushing a 1,500-passenger barge.

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The President excursion riverboat, built in 1924, accommodates 3,000 passengers.

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The uninspected, normally non-passenger carrying towing unit (the power module), and the inspected passenger barge present an interesting balancing act for a marine inspector. (Note: the propulsion, steering systems and electrical generators contained on the power module have been defined by the Coast Guard as an inland uninspected towing vessel.) Historically, the Coast Guard has not inspected towing vessels in an integrated tug/barge combination, and there is no congressional mandate to inspect inland towing vessels.

With this in mind, a marine inspector must ensure the safety of the passengers without the statutory authority to inspect the power module. The commandant recognized this perplexing situation in 1990, and issued a policy letter to assist marine inspectors in carrying out their responsibilities. This letter required marine inspectors to examine the power module, not as an inspected passenger vessel, but as an inland towing vessel. The inspector was directed to pay specific attention to all shipboard systems which were common to the two-piece unit to ensure its safety.

As more and more new designs in riverboats were reviewed, it became evident that Coast Guard policy was inadequate to deal with the complex issues involved. Consequently in December 1993, the commandant issued another policy letter canceling the 1990 one. Now tug/barge combinations carrying passengers must be treated as single units and comply with many of the requirements in Subchapter H. In addition, each vessel (tug and barge) must have independently functioning emergency systems.

A frequent question asked by riverboat operators is, "why are almost identically sized boats governed by entirely different material safety, licensing and manning requirements? **The answer is gross tonnage.** This is a technical and regulatory measurement to calculate the vessel's approximate volume. Once arrived at, the gross tonnage determines which federal regulations are to be followed in the construction and inspection of the vessel. Routinely, very creative measures are used by naval architects to reduce the regulatory tonnage, thereby reducing the regulatory burden.

Excellent illustrations of this are the *Diamond Lady* and the *Casino Rock Island*. The former is a 1,168-gross ton 800-passenger riverboat, and the latter is a 96-gross ton vessel accommodating 1,000 passengers. Since the *Casino Rock Island* is less than 100 gross tons, it is only required to meet the less strict small passenger vessel regulations, even though it carries more passengers. Since the *Diamond Lady* is greater than 100 gross tons, it must meet the more stringent regulations under Subchapter H.

For example, Subchapter H requires that large passenger vessels must have liferafts for 10 percent of the passengers, motorized rescue boats, two fire pumps, two bilge pumps and an emergency generator. On the other hand, the *Casino Rock Island*, as a small passenger vessel, is not required to have liferafts, rescue boats or an emergency generator. However, when it comes to fire protection, the regulations are the same for all vessels carrying more than 150 passengers.

Casino riverboat operators continually change their decor. They move machines and tables, and add new equipment. Such weight changes can alter the stability, an analysis of which was approved during the initial certification. Consequently, the operators must account for all weight added and removed.

After several modifications, a riverboat operator may be required to submit revised stability data. For example, in November 1993, after numerous modifications, the *Par-A-Dice*, moored in Peoria, Illinois, was directed by the Coast Guard Marine Safety Center to review its initial stability analysis only two years after its first inspection certification.

Licensing

There are some tough licensing and manning issues involved when it comes to gambling riverboats. Should a licensed person required to be on board receive credit for time served dockside? And when a riverboat is operated shore side for months with shore power, sewage and fresh water connections, should a licensed engineer be required? What type of credit should a licensed captain or engineer receive for dockside service? Is there a need for a navigating captain?

Presently, the regional examination at MSO St. Louis does not give credit to a captain or engineer for dockside service. Questions about required manning are addressed on a case-by-case basis by the officer-in-charge, marine inspection.

"Only time will tell if the great riverboat explosion of the 1990s will blast ahead full speed. . . "

Built in 1991, the Casino Rock Island carries 1,000 passengers.

Conclusion

The riverboat gambling market has dramatically changed the excursion business on the western rivers. There have been winners and losers. The winners are the naval architects, shipyards, casino operators and local river communities.

When casino boats enter an area, the small dinner cruise boats either convert to gaming or disappear. In the words of one operator, *"I can't compete against casino boats who provide free boarding, food and drink."*

Only time will tell if the great riverboat explosion of the 1990s will blast ahead full speed or whether it will fizzle out like the steamers of the 1890s.

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Making a difference

Fishing industry regulations make positive impact

By Mr. Timothy J. Farley

It's a cold dreary morning. The alarm clock shrieks. You are jolted awake, quickly roll over and pound the snooze alarm, draw the warm covers up a bit and pray for just a few more peaceful moments of sleep. After awhile you reluctantly rise, stagger to the bathroom and gingerly step into a nice warm shower. You ease into another day.

Now, imagine waking to screams, "get your immersion suit, we're going down!" In just seven minutes, about the time it takes to brew a pot of coffee, you must leap out of bed, throw on an immersion suit, grab your emergency position indicating radiobeacon (EPIRB) and try to release your liferaft. Then you must face death directly -- jump blindly into the dark, churning water of the Bering Sea. Matching a pair of socks in the morning seems rather dull by comparison.

Hands-on training focuses on liferaft and immersion suit.

Fishing vessels idle dockside in Alaskan harbor.

The *Majestic* saga

On the morning of September 22, 1992, the veteran five-man crew of the *Majestic*, a 70-foot wooden commercial fishing vessel, set out on a routine trip in the Bering Sea. The weather was somewhat nasty — 50 degrees, rain, 35-knot winds and 10-foot seas — but not out of the ordinary for late September in Alaska.

The *Majestic*'s captain had slowed the vessel to reduce the pounding and give the crew some rest. He knew they must conserve energy for the almost Herculean effort that lay ahead — the few days of round-the-clock fishing that comprise the halibut season.

What the captain and crew didn't expect was that the *Majestic* would sink from under their feet. One minute they were taking the usual roll, the next moment they were fighting for their lives. Suddenly, without warning, the vessel refused to recover, listed and started to sink.

The crew immediately sprang to action, donning their immersion suits and deploying safety gear they hoped would save their lives. In seven minutes, they were left alone in icy 45-degree water to fend for themselves. Fortunately, they were prepared. They had conducted drills, rehearsed individual emergency duties and had become well acquainted with all of their survival equipment.

These five fishermen are living testimonials to the positive impact of the new commercial fishing industry vessel safety regulations. Without the required safety equipment, drills and training, they would not have survived. Their rehearsals enabled them to respond correctly to the crisis and significantly increase their chances of survival.

Without immersion suits, these men had a 50-percent chance of surviving during their first 40 minutes in the water. The longest they could possibly have lasted was two hours. Remarkably, they were plucked safely from the forbidding water after six hours. They had survived this incredible ordeal by activating the EPIRB, donning immersion suits and keeping a positive attitude.

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Coast Guard inspector checks distress apparatus aboard fishing vessel.

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No isolated case

The *Majestic* incident is not an isolated case. Numerous fishing vessel crews all over the United States attribute their survival from similar vessel mishaps to equipment and drills required by the Coast Guard. Fathers, mothers, sisters, brothers, children and friends aboard such fishing vessels as the *Discovery*, *Deborah Lee*, *Tripolina*, *Lucky One*, *Miss Barbara* and *Westwind* might not be alive today, but for the required drills, training and equipment. In Alaska alone, fishing vessel fatalities were nearly halved in 1993 from the usual 35 to 18.

"Commercial fishing is one of the nation's most dangerous occupations," according to the Department of Labor. During the past ten years, the casualty rate in the commercial fishing vessel industry has averaged approximately 250 vessels and 100 lives per year. Until 1991, uninspected fishing vessels had only to meet minimal safety equipment requirements that might apply to recreational vessels.

1988 act

In response to the poor safety record, Congress passed the Commercial Fishing Industry Vessel Safety Act of 1988, assigning the responsibility to the Coast Guard to develop and implement mandatory safety regulations for the industry. Effective September 15, 1991, these regulations require the carriage of lifesaving and fire protection equipment, immersion suits, distress signals and EPIRBs aboard commercial fishing vessels.

Public awareness

Initially, the Coast Guard focused on informing the public about the new regulations. Information booths were set up at national, regional and local trade shows throughout the country. Pamphlets, videos and press releases were distributed by the thousands. Articles were published in such widely read trade magazines as the *National Fisherman and Commercial Fisheries News.*

Valuable outreach education has been accomplished through voluntary dockside examinations. The Coast Guard arranges an informal visit to a fishing vessel and examines its safety equipment, determining if the regulations are satisfied. When a vessel is found in compliance, a special decal is posted on their pilothouse window. If a vessel does not comply with the regulations, deficiencies are pointed out and explained to the captain or other responsible crew member. Violations or citations are not issued to a vessel after a voluntary dockside exam. After correcting the deficiencies, a commercial fishing vessel may obtain a decal.

To prevent violations or fines imposed after at-sea boardings of commercial fishing vessels, owners and operators are encouraged to contact their district Coast Guard fishing vessel safety coordinator and arrange for a dockside examination. Time spent dockside learning about necessary safety equipment and successfully completing a voluntary examination may not only avoid fines and delays on the fishing grounds — it could save lives.

Conclusion

Currently there are 45 Coast Guard officials assigned to conduct dockside examinations. In addition, other active duty, reserve or auxiliary members have undergone special training to qualify as fishing vessel dockside examiners.

These efforts are paying off. During the first six months of 1993, more than 4,200 dockside exams were conducted and 2,400 decals issued. This is twice the number of examinations completed in all of 1992.

With an estimated 110,000 to 130,000 commercial fishing vessels in operation, there is much to be done. However, significant progress has been made and will continue to be made for the sake of commercial fishing vessel safety.

In the words of Commandant Admiral J. William Kime, *"the Coast Guard is committed to improve safety in the commercial fishing industry."*

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"Commercial fishing is one of the nation's most dangerous occupations,"

Department of Labor

The lack of required machinery guards can have tragic consequences.

Waterfront facility regulations EVOLVE

By LCDR Mark O'Malley

The goal of the Coast Guard's waterfront facility regulations is to protect people, property and the environment from harm. The facilities regulated under the Code of Federal Regulations (CFR) are those that transfer oil and hazardous materials to or from vessels, and include fixed shoreside and mobile facilities, such as tank trucks. Commodities regulated include packaged explosives, bulk oil, bulk liquid hazardous materials, bulk liquefied gases, containerized cargoes and bulk solid hazardous materials.

Altogether, four separate CFR sections deal with the Coast Guard's primary safety regulations for oil and hazardous materials transferred to or from vessels by onshore facilities.

