The Coast Guard Journal of Safety at Sea

PROCEEDINGS

of the Marine Safety & Security Council

Proceedings at 60

PROCEEDINGS

Spring 2004

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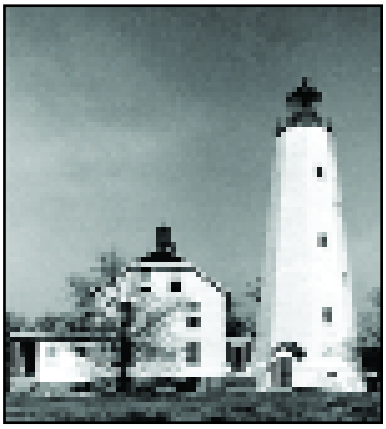

On the Cover

The Sandy Hook Light tower, in New York's Lower Bay, is the oldest original lighthouse still standing and in use in the United States. Originally known as the New York Lighthouse, the light in this tower was lit for the first time on June 11, 1764. On its 200th anniversary, the lighthouse was dedicated as a National Historic Landmark; the Coast Guard transferred ownership in 1996 to the National Park Service. The Sandy Hook tower is a part of the Gateway National Recreational Area. Equipped with a 1,000-watt bulb, its light is visible up to 19 miles on a clear day. The New Jersey Lighthouse Society, in conjunction with the National Park Service, conducts tours of the tower. Researched by Diane Hackney. Cover is a USCG illustration.

A Look Back

Where We Are Now

The Way Forward

On Deck

Back Cover Credits:
The members of U.S. Coast Guard Port Security Unit (PSU) 308, based in Gulfport, Miss., returned home March 11 after a 7-month deployment. Their mission was to protect the Port of Ash Shuaiba, Kuwait and ensure the safe flow of equipment and supplies to coalition forces participating in Operation Iraqi Freedom. All photos are by Public Affairs Officer Nicholas Cangemi, USCG, except Arriving Home.

Couple Kissing: Rachel Sercovich and her husband, Petty Officer Terry Sercovich.

Arriving Home: Public Affairs Officer Jeff Murphy, USCG.

Expectant Parents: Mary Tingle anxiously awaits the return of her son, Brette Tingle.

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All are USCG illustrations based on original *Proceedings* covers.

A Look Back:
October 1944; volume 1, number 10.

Where We Are Now:
October 1946; volume 3, number 10.

The Way Forward:
May 1945; volume 2, number 5.

Assistant Commandant's Perspective

by Rear Adm. THOMAS H. GILMOUR
Assistant Commandant for Marine Safety, Security & Environmental Protection

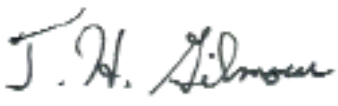
The maritime community has seen significant improvements in safety in virtually all sectors of the industry throughout the past 60 years, thanks in large measure to a steadfast commitment by the Coast Guard and our industry partners. Despite the varying challenges of the past 60 years, making the seas safe has been, and will continue to be, a central Coast Guard mission, one from which we will not waver.

In 1944, Coast Guard Commandant Vice Admiral Russell Waesche established the Merchant Marine Council, the forerunner of the Marine Safety and Security Council, to "advise and assist the Commandant on matters relating to navigation and maritime safety..." Our country at that time was engaged in one of the largest wars in our history, consuming many of our resources. It was recognized, however, that safety and security are intertwined and essential to keeping goods moving in an efficient marine transportation system.

Thirty years later, in 1974, the country was facing serious economic problems. Coast Guard Commandant Owen W. Siler told a gathering of safety experts from all over the nation that "the safety of all those who use the waters, and the protection of those waters, themselves, are the bone and muscle of Coast Guard programs….Tight money and an austere economic climate is no excuse to reduce your safety efforts."

And now, 30 years later, our country is facing a much different challenge—the threat of terrorism on our homeland. Coast Guard Commandant Thomas H. Collins reiterated in his annual State of the Coast Guard Address in March 2004, that our priority is to "build out our readiness to mitigate security risks to the homeland." But, as he noted, the increasing security demands have not lessened our mandate to perform all of our missions, including those relating to maritime safety. Safety and security are intertwined to achieve peaceful and sustainable use of our waterways. We have taken several measures to achieve those goals through initiatives such as the suite of regulations implementing the Maritime Transportation Security Act of 2002, which ensures the safety of our ports and vessels through a new set of security standards, and by aggressively pursuing partnerships with those in the maritime industry.

As we look back at our accomplishments of the past 60 years, we can note with pride our many accomplishments in making our waters safer and more secure. We have done so despite the challenges we faced, and with continued resolve and cooperation with our partners in government and industry, we will continue to improve the safety and security of our maritime industry.



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Champions Point of View

by Capt. ERNEST J. FINK
Commanding Officer, U.S. Coast Guard National Maritime Center

This issue of *Proceedings* marks the magazine's 60th anniversary. Through the articles in these pages we look back at some of the programs and significant incidents that have shaped the Coast Guard's marine safety program throughout the past 60 years, present an overview of several current initiatives, and take a glimpse at some of the measures and programs planned for the future.

Though the look and feel of the magazine has changed markedly over the years—going from a monthly to quarterly publication, black and white to full color—its purpose has stayed the same. What was pointed out in the premiere issue in January 1944 still holds true today: "It is hoped to include herein matters of information and interest which, by their dissemination, will make for greater safety at sea."

Disseminating information for greater safety at sea remains our principal purpose. Yet as times change, and new issues emerge, so too do our actions to achieve the safety we all strive for. The pages in this magazine have chronicled those changes over the past 60 years. We saw this in the mid-1940s as we applied increased resources to vessel inspections to bring about greater safety for passenger vessels. We responded in the 1990s as we applied greater resources to implement additional protections for our maritime environment. And we see that today, as the Coast Guard places greater emphasis on security in response to the most recent threats to our safety and security. Our parent body—the Marine Safety Council—recently changed its name to reflect the increased focus on security. As the document of that body, we will follow suit; the new name of this magazine is *Proceedings of the Marine Safety and Security Council*. We will continue to disseminate information to improve safety at sea, but in recognition of today's challenges, the Coast Guard's increasing emphasis on maritime security will also be reflected in these pages.

In the age of the Internet, we recognize that there are faster, and indeed, cheaper, ways of disseminating information. But we have a larger goal with each issue of this magazine; that is to present in-depth information on different aspects of the marine safety industry from subject matter experts, to maintain a dialogue with our industry partners, and to serve as a vehicle to document our history and share lessons learned. Through these pages we aim to keep alive the lessons of the marine safety program so we can examine and learn from those lessons 60 years hence.

Charting the Next Leg ...

Looking at the course ahead for Proceedings

by ALBERT G. KIRCHNER JR.
Acting Executive Editor, U.S. Coast Guard National Maritime Center

I am privileged to be at the Executive Editor's helm of *Proceedings* on its 60th anniversary. In putting together this issue, all of us involved were impressed by the evolution of the magazine throughout its 60-year lifetime. From its inception, *Proceedings* endeavored to promote safety, build better relationships, share "lessons learned" and minimize regulatory burdens through timely communication with the public and regulated industry. During this same time in our nation's history, Congress turned its attention to the whole issue of regulatory practices of federal agencies. It passed the Administrative Procedures Act of 1946 that set the stage for better public involvement in regulatory initiatives. The act required the publication of public notices for agency rulemaking in the *Federal Register*, established in 1935.

Today, *Proceedings* is the "Voice of the Program" for the U.S. Coast Guard's Marine Safety, Security and Environmental Protection Program, with quarterly issues showcasing programs, sharing "lessons learned" and providing technical insights on subjects impacting on various segments of the national and international maritime community.

As *Proceedings* continues to evolve, we are working to improve it as well. During the past 18 months our magazine staff has accomplished a number of items that we are very proud of:

- Using an independent publications consultant to take a fresh look at the magazine, *we developed an agenda to make it more attractive, focused and professional.* You may have noticed some changes already and will see more in the near future.

- *We grew our subscription base to more than 10,000* by targeting new readers in our various industry segments and constituencies. With the help of several maritime academies, their Cadets—the industry's future leaders—now receive their own personal copy of *Proceedings* each quarter.

Looking ahead, we have three high priority goals for the magazine:

- *Provide top quality content* to satisfy the needs of our readers;

- *Make* Proceedings *an important "tool" in the achievement of our Coast Guard Marine Safety, Security and Environmental Protection program objectives and annual business plan goals.* To do this we need to be able to demonstrate to our program managers that *Proceedings* is a viable tool for their programs to achieve effective dialogue with their constituencies;

- *Increase readership by 50 percent per year for three years.* This goal is critical to the previous goal—we cannot just increase the numbers, we must also find the right readers—those who are able to make a difference in solving the safety, security and environmental challenges in their segment of the marine industry.

PROCEEDINGS

of the

MERCHANT MARINE COUNCIL

UNITED STATES COAST GUARD

Vol. 1 January, 1944 No. 1

Above is the cover of the inaugural issue of *Proceedings of the Merchant Marine Council* in January 1944. In his message in that first issue, U.S. Coast Guard Commandant Vice Adm. R.R. Waesche announced formation of the Merchant Marine Council, saying its purpose was to "advise and assist the Commandant on matters relating to navigation and maritime safety, and to provide a forum in which all interested parties may express their views on actions taken or contemplated." The magazine, he said, "represents another step toward cooperation and collaboration in administration. It will bring each month to the members of the industry and other interested persons information in convenient form concerning action taken by the Coast Guard on matters within the cognizance of the Council."

A Look Back With Vice Adm. William F. Rea

by Capt. Ernest J. Fink
Commanding Officer, U.S. Coast Guard National Maritime Center

and Ellen Rosen[1]

The past 60 years have seen striking changes not only in the face of the U.S. Coast Guard's marine safety program, but in its scope and breadth as well. And while these changes have touched virtually every sector of the maritime industry in every climate, from times of war to times of peace, what has remained steady is the Coast Guard's commitment to continually seek improvements to the program. One who has witnessed the transformation over the past 60 years elucidated this fact: Vice Adm. William F. Rea, III.

Adm. Rea was at the center of the marine safety program for more than 30 years and saw much of the transformation first-hand. He served as chief, Office of Merchant Marine Safety, the predecessor to the current Office of Marine Safety, Security and Environmental Protection, from 1970 to 1974. He served on the Marine Safety Council since its formation in 1971, and prior to that served as chairman of the Council's predecessor, the Merchant Marine Council and as a member of the council during a previous tour of duty at Coast Guard Headquarters. He recently spoke with Capt. Ernest J. Fink, Commanding Officer of the Coast Guard's National Maritime Center, about the changes he experienced as one of the first to come of age in the modern day marine safety program.

Rea gained greater insight to requirements of the industry, as well as a greater sensitivity to the impact of the regulations imposed; for Rea, this time "put things in perspective."

Adm. Rea was born in 1918 in Philadelphia, Pa., and he graduated from the U.S. Coast Guard Academy in New London, Conn. with a B.S. degree in marine engineering and with a commission of ensign on Dec. 19, 1941, shortly after the bombing of Pearl Harbor. His career in marine safety was launched about the same time the Bureau of Marine Inspection and Navigation (BMIN) was transferred from the Commerce Department to the Coast Guard, marking the first time in the nation's history that all functions of maritime safety came under one agency. He was one of the first Coast Guard graduates, he pointed out, to attend formal inspection school in 1943 in lower Manhattan, and one of his initial assignments after World War II was as a deck inspector at the Marine Inspection Office at Norfolk,

Va. Reflecting on those early days, he said some of the greatest challenges faced by new Coast Guard marine inspectors were their age and lack of experience. Most of the BMIN inspectors had been in their positions for many years and were known to the vessels' crews and port engineers. When they arrived to perform an inspection, the crew would see these young, inexperienced inspectors and often ask, "When's the inspector coming?" It took many months, he said, to establish themselves and the Coast Guard in this new role.

When asked about the most notable changes in the Coast Guard, he pointed to the growth of the organization. One of the results of that growth, he said, has been an increase in the number of flag officers; when he graduated from the Academy in 1941, the Coast Guard was headed by a vice admiral.

The scope of the marine safety program, which during his tenure was limited to safety concerns, now includes environmental protection and homeland security as central components of its mission. The Office of Marine Environment and Systems addressed environmental concerns, and while port security has historically been a traditional mission, the focus on homeland security has increased, of course, since September 11.

Rear Adm. William F. Rea III, Chief, Office of Merchant Marine Safety, speaks in 1971 at a retirement luncheon for Rear Adm. Roderick Edwards, Chief, Office of Public and International Affairs.

Discussing the regulatory process, he said he was pleased to see the increasing numbers of partnerships between the Coast Guard and various sectors of the maritime industry, noting that there is more cooperation today with the industry than during his tenure. The advent of trade associations, such as the American Waterways Operators and the Passenger Vessel Association, have enabled greater Coast Guard-industry cooperation, he said. The year he spent in 1948 receiving industry training at Texaco in Port Arthur, Texas, he said, "put things in perspective," giving him greater insight to industry's requirements and a greater sensitivity to the impact of the regulations imposed on industry. In fact, one of his goals as chief of Merchant Marine Safety was to update the program and get rid of obsolete regulations.

Technology, he noted, has had a great impact on the way the Coast Guard does business. He recalled the tedious process in which regulations were updated in his early years; separate booklets were printed with each of the regulations, and then changes were manually cut and pasted in. Because the process was so tedious, changes were issued as notices to mariners once a year. With the Internet and capabil-

ity to perform changes electronically, updates to regulations and communicating with the industry is much easier and more efficient.

Discussing other positive changes that have enhanced the program, he pointed to the Chief Warrant Officer to Lieutenant program as an example of a current initiative that has given the marine safety program more stability and depth. The program enables warrant officers with deck and engine experience in marine safety to apply for a limited duty officer position in the program. The program is a win-win, he said, because it provides the program with stability, and gives the chief warrant officers an opportunity for career advancement.

Asked about his career highlights, he said one was the period he spent in Korea, from September 1946 to April 1947, assisting in the organization and training of a Korean coast guard. He also pointed to his tours of duty on Coast Guard cutters and in the field, such as a senior investigating officer at the Marine Inspection Office in New Orleans, which he said was a very busy time helping the Coast Guard establish national policy. He served on several marine boards of investigation and he had three tours of duty at Coast Guard Headquarters, including his last as chief, Office of Merchant Marine Safety. He was awarded the Legion of Merit for his services in that post in December 1973. On July 1, 1974 he was promoted to vice admiral and assumed command of the Atlantic Area and the Third Coast Guard District on Governors Island. His said his "best job" was as Commander Atlantic Area, from 1974 to 1978, which included the celebration in 1976 of the tall ships entering New York Harbor. Adm. Rea served in this position until his retirement in June 1978.

After retiring, he served as a consultant to the American Bureau of Shipping for 20 years and he conducted several investigations of major marine casualties for the government of Liberia. In addition, following up on his interest and many years of involvement with the liquefied natural gas (LNG) industry, he took a position with Cabot Corporation (the company sold its LNG business in 2000). At Cabot he served as one of four members on the LNG safety committee, and found his greatest challenge was ensuring that personnel working in this segment of the industry focused on safety and did not become complacent. Ultimately, he said, it was a very effective committee and they dealt directly with the head of Cabot Corporation in submitting their views and recommendations.

Reflecting on his entire career, and its focus on marine safety, Adm. Rea noted that it was filled with many positive experiences and noteworthy accomplishments that resulted in his appointment to vice admiral. While the look back highlighted many of the changes in the past 60 years, it reinforced one endeavor that has stayed the same—the commitment by the Coast Guard to make the industry as safe as possible for all those who use the nation's waterways.

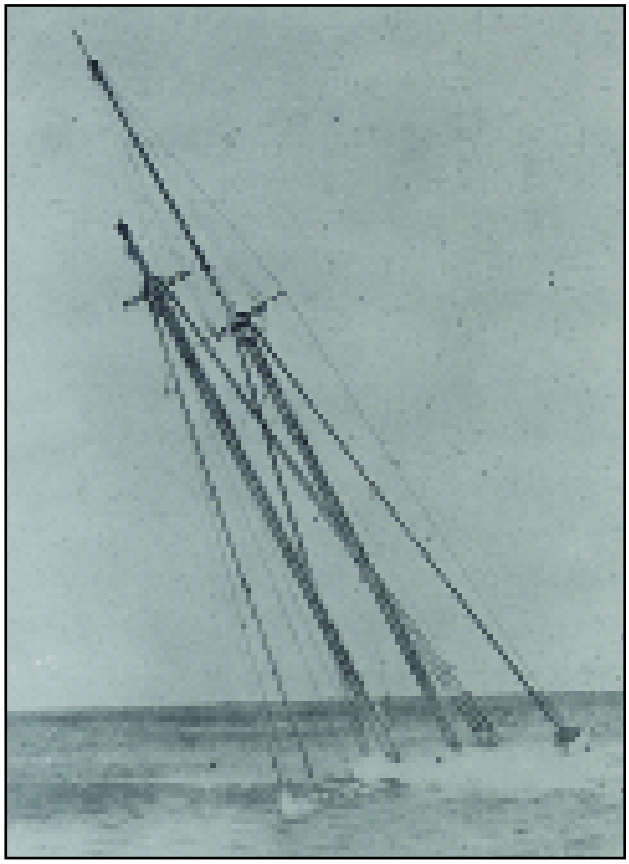
[1] Ellen Rosen is the Managing Editor for *Proceedings*.

Ship Ashore

An Overview of Marine Vessel Casualties

by ROBERT M. BROWNING JR.
U.S. Coast Guard Historian

The wooden ship *Hannah E. Shewbert*.



Around the globe and probably near the beginning of the spoken word, the cry "ship ashore" was uttered above howling winds and stormed tossed seas. For thousands of years, mankind used wooden ships to carry the lifeblood of nations, to transport passengers, and to carry war to the doorsteps of foreign countries. The era of the wooden ship lasted from the dawn of civilization until after the turn of the 20th century. During this era, navigation was imprecise, the ability to predict weather impossible and the ships themselves were fragile. These factors, combined with human error, mechanical failure, and the unforgivable nature of the seas are the variables that have caused marine casualties. Over the centuries, mankind has overcome some of these factors with improved technology. Ships are now made of steel and no longer rely on the wind and currents to propel them, and navigation is nearly exact. Yet, marine casualties are still a part of the risk of the maritime profession.

Along the coast of the United States, the greatest hazards historically were near the entrances to the major ports and along shallow shorelines. Marine casualties along our shores reached their apex during the middle of the 19th century. Coincidentally, this was also at the height of the use of wooden ships. This was an era when immigrants came to America in the tens of thousands each year and our ports were crowded with the trade of worldwide markets.

Imprecise navigation, inadequate aids to navigation, and storms caused most early marine casualties. In less than a decade, 338 shipwrecks occurred on the approaches to New York. Large cargo ships and immigrant packet ships, caught on a lee shore in northeast gales, piled onto our shores by the dozens each year. In 1854, during a fierce northeast storm, the immigrant packet ship *Powhatan* grounded on the coast of New Jersey and all of the reportedly more than 350 passengers died. Tremendous loss of life and financial ruin to the ship's owners were common. The large loss of life within site of shore was one of the major factors in the creation of the U.S. Life-Saving Service.

For thousands of years, mankind used wooden ships to carry the lifeblood of nations, to transport passengers, and to carry war to the doorsteps of foreign countries.

By the middle of the 19th century, the steamship began to make its appearance along our shores and in the river trade. These vessels did not need wind for propulsion, giving them at least one advantage over sailing vessels. These ships, however, built with new technology, had engines that were not powerful or always reliable. In storms, these ships sometimes lost motive power, leaving them helpless against the elements. Under these circumstances, many were lost. Fire, now introduced as a key element on ships, cursed early steamers, which commonly suffered boiler explosions and fires. Disasters made public the carnage suffered. The 1838 boiler explosion onboard the *Pulaski* in North Carolina killed 100 persons and informed Congress of the danger of steam travel. Also well known is the 1904 fire onboard the *General Slocum*, which killed 1,021. These, however, are only two disasters

among the scores recorded in the first 50 years of steamboat travel. The plethora of steamship accidents led to the creation of the Steamboat Inspection Service.

Technology advanced to such a degree after the turn of the 20th century, ships increased exponentially in size, speed and power. Fewer ships now carried the commerce of nations. The commercial sailing ship, once the queen of the ocean, was by World War II, virtually a memory. Advances in Aids to Navigation (ATON) improved the certainty of navigation and just after the war, the introduction of Long Range Navigation (LORAN) and radar on ships further advanced safety at sea. Yet, disasters still occur.

Human error, unavoidable accidents and weather are the causes of most of the modern marine casualties. Human error, however, has been consistently the major cause of casualties in the post-World War II era. One only has to look at the major accidents within the last half century to illustrate this fact.

SKIPPER OF SUNK SHIP
Showing the strain of his ordeal, Capt. Piero Calamai (right) of the sunken *Andrea Doria* is supported as he arrives aboard the Navy escort *Edward R. Allen* at the Brooklyn Army Terminal. He praised the "brilliant" rescue operation, but refused to answer any questions involving the crash.

Damage shown to the freighter *Stockholm* after it collided with the *Andrea Doria* on July 25, 1956; 52 died.

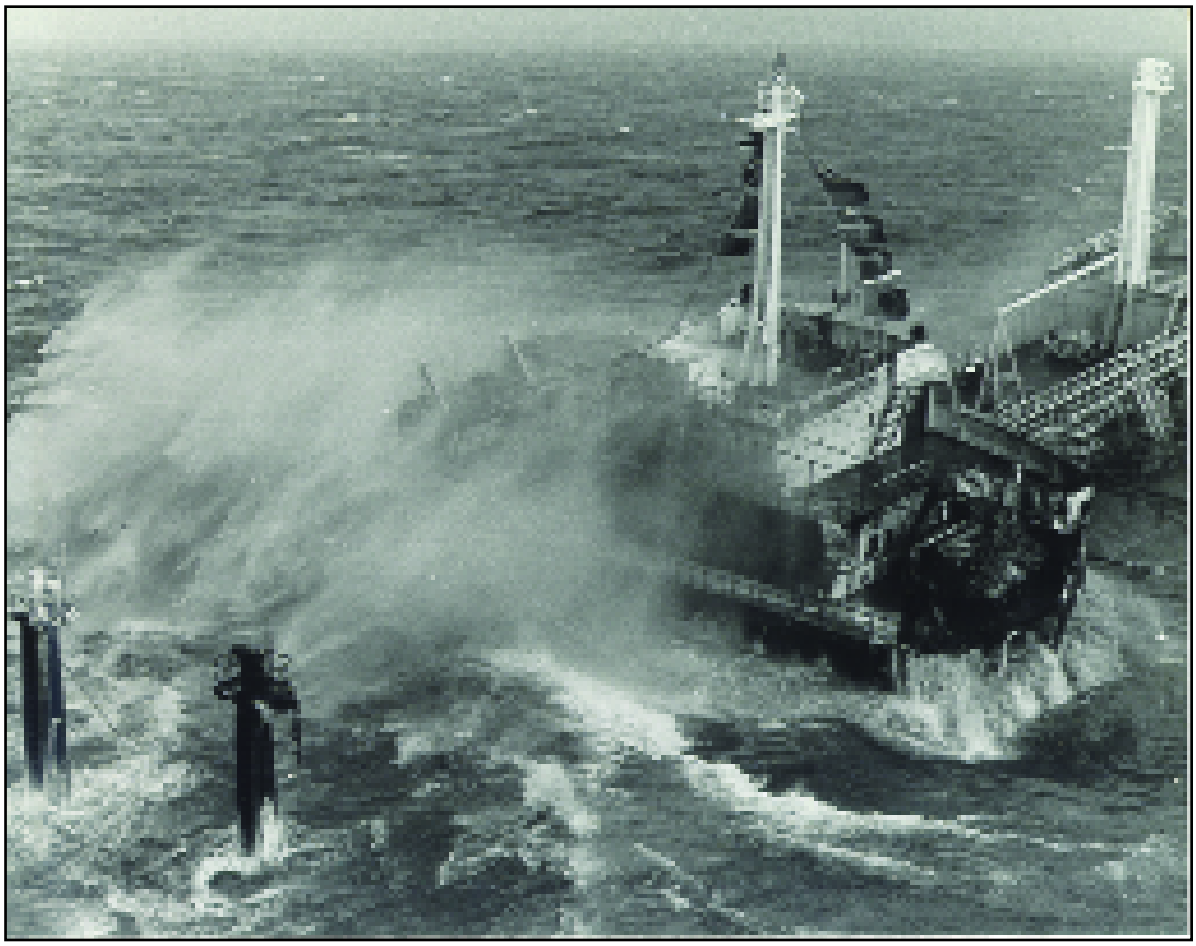
One of the first accidents that attracted both national and international attention was the collision between the Swedish liner *Stockholm* and the Italian luxury liner *Andrea Doria* 55 miles off Nantucket Island. On July 25, 1956, in a dense fog, the *Andrea Doria*, bound for New York, steamed westward while the *Stockholm* cruised from New York on its regular run to Sweden. Both captains steered towards the Nantucket lightship intending to pass within a mile of this floating navigational aid.

At 11:22 p.m. the much smaller *Stockholm* struck the *Andrea Doria* forward of its stack on its starboard side. The collision smashed and sheared away the bow of the *Stockholm*. The *Andrea Doria* received a fatal gash in its side that stretched from the main deck to below the bulkhead deck and into some empty fuel tanks. When the tanks flooded, the liner began to list to starboard. This placed the gash above the non-watertight bulkhead deck and the ship was doomed.

The *Andrea Doria*'s captain called away the lifeboats and radioed for medical assistance. He also called for the help of nearby ships for more lifeboats for 1,500 of his passengers. U.S. Coast Guard cutters and other ships began to steam to assist the stricken ships. Included were the French liner *Ile de France*, the freighter *Cape Ann*, and the Coast Guard cutters *Tamaroa* and *Owasco*. The *Andrea Doria* sank 10 hours after the collision. Forty-seven persons died on the Italian liner and five crewmen died on the *Stockholm*. With more caution by either skipper, they might have avoided the accident.