A 1980 review of the waterfront facility regulations indicated that revisions were needed, particularly concerning clarity, risks and updated procedures. A four-phase project to revise the regulations is halfway completed.

33 CFR part 126
Handling of explosives or other dangerous cargoes within or contiguous to waterfront facilities

Originally written in the 1950s, this CFR portion was for that time extremely comprehensive: It set requirements for facilities handling any type of oil or hazardous material, packaged or in bulk. However, the requirements later duplicated and, in some cases, conflicted with those in 33 CFR parts 154 and 156.

The first phase of the project established regulations pertaining to liquefied natural gas in part 127. The second and third phases transferred regulations for waterfront facilities handling bulk oil, bulk liquid hazardous materials and bulk liquefied hazardous gas from part 126 to other sections under 33 CFR.

Currently, the regulations under 33 CFR 126 set some basic safety requirements, but do not specifically address potential problems resulting from cargo handling techniques such as containerizations. These techniques were developed after the 1950s, when this part was written.

This section will be revised significantly during phase four of the project.

33 CFR part 127
Liquefied natural gas waterfront facilities

Published in 1988, this section provides comprehensive safety requirements for the design, construction, equipment, operations, maintenance, personnel training, fire fighting and security at facilities transferring and storing liquefied natural gas in bulk. Before this part was developed, bulk liquefied gas facilities were regulated under 33 CFR part 126.

33 CFR part 154
Facilities transferring oil or hazardous material in bulk

This part establishes equipment and operational requirements for marine facilities transferring oil or liquid hazardous materials to or from vessels with a capacity of 40 cubic meters or more. Originally written to address only pollution prevention requirements for facilities handling oil in bulk, this part was revised in 1990 by phase two of the project to include bulk liquid hazardous materials and add specific safety requirements.

33 CFR part 156
Oil and hazardous material transfer operations

Subpart A of this section establishes procedures and equipment requirements which specifically address the transfer of oil and liquid hazardous materials in bulk. Like part 154, the applicability of this section is limited to marine terminals which transfer oil or hazardous materials to or from vessels with a capacity of 40 cubic meters or more.

Originally, this part only addressed facilities handling oil in bulk, but it was also revised in 1990 by phase two to include bulk liquid hazardous materials.

The overlapping, sometimes conflicting facility regulations were a source of confusion to both Coast Guard and industry personnel with respect to their proper application and enforcement. The problems generally fell into three categories.

1) Clarity

Operators of bulk liquid terminals were required to comply with three different parts of the CFR, two of which focused on the transfer operation and the third contained basic safety regulations. Many requirements overlapped and some contradicted others.

2) Risk basis

Regulating a wide variety of commodities under part 126 did not allow appropriate precautions based on risk. Generally, commodities stored and transferred in bulk present a greater risk to persons, property and the environment than packaged commodities. Consequently, the requirements for bulk liquefied natural gas facilities in part 127 are more stringent than those for packaged hazardous materials facilities.

On the other hand, the requirements for facilities handling other bulk liquefied hazardous gases, such as petroleum gas, were originally much less stringent than those for bulk liquefied natural gas facilities, despite the fact that the risk is nearly the same.

3) Updated procedures

Until the recent changes, part 126 applied to all facilities regardless of the hazardous material being transferred. Now, this section applies to the handling of packaged, bulk solid and certain liquefied gas hazardous materials.

The storage requirements in part 126 addressed pierside warehousing operations of the 1950s. They are not adequate for modern packaged cargo handling methods, and have only limited application to liquefied hazardous gas operations.

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Port of Baltimore, Maryland.

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COMPLETED ACTIONS

Liquefied natural gas facilities

A final rule was published in the *Federal Register* on February 7, 1988, (53 FR 3376) that established comprehensive safety requirements for the design, construction, equipment, operations, maintenance, personnel training, fire fighting and security in 33 CFR part 127.

Bulk oil and liquid hazardous material facilities

A final rule was published in the *Federal Register* on September 4, 1990, (56 FR 54757) amending part 126 to cancel its applicability to bulk liquid hazardous materials. It transferred this applicability to parts 154 and 156, and added facility safety requirements to part 154.

Explosives and other dangerous cargoes

An advance notice of proposed rulemaking was published in the *Federal Register* on January 13, 1993, (58 FR 4127). It proposed changing part 126 to establish safety precautions for the handling of explosives and other hazardous materials within or contiguous to waterfront facilities. The facilities affected include those handling break-bulk, containerized or dry bulk hazardous materials. A notice of proposed rulemaking is expected to be published in 1994.

Port of Savannah, Georgia.

ONGOING ACTIONS

Liquefied hazardous gas facilities

A notice of proposed rulemaking was published in the *Federal Register* on October 5, 1993, (58 FR 51906) proposing to expand the applicability of part 127 to cover 19 liquefied gases (in addition to natural gas) transferred in bulk to or from vessels. To accomplish this, both the content and applicability of the requirements in part 127 would be modified to reflect the different hazards of liquefied natural gas and the other gases, particularly toxicity and flammability. This notice also proposed to delete the applicability of part 126 to these facilities. A final rule is expected to be published in 1994.

Conclusion

When completed, the waterfront facility regulatory project will clarify regulations for the handling of oil and hazardous material, making them easier to understand and apply. As a result, these regulations will help to ensure that commodities are handled safely, thereby protecting people, property and the environment within United States ports.

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Coast Guard rules on terrorism

Passengers aboard the ~~Achille Lauro~~.

By LT Glena T. Sanchez

The Coast Guard has proposed regulations against acts of terrorism. If adopted, these rules will establish minimum equipment and performance standards to improve security on passenger vessels over 100 gross tons, carrying more than 12 passengers, on voyages of more than 24 hours on the high seas.

These regulations are considered necessary because voluntary compliance with 1987 IMO guidelines has not adequately improved vessel and terminal security. Public Law 99-399 recommends that the secretary of the Department of Transportation propose legislation so that these guidelines could be enforced if not adhered to voluntarily.

IMO guidelines

Terrorist acts against cruise ships are not new. However, it was the seizure of the *Achille Lauro* in the Mediterranean in 1985 that prompted action. An American citizen, Leon Klinghoffer, was murdered. The terrorists dragged him in his wheelchair to the side of the ship, and, in cold blood, shot him in the forehead. His body and wheelchair were then thrown over the side into the sea.

This incident prompted the IMO to develop, *"Measures to prevent unlawful acts against passengers and crews on board ship."* These guidelines outline procedures to improve port and vessel security.

In April 1987, the Coast Guard published the IMO measures in the *Federal Register,* explaining the United States implementation strategy. Voluntary compliance by port and vessel operators was at the heart of the strategy. The Coast Guard acknowledged that all United States ports and passenger vessels have unique features. Therefore, a security program would best be carried out on a port-by-port and ship-by-ship basis, using the IMO measures as guidelines.

It was hoped that within four years, port and vessel operators would comply with the measures, using them as a basis for their own security programs. After four years, less than half of the operators had adopted the measures, according to Coast Guard security assessments.

Coast Guard proposal

The Coast Guard concluded that in order to successfully implement the IMO measures, there had to be formal requirements. A notice of proposed rulemaking for *"Passenger Vessel and Terminal Security Regulations,"* was published in the *Federal Register* on March 25, 1994 (59 FR 14290). (See page 55.)

Costs

The Coast Guard expects that the cost to industry for implementing the proposed regulations will be approximately $9 million per year. The first year expense, however, will be about $26 million to cover initial equipment purchase, training and plan development.

These costs, while significant, are clearly offset by the impact an act of terrorism would produce. Terrorist incidents on ship or in port are extremely costly in terms of loss of life, property damage and lost revenue. Cruise lines operating in the Mediterranean still have not recovered financially from the *Achille Lauro* incident, which was nearly nine years ago.

Rationale

Most international terrorist incidents have taken place on land and in the air. In fact, the number of potential targets on land and in airplanes far exceeds those at sea or in ports.

While most incidents have occurred outside the United States, the 1991 World Trade Center bombing in New York exposed our vulnerability.

As high visibility targets, such as the World Trade Center and the United Nations, increase their security, terrorists are expected to seek targets with little or no security.

The proposed regulations are intended to make the maritime cruise ship industry an arena that terrorists will avoid. They would provide a significant measure of security for United States passengers in today's uncertain world.

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Sharing expertise pays big dividends

By LTJG Wayne Clayborne

Today you can't read a newspaper, news magazine or trade journal without seeing articles on the "global economy," the "global environment" or "globalism," describing international environmental alliances, national trade policies and new world markets. Indeed, many United States shippers and regional port authorities have invested heavily in improving their markets by seeking new global customers, promoting their expertise and service advantages globally, and tailoring their vessel operations or port facilities to better accommodate international customer needs to increase their market share and profits.

International safety team

It is within this global framework that the Office of Marine Safety, Security and Environmental Protection established the Marine Safety Training and Assistance Team to help implement the Coast Guard's overall international strategy as a global leader in marine safety and environmental protection.

The team was specifically formed to respond to many training requests from nations around the world seeking Coast Guard expertise in maritime safety, port operations and security, and environmental protection. Such requests have come from countries in eastern Europe, the Persian Gulf, Indian Ocean, Far East, West Africa, and Central and South America.

Headquartered at the Marine Safety School in Yorktown, Virginia, the safety training team was established in September 1993 with 11 members.

The team's international training deployments are coordinated by the International Affairs staff at Coast Guard headquarters, which also secures travel and support funding from Department of State and Department of Defense international funding sources.

Specific requests

With the end of the Soviet Union, there is a general tendency for countries to worry less about territorial defense and more about marine pollution, ports and harbors, and fisheries. Consequently, there is a great increase in the number of countries seeking training in these areas. Thus far, in FY 1994, the Coast Guard has received requests from more than 20 nations for training and assistance in marine pollution and port safety/security.

To help meet the demand, the team first visited Panama and Montevideo, Uruguay. Another trip to Trinidad, Bolivia, and Lima, Peru, was scheduled for March-April 1994. Team visits to Columbia, Argentina, Indonesia, Poland and Tanzania also are expected during FY 1994.

Training

The team promotes the commandant's and the Department of State's nation-building goals by assisting countries in improving their maritime abilities through proper management of their flag fleet and port facilities.

The failure of many foreign nations to comply with international maritime treaties demands a strong United States port-state control program (enforcement boardings by the Coast Guard to ensure the safety and protection of United States ports and environment). However, an increase in maritime competence, particularly by developing nations, can ultimately lead to a decrease in demand for United States port-state control.

By directing training efforts at the root of the problem instead of attacking the symptoms by detaining substandard foreign flag vessels calling at United States ports, as we do now, the Coast Guard will be far more successful in promoting marine safety. Instead of just reacting, the Coast Guard is able to achieve more positive results by offering program expertise through the Marine Safety Training and Assistance Team.

Goals

The new training team will enable the Coast Guard to:

- recognize critical international issues at the earliest stage and use resources to solve problems;
- expand the range of assistance to developing countries to help them administer their maritime affairs effectively and comply with international maritime agreements;
- strengthen international relationships and coordinate plans by exchanging information;
- encourage flag-state compliance with international agreements; and
- communicate to governments of substandard flag vessels calling at United States ports a willingness to assist them in establishing responsible maritime administrations.

Conclusion

The Coast Guard must keep pace with the world as it changes. By maintaining its leadership role in the international maritime community, and vigilantly assisting developing nations to achieve maritime competence, the Coast Guard can not only keep up with global change, but contribute positively.

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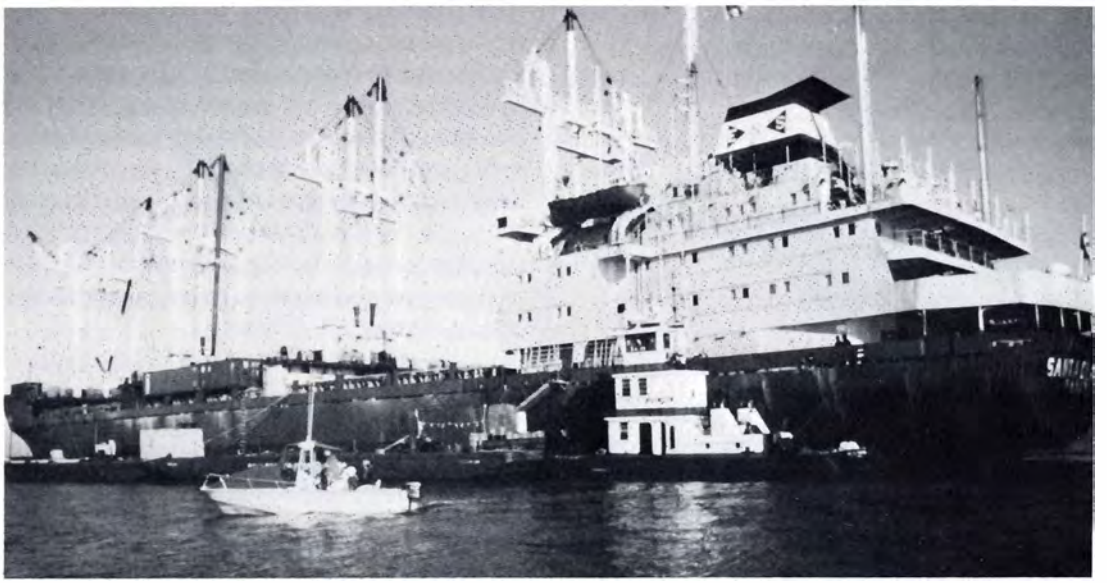

Santa Clara I's hazardous cargo loss in 1992 provided the impetus for a new inspection program.

"Hazmat" enforcement takes new direction

By LTJG Wayne Clayborne

In response to persistent noncompliance with hazardous materials (hazmat) transportation regulations by shippers and carriers, Congress recently authorized the Coast Guard to establish a national container inspection program to oversee the transportation of packaged hazmat by vessel. This was preceded by several key events.

History

During a six-month trial program in 1985, the Coast Guard conducted random inspections of intermodal freight containers in 21 ports to determine the amount of hazmat shipped and the level of compliance with hazardous materials regulations under 49 CFR parts 171-180. An alarming level of noncompliance was uncovered. Nearly 25 percent of the containers inspected had one or more violations.

In 1985 and 1988, packaged hazmat programs conducted by the Department of Transportation (DOT) were audited by the General Accounting Office and a DOT task force. Recognizing the vital link the Coast Guard provides between land, water and air transport, these audits stressed the need for improved coordination among the Coast Guard and other DOT administrations. It was recommended that the Coast Guard start a dedicated container inspection program for hazmat.

In January of 1992, the freight vessel *Santa Clara I* lost 21 containers overboard during a storm off the New Jersey coast. Four of these containers were fully loaded with drums of toxic arsenic trioxide. A Coast Guard investigation revealed improper stowage on deck to be the primary cause of the incident, along with numerous other safety violations. The incident generated much public and congressional interest, and a recommendation of a marine board of inquiry that a national container inspection program be established.

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The Coast Guard conducts . . .

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Historically, the Coast Guard has focused on ocean carriers, citing them for transporting containers which are not in compliance with hazmat regulations. These carriers, however, are usually unaware of the internal condition or the true contents of containers they transport. Instead, most serious violations are caused by improper load preparations by shippers and intermediaries, such as freight forwarders and consolidators. Too often, hazmat shipments have been prepared by shippers and consolidators unfamiliar with the marine environment, and unskilled in the proper packaging and stowage for ocean transport.

Findings

In the spring of 1993, the Coast Guard conducted pilot programs in the ports of New York and Los Angeles/Long Beach to again measure the level of compliance with hazmat regulations. From these programs, task force operations and other container inspections, the Coast Guard concluded that:

- approximately 25 percent of all inspected intermodal freight containers have deficiencies;
- freight forwarders, consolidators and other intermediaries are responsible for many of the discrepancies;
- more effective training of hazmat employees is essential to improve compliance;
- uniform enforcement by ports is necessary; and
- multi-agency coordination and joint inspections will reap tremendous benefits.

These determinations have caused the Coast Guard to change current methods of regulating hazmat transported in containers. A new national container inspection program will provide an active approach to ensuring safe hazmat transportation.

Policy and goals

Supported by Congress, the Coast Guard will implement a national container inspection program designed to improve compliance with hazmat regulations, ensure proper preparation of packaged hazmat for shipping and reduce the number of substandard containers going through United States ports. In so doing, the Coast Guard will minimize the threat of hazmat release, and reduce the potential for fatality, injury and economic loss associated with hazmat transportation.

Hazmat cargo will be inspected for compliance with 49 CFR, as well as the International Maritime Dangerous Goods (IMDG) code, where applicable. Designed and maintained by the International Maritime Organization (IMO), the IMDG code is recognized as the worldwide standard for the transportation of packaged hazmat by vessel.

Inspectors will examine containers to ensure that hazmat within is properly documented, packaged, marked, labeled, stowed, secured, segregated from incompatible materials and otherwise in conformance with applicable regulations. In addition, vehicles, intermodal freight containers, portable tanks and other hazmat transportation conveyances will be examined to ensure compliance and structural integrity.

National coordination

Up to this time, the Coast Guard has inspected hazmat containers in a decentralized fashion, largely in accordance with locally-established procedures. National container inspection policies are being developed to clearly define Coast Guard's goals and practices, replacing existing decentralized policies with standardized inspections and enforcement procedures.

A national program coordinator will oversee the implementation of the program and serve as a focal point for interagency coordination. The coordinator will be responsible for:

- developing standardized policy and procedures;
- collecting and analyzing hazmat data for internal use and DOT's annual report to Congress;
- interagency coordination;
- coordinating container inspection training and assistance team field activities; and
- ensuring accountability.

Assistance team

To support the program the Coast Guard is developing a container inspection training and assistance team consisting of a cadre of highly trained inspectors to lend expertise and assistance to field offices. Specifically, this team will provide hazmat training, promote national standardization of inspection procedures and assist units in coordinating interagency task force inspection activities. The team will be located at DOT's Transportation Safety Institute in Oklahoma City, Oklahoma.

Continued on page 44

. . . a hazmat inspection.

". . . the new container inspection program will bring significant improvements in port safety here and abroad."

Hazmat cargo on this container vessel will be inspected for compliance with safety regulations.

Continued from page 43

Field operations

The Coast Guard will assign 51 new inspectors to field units based on historical data on the volume of container traffic at all United States ports. The primary duty of these field inspectors will be to inspect intermodal freight containers and portable tanks for compliance with hazmat regulations, the Safety Approval of Cargo Containers Regulations (49 CFR parts 450-453) and MARPOL Annex III requirements for packaged marine pollutants.

As defined by the International Safe Container Act, 49 CFR parts 450-453 provides the requirements and procedures for safety approval and periodic examination of cargo containers used in international transport. The Coast Guard will also check compliance with recent hazmat regulation changes implementing the provisions of Annex III of the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). This change increases the safety level associated with hazardous substances known to endanger marine life.

Field inspectors will also maintain liaison with federal, state and local enforcement agencies.

Conclusion

The dramatic annual increase in the volume of hazmat shipped through United States ports by intermodal freight containers has magnified the risk of release. By the 1990s, more than 16 million 20-foot equivalent units of containers were being shipped through United States ports every year, double the amount in the 1980s. At the same time, the amount of hazmat transported has significantly increased. It is estimated to comprise 10 percent of all cargo shipped in containers.

The Coast Guard, as guardian of the nation's ports, is in a unique position to inspect containerized hazmat imports and exports as they pass through the ports. Now that the Coast Guard's port-state control of maritime activities in the United States is increasing, the new container inspection program will bring significant improvements in port safety here and abroad.

LTJG Wayne Clayborne is a staff member of the Port Operations Branch of the Port Safety and Security Division.

Telephone: (202) 267-0501.

Human elements underscore marine safety

By LCDR David L. Scott

On November 4, 1993, the IMO adopted "The International Management Code for the Safe Operation of Ships and for Pollution Prevention," known as the International Safety Management (ISM) Code.

By establishing a link between operating companies and seafarers on board the vessels, the ISM code will improve safety management skills in the maritime industry.

The ultimate goal of this code is to ensure that vessel owners and operators manage their fleets according to applicable international and flag state requirements, thereby reducing the occurrence of human injuries and minimizing environmental risks.

Presently, the ISM code is an IMO assembly resolution, which means that compliance is voluntary. However the IMO is taking steps to incorporate the code into the International Convention for the Safety of Life at Sea (SOLAS), where upon compliance would be mandatory for some types of vessels beginning on June 1, 1998. This means that all parties to SOLAS would have to ensure that their flag vessels comply with the code.