Less than a decade later, another large loss of life occurred involving a non-American flagged ship. The fact that many of the passengers were American citizens captured the attention of those responsible for safety at sea. The SS *Yarmouth Castle*, a Panamanian-flagged passenger ship was on its bi-weekly cruise from Miami to the Bahamas. Just after midnight in the early morning of Nov. 13, 1965, someone discovered a fire in the forward staircase. Flames rapidly spread to the amidships passenger section and bridge. The passengers and crew abandoned ship, suffering casualties of three dead and 87 missing. The Republic of Panama requested that the Coast Guard hold a Marine Board of Investigation. After the Coast Guard made the findings public, the United States pressed for more stringent passenger ship safety.

In 1976 a marine casualty occurred that had the potential for causing a significant environmental disaster. On December 15, the Liberian tanker *Argo Merchant*, carrying a cargo of about 7.5 million gallons of heavy industrial fuel oil, bound for Salem, Mass., ran aground on Fishing Rip Shoals about 28 miles southeast of Nantucket. The Coast Guard reacted quickly and sent the cutters *Sherman* and *Vigilant*, as well as members of the Atlantic Strike Team, to try to refloat the tanker and prevent the cargo from spilling into the Atlantic.



Seas off Cape Cod break the grounded tanker *Argo Merchant* 29 miles southeast of Nantucket Island in December 1976, after it strayed 18 miles off course. Six days later, the tanker spilled 7.5 million gallons of oil into the ocean—one of the largest oil spills in U.S. history.

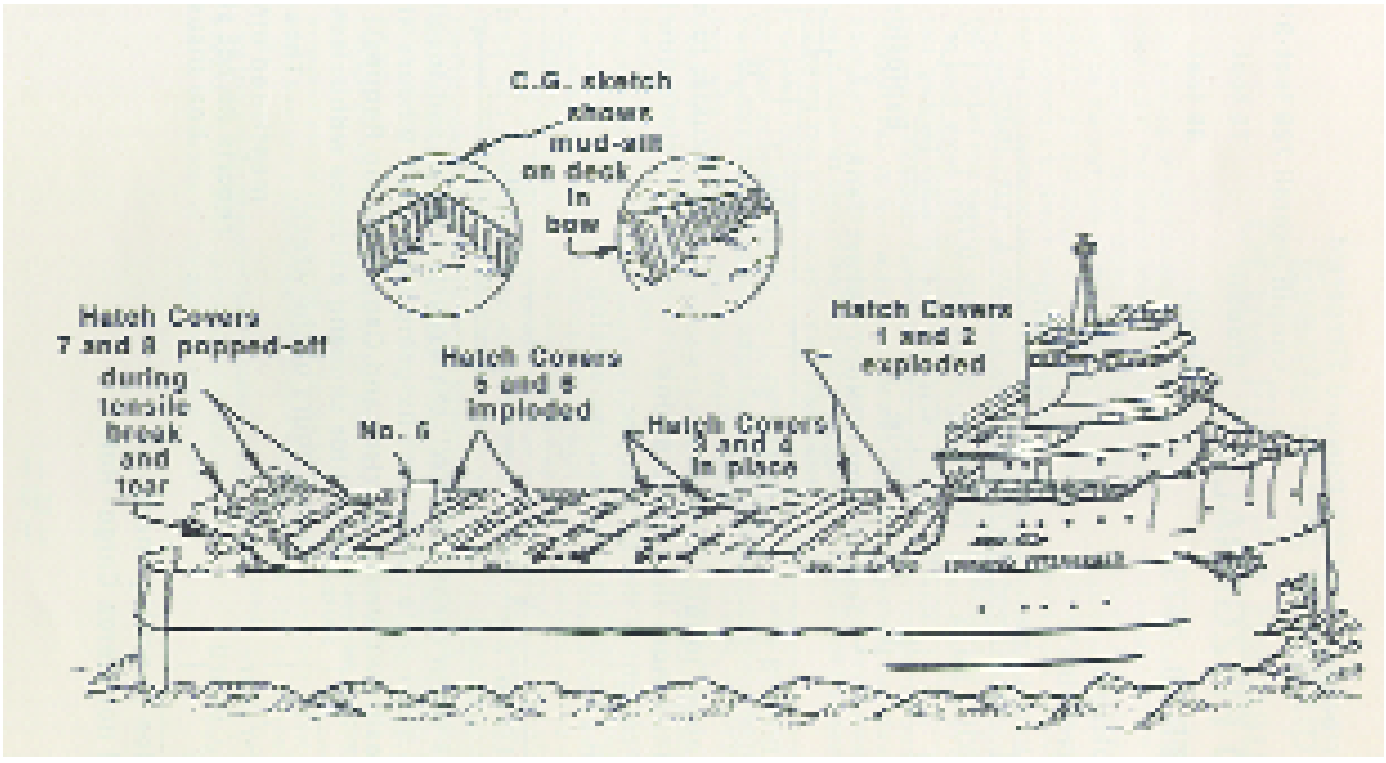
The plan to send lighters to unload the *Argo Merchant* never materialized due to increasingly heavy seas. Hard aground, the seas began to batter the vessel and it began leaking oil that afternoon. This forced the evacuation of the vessel's crew and the Coast Guardsmen sent to dewater the ship and contain the oil spill. On December 15 and 16, helicopters from Air Station Cape Cod lifted the men on the ship to safety. While the Coast Guard rescued the crew, the vessel began to break up, spilling its huge cargo into the churning Atlantic Ocean. Eventually the tanker broke in half. Fortunately, northeasterly winds drove the oil seaward and the ecological damage from one of the largest oil spills in U.S. history was minimal.

This accident had an important impact on the American public. Within the next 10 weeks, 14 more oil spills occurred in or near American waters, 10 involving Liberian-registered ships. This created a national environmental concern about tanker safety and eventually led to the passage of the Tanker Safety and Pollution Prevention Act of 1977. This act authorized the Coast Guard to enforce tougher regulations to deal with the material condition and equipment of tankers. It also established a 200-mile pollution control zone.

Adverse weather accidents also caused two of the most noted modern shipwrecks. In November 1975, the ore carrier *Edmund Fitzgerald* sank in a storm in Lake Superior with the loss of all 29 crewmen onboard. Similarly, in February 1983, the *Marine Electric*, which was carrying coal, capsized and sank in a gale off the coast of Virginia with the loss of all hands.

A marine casualty that might have had serious consequences for those onboard was the fire and later sinking of the Dutch cruise ship *Prinsendam*. Shortly after midnight on Oct. 4, 1980, a fire, started by a broken fuel line, erupted in the engine room. The 190-man crew reacted slowly and failed to contain the fire. With the ship in danger, the captain of *Prinsendam* had the 320 passengers muster in the lounge on the promenade deck and sent an SOS.

At the time of the fire, the cruise ship, sailing from Vancouver, British Columbia to Singapore, lay 400 miles from the nearest Coast Guard air station, nearly 200 miles from the nearest cutter, and 100 miles from the closest merchant ship. The first helicopter arrived from Kodiak and lowered a pump



Official drawing of the bow of the *Edmond Fitzgerald* from the starboard side. Courtesy "*The Wreck of the SS* Edmund Fitzgerald, *November 10, 1975*" by Paul E. Hainault.

The *Prinsendam*.

and a chief warrant officer to help bring the fire under control. The *Prinsendam*'s passengers, mostly elderly, had assembled in their nightclothes, and the fire spread so rapidly that they had to abandon the ship without returning to their staterooms for warmer clothing. At 5:15 a.m., the passengers and crew began clamoring into the lifeboats, which they lowered into the five-foot swells.

Just before dawn, the tanker *Williamsburg* arrived on-scene. Eventually, three Coast Guard cutters, two other merchant vessels, five Coast Guard helicopters, as well as one Air Force and two Canadian helicopters all joined the rescue efforts. The *Williamsburg* became a crucial component of the rescue. The helicopters, operating at extreme ranges, hoisted the passengers from the lifeboats, and when full deposited them on the deck of the large tanker and returned to search for more.

Miraculously, everyone escaped the burning cruise ship, which sank on Oct. 11, 1980. Given the advanced age of most of the passengers, it was fortunate that all lived and not even a single passenger suffered a serious injury. In comparison with the events on the *Yarmouth Castle*, it certainly ranks as one of the most successful rescues in history.

One of the marine casualties that had the most influence on the Coast Guard was the grounding of the *Exxon Valdez*. On March 24, 1989, shortly after midnight, the 987-foot tanker struck Bligh Reef in Prince William Sound, Alaska. The tanker eventually lost more than 10 million gallons of crude oil. The oil soiled more than 350 miles of shoreline in the fragile ecosystem in Prince William Sound. The cleanup and salvage operations involved more than a dozen federal agencies. The cleanup also required a large number of Coast Guard assets and personnel for many weeks. The long-term impact on the Service resulted from the passage of the Oil Pollution Act in 1990, one of the largest legislative tasks ever given to the Coast Guard.

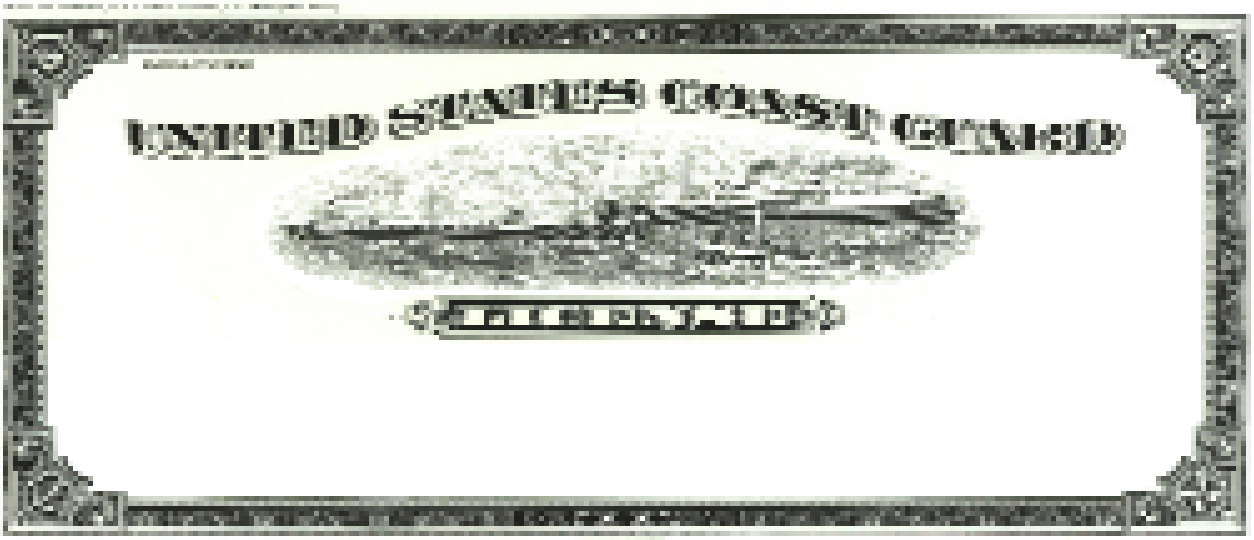
Marine casualties occur around the world almost daily. Some of these accidents end with incredible loss of life. Careful regulation and vigilance by agencies such as the Cosast Guard, and use of tools such as the Automated Mutual Assistance Vessel Rescue (AMVER) System and Global Positioning System (GPS) technology have spared the United States from major disasters in recent years. Yet, casualties caused by human error such as the Feb. 4, 1999 grounding of the Panamanian-flagged bulk carrier *New Carissa* will continue. The overall trend of marine casualties in the United States, however, has certainly been one of greater safety, particularly for passengers. While mankind can probably never overcome human error and will likely never control the weather, technology has eliminated or greatly reduced many of the other variables that have historically created the circumstances for shipwrecks and maritime disasters.

The *Exxon Valdez* enters a drydock to undergo repairs following its 1989 grounding and spill of 10 million gallons of oil. Courtesy Kim Lee, National Steel & Shipbuilding Company; USCG.

Three Ships on Maritime Licenses Continue Long Tradition

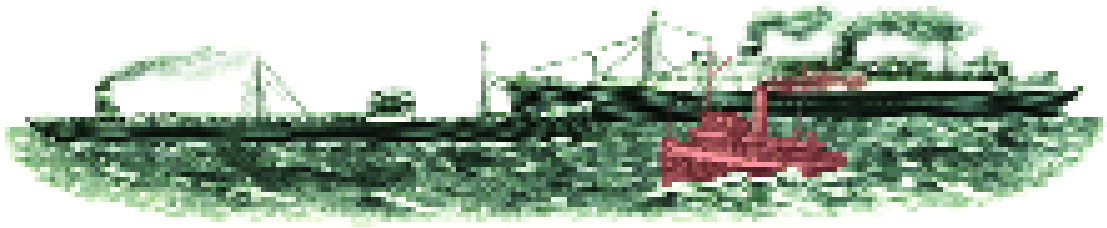
by Prof. ROBERT STANLEY BATES, Capt. U.S. Coast Guard (Ret.)
U.S. Coast Guard Academy

The following is a condensed version of an article, A New Look in Maritime Licenses, *that appeared in* Steamboat Bill, *Number 244, Vol. 59, No. 4. For a copy of the full article, or more information on licenses and documents issued to the U.S. Merchant Marine beginning in 1852 and a much expanded history of the three ships that form the engraving on the current Coast Guard-issued license, contact the author at* rbates@exmail.uscga.edu.