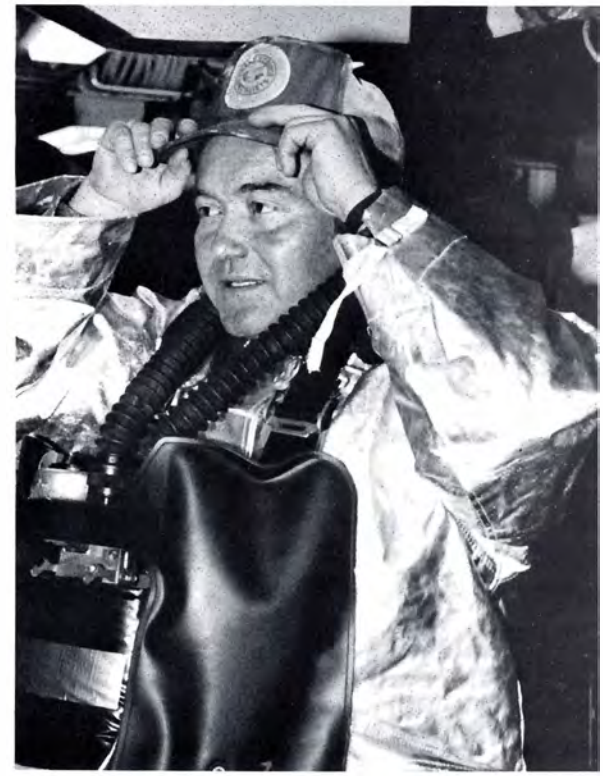
Competition

Today, business and industry operate in a climate of unprecedented challenge. Global competition, growing public sensitivity to environmental protection, and an unyielding demand for productivity and customer service are a few of the challenges companies must face. The maritime industry is particularly affected by these business realities because of its unique international character, its basic tie to the environment and its need to balance economical service against multiple international and domestic regulations.

The ISM code is designed to provide an international quality standard for the safe management of ships and pollution prevention. In reality, however, it merely reflects the good sense policies and practices employed over the years by responsible companies to keep their fleets running safely and efficiently.

Even though the code was developed primarily for owners and operators of deep draft vessels on international routes and mobile offshore drilling units, its management principles and organizational guidelines can be applied to vessels of all kinds.

Continued on page 46



Merchant seaman dons firefighting apparatus for a shipboard drill.

Photo courtesy of Seafarers International Union.

Continued from page 45

Unfortunately, there are still far too many substandard companies in operation which cannot or will not abide by these principles. Encouraging compliance with the ISM code is one means by which the international community can rid the seas of these operators.

Human element

To achieve success in today's competitive market, many maritime industry leaders have embraced the concept of "quality management" to distinguish their operations from those of substandard competitors. Central to the concept of quality management is the role of the "human element."

The term, human element, may be broadly defined as the acts or omissions of personnel which adversely affect the proper functioning of a system or the successful performance of a task. The ISM code is based upon the importance of the human element in maritime safety.

In the context of the code, the human element includes the vessel's crew as well as the managers of the company operating the vessel. In brief, the code establishes guidelines to ensure that the crew is qualified to safely operate the vessel, and that the owner or operating company has the background and resources necessary to support the crew, to respond adequately to emergency situations and to maintain the vessel properly according to all relevant standards.

Philosophical shift

The ISM code introduces no revolutionary new management concepts. However, it marks a significant philosophical shift in the maritime community's approach to safety at sea.

Historically, the international maritime community has approached safety from a predominantly technical point of view. The traditional wisdom was to apply engineering and technological solutions to promote safety and minimize the consequences of marine casualties.

Accordingly, international standards have addressed equipment requirements, such as the lifesaving and fire-fighting apparatus required on ship. Design requirements, such as protectively located segregated ballast tanks, double hulls and improved steering gears have been adopted to make tanker operation safer and to minimize pollution from casualties.

Innovations in structural fire protection have significantly improved fire safety in today's cruise ships. State-of-the-art electronics have had a profound effect on the accuracy of navigation. Finally, advances in materials and computer-assisted construction techniques have improved quality and reliability throughout the industry.

Despite these innovations, serious marine casualties continue to take place. Analyzing the casualties over the past 30 years has prompted the maritime community to acknowledge the role of human factors.

Recent studies have indicated that more than 80 percent of all significant marine casualties may be attributable to human factors.

Consequently, the international maritime community is starting to emphasize effective shipboard management as a means to reduce marine casualty incidents. The International Chamber of Shipping and the International Shipping Federation recently noted that:

". . .the task facing all shipping companies is to minimize the scope for human decisions to contribute, directly or indirectly, to a casualty or pollution incident. Decisions taken ashore can be as important as those taken at sea, and there is a need to ensure that every action affecting safety or the prevention of pollution, taken at any level within the company, is based upon sound understanding of its consequences."

Promoting worldwide development of safety management guidelines, the United States presented a paper entitled, "Good Management Practice in Safe Ship Operation," to the IMO's Maritime Safety Committee in August 1982.

International interest in the issue accelerated following the sinking of the ferry *Herald of Free Enterprise* in 1987. This resulted in an IMO resolution A.596(16), *"Safety of Passenger RO/RO Ferries."* Shortly afterward, an IMO working group on the human element was formed to develop guidelines on the management and operation of vessels.

Management commitment

Vital to the success of any company's safety program is the senior management's commitment to it. But, regardless of the strength of the commitment, success cannot be achieved without an effective organizational structure to implement and monitor the program.

The importance of top-management commitment and an effective organizational structure was a key element in IMO's resolution A.647(16), *"IMO Guidelines on Management for the Safe Operation of Ships and for Pollution Prevention,"* in October 1989. This resolution was replaced in November 1991 with A.680(17), which encouraged those responsible for the management and operation of ships to develop and implement safety and pollution-prevention management practices.

The IMO's Maritime Safety and Marine Environmental Protection Committees continued to focus on the importance of a company's response to the needs of those on board its ships to achieve and maintain high standards of safety and environmental protection. Their efforts led to the development of the ISM code, which replaced resolution A.680(17).

Lifeboats are lowered during shipboard drill. *Photo by Rich Muller.*

Crew training and proficiency is the best way to achieve our ultimate goals of safe vessels and clean oceans.

By establishing an international quality standard for ship operation and management, the code requires responsible individuals, both on ship and shore, to be much more accountable in ensuring their vessels are operated according to applicable domestic and international standards. The code requires a company to document management procedures to ensure that safety or environmental practices on the vessel and in the office are developed, coordinated, implemented and monitored according to government or company requirements. The code thus promotes an active approach to safety, where the company instead of a regulatory authority is responsible for identifying and correcting problems.

Safety management system

The heart of the ISM code is the safety management system, the mechanism by which the company applies the code's principles.

The safety management system must include:

- **the company's safety and environmental protection policy;**
- **instructions and procedures to ensure the company operates its ships and protects the environment in compliance with relevant legislation;**
- **defined levels of authority and lines of communications between and among ship and shore personnel;**
- **procedures for reporting accidents and nonconformities with code provisions;**
- **procedures to prepare for and respond to emergency situations; and**
- **procedures for internal audits and management reviews.**

Many responsible maritime companies have already instituted management practices or have documents to address these items. For example, many personnel manuals provide job descriptions with specific responsibilities, establish qualifications and define levels of authority between and among ship and shore personnel. Many companies have prepared emergency plans and have established procedures for reporting accidents and malfunctions. Operating manuals and other technical publications indicate how to maintain vessel equipment according to relevant requirements. Finally, many companies have internal auditing programs to identify problem areas and initiate corrective action. Such companies are well on their way towards complying with the code.

Conclusion

To succeed in today's climate of rigorous international competition, a company must focus on quality service and responsible operation. Compliance with the ISM code and its emphasis on the human element in the safety process is one way to distinguish responsible, quality-oriented companies from undesirable, substandard operators.

The current focus on the human elements of maritime safety compliments other positive international developments, including improved technical standards for vessel design and operation, upgraded classification society performance standards and increased emphasis on port state control efforts.

LCDR David L. Scott is on the staff of the Compliance and Enforcement Branch of the Merchant Vessel Inspection and Documentation Division. Telephone: (202) 267-1464.

Chemical of the month *1/C Sharif Abdrabbo*

Endosulfan

Endosulfan is a brown crystalline solid, usually in powdered form. It has a terpene-like odor and is insoluble in water, yet it is soluble in most organic solvents.

The chemical is an organochlorine pesticide/acaricide that was used in the past on a variety of fruits and vegetables, including apples, cauliflower, celery, lettuce, strawberries and pears. It is marketed under the commercial names of Thiodan, Cyclodan and Malix.

Health hazards

Endosulfan is extremely hazardous if inhaled, ingested or absorbed through eye or skin contact. Any such contact will induce headache, dizziness, nausea and vomiting. Prolonged exposure will result in central nervous system symptoms, such as hyperirritability, convulsions and coma, which may lead to death.

There have been cases of deaths due to overexposure by workers not adhering to appropriate safety practices. It is highly toxic to the nervous system, but has not been shown to accumulate significantly in human tissue.

The recommended equipment for workers handling endosulfan is rubber overclothing, rubber gloves, goggles or mask, and respirator.

Treatment

If exposed to endosulfan, remove all contaminated clothing and shoes. For skin exposure, wash with soap and water. If the eyes come in contact, hold the eyelids open and flush thoroughly with water for 15 minutes. For ingestion, have the victim drink milk or water, and induce vomiting. A person should receive immediate medical attention for any type of exposure to endosulfan.

Environmental hazards

An accidental discharge of endosulfan should be stopped, if possible, isolated and removed from the area. Avoid contact with the chemical and keep people away from the spill. The local health, wildlife and pollution control officials should be notified immediately.

Endosulfan sinks in water. It is immediately toxic to fish, even in low concentrations, and has caused large-scale fish kills. If spilled into a waterway, the operators of nearby water intakes should be notified immediately. When exposed to fire, endosulfan will deteriorate and emit toxic $C1_2$ and SO_x fumes.

Shipping

When transported by vessel, endosulfan must be "separated from" explosives class 1.1, 1.2, 1.3 and 1.5, and "away from" spontaneously combustible substances, oxidizing substances, organic peroxides and infectious substances. It should be stowed clear of living areas. Proper stowage of endosulfan in cargo holds is outlined in 49 CFR 176.

Endosulfan has a poison shipping label. Its U.N. number is 2761. It is classified as a 6.1 poisonous material and a severe marine pollutant in the IMO IMDG code. The Coast Guard regulates the transportation of endosulfan as a packaged cargo in 49 CFR subchapter C.

Endosulfan

Chemical name:	Endosulfan
Formula:	$C_9H_6CL_6O_3S$
Brand names:	**Benzoepin,** Beosit, Chlorthiepin, Cyclodan, Endosol, Endosulphan, Hildan, Insectophene, Malix, Thiodan, and Thionex
Description:	A light to dark brown crystalline solid with a terpene-like odor

Physical properties:

Boiling point:	106°C at 0.7mm Hg (223°F)
Melting point:	70° to 100°C (158° to 212°F)
	106°C pure (223° pure)
Vapor pressure:	$1x10^{-5}$ mm Hg at 25°C (77°F)

Threshold limit values:

Time-weighted average:	0.1 mg/m^3 (skin)

Densities:

Specific gravity at 20°C:	1.745

Identifiers:

CHRIS code:	ESF
CAS registry number:	115-29-7
U.N. number:	2761
U.N. class:	6.1, Poisons
Proper shipping name:	Organochlorine pesticides, solid, toxic, n.o.s.

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

This article was reviewed by the Hazardous Materials Branch, Marine Technical and Hazardous Materials Division, Office of Safety, Security and Environmental Protection. Telephone: (202) 267-1577.

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

Engineer

1. Severe vibration with flashover at the collector rings of an alternator operating in parallel is a symptom of _____.

A. reverse current motorization
B. loss of synchronism
C. destructive overspeeding
D. reverse polarity

2. The cubic inch displacement of a cylinder is determined by the diameter of the piston and _____.

A. the length of the crankshaft
B. the volume of the clearance space
C. the weight of the piston
D. the length of the stroke

3. If a small electric motor has been submerged in saltwater for a short period of time, you should _____

A. send it ashore for rewinding
B. rinse it with warm freshwater and bake it dry in an oven
C. soak it in a bucket of commercial solvent and bake with internal heat
D. clean it with carbon tetrachloride and blow it out with compressed air

4. An internal resistance is placed in series with the meter movement of which instrument?

A. AC ammeter.
B. DC ammeter.
C. DC voltmeter.
D. Frequency meter.

5. When mixing electrolyte for a lead-acid storage battery, you should pour the _____.

A. distilled water into the acid in a zinc-plated container
B. distilled water into the acid in a glass container
C. acid into the distilled water in a zinc-plated container
D. acid into distilled water in a glass container

6. The purpose of the flywheel is to _____

A. store energy to operate the engine between power impulses
B. neutralize the primary inertia force of the crankshaft
C. reduce the shock of starting loads on the main bearings
D. prevent the engine from operating at critical speed

7. The usual method for effectively applying foam on a fire is by _____

A. spraying directly on the base of the fire
B. flowing the foam down a vertical surface
C. sweeping the fire before you with the foam
D. spraying directly on the surface of the fire

8. A continuous watertight bulkhead on a MODU is normally also a(n) _____

A. structural bulkhead
B. exterior bulkhead
C. centerline bulkhead
D. joiner bulkhead

9. The proper way to apply electrical tape to a splice in an electrical cable is to _____

A. tape to the braided cover but avoid touching it
B. wind the tape so that each turn overlaps the turn before it
C. apply the tape in one non-overlapping layer only
D. heat the tape with a soldering iron for good bonding

10. When taking on fuel, it is important to remember that petroleum vapors are _____.

A. not volatile unless the ambient air temperature exceeds 90°F
B. lighter than air and dissipate rapidly
C. unlikely to ignite except in the presence of an open flame
D. heavier than air and may enter the bilges and/or deckhouse

Comment and protest system

The Coast Guard allows mariners to review their examinations when they fail to attain a passing score by missing no more than two questions. Upon review, a mariner may protest any question he or she believes faulty. The protest is then forwarded on to Coast Guard headquarters for review. If the mariner succeeds in proving a question faulty, he or she is credited and may pass that section of the exam.

Deck

1. What is the length of a nautical mile?

A. 1,850 meters.
B. 6,076 feet.
C. 6,080 feet.
D. 2,000 yards.

2. All of the following can be determined by use of a stabiloguage EXCEPT_____

A. metacentric height
B. mean draft
C. moment to trim one inch
D. deadweight

3. What is the mechanical advantage of tackle number 2 in illustration D029DG?

A. 0.5.
B. 1.0.
C. 2.0.
D. 3.0.

4. A vessel's "quarter" is _____

A. abeam
B. dead astern
C. just forward of the beam
D. on either side of the stern

5. An azimuth angle for a body is measured from the _____

A. observer's meridian
B. Greenwich meridian
C. body's meridian
D. zenith distance

6. Which of the following would give the best radar echo?

A. The beam of a three-masted sailing vessel with all sails set.
B. A 110-foot fishing vessel with a radar reflector in its rigging.
C. A 300-foot tanker, bow on.
D. A 600-foot freighter, beam on.

7. On a cargo vessel, fire and boat drills must be held within 24 hours of leaving port if the percentage of the crew replaced was more than_____.

A. 5%
B. 10%
C. 25%
D. 40%

8. Which statement is TRUE concerning lifeboat gripes?

A. They must be released by freeing a safety shackle.
B. They should not be released until the boat is in a lowering position.
C. They may be adjusted by a turnbuckle.
D. They are normally used only with radial davits.

9. Which statement is TRUE concerning life preservers?

A. Buoyant vests may be substituted for life preservers.
B. Life preservers are designed to turn an unconscious person's face clear of the water.
C. Life preservers must be worn with the same side facing outwards to float properly.
D. Lightly stained or faded life preservers will fail in the water and should not be used.

10. What is the purpose of intake/exhaust valves in a diesel engine?

A. They regulate the combustion cycle.
B. They supply cooling water.
C. They synchronize the ignition spark.
D. They supply/regulate the lubricant flow.

ANSWERS

Engineering:

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

Deck:

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

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

Mariner's Seabag

Introducing "Mariner's Seabag" -- a new regular ~~Proceedings~~ column of late developments in maritime examination contents, processes and references.

Navigation problems module

Navigation problems for licenses between 100 and 1600 GT on ocean, near coastal and inland routes

This module contains 20 questions with a passing score of 90 percent. The first five questions may include one tide problem and one tidal current problem. The examinee must determine the state of the tide or tidal current at any time, using tables one, two and three from the *Tide Tables* and *Tidal Current Tables*. Other questions may deal with the application and determination of compass error, course changes, distance off and time of the closest point of approach.

The practical chart navigation problem consists of 15 questions based on terrestrial navigation using the gyro and magnetic compass. Other questions may deal with the use of radar, RDF, fathometer and loran in this exam portion. This section begins with information about the vessel, weather or voyage. It includes a deviation table and the gyro compass error.

Typical questions involve plot fixes, set and drift data, leeway and compass error applications, and ETA determination. The applicant may also be tested on the use and interpretation of information on a chart and in publications normally available on a vessel.

Exam question changes

Deck

1. Sequenced radiobeacons are being eliminated from service. All questions about them are deleted.

2. Storm warning signals have been replaced by radio broadcasts. All questions on them are deleted.

3. Questions on decoding a weather message based on the international analysis code, IAC Fleet, FM 46-IV are deleted.

4. Questions on signaling are now based on the 1993 edition of 1993 *International Code of Signals*.

Engineering

1. All questions on emergency breathing apparatus are based on the self-contained types. Questions on chemical and regenerative breathing apparatus, and the fresh air hose mask are deleted.

2. All questions on portable soda-acid and foam fire extinguishers are deleted.

Standard charts and references

The charts and publications used during the chart problem examination section are now permanent training charts, not to be revised. The charts in use are: *Chesapeake Bay and Approaches* (No. 12221TR), *Long Island Sound - Eastern Part* (No. 12354TR) and *Block Island Sound* (No. 13205TR).

This reduces the cost and allows the plotting of problems in the *Merchant Marine Deck Examination Question Books*. Pertinent chapters of the *Coast Pilots* and the *Light Lists* corresponding to the charts are now extracted and combined into one book, which will remain consistent with the examination material.

In the past, when regular navigational charts were used, the plotting problems had to be constantly revised to correspond with the updated material.

The permanent plotting problems are published by the Government Printing Office in the *1994 Supplement to the Merchant Marine Examination Question Books*.

Call (202) 783-3238 for cost and availability.

Reference update

These publications have been added to the Coast Guard reference library used to develop exam questions for merchant marine licences and documents.

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Baptist , C (1991); *Tanker Handbook for Deck Officers*. Glasgow: Brown, Son & Ferguson, Ltd.

International Chamber of Shipping, Oil Companies International Marine Forum, International Assoc. of Ports & Harbors (1988); *International Safety Guide for Oil Tankers & Terminals*. London: Witherby & Co. Ltd.

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Interim final rule

CGD 84-060, Licensing of Pilots; Manning of vessels by Pilots (48 CFR part 15) RIN 2115-AB67 (February 2).

The Coast Guard is amending the regulations concerning the licensing of pilots and the manning of vessels by pilots. This interim final rule: defines coastwise seagoing vessel for pilotage purposes; describes first class pilotage areas where local pilotage expertise is warranted; allows licensed individuals to serve as pilots in areas not identified as first class pilotage areas on vessels that they are otherwise qualified to control; requires a federal pilot for vessels in excess of 1,600 gross tons, propelled by machinery and subject to inspection under 46 U.S.C. chapter 33, that are not authorized by their certificate of inspection to proceed beyond the boundary line; and provides quick reference tables for federal pilotage requirements. These changes are necessary to eliminate confusion over where and on what vessels pilotage expertise is required.

EFFECTIVE DATE: March 4, 1994. Comments must have been received by March 21, 1994.

Addresses: The executive secretary, Marine Safety Council (G-LRA/3406), maintains the public docket for this rulemaking. Comments are part of this docket and are available for inspection or copying at room 3406, Coast Guard headquarters, 2100 Second Street, S.W., Room 3406, Washington, D.C. 20593-0001, between 8 a.m. and 3 p.m., weekdays, except holidays. Telephone: (202) 267-1477.

For further information, contact: Mr. John Hartke, Merchant Vessel Personnel Division (G-MVP-7). Telephone: (202) 267-6102.

Notice of termination

CGD 85-026, Pollution prevention: implementation of amendments to Annex I of MARPOL 73/78 (33 CFR parts 151, 154 and 155) RIN 2115-AC11 (February 15).

The Coast Guard is terminating all rulemaking under docket number CGD 85-026. It published a notice of proposed rulemaking that proposed to amend the oil pollution prevention regulations for ships in order to implement the amendments to end interpretations of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the protocol of 1978 (MARPOL 73/78). It is now terminating that rulemaking because of intervening developments, but it will continue to evaluate the need for another such rulemaking.