The license forms for the new millennium, issued by the U.S. Coast Guard in 2002, celebrate 150 years of licensing of the American merchant mariner. The first certificates, issued by the Steamboat Inspection Service in 1852, had a variety of vignettes, engraved borders and corners. Since the end of World War II almost every licensed mariner of the U.S. Merchant Marine has had the generic license with the three-ship engraving. They were, and are today, handsome monuments to a mariner's lifetime accomplishments and it was not uncommon for the recipients to know the names and histories of the ships that adorned those prized certificates.

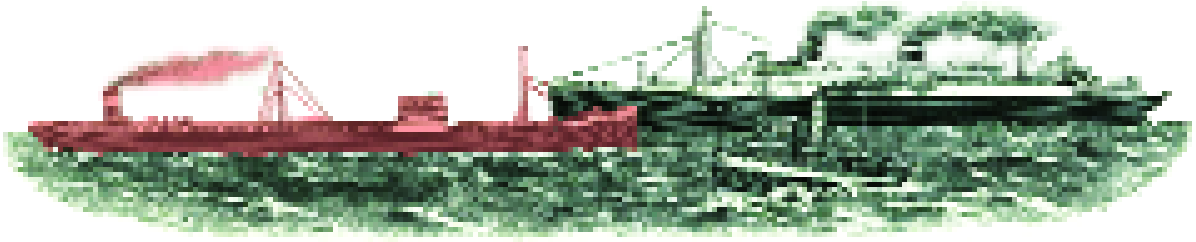
The new millennium license form will preserve the three-ship engraving that has been on Coast Guard-issued licenses since 1946. The tug *Inca*, first appearing on licenses in 1887 under the Steamboat Inspection Service, the tanker *G. Harrison Smith*, first appearing on Tankerman Certificates in 1936 under the former Bureau of Marine Inspection and Navigation (BMIN), and the SS *Manhattan* first appearing on certificates of service and certificates of identification in 1936 under the BMIN, will all appear on the new license forms and preserve the traditions of our proud heritage from its inception. The mariners of yesteryear were all familiar with the histories and stories about the vessels that were on their licenses, and it is as appropriate today as it was then to carry this history along.



Inca

The tugboat in the foreground is the *Inca*, whose story is an important part of Americana that has almost been forgotten. The *Inca* had the singular honor of appearing in the foreground of licenses issued by the Steamboat Inspection Service, the Bureau of Navigation and Steamboat Inspection, the BMIN, and on today's Coast Guard-issued licenses. *Inca*, a steam screw with a documented homeport of Brunswick, Ga., first appeared on licenses "to special engineers" on "steamers 100 gross tons and under" in 1887, only eight years after it was built. The engraving was artfully crafted by the talented engraver, Lorenzo J. Hatch, who began his apprenticeship at the Bureau of Engraving and Printing (BEP) in August 1874 at age 18, becoming the youngest apprentice at the BEP up to that time. The image of the tug *Inca* was to be seen on five distinct Merchant Marine licenses in the 19th, 20th, and 21st centuries, almost as long as the government has issued licenses.

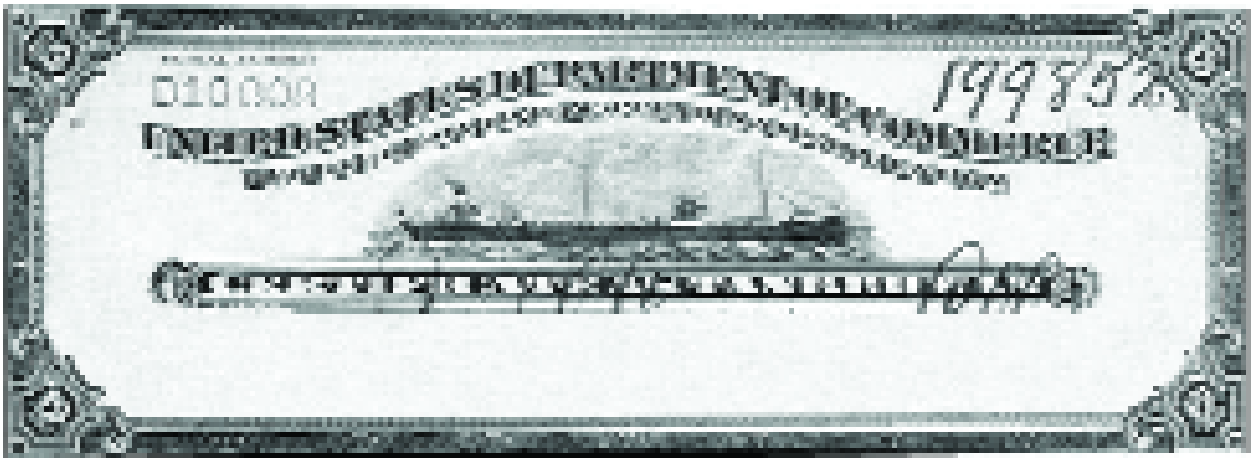
Its classic appearance was probably the reason it was chosen to adorn the licenses issued by the Steamboat Inspection Service, the BMIN, and the Coast Guard. It spent most of its life working in and around the harbor and the nearby coastal waters of Brunswick, Ga., but also made trips along the intercoastal waterways to haul barges from other ports such as Norfolk, Charleston, and Jacksonville. Capt. Bruce Fendig's book, *Brunswick—The Ocean Port of Georgia* (Darien Printing & Graphics, 1998) makes the *Inca* the centerpiece of the maritime history in Brunswick Ga. for its more than 70 years of service. In his book he lists the *Inca*'s legendary skippers as W.M. Tupper, B.A. Fahm, B.F. Latham, Leo Lommand, and finally John T. Hotch. Around 1950, the time of steam tugs ended as the diesel plants took over, and the *Inca* was laid up for years in Brunswick Harbor. It was up for sale, but if it were to work again, re-engineering would be necessary because it could no longer remain in commercial service with its outdated old steam plant. Although never proven, it appears that vandals boarded the tug one evening in the early 1950s to acquire any brass they could find, including its seacocks. When they knocked off the brass fitting below the waterline, it took on water and sank down to the top of its deckhouse. Years later, a storm claimed the pilothouse and its remains were finally cleared away. The Bureau of Engraving and Printing destroyed the original die for the *Inca* about the same time.

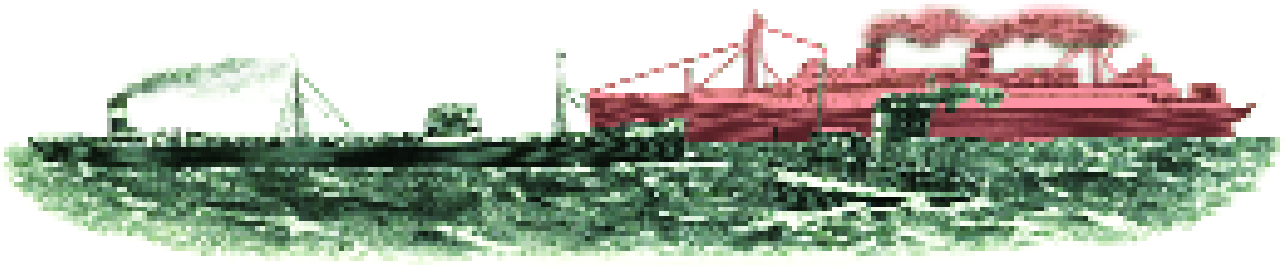


G. Harrison Smith

The tanker coming in from the left-hand side of the engraving on the Coast Guard license is the *G. Harrison Smith*, built in 1930, not to be confused with a tanker of the same name that was built in 1921. Carrying a crew of 41, the Standard Oil Company of New Jersey owned and operated the vessel and had a documented homeport of Wilmington, Del. The customs document for the *G. Harrison Smith* records that it was completed on Sept. 22, 1930 at the Federal Ship Building & Dry Dock Company in Kearney, N.J. It also had a sister ship, the *W.S. Farish*, which looked very much like it and in many ways shared a similar history. But the *G. Harrison Smith* had an exceptional record during World War II. Amid convoys of tankers, many of which were destroyed by German U-boats, the *G. Harrison Smith* never sustained any damage during its service in both the North Atlantic and the Pacific theaters. The U.S. government officially recognized the captain and crew for record turn-around time. On April 20, 1942, *G. Harrison Smith* was chartered to the War Shipping Administration in support of the all-important war effort. The war resulted in the loss of about 40 percent of the prewar worldwide tanker fleet. The effect was that it hastened the general utilization of larger and faster American-flag tankers. The average prewar tanker had a deadweight tonnage of about 11,500 tons and a speed of about 10 knots. The postwar tankers were about 15,000 deadweight tons and could sustain a speed of 14 knots. With rising costs, these characteristic figures contributed greatly to reducing operating expenses. The construction of many T-2 tankers by the government during the war resulted in a class of vessels of about 16,600 deadweight tons that could sustain speeds of 15 knots. With the average lifespan of a tanker being about 20 years and the appearance in the American trade of more efficient and economical carriers, a foreign interest bought the *G. Harrison Smith* and it resumed service under the Panamanian flag in April 1949.

As with the *Inca*, the image of the *G. Harrison Smith* came from an engraving on a certificate issued by a predecessor authority. Its image first appeared on the merchant seaman's certificate of qualification issued by the BMIN to tankermen and it was the first tanker to grace an engraved seaman's document. The engraving was done at the Bureau of Engraving and Printing from a newspaper picture of the ship by the artist James R. Lowe during September and October of 1936.



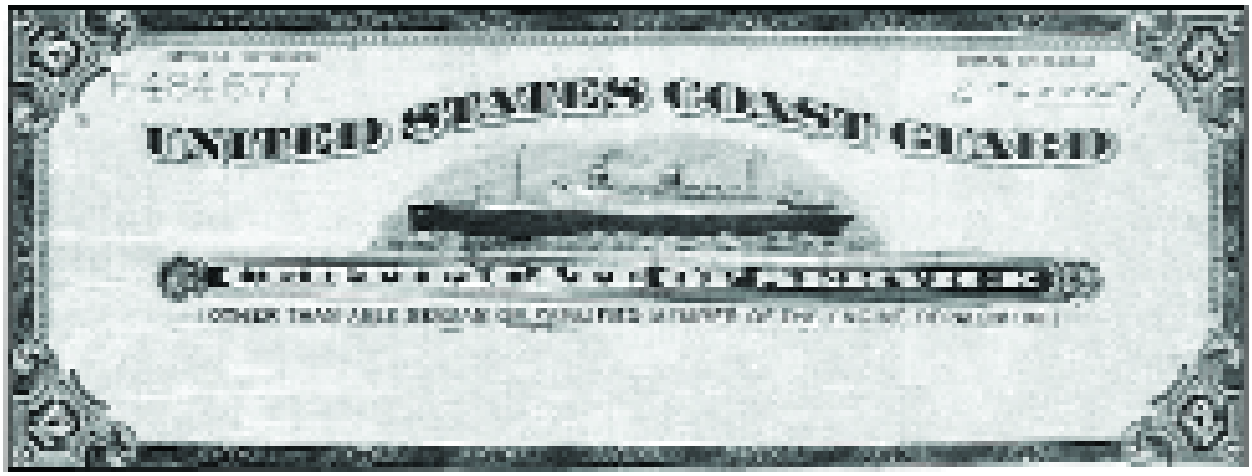


Manhattan

The passenger ship in the upper right-hand corner of the engraving is the *Manhattan*, whose story occupies an important place in American maritime history. The United States Lines wanted "the fastest cabin ship in the world" when they contracted with New York Shipbuilding Company in Camden, N.J., to build the SS *Manhattan*. (The New York Shipbuilding Company's original plan was to build a new plant in the New York district around 1900, hence the name, but found it impossible to acquire about 190 acres of land in New York and had to search for locations from New Jersey to Virginia.) The days of the Great Depression did not interrupt the plans to build, primarily because of the economic benefits of the Merchant Marine Act of 1928 and the Jones-White Act, under which the United States was endeavoring to build up a merchant fleet that would make the nation not only independent of foreign bottoms, but also promote American trade wherever it carried the flag. As a result, a contract for building the *Manhattan* and the *Washington* was signed on May 24, 1930 for their construction at an estimated cost of $21 million. The building of the two ships meant an average employment of 2,600 jobs within the shipyard and 3,000 jobs in various industries furnishing machinery and equipment to the shipyard. On Dec. 6, 1930 when the keel was laid, the *Manhattan* was to become the first liner to be built in an American shipyard for operation in the North Atlantic in 35 years. Three distinguished senators attended: Wesley L. Jones of Washington, Wallace H. White Jr. of Maine (joint authors of the Jones-White Act) and Dwight W. Morrow of New Jersey. The three senators donned white gloves in the shipyard and in turn grasped the lever of a giant air hammer that drove home the first three rivets in the keel.

One year later, on Dec. 5, 1931, the *Manhattan* was ready to be launched. The ceremonies received a great deal of notoriety, for this was to be the highest powered and largest merchant ship ever built in the United States. Edith Kermit Roosevelt, the widow of President Theodore Roosevelt, christened the *Manhattan* that day as the 705-foot hull slid down the ways. It was an impressive sight to see such a huge vessel launched with *Manhattan*'s moulded depth of 47 feet and beam of 86 feet.

Until World War II, the *Manhattan* sailed the North Atlantic. Its image first appeared on the merchant seaman's certificate of identification and the certificate of service when seaman's papers were issued



by the BMIN in 1936. Matthew D. Fenton initially engraved the vignette of the *Manhattan* in 1936, and later, Edward R. Grove re-engraved it in 1945 for the Coast Guard license.

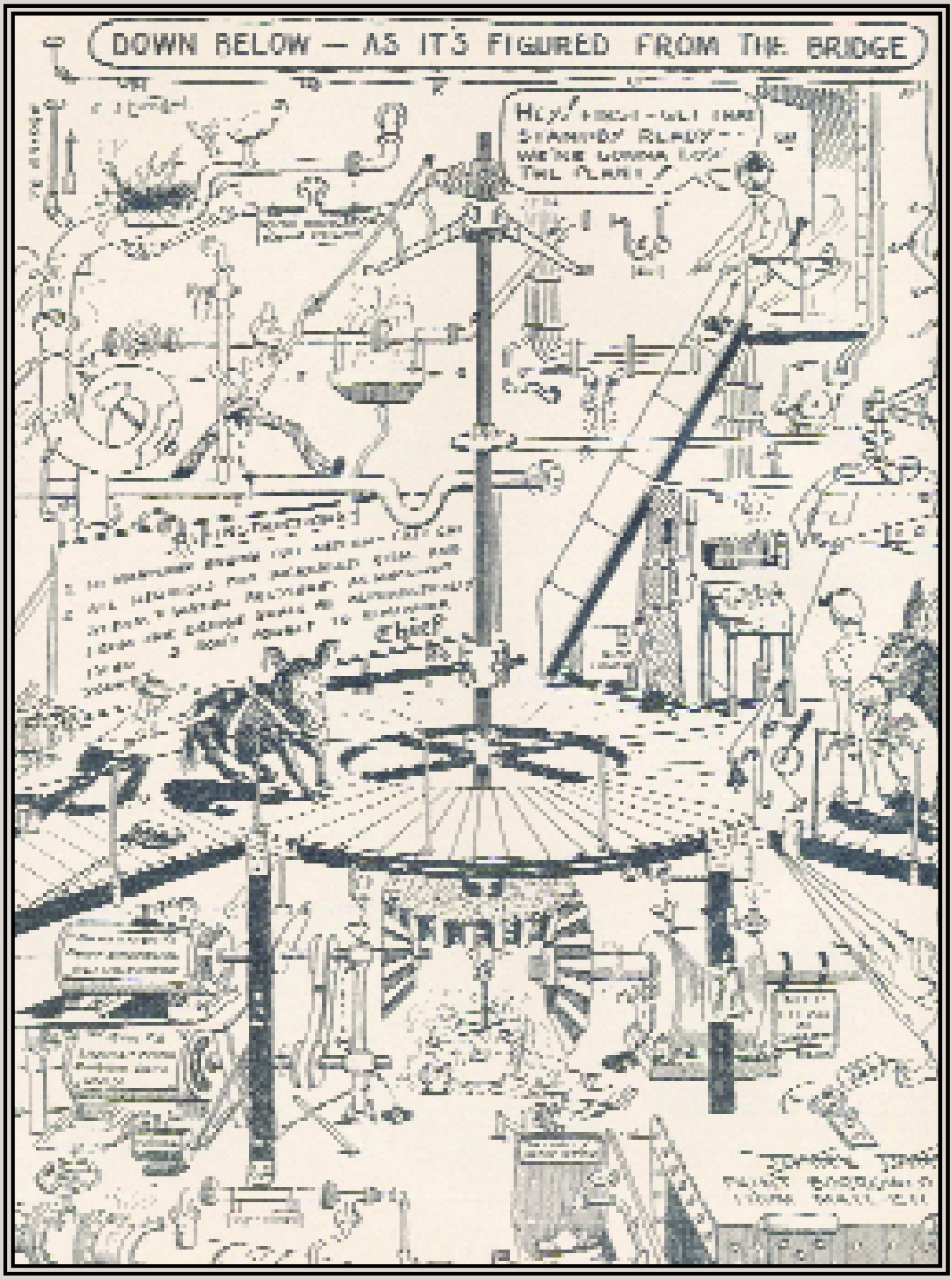
On June 6, 1941,the War Shipping Andministration chartered the *Manhattan* to the United States for service as a troop transport under the Navy Department as the USS *Wakefield* (*AP-21*). On Jan. 30, 1942 in Keppel Harbor, Singapore, a Japanese bomb hit the *Wakefield* that exploded in its sick bay, killing five and wounding nine. Later that year, in early September 1942, a devastating fire consumed the *Wakefield* in the North Atlantic and the decision was made to rebuild it, at great expense, solely as a troop transport and never to be restored to its former glory as a commercial passenger liner. The days of the *Manhattan* as a merchantman were unalterably ended, but it was yet to be of great service as *AP-21* under the command of some very capable Coast Guard captains. After 18 months of rebuilding, it resumed service in 1944 until the end of the War and was finally scrapped in 1965.

The historical reasons for creating mariners' licenses and documents, their design and the procedures for issuance form an important aspect of the maritime history of the United States. In addition to the contribution they have made to our treasure trove of national art, maritime licenses and documents truly embellish the history of various governmental agencies and the associated legislation that so richly reflects our maritime heritage.

The data in the Vessel Specifications table provides a sense of the size, power, use, propulsion and age of the vessels depicted. There is also a significant historical thread here with the image of the *Inca* surviving from 1887 on the licenses of predecessor authorities, the incredible record of the unscathed *G. Harrison Smith* during World War II and the manning of the *Manhattan* in World War II by the issuing agency, the Coast Guard. The three-ship engraving clearly demonstrates the continuity of the maritime tradition in a magnificent way. The obvious effort that has been expended throughout the past century and a half to provide merchant officers with ornate testimonials to their qualifications speaks volumes about the heavy emphasis that is placed on the appearance of the maritime license, as well as the historical authority behind it by those agencies that required it.

Vessel Specifications

	Inca	*G. Harrison Smith*	*Manhattan*
Official #	100234	230210	231779
Service	Tugboat	Tanker	Passenger
Gross Tons	103	11,752	24,289
Net Tons	51	7,328	13,924
Length	92.6'	525'	668.4'
Breadth	20'	74.3'	86.3'
Depth	9.5'	40.5'	33.3'
Year Built	1879	1930	1932
Location Built	Philadelphia, Pa.	Kearny, N.J.	Camden, N.J.


DOWN BELOW — AS IT'S FIGURED FROM THE BRIDGE
Chief

Marine Safety Council Adds Security To Name

The Marine Safety Council, which provides oversight, review and guidance for all U.S. Coast Guard regulatory activity, officially became the Marine Safety and Security Council in June 2003, reflecting the increased emphasis on security in the Coast Guard's mission. The council met for the first time under the new name in December 2003.

The Marine Safety and Security Council is the Commandant's advisory council for Coast Guard regulatory issues. The Council reports to the Commandant on the status of active projects, and approves or recommends Commandant approval of new projects. The Council also provides policy and procedural guidance to program managers and regulatory development teams for the development of Coast Guard Headquarters rulemaking projects.

Members of the council include the Chairman, Rear Adm. John E. Crowley Jr., Judge Advocate General; Rear Adm. David Belz, Assistant Commandant for Operations; Rear Adm. Thomas H. Gilmour, Assistant Commandant for Marine Safety, Security and Environmental Protection; Steven Venckus, Legal Advisor; and Cmdr. John F. Koeppen, Acting Executive Secretary.

The council was organized in 1943 as the Merchant Marine Council by Coast Guard Commandant Russell Waesche, whose administration placed increased emphasis on maritime safety. Its purpose was "to advise and assist the Commandant on matters relating to navigation and maritime safety, and to provide a forum in which all interested parties may express their views on actions taken or contemplated." Its formation coincided with the transfer to the Coast Guard of the safety and navigation functions of the Bureau of Marine Inspection and Navigation, marking the first time in the nation's history that all functions of maritime safety came under one agency. (The bureau was transferred to the Coast Guard by Executive order in 1942.) With this new emphasis on safety, the Council noted that they "will particularly welcome safety suggestions or short accounts of any unusual and effective safety procedure from the shipping industry, including its seafaring personnel."

Original members of the Merchant Marine Council included the chairman and vice chairman; the chief of the naval engineering division; chief of merchant marine inspection; chief of merchant marine personnel; the executive secretary and the legal advisor.

Following another Coast Guard reorganization in March 1971, the Council changed its name to the Marine Safety Council. Council members at the time included the chief, Office of Public and International Affairs; the chief counsel; chief, Office of Operations; chief, Office of Merchant Marine Safety; chief, Office of Engineering; and chief, Office of Boating Safety. Composition of the Council members has changed throughout the years; in 1986, for instance, members included, among others, the chiefs of the office of research and development and the office of navigation. Despite these changes, the purpose of the Council has remained constant—to serve as the Commandant's principal advisor on rulemakings that affect safety and security of the entire maritime community.

Members of the Marine Safety and Security Council assembled at the December 2003 meeting at Coast Guard Headquarters, marking the first time the council met under its new name. From left (front row): Rear Adm. David Belz, Assistant Commandant for Operations; Rear Adm. John E. Crowley Jr., Judge Advocate General, Chairman; and Rear Adm. Thomas H. Gilmour, Assistant Commandant for Marine Safety, Security and Environmental Protection. From left (back row): Steven Venckus, Legal Advisor; and Cmdr. John F. Koeppen, Acting Executive Secretary.

Technology Improves Navigation Safety, Waterways Management

by MARGIE HEGY
U.S. Coast Guard Waterways Management Division

The U.S. Coast Guard Waterways Management Directorate (G-MW) is responsible for three well-established programs: Vessel Traffic Management, Navigation Safety, and Great Lakes Pilotage. In addition, G-MW has partnered with the Maritime Administration to lead the Department of Transportation's Marine Transportation System (MTS) initiative. The primary objective of the directorate is to manage these programs and coordinate waterways management issues with other Coast Guard offices and organizations outside the Coast Guard that share responsibility for our nation's waterways. While our primary mission of navigation safety has not changed in the last 60 years, technology has changed the means by which navigation safety is achieved, and waterways users continue to develop new ways to maximize their usage of the waterway, which often competes with traditional navigation.

The Office of Vessel Traffic Management (G-MWV) provides direction, program oversight and policy guidance for the nation's Vessel Traffic Services (VTS); develops measures of effectiveness; sponsors research and development of new vessel traffic management technology; and represents the United States in international forums where vessel traffic management issues are addressed and worldwide policies are adopted. G-MWV's goal is to enhance navigation safety in all ports and waterways.

The goal of the Office of Vessel Traffic Management is to enhance navigation safety in all ports and waterways.

The tools of the trade have changed with the advent of new technology that has expanded the utility of a VTS and improved the efficiency of managing vessel traffic. The biggest technological advance has been the Automatic Identification System (AIS), which is a shipboard device that transmits predetermined information from ship to ship and from ship to shore.

Although primarily designed as a navigation safety tool, after September 11, AIS was identified as a security device for monitoring vessels navigating our nation's waterways and calling on U.S. ports. These security concerns led to the acceleration of both domestic and international AIS carriage requirements. Technology has enabled the Coast Guard to provide the navigation safety information that a mariner needs in a less resource intensive manner.

G-MWV is also responsible for setting vessel navigation safety equipment standards and requirements in accord with international standards; coordinating and disseminating information on the Inland and International Navigation Rules; and providing program oversight and policy guidance on regulatory matters involving anchorages, regulated navigation areas, bridge-to-bridge radiotelephone, vessel routing measures and shipping safety fairways, and safety and security zones.

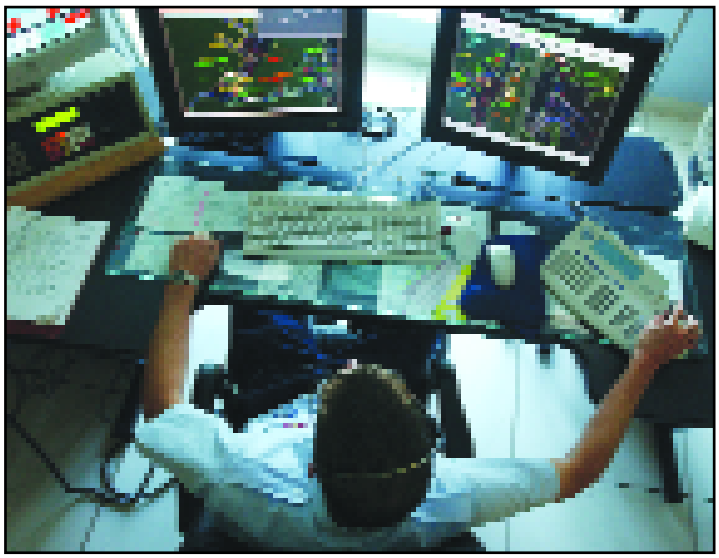
Changes to Navigation

Technology has driven revolutionary changes to navigation. The Radio Direction Finder, which came into use on commercial ships in the 1930s, was the first technological development in marine radionavigation. Following World War II, marine radar and other military radio-based position-fixing systems such as Decca Navigator and Long Range Navigation became available for use on commercial ships.