For further information, contact: LCDR Mark McEwen, project manager, Marine Environmental Protection Division. Telephone: (202) 267-6714.

Notice of proposed rulemaking

Random drug testing program (46 CFR part 16) RIN 2105-AB94 (February 15).

Five operating administrations -- the Federal Aviation Administration, the Federal Highway Administration, the Federal Railway Administration, the Research and Special Programs Administration and the Coast Guard -- currently require random drug testing of safety-sensitive employees. (The Federal Transit Administration is adopting a parallel rule for covered transit employees.)

In response to public comments, petitions submitted by industry and on their own initiative, these agencies are proposing to lower the minimum random drug testing rate to 25 percent where the industry-wide (e.g., aviation, rail) random positive rate is less than 1.0 percent for two calendar years while testing at 50 percent. The rate would return to 50 percent if the industry random positive rate were 1.0 percent or higher in any subsequent calendar year. The industry-wide random positive rate for each transportation industry would be calculated from data submitted to the Transportation Department and announced yearly by the respective administrator or the Coast Guard commandant.

DATE: Comments were due April 18, 1994.

For further information, contact: Dr. Donna Smith, acting director, Office of Drug Enforcement and Program Compliance. Telephone: (202) 366-3784.

Notice of proposed rulemaking

CGD 93-030, Shipboard oil pollution emergency plans (33 CFR part 151) RIN 2115-AE44 (February 17).

The Coast Guard proposes regulations to require all United States flag oil tankers of 150 gross tons and above, and all other United States flag ships of 400 gross tons and above, to carry approved shipboard oil pollution emergency plans. These regulations would also require foreign oil tankers of 150 gross tons and above and other foreign ships of 400 gross tons and

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above to carry evidence of compliance with regulation 26 when in the navigable waters of the United States. This proposal would implement the requirements of regulation 26 of Annex I of MARPOL 73/78. The purpose of regulation 26 is to improve response capabilities and minimize the environmental impact of oil discharges from ships.

DATE: Comments were due by April 18, 1994.

Addresses: The executive secretary, Marine Safety Council (G-LRA/3406), maintains the public docket for this rulemaking. Comments are part of this docket and are available for inspection or copying at room 3406, Coast Guard headquarters, between 8 a.m. and 3 p.m., weekdays, except holidays.
Telephone: (202) 267-1477.

For further information, contact: Ms. Jacqueline L. Sullivan, project counsel and project manager, OPA 90 staff (G-MS). Telephone: (202) 267-6404.

Supplemental notice of proposed rulemaking

CGD 87-016b, Emergency position indicating radio beacons and visual distress signals for uninspected vessels (46 CFR part 25) RIN 2115-AC69 (February 17).

The Coast Guard proposes to amend the uninspected vessel regulations by requiring an emergency position indicating radio beacon (EPIRB) on certain uninspected passenger vessels and uninspected vessels engaged as vessel assistance towing vessels. The proposed EPIRB requirement would apply to these vessels operating more than 3 nautical miles from the coastline or more than 4.8 KM (3 statute miles) from the coastline of the Great Lakes. However, under specific circumstances, these vessels would be exempt from this proposed EPIRB requirement. The Coast Guard also proposed requiring visual distress signals on all uninspected vessels not presently required to carry them, when operating in coastal waters.

The "EPIRBs on Uninspected Vessels Requirements Act" amended the shipping laws of the United States by requiring uninspected commercial vessels to carry alerting and locating devices, including EPIRBs, as prescribed by regulations. By implementing this law, the regulations will provide improved search and rescue assistance during emergency situations, thereby reducing the potential for loss of life and property.

DATE: Comments must be received by June 17, 1994.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 87-016b), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., Monday through Friday, except federal holidays.
Telephone: (202) 267-1477.

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

For further information, contact: ENS Stephen H. Ober, Survival Systems Branch.
Telephone: (202) 267-1444.

Notice

CGD 94-013, National Fire Protection Association Technical Committee on Fire Protection of Merchant Vessels (March 2).

The Coast Guard announces it will be participating in a new National Fire Protection Association (NFPA) technical committee on Fire Protection of Merchant Vessels. The goal of this committee is to develop codes and standards applicable to fire protection of merchant vessels. The committee is intended for technical experts in the field who are interested in volunteering to participate in the development effort.

DATE: Completed applications for committee membership should be submitted to NFPA by June 1, 1994.

Addresses: Application forms may be obtained by writing to the Secretary, Standards Council, National Fire Protection Association, One Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101. Forms are also available at G-MTH-4, Coast Guard headquarters.

For further information, contact: Mr. Morgan J. Hurley, fire protection engineer, Ship Design Branch. Telephone: (202) 267-2997.

Notice of proposed rulemaking

CGD 91-223, Chemical testing for dangerous drugs of applicants for issuance of renewal of licenses, certificates of registry or merchant mariner's documents (46 CFR parts 10, 12 & 16) RIN 2115-AE19 (March 4).

The Coast Guard proposes to require chemical testing for use of dangerous drugs of all applicants for issuance or renewal of licenses, certificates of registry or merchant mariner's documents. This action is necessary to implement the requirements of OPA 90. Testing of applicants would increase maritime safety by promoting a drug-free work place in the maritime industry.

DATE: Comments must be received by June 17, 1994.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 91-223), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., Monday through Friday, except federal holidays.
Telephone: (202) 267-1477.

Comments on collection of information requirements must be mailed also to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, N.W., Washington, D.C. 20503. Attn: Desk officer, U.S. Coast Guard.

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

For further information, contact: Mr. James W Cratty, project manager, OPA-90 staff.
Telephone: (202) 267-6740.

Final rule

CGD 81-059a, Licensing of officers and operators for mobile offshore drilling units (46 CFR parts 10 & 15) RIN 2115-AB91 (March 8).

In an interim final rule published on April 18, 1990, (55 FR 14792), the Coast Guard amended the regulations concerning the licensing of officers on mobile offshore drilling units (MODUs) and the manning of these vessels. The rulemaking implemented National Transportation Safety Board recommendations for the establishment of personnel qualifications and manning regulations for MODUs. These minimum standards were intended to ensure that licensed individuals on board MODUs are qualified to deal with specific marine safety matters.. This rule adopts the interim final rule with minor changes.

DATE: This rule was effective on April 7, 1994.

For further information, contact: Mr. Paul W. Eulitt, project manager, Merchant Vessel Personnel Qualifications Branch. Telephone: (202) 267-0224.

Notice of meeting

CGD 94-022, Chemical Transportation Advisory Committee (CTAC) Subcommittee on Tank Filling Limits (March 21).

This subcommittee will meet to review and discuss the proposed guidelines for evaluating the adequacy of type C tank vent systems for loading tanks on gas carriers wishing to use increased filling limits now allowed under chapters 8 and 15 of the International Gas Carrier Codes. The meeting will be open to the public.

DATE and PLACE: The meeting will be held on May 3 from 9 a.m. to 5 p.m. at the American Bureau of Shipping, 16855 Northchase Drive, Houston, Texas 77060.

For further information, contact: Dr. Michael Parnarouskis, G-MTH-1, Chief of the Bulk Cargo Section. Telephone: (202) 267-1217.

Notice of meeting

CGD 94-021, Towing Safety Advisory Committee (TSAC) (March 21).

DATE and PLACE: TSAC work groups will meet May 5 from 9:30 a.m. to 4 p.m., and the full committee will meet on May 6 from 8 a.m. to 12 noon at Coast Guard headquarters. Meetings are open to the public.

For further information, contact: LTJG Bob Gillan, G-MTH-4, Ship Design Branch.
Telephone: (202) 267-2997.

Notice of proposed rulemaking

CGD 91-012, Security for passenger vessels and passenger terminals (33 CFR parts 120 and 128) RIN 2115-AD75 (March 25).

The Coast Guard is proposing rules to establish equipment and performance standards, and procedures for security against acts of terrorism on certain passenger vessels and associated passenger terminals. Passenger vessels over 100 gross tons carrying more than 12 passengers on voyages of over 24 hours on the high seas will be affected. These rules are necessary because lack of voluntary compliance with measures of the IMO published in 1986, or published as Coast Guard guidelines in 1987, requires mandatory compliance to attain effective security measures.

DATE: Comments must be received by June 23, 1994.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 91-012), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., Monday through Friday, except federal holidays.
Telephone: (202) 267-1477.

Comments on collection of information requirements must be mailed also to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, N.W., Washington, D.C. 20503. Attn: Desk officer, U.S. Coast Guard.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406, Coast Guard headquarters.

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For further information, contact: Mr. Gary W. Chappel (G-MPS-3), Policy and Standards Development Branch. Telephone: (202) 267-6740.

Notice of meeting

Chemical Transportation Advisory Committee (CTAC.)

DATE and PLACE: The meeting will be held on June 16, 1994, starting at 9:30 a.m. in room 2415, Coast Guard headquarters. This meeting is open to the public.

For further information, contact: CDR Kevin J. Eldridge or Mr. Frank Thompson, Hazardous Materials Branch. Telephone: (202) 267-1217.

Notice of meeting

Merchant Marine Personnel Safety Advisory Committee (MERPAC) and working groups.

DATE and PLACE: Working group meetings will be held on June 14, 1994, starting at 8:30 a.m., and the full committee will meet on June 15, 1994, starting at 9 a.m. All meetings are open to the public and will be held in room 2415, Coast Guard headquarters.

For further information, contact: Ms. Barbara Miller, Merchant Vessel Personnel Division. Telephone: (202) 267-0224.

Final rule

CGD 91-228, Civil penalties under the Federal Water Pollution Control Act and the Comprehensive Environmental Response, Compensation and Liability Act (33 CFR part 20) RIN 2115-AE39 (March 30).

The Coast Guard is issuing final regulations addressing practice and procedure for cases assessing class II civil penalties under section 311(b) of the Federal Water Pollution Control Act as amended by OPA 90, and section 109 of the Comprehensive Environmental Response, Compensation and Liability Act.

All class II penalties will be assessed following notice and opportunity to be heard in proceedings that meet the requirements of the Administrative Procedure Act.

The regulations provide for public notice of a class II civil penalty action and an opportunity for interested persons to comment on the proposed civil penalty, to present evidence at a hearing and to seek a hearing if none is held.

The regulations make available enhanced enforcement capabilities provided by the OPA 90 amendments to the Federal Water Pollution Control Act.

EFFECTIVE DATE: March 30, 1994.