In the late 1970s, marine radars were enhanced by the development of Automatic Radar Plotting Aids (ARPA), which relieved the navigator of plotting radar targets manually, and more accurately assessed risk of collision with other ships. In the mid-1980s manufacturers began producing electronic charting systems, which provided computer-generated displays of paper nautical charts. In 1995, the International Maritime Organization adopted performance standards for an Electronic Chart Display and Information System (ECDIS).

In 1995, after many years of development, the U.S. Global Positioning System (GPS) was declared fully operational. This provided worldwide, satellite-based, position-fixing capability for ships. As all of these technologies matured, it became possible to integrate the individual devices. For example, radars could be enhanced with chart overlays and ECDIS would display real-time own-ship position via GPS. Differential corrections to GPS, provided by surveyed shore stations, increased the accuracy of the satellite signals to 10 meters and better.

And as mentioned earlier in conjunction with VTS, the most recent development in navigation safety equipment is the AIS. Shipborne AIS equipment transmits information such as ship's name, course and speed, etc., which can be received by other ships to provide identification and collision avoidance information, and by shore stations such as VTS to allow tracking of ships in coastal waters. Work is



Seaman Operations Specialist Jason Dailey, sector operator at the Vessel Traffic Center at Coast Guard Activities New York, monitors vessel traffic in the New York Harbor. Public Affairs Officer Mike Hvozda, USCG.

underway in several international bodies to develop performance standards to enable the display of AIS information on radar, ARPA, and ECDIS to take the integration of navigation safety equipment to an even higher level.

Great Lakes Pilotage

In addition to managing traffic and setting navigation equipment and other vessel operating parameters, G-MW administers the Coast Guard's Great Lakes Pilotage Program, mandated by the Great Lakes Pilotage Act of 1960. The basic mission to provide a safe, reliable, and efficient pilotage system in the Great Lakes has not changed. This has been a unique undertaking for the Coast Guard, because in addition to establishing training and licensing requirements, something that the Coast Guard does for all licensed mariners, the Coast Guard is involved in the selection of pilots, developing work rules and dispatching procedures, and setting the rates that pilots can charge for their services and pilot compensation. The Director of Great Lakes Pilotage (G-MWP-1) is responsible for these functions, including enforcement to ensure that Coast Guard procedures, policies and regulations are followed. In addition, the Director has to coordinate pilotage with Canadian counterparts for the shared Great Lakes/St. Lawrence Seaway System.

Administering the Great Lakes Pilotage program has been particularly challenging because there has been a significant decrease in the number of ships

transiting the Lakes. In fact, the 2003 shipping season is purported to be the worst season in 25 years with respect to the number of ships in the system. The real challenge for the Coast Guard is to effectively manage the program to ensure that qualified pilots are available to provide services. This may require changes in the system, but the mission will remain unchanged.

While each of these waterways management programs is a system within itself, it is also part of a larger entity, the Marine Transportation System (MTS). The MTS consists of waterways, ports and their intermodal connectors, as well as the vessels, terminals, operators, etc. that operate within or use the system. The MTS includes more than 26,000 miles of commercially navigable waterways serving 361 ports on the coasts, Great Lakes, St. Lawrence Seaway, and inland waterways. These waterways transport more than 180 million passengers by ferry, host more than seven million cruise ship passengers, support 110,000 commercial fishing vessels that contribute $111 billion to state economies and serve an increasing population of 78 million Americans engaged in recreational boating.

The biggest technological advance has been the Automatic Identification System (AIS), which is a shipboard device that transmits predetermined information from ship to ship and from ship to shore.

MTS Initiative

The MTS is a valuable component of our nation's transportation system, but unlike highway, rail and air transportation modes, it does not have a dedicated federal agency to provide oversight and establish policy. While the Coast Guard has extensive waterways management responsibility, it shares jurisdiction over the MTS with a myriad of federal, state and local governments. The MTS is a complex system in that most of the infrastructure is owned by the private sector. And, with the projection that waterborne trade could double or triple during the next 20 years, the Secretary of Transportation kicked off the MTS Initiative in 1997 to coordinate management of the MTS among the various agencies to ensure that the MTS would be able to accommodate the projected increase in trade. The need to coordinate these activities was supported by a 1999 report to Congress that found management of the MTS fragmented and recommended that a systems approach be used to manage the MTS.

The Coast Guard has played a leadership role in the MTS Initiative in coordinating with other agencies to implement the numerous recommendations in the report to Congress. To improve coordination of MTS responsibilities, the Coast Guard created and now co-chairs with the Maritime Administration a national-level Interagency Committee on the MTS (ICMTS) with 18 federal agency members that are responsible for some aspect of the MTS. A national-level MTS National Advisory Council (MTSNAC) comprised of 30 private sector organizations was also established to advise the Department of Transportation on MTS matters. Three regional MTS committees and more than 100 local harbor safety committees complete the MTS coordinating structure.

The Coast Guard (G-MW) has been actively pursuing, with its interagency partners, the development of a comprehensive legislative package (SEA-21) for dedicated funding of the MTS. In a January 2004 report, the National Academy of Science's Marine Board recommended that the Department of Transportation take a leadership role in furthering key national MTS interests to facilitate commerce, protect the marine environment, and ensure safety and security of the MTS.

The MTS will continue to be a major factor in our nation's economic prosperity and quality of life. As trade and stakeholder usage continue to increase, the challenge of balancing the needs of all the waterways users while preserving safety and the marine environment will continue to require coordination with our interagency partners and outreach to the waterways users.

Let's Remember, Folks!

FOR MORE FUN IN A BOAT

MAKE A SHARP TURN AT HIGH SPEED

IN ROUGH WATER, KEEP LOW IN THE BOAT AND HEAD INTO THE WAVES

DON'T STAND UP

IF YOU MUST STAND, OR CHANGE SEATS, KEEP TO THE CENTER WITH BOTH HANDS ON GUNWALES, KEEP LOW

DON'T OVERLOAD

. . . MATCH YOUR BOAT AND MOTOR . . . LOOK FOR THE OBC PLATE ON YOUR BOAT

KEEP WATCH

FOR ROCKS, LOGS OR OTHER OBSTRUCTIONS, AS WELL AS FOR OTHER BOATS, SWIMMERS AND WATER SKIERS

Courtesy of Outboard Boating Club of America

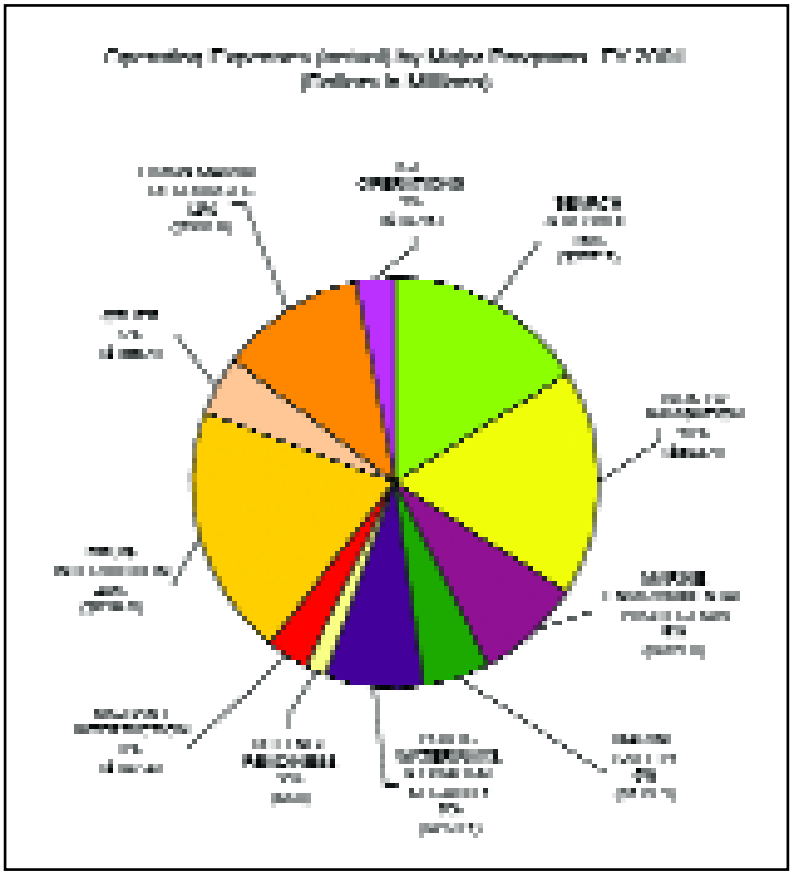
April 1961

57

History of Port Security Within the Coast Guard

by Ensign Jim Stern
U.S. Coast Guard Office of Port Security Planning and Readiness

The U.S. Coast Guard has played a vital role in port security since the service's formation in 1790. From that time, and especially during the last 60 years, the nation's focus on port security has both grown and diminished, more often than not in flux with the worldwide political climate or even single events, such as the *Exxon Valdez* oil spill or the terrorist attacks on the United States. With the rise of terrorist activities in recent years, the current shift has been toward an increase in security. With this new emphasis, the Coast Guard has implemented the High Interest Vessel (HIV) Program, added capabilities like Maritime Safety and Security Teams (MSST), and initiated new rulemakings for maritime homeland security via mandates from the Maritime Transportation Security Act (MTSA) of 2002. We have also focused on the concept of increased Maritime Domain Awareness (MDA). Through a historical lens one can see how the Coast Guard's port security posture has ebbed and flowed and evolved into its current state.



The Coast Guard performed many port security duties during World War I, and before the war's end, the first national directive regarding security of U.S. ports, the Espionage Act of 1917, had been established. This Act directed the Secretary of the Treasury to regulate the movement of any vessel and, if necessary, to board and seize a given vessel in the interest of national security. The Coast Guard port security duties during World Wars I and II were performed while it was operating as a service within the department of the Navy. One interesting mission the Coast Guard performed during World War II was the patrolling of U.S. beaches to prevent saboteurs and spies from coming ashore. It was in large part due to many of these war-related missions that port security was viewed as a

wartime issue until around 1950, when it was made a permanent program and reassigned to the Coast Guard.

Port security took a step forward with the Magnuson Act of 1950. With the commencement of hostilities in Korea and the continuing Cold War, it was determined that broader authority was required for control of vessels and waterfront facilities. The Magnuson Act amended the Espionage Act of 1917, authorizing the President to institute measures and issue rules and regulations necessary to inspect and govern the anchorage and movement of any foreign-flag vessel in U.S. territorial waters. The Act also protected from destruction, loss or injury from subversive acts all vessels, harbors, ports, and waterfront facilities subject to U.S. jurisdiction whenever the President found the security of the U.S. endangered by war, invasion, potential subversive acts, or disturbances of international relations.

A Coast Guard officer picks up a duck that died as a result of the *Exxon Valdez* oil spill in Alaska in 1989. In the late '80s and through the '90s, the pendulum swung toward a more robust Marine Environmental Protection Program, with increased pollution prevention and response capabilities.

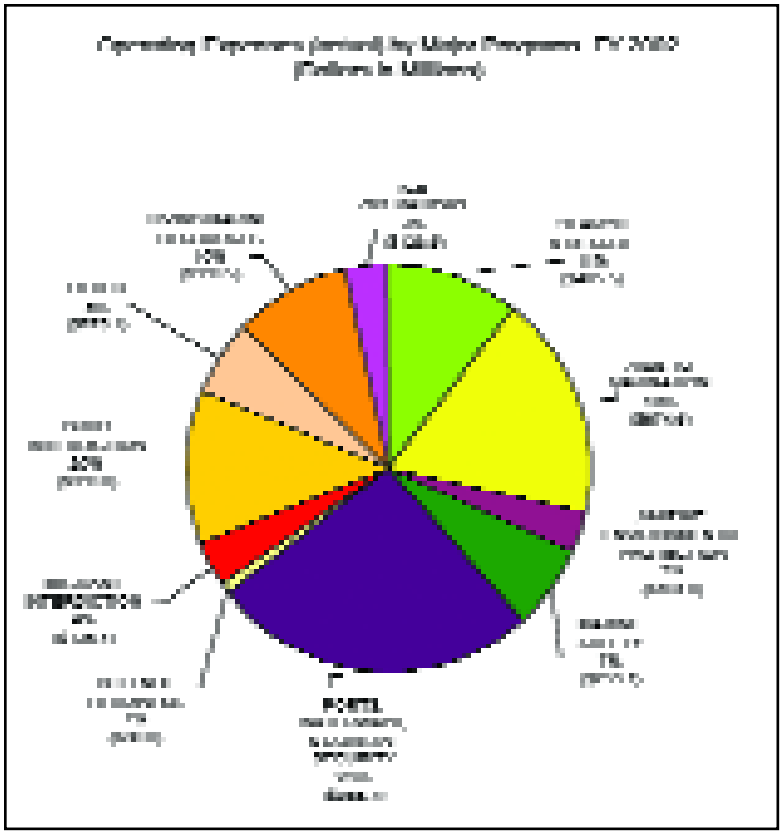
The 1950s also brought the development of the Special Interest Vessel (SIV) Program, the element of the U.S. Port Security Program that controls and monitors the entry of vessels bearing the flag of certain states into U.S. ports, internal waters and territorial seas. The program divides SIVs into two categories: restricted states, which may enter U.S. ports subject to certain limitations; and non-entrant states, which are not allowed to enter U.S. waters at all. With the beginning of the Cold War, the SIV program was aimed largely at controlling the entry of vessels belonging to Eastern Bloc and other communist countries, with the fear of a freighter coming into port armed with a nuclear bomb.

One assignment in which the Coast Guard has been involved is supervising the loading and unloading of dangerous cargo at U.S. and foreign ports, specifically, high explosives and other ammunition. This tasking was particularly important during the Korean and Vietnam Wars, and again later during the Gulf Wars. The Coast Guard again provided assistance in Vietnam during Operation Market Time. The Coast Guard worked with the Navy during this operation to stop the flow of arms and supplies by sea from North Vietnam to enemy troops further south. Soon, supply routes from the sea became nonexistent, forcing expansion of inland supply routes, i.e., the Ho Chi Minh Trail.

In the 1980s, the Coast Guard was very involved in the war on drugs and illegal immigration. However, while the U.S. was concerned with terrorism originating in the Middle East at that time, the nation as a whole was not overly concerned with terrorism reaching our soil. Military readiness and port security remained a focus during the 1980s, but the focus was outward rather than inward. The vision was that the threat was overseas, and America felt generally safe and secluded, distanced from what was going on in other parts of the world.

One of the significant port security capabilities added to the Coast Guard arsenal in the 1980s was the Port Security Unit (PSU). These units are composed primarily of reserve personnel and were created as operational forces designed to be deployable to ports and navigable harbors worldwide in support of U.S. and allied military objectives. They have played a critical role in protecting U.S. vessels overseas, particularly during the wars in the Persian Gulf.

In the late '80s and through the '90s, the pendulum swung toward a more robust Marine Environmental Protection (MEP) Program, with increased pollution prevention and response capabilities. Several key factors contributed to this realignment of resources. Of particular note was the *Exxon Valdez* spill. On March 24, 1989, the *Exxon*



Valdez grounded in Alaska, spilling nearly 11 million gallons of oil into Prince William Sound. This incident—combined with other large pollution incidents that occurred around the same time, and legislation resulting from these incidents—caused a shift in mission emphasis toward environmental protection. Also in 1989 the Berlin Wall fell, which was one of a number of signs that the Cold War was ending and that the power of, and perceived threat from, communism was diminishing. After the end of Operation Desert Storm in 1991, the military began experiencing cutbacks, including a significant drop in reserve contingent, which had traditionally provided considerable support for Coast Guard port security efforts. The Port Security Program's attention shifted to managing PSUs, an overseas capability, with less emphasis on domestic maritime security.

The emphasis on MEP and other Coast Guard missions continued until the Sept. 11, 2001 terrorist attacks. The realization that the distance from our enemies no longer protected us demanded a refocusing of the Port Security Program. Before the attacks, the percentage of the Coast Guard's budget devoted specifically to port security was relatively small and it was allocated indirectly through a variety of programs, whereas in fiscal year 2004, a full 27 percent of the Coast Guard's budget will be devoted specifically to ports, waterways and coastal security. A few of the major capabilities and initiatives that have become part of this new and more robust program are MSSTs, the HIV Program, changes to the SIV Program, rulemaking efforts in response to the MTSA of 2002, international maritime security as addressed through the International Ship and Port Facility (ISPS) Code, and building MDA.

MSSTs are a new Coast Guard rapid response force assigned to vital ports and capable of nationwide deployment via air, ground or sea transportation to meet emerging threats. MSSTs, along with the other new programs and initiatives, have become a part of the Department of Homeland Security's layered strategy directed at protecting our seaports and waterways.

The Coast Guard's HIV Program is a risk-based decision-making program that targets vessels that may pose a substantial security risk to the port. The goal is to identify vessels that pose higher risks and take appropriate action to determine the status of the vessel prior to entry into a U.S. port.

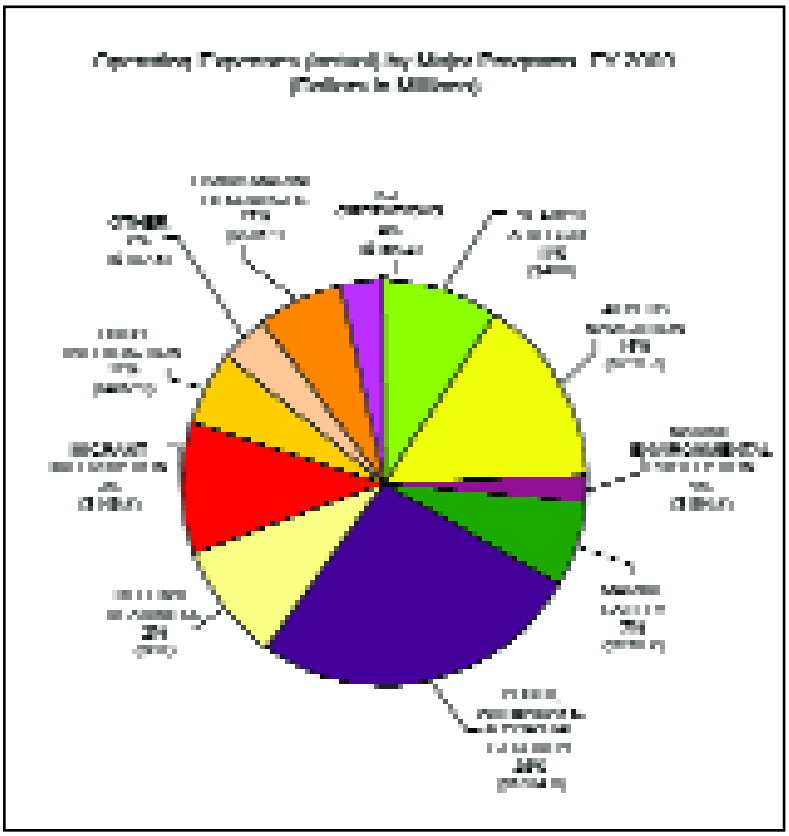
Still being worked on are necessary modifications to the SIV Program identified as a result of both the Kosovo Conflict in the late 1990s and the events of September 11. The Department of Homeland Security, the Homeland Security Council, and other top government officials, are revising the program for potential expansion to better protect the United States from maritime threats.

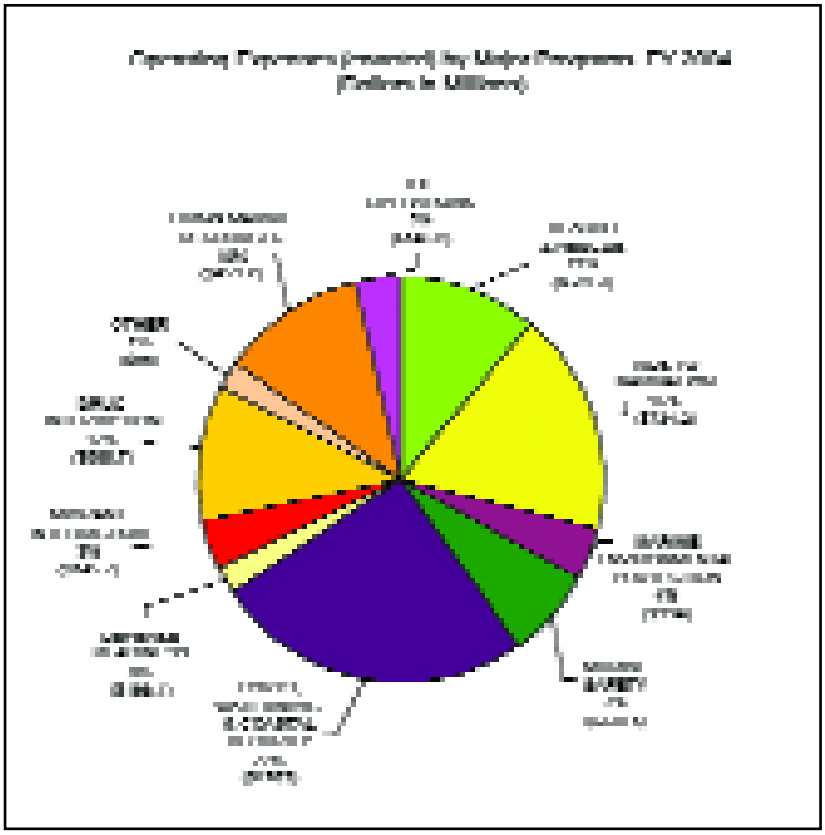
The MTSA of 2002 creates a legislative framework to enhance the security of the marine transportation system. In response to the MTSA, the Coast Guard developed a comprehensive suite of regulations to address maritime security issues. These regulations are divided into several distinct parts and focus on specific segments of the maritime industry, establishing requirements such as vulnerability assessments, plans, and exercises for ports, vessels, and facilities—including outer continental shelf facilities. The regulations also require the carriage and operation of Automatic Identification System (AIS) for certain classes of vessels to facilitate vessel tracking.

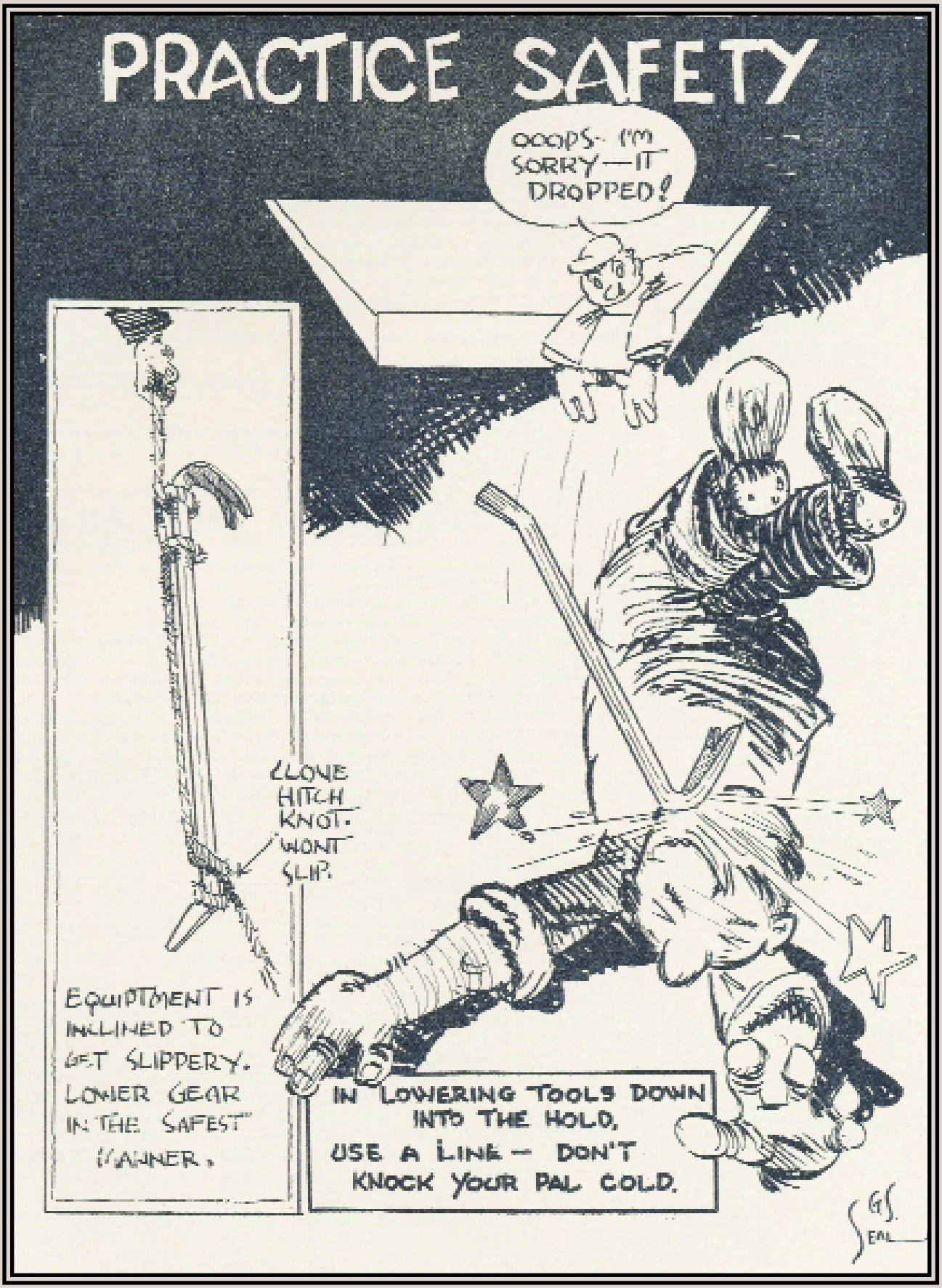
As part of the U.S. delegation, Coast Guard representatives played a major role at the International Maritime Organization (IMO), leading the effort to develop and gain approval for passage of the ISPS Code. This amendment to the Safety of Life at Sea Convention, which aligns well with the MTSA, seeks to establish an international framework of cooperation between governments, government agencies and the shipping and port industries to detect and take preventive measures against security incidents affecting ships or port facilities used in international trade. This was a significant achievement as it has created a global effort to enhance maritime security.