For further information, contact: Mr. Walter D. Rabe, Marine Investigation Division. Telephone: (202) 267-1430.

ATTENTION -- MEMBERS of the MARINE INDUSTRY

The November/December 1994 issue of *Proceedings* is dedicated to you. Here is your opportunity to express your views, tell your stories, air your issues and present your solutions. To publish an article in this issue, please contact the editor (G-MP-4) at (202) 267-1408. A few ground rules: articles must be typed double spaced and accompanied by color or black and white 5" x 7" photographs (which will be returned after publication). The deadline for the submission of material is August 5, 1994.

We look forward to hearing from you soon.

Marine safety law gets more aggressive

By LCDR Richard L. Booth

Over the years, the Coast Guard has promoted safe maritime commerce on the high seas, and within United States waters and ports. One of the most effective means is marine safety law enforcement — the next step above education and regulatory control.

New marine safety law enforcement policies signal a more aggressive posture for the 1990s and beyond.

Open communications between the Coast Guard and the public are essential, as demonstrated by the petty officer and marine industry representatives.

Purpose

The basic purpose of marine safety law enforcement is to both correct deficiencies through compliance and operational control, and to prevent future violations through administrative, judicial and criminal proceedings. Within this context, the appropriate district commander, captain of the port and officer in charge, marine inspection, must balance law enforcement actions to fit individual situations, while maintaining a desired level of national consistency. Thus, while field enforcement efforts nationwide should be reasonably consistent, absolute uniformity would prevent the exercise of necessary judgment.

Policy

The Coast Guard has established a strong national policy maintaining necessary flexibility while providing enforcement thresholds. For all instances where prima facie evidence of a violation exists, whether observed during a port safety boarding, a marine inspection or other activity, enforcement actions will be initiated. Actions may range from a letter of warning for a minor, first violation which is immediately corrected, to the initiation of a civil violation case (including letters of undertaking/surety bonds or denial/revocation of endorsements for a vessel's certificate of documentation where appropriate) or criminal prosecution.

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Law enforcement responsibilities are an including port safety, vessel inspections

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Options

Possible enforcement options include **corrective actions, operational controls, suspension and revocation, civil penalties** and **criminal violations.** Depending upon the circumstances, enforcement actions may be taken independently or in conjunction with one another.

- **Corrective actions** provide nonconforming vessels or facilities the opportunity to rectify relatively minor deficiencies within a reasonable period of time. Itemizing deficiencies requiring attention is an example of corrective action often used by inspectors.

- **Operational controls** are used to prevent, restrict or direct commercial operations based on more serious deficiencies. They are normally exercised as preventive measures when greater control of nonconforming vessels or facilities is needed to reduce risks of injury, property damage or pollution. They often have a greater impact on vessel and facility operators than corrective actions, particularly when the controls may halt operations in progress, restrict planned operations or prevent vessel movements. Examples include vessel detentions and terminations of cargo transfer operations.

- **Suspension and revocation** administrative proceedings target licenses, documents or certificates of registry of merchant mariners suspected of acts of misconduct, negligence or incompetence. In addition, these proceedings are initiated for mariners who use dangerous drugs, or are suspected of violating laws or regulations intended to promote marine safety or to protect navigable waters. The process begins with formal charges and continues through a formal hearing adjudicated by an administrative law judge. Possible actions include the dismissal of charges, if unproved, or range from admonishment to revocation of seaman's papers, if proved. The Coast Guard completes nearly 800 suspension and revocation proceedings every year.

- **Civil penalties** target individuals or companies. Civil penalty enforcement begins when a violation report is submitted by a field unit, and is completed through adjudication. Final actions range from case dismissal to assessment of monetary penalties. As a port state control measure, a foreign vessel owner/operator may be required to post a letter of undertaking or a surety bond to assure payment of an assessed penalty or fine. Similarly, as a flag state control measure for United States vessels, Coast Guard officers may deny the issuance or renewal of, or may revoke the endorsement(s) on a certificate of documentation if the vessel owner has failed to pay a civil penalty assessed by the Coast Guard. The Coast Guard adjudicates approximately 8,000 marine safety violation cases involving civil penalties annually.

- **Criminal violations** are prosecuted in federal court by Department of Justice attorneys. When sufficient evidence exists to suspect criminal violation, the Coast Guard may seek prosecution by referral to the Department of Justice.

integral part of Coast Guard activities, and marine accident investigations.

Law enforcement principles

All marine safety law enforcement efforts are based on the following principles.

- **Authority and jurisdiction** must be respected. Enforcement actions depend on thorough knowledge of applicable United States laws, regulations and international conventions. These statutory responsibilities provide the Coast Guard with a range of enforcement capabilities specific to each law.

- **Investigation and evaluation** of each suspected violation is essential to determine relevant facts and draw conclusions concerning the deficiency, including the severity, impact, duration and culpability.

- **Judgment** must be exercised in selecting appropriate enforcement actions. The seriousness of the deficiency and the sufficiency of evidence will determine one or more appropriate enforcement actions. No two situations are alike, and the same deficiency or violation on different ships or facilities may call for different actions. Variables influencing enforcement decisions include violation histories of the parties involved, differing circumstances or risks, and the quantity and quality of evidence. Thus, while enforcement actions should produce equal results for similar circumstances, the methods followed may not be identical.

- **Fairness** is a must. All enforcement actions are directed toward the specific parties responsible for deficiencies or violations. The level and type of enforcement action initiated is proportional to the seriousness of the deficiency or violation in terms of the impact or potential risk to lives, property or the environment.

- **Communication** between the Coast Guard and other entities, including foreign governments, law enforcement agencies and regulated maritime interests is fundamental. On-site notification to vessel/facility personnel is a first step in establishing effective communication. In addition, the Coast Guard must ensure that timely and accurate notification is made to all parties at appropriate levels of management directly affected by the enforcement action.

- **Cooperation** with other federal, state and local law enforcement organizations sharing jurisdiction with the Coast Guard is essential. In many circumstances, mutual assistance, close working relationships and coordination of effort will minimize duplicate requirements due to differing federal, state or local regimes. Also, international cooperation is improved by reporting foreign vessel detentions or referring deficiencies for possible flag state enforcements, detailed in international conventions.

Conclusion

During an average day, the Coast Guard responds to 34 oil and/or hazardous chemical spills, boards 90 large vessels for port safety checks, inspects 64 commercial vessels, investigates 17 marine accidents and performs many other marine safety activities. Law enforcement responsibilities are an integral part of these tasks that must be carefully applied.

When misused, enforcement actions may be unnecessary, inappropriate or ineffectual in achieving program goals, and could create international incidents. At their best, enforcement actions reduce maritime risks and prevent future violations.

LCDR Richard L. Booth is assigned to the Safety Evaluation Branch of the Marine Investigation Division.

Telephone: (202) 267-1430.

Coast Guard goes metric

By LTJG Pamela Zearfoss

The Coast Guard is converting to the metric system of measurement. This conversion was initiated by the 1991 executive order 12770, "Metric Usage in Federal Government Programs." It was followed in early 1993 by the Coast Guard's internal instruction, "Coast Guard Transition to the Metric System," which outlines the policies and responsibilities for implementing the system.

The Coast Guard is one of several federal government agencies which will convert to the metric system. This is partly in response to requests by industrial representatives for the federal government to lead a national conversion effort to make United States business more competitive on the global market.

From gallons to liters.

Transition Plan

Several steps are being taken to implement a metric transition plan in the Coast Guard. A program has been initiated to convert all regulations affecting commercial ship construction, inspection, and manning; marine environmental protection; hazardous materials transportation and merchant vessel measurement to the metric system. All weight and measurement units in Coast Guard regulations in titles 33, 46 and 49 of the Code of Federal Regulations will be converted.

The metric transition plan also directs that metric units be used in all correspondence from the Office of Marine Safety, Security and Environmental Protection. This includes letters on regulations, research and development, industry standard development, procurement and all policies, publications and pamphlets; memoranda of understanding, public information, program forms, the Marine Safety Manual, Marine Safety Information System and instruction manuals, and merchant marine examinations — in short, all business-related activities. All regulations, contracts, purchase orders, reports, statistical tables and data bases will also be converted and/or drafted using metric measurements.

Methods

There are different methods to convert from an inch-pound unit (the customary unit) to the metric system. One conversion method is called hard metric or "size substitution." In this method, an inch-pound standard size is replaced with an accepted metric standard size for a particular purpose.

For example, size substitution is used in packaging liquids by the liter instead of by the gallon. Another example is using A4 paper instead of 8 and a half by 11 inch paper. A4 paper is the standard metric size, just as 8 and a half by 11 inches is the standard inch-pound size. (A4 paper measures 21 by 30 centimeters, while 8 and a half by 11 inch paper measures 21.5 by 28 centimeters.)

Another method is soft metric or "exact mathematical conversion." This process is used to obtain an exact change in measurement units by multiplying an inch-pound measurement with a conversion factor to obtain a metric equivalent. The metric value will have the same degree of precision as that of the value from which the conversion is made. For example, to convert three miles to a metric equivalent in kilometers, one must divide three by the conversion equivalent (.62) to reach 4.8 kilometers.

A dual systems method or "adaptive conversion," is also used. This method changes a magnitude in the inch-pound system to a reasonably equivalent magnitude in the metric system. The inch-pound value is placed in parentheses immediately following the metric measurement. This process should result in conversions which are meaningful and practical in application.

Consistent with national policy, the Coast Guard advocates the hard conversion method. However, the soft metric and dual system may be used under certain circumstances.

Conclusion

The Coast Guard recognizes that converting to the metric system will not be easy on its personnel and that of the marine industry. A familiar old tradition must be replaced with an all new perception of weights and measures. It will involve converting machinery labels and units in technical manuals. People must become familiar with metric units and terminology. However, all these efforts will be worthwhile when metric usage feels natural and new global markets become more accessible to United States manufacturers.

LTJG Pamela Zearfoss is a staff member of the Engineering Branch of the Marine Technical and Hazardous Materials Division.

Telephone: (202) 267-2206.

Oil pollution prevention — where we are . . . . . and where we are going

By Mr. Bruce Novak

Background

In response to highly publicized oil spills, most notably the *Exxon Valdez*, Congress unanimously passed the Oil Pollution Act of 1990 (OPA 90). This was the largest pollution prevention legislation since the Act to Prevent Pollution from Ships in 1980, which primarily dealt with operational pollution. The goal of OPA 90 was to lessen chances of accidental oil spills and to improve clean-up capabilities. It did this by increasing liability limits significantly and by requiring additional operational and construction requirements for tankers.

Closely monitored by Congress, environmental and industry groups, OPA 90 implementation clearly follows the traditional Coast Guard mission of marine safety and environmental protection.

OPA 90 assigned responsibilities to many federal agencies, but the bulk of the implementation fell to the Coast Guard. This was no accident. There are three reasons why the Coast Guard was given the environmental protection mission. They are **presence, authority** and **experience**.

The Coast Guard has been a major **presence** on United States waterways since its founding in 1790. Today, there are field offices in 47 major ports on the coasts and inland waterways. The Coast Guard maintains cutters and aircraft nationwide to detect spills, deploy resources and act as mobile command centers.

The Coast Guard has broad **authority** to enforce federal law on United States waters. Specifically, the agency is responsible for regulating the merchant marine and protecting the marine environment.

The Coast Guard also has vast **experience** in environmental protection and response, with a long active vessel and facility inspection program. Lately, attention has been focused on the role of the human element in environmental protection. The Coast Guard's licensing and training experience is an invaluable asset in promoting properly sized, well trained and rested crews to prevent accidents.

Prompt achievements

OPA 90 was an enormous challenge for the Coast Guard. It required quick action on rulemaking, operations and organization. The provisions of the act which didn't need formal rulemaking were implemented immediately.

- A new light was installed at Bligh Reef in September 1990.
- An interagency research and development committee specified by OPA 90 was formed and a comprehensive report submitted to Congress.

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An oil pollution strike team and the National Strike Force Coordination Center were commissioned in September 1991.

The United States coastline was evaluated for strategic locations for pre-positioned oil spill response equipment. Nineteen sites were selected and equipment purchased. Galveston, Texas, was the first site to be operational in February 1993.

The emergency management and response process for dealing with major spills was revamped and improved with a new process called, "spills of national significance," which pre-plans responses to a major spill, saving time and confusion when such an event actually occurs.

Two staffs of about 100 members each were rapidly developed to implement OPA 90. The National Pollution Funds Center staff was created to administer OPA 90 funds.

The OPA 90 staff was created with a limited life span and an ambitious mandate. Its purpose was to write the regulations, as well as develop supporting economic and environmental evaluations, and conduct oversight for studies required by the act. The only way to accomplish this was to create a special staff to implement OPA 90.

An average rulemaking takes about 400 working days and about nine steps to develop. Complex rulemaking with extensive analysis requires about 700 working days, passing through some dozen developmental steps. So far the Coast Guard's time for developing OPA 90 rules has been from 25 to 33 percent less than normally expected.

Throughout the regulation development process, meaningful public involvement was a primary goal. To achieve this, the Coast Guard used the negotiated rulemaking process, a technique to reach consensus on issues by bringing together the interested parties in face-to-face negotiations. This relatively new method can help avoid some of the conflict associated with more traditional confrontational or notice and comment techniques. One side benefit is that the parties become educated on the various parts of regulatory proposals.

OPA 90 accomplishments

Recent improvements brought about through OPA 90 include:

- increased levels of liability, encouraging greater caution among shippers;
- clear statement of public policy that the spiller is responsible for clean-up costs;
- increased international cooperation; International and United States oil pollution-prevention requirements are essentially the same. For example, IMO adopted MARPOL 74/78 regulations requiring tank vessels of 5,000 deadweight tons and above, contracted for on or after July 6, 1993, to have full double hulls.
- greater emphasis on human factors; Incompetence and human errors can overcome engineered solutions. It is more economical in the long run to obtain proper training, manning and work hours than to rebuild ships. Accordingly, the act provides for:

  (1) review of drug and alcohol use before mariners' documents are issued;

  (2) access to the National Driver Register to check on driving histories;

  (3) five-year renewal schedule for all licenses and documents; and

  (4) temporary suspension of mariner documents for drug and alcohol abuse.

The act also contains limits on crew work hours on tank vessels. A licensed individual may not work more than 15 hours in any 24-hour period, or more than 36 hours in a 72-hour period, except in an emergency or drill. This should help reduce crew fatigue contributing to casualties.

- Increased community involvement through establishing regional citizen's advisory committees; (Thus far there are committees in Prince William Sound and Cook Inlet in Alaska.)
- National response system improvements, including the establishment of a third strike team (the Gulf team headquartered in Mobile, Alabama), the creation of the National Strike Force Coordination Center, the selection of 19 sites for pre-positioning pollution response equipment, and additional response equipment procured for each Coast Guard district; and
- creation of a port-state information exchange, a computer database system making specific vessel performance data available to interested parties.

OPA 90 requirements have already paid dividends. Pre-positioned equipment has minimized damage from several recent spills, including the barge grounding off Puerto Rico and the barge collision, fire and spill off Tampa, Florida. The Gulf Strike Team has engaged in response activities, and vessels have successfully responded to spills in compliance with their response plans.

"The emphasis is on prevention instead of cleanup . . ."

Future focus

OPA 90 has forced dramatic changes in the marine industry, which is under increasing pressure from many sides. Like a snowball rolling downhill, the world demand for improved pollution prevention is gathering speed and support. The emphasis is on prevention instead of cleanup, because, to avoid destruction of natural resources, it is imperative to stop spills before they happen. International cooperation is necessary to achieve this.

Flag states, classification societies and vessel owners are primarily responsible for safe vessel operation. Unfortunately, they have not always acted responsibly, leaving port states to pay the price for pollution and natural resource losses. More and more port states are demanding compliance with existing requirements.

The United States, along with other port states that have been victimized by lax flag state enforcement of standards, is working through IMO to identify countries and organizations not meeting international responsibilities. The United States is also increasing its enforcement efforts and port state control inspections on visiting foreign flag vessels. The public will see stricter enforcement standards along with increased penalties for violators.

The United States is opening up selected vessel inspection and boarding files to shipowners, charterers, classification societies and flag states worldwide to inform them of specific vessel enforcement histories.

Joining the international community, the United States is reexamining the provisions of the Convention on Standards and Training Certification and Watchkeeping. Credible standards for work hours, manning and crew size are imperative for vessel safety, particularly on the new automated vessels. They may be less expensive to operate and require smaller crews, but the crews must be trained on the new equipment and must not be forced to work excessive hours.

Expense is the overwhelming reason that the shipping industry objects to the new safety and pollution-prevention requirements. However, safe vessel operation is ultimately cheaper in the long run. It takes only a minor spill to wipe out years of savings from scrimping on crew costs, training and maintenance.

Conclusion

The United States and other port states will pursue strict uniform enforcement policies to force out substandard operators who are driving the freight rates so low that reputable owners cannot compete. In the near future, substandard vessel operators won't find markets willing to do business with them. Owners and operators, classification societies and even flag states will soon realize that safe vessel operation is in everybody's best interest. Competitive pricing, while important, will no longer be the primary concern in letting shipping contracts.

There is an international recognition that business as usual in developing and enforcing standards just can't go on. We have to do better. The public expects it and it will happen. Indeed, we can all look forward to cleaner seas and safer ships in the very near future.

Mr. Bruce Novak is chief of coordination and clearance with the OPA 90 staff.

Telephone: (202) 267-6819.

Standards

level the playing field

By Mr. Howard Hime

"The Office of Marine Safety, Security and Environmental Protection is committed to developing nationally and internationally recognized standards to improve maritime safety and marine environmental protection, and to promote an internationally competitive United States maritime industry."

RADM A. E. "Gene" Henn

This policy statement recognizes the historical role of the Coast Guard in developing maritime standards as effective alternatives to regulations to improve safety, environmental protection and to reduce the regulatory burden on the United States maritime industry.

The first standard

In 1934, after the *Morro Castle* burned within sight of shore with 124 lives lost, Congress established a committee to see if there were construction materials that could resist fire. The Coast Guard worked with the National Fire Protection Association and the National Bureau of Standards reviewing materials and conducting performance test standards.

In 1936, successful full-scale tests were conducted aboard the merchant vessel *Nantasket*. The test was standardized in 1938, and remains in effect today as the United States standard for fire safety.

In the 1960s, a series of fires aboard foreign passenger ships highlighted the problem again. The IMO ultimately developed the 1974 Safety of Life at Sea (SOLAS) Convention based largely on the United States fire standard.

The same standard was adopted by the International Standards Organization in 1973 and is now referenced as the standard test requirement for noncombustible materials.

Passenger ships throughout the world must now be constructed of materials that pass this test. This has provided a level playing field in the international maritime community, offering United States manufacturers the opportunity to sell their products competitively overseas.

"The Coast Guard must help ensure our national security by engaging in domestic and international efforts which enhance the image of the United States, protect our economic interests and defend United States property and citizens."

Coast Guard strategic agenda

Many standards later

Since 1968, the Coast Guard has adopted more than 250 standards agreed upon by industry into federal regulations to reduce the government's regulatory burden and minimize the cost of compliance. (Equipment and parts built to industry standards are more readily available and cost less than one of a kind items.)

Adopting standards in the Code of Federal Regulations keeps the rulings on the cutting edge of technological advancement and gives them a flexibility which makes compliance much easier. This also helps promote competitiveness by ensuring that products meet certain minimum quality standards and will perform to expectations.

"Each agency shall tailor its regulations to impose the least burden on society . . . consistent with obtaining the regulatory objectives . . ."

Executive Order 12866

Savings through standards

The thousands of components and materials that make up a ship meet hundreds of standards developed with industry and Coast Guard cooperation. Currently, the Coast Guard participates actively in more than 60 standards-making committees of at least 12 non-government organizations.

Adopting industry standards in regulations has saved both the Coast Guard and industry time and money. For example, the acceptance of the American Society of Mechanical Engineers code for boilers and pressure vessels saves over $1 million annually. No longer do Coast Guard inspectors have to travel 500 miles or more to perform shop inspections. Now they only have to review the manufacturer's data report form and visually check the boiler or pressure vessel at the shipyard. This was made possible by Coast Guard representatives working with association committees to make sure all concerns were covered in the boiler and pressure vessel code.

"Work to improve and gain wider implementation on international standards to enhance transportation security."

Department of Transportation national policy

Conclusion

The United States maritime industry must have the opportunity to design and build commercial vessels on a level playing field. This means that, without compromising safety, common international standards should be incorporated in the shipbuilding and operation process.

Our European and Far Eastern counterparts currently enjoy the benefits of such a system. This benefit should be extended to United States industry for a more level playing field. A viable maritime industry assures national security.

The photographs accompanying this article are fire endurance tests of steel and fiberglass piping.

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