All of these changes have been part of the continued evolution of the Port Security Program, whose aim is achieving maritime homeland security. One of the principal elements of the Coast Guard's maritime security strategy is MDA, which involves having comprehensive knowledge of all relevant entities within the U.S. maritime domain that could affect America's security, safety, economy, or environment. After September 11, the Coast Guard realized that to effectively execute maritime security tactics and strategy, it is critical to build greater awareness of activities occurring in the maritime domain. Improvements were necessary in systems designed to collect, process, and disseminate maritime information, which provide decision-makers with information and intelligence to carry out the maritime security mission. In response to the need to build a comprehensive MDA picture, a number of activities have been initiated to improve surveillance, command and control, communications, and intelligence processes and capabilities.

The initiatives, programs, regulations, and capabilities mentioned are just some of the major developments the Coast Guard has made over the years. As one can see, emphasis on port security has ebbed and flowed, and mission focus has shifted from inward (domestic) to outward (foreign) maritime security, depending on the world events that impact our nation's security. The tragic events of September 11 brought domestic security again to the forefront of the nation's consciousness, and the Coast Guard has responded by dramatically increasing resources devoted to maritime homeland security. This emphasis and focus will probably remain for some time to come, given threats we now face, which are quite different than those that we have experienced in any other time in our nation's history.






PRACTICE SAFETY
OOOPS- I'M SORRY—IT DROPPED!
CLOVE HITCH KNOT. WONT SLIP.
EQUIPTMENT IS INCLINED TO GET SLIPPERY. LOWER GEAR IN THE SAFEST MANNER.
IN LOWERING TOOLS DOWN INTO THE HOLD, USE A LINE — DON'T KNOCK YOUR PAL COLD.
GS. SEAL

Leveraging IT to Better Serve the Maritime Industry

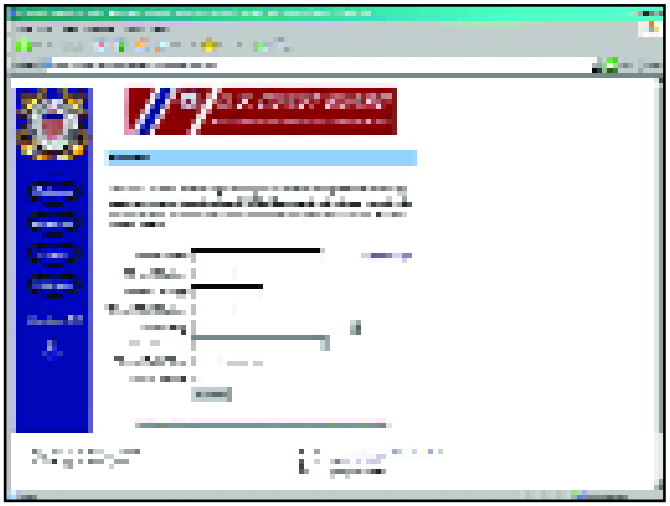
by Chief Petty Officer Douglas Craft
U.S. Coast Guard Office of Information Resources

One of the responsibilities of the U.S. Coast Guard Office of Information Resources (G-MRI) is to ensure the development, operation, maintenance, and support of information systems that satisfy the overall needs of Marine Safety, Security and Environmental Protection (G-M). The Coast Guard Maritime Information Exchange (CGMIX) and the G-M Mail List Server are two examples of how G-MRI is leveraging information technology to better serve the maritime industry and the general public.

Coast Guard Maritime Information Exchange
In 2003, as a result of the tremendous success and popularity of the Port State Information Exchange Web site, the CGMIX Web site was launched: **http://cgmix.uscg.mil/**. CGMIX includes the latest evolution of Port State Information Exchange (PSIX) and is designed to be a publicly available Maritime Information Portal. Currently, CGMIX includes PSIX and the new "Approved Equipment List."

Port Security Information Exchange
The PSIX, **http://cgmix.uscg.mil/psix/psix2/,** is a Web-based, publicly available information system that contains specific information about U.S. documented vessels and other vessels subject to Coast Guard activities. The information available in PSIX includes the vessel's physical characteristics, a summary of Coast Guard contacts since 1989, a history of the vessel's noted deficiencies, and a listing of the vessel's official documents and certificates. PSIX also contains a wide array of Internet links to various maritime information sites and data sources. Users can submit questions, comments or concerns directly to the PSIX staff via the Internet. PSIX is updated on a weekly basis using data obtained from the Coast Guard's own internal Marine Information for Safety and Law Enforcement (MISLE) database. PSIX does not contain information on vessel owners or operators, or information concerning active investigations or enforcement activities.

The Coast Guard Maritime Information Exchange server at http://cgmix.uscg.mil/**.**

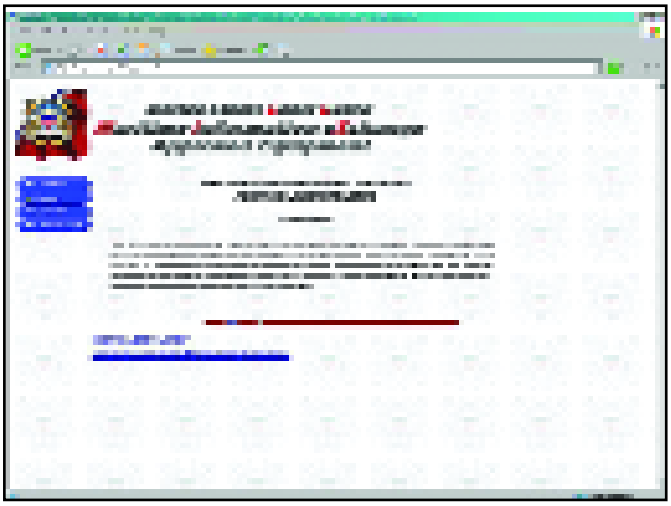


The Port Security Information Exchange server at http://cgmix.uscg.mil/psix/psix2/**.**

PSIX first became operational in October 1993. The original version was a dial-up computer bulletin board system that was limited to four users at a time. Users were only able to search by Vessel Identification Number (VIN), and were limited to 30 minutes of connect time. PSIX has steadily grown and improved over the years, moving to the current Web-based Internet format in August 1997. Overall, the PSIX Web site now receives more than 20,000 hits per day, and the search features are used by approximately 800 unique users daily. These users encompass a broad spectrum, including: curious private citizens, the domestic and international maritime industry, and local, state, national and international government agencies.

Approved Equipment

CGMIX offers a searchable database of lifesaving and fire safety equipment that is approved by the Coast Guard and issued an approval number. The public can retrieve information on specific equipment, including the approval number and manufacturer's information. The database may be searched in a variety of ways, including: manufacturer, equipment class, equipment type, approval number, and a general keyword search.



The Coast Guard Maritime Information Exchange Approved Equipment server at http://cgmix.uscg.mil/psix/psix2/**.**

In addition to the Web-based searches available via PSIX and the equipment list, CGMIX also provides users the ability to obtain data directly from the databases using Extensible Markup Language or XML. The public is able to link their Internet-based applications directly to real-time CGMIX data, or even download the entire database if desired. Numerous commercial and noncommercial organizations use the CGMIX data in this manner, thus bypassing the need to request the data directly from the U.S. Coast Guard and speeding up the delivery of data to others in the maritime community.

The CGMIX will continue to grow and serve the ever-increasing needs of the maritime community. Future plans call for increasing the amount and detail of vessel data available, and the inclusion of maritime facility information. For more information, contact Chief Petty Officer Doug Craft, the CGMIX Administrator (**dcraft@comdt.uscg.mil**, or (202) 267-6889, or visit **http://cgmix.uscg.mil/** on the Web).

G-M Mail List Server

A relatively new service, the G-M Mail List server, **http://cgls.uscg.mil/,** was deployed in April 2003. A list server allows for automated processing of Email distribution lists and removes the burden on information providers to manually administer those distribution lists. The list server provides the capability to quickly and effectively distribute time critical news, notices, and other important items of interest to the public by using E-mail distribution lists organized by defined topics, with the intent of reaching specific interest groups. The list server also augments distributing information to the public via the G-M Internet site by providing a means of notifying them when specific, more detailed content has been posted on the Internet. The list server allows the Coast Guard to create and maintain business relationships without requiring anyone to visit G-M Web sites and browse for new, often time critical information.

The G-M Mail List server at http://cgmix.uscg.mil/psix/psix2/**.**

Newsletter topics are organized in groups on the G-M Mail List Web site. Each group relates to a broad topic area or G-M mission. For example, one of the group titles is Marine Safety, and it contains the newsletter topics Commercial Fishing Vessel, Small Passenger Vessels, and Merchant Marine Licenses and Merchant Mariner Documents.

Currently there are 24 newsletter topics organized within seven groups. Other groups include Maritime Security, Environmental Protection, Regulations and Standards, National Vessel Documentation Center news, and Navigation Center (Notices to Mariners and GPS Status) news and National Vessel Movement Center.

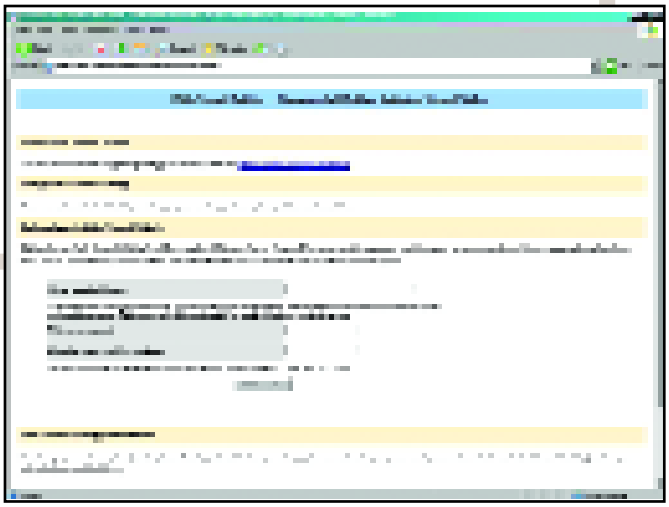
The use of a mail list provides some key benefits not realized using traditional E-mail distribution lists. The G-M Mail List Server enables users to control and customize their mail list account to meet their personal needs. Users can subscribe or unsubscribe to any of the lists, change their passwords, set preferences for how they would like to receive E-mail messages, and temporarily remove themselves from lists if they are unavailable to receive messages for a period of time.

How do I subscribe to the G-M Mail List?

- Access the Mail List Web site at **http://cgls.uscg.mil/** and click the "Groups hosted on this site link" at the bottom of the page.
- Double click on the Group Name you are interested in and this will display the available newsletter topics for the group you may subscribe to. Click the Subscribe/Unsubscribe link and complete the information.
- Once the information is completed you will be sent a confirmation E-mail. You must reply to this E-mail in order to start your subscription.

You will only receive new postings to the newsletter. If you wish to view past postings, select the Archive link.

For more information, contact Mr. Ervin Boyd, the G-M Mail List Server Administrator at **eboyd@comdt.uscg.mil**, (202) 267-6242), or visit **http://cgls.uscg.mil/**.



International Convention for the Safety of Life at Sea, 1974

by Robert Gauvin
U.S. Coast Guard Office of Compliance

Necessity is the Mother of invention (Anon);

Or, was that convention!

As the saying goes, the marine industry, its operating techniques, many based in sea lore and tradition, have seen enormous growths in design, construction and technologies, which have made the ability to manage safety the mother of regulatory invention, "or was that convention." The only way to ensure proper safety standards is to investigate the cause and effect of accidents, find their pros and cons, and work to move the cons into the pro safety category. This is even more complicated on a global platform. This is a simplistic statement considering the title of this article. The International Convention for the Safety of Life at Sea (SOLAS), 1974 has been the form of choice and a crucial instrument to safety, *and now security* at sea and *in the ports*, for global standards for international shipping.

Introduction and History

The SOLAS Convention[1] in its successive forms is generally regarded as the most important of all international treaties regarding the safety of merchant ships. The first version was adopted in 1914 in response to the *Titanic* disaster; the second in 1929, the third in 1948 and the fourth in 1960.

The 1960 Convention—which was adopted June 17, 1960 and entered into force May 26, 1965—was the first major task for the International Maritime Organization (IMO) after the organization's creation, and it represented a considerable step forward in modernizing regulations and in keeping pace with technical developments in the shipping industry. This original convention and its require-

ments were material inspection standards based, requiring systems being placed and used on ships to meet a minimum safety guideline or standards.

The intention was to keep the Convention up to date by periodic amendments, but in practice the amendments procedure proved to be very slow. It became clear that it would be impossible to secure the entry into force of amendments within a reasonable period of time.

As a result, a completely new Convention was adopted in 1974, which included not only the amendments agreed up until that date, but a new amendment procedure—the tacit acceptance procedure—designed to ensure that changes to the technical parts could be made within a specified (and acceptably short) period of time.

Instead of requiring that an amendment shall enter into force after being accepted by, for example, two thirds of the parties, the tacit acceptance procedure provides that an amendment shall enter into force on a specified date unless, before that date, objections to the amendment are received from an agreed number of parties.

As a result, the 1974 Convention has been updated and amended on numerous occasions. The Convention in force today is sometimes referred to as "SOLAS, 1974, as amended."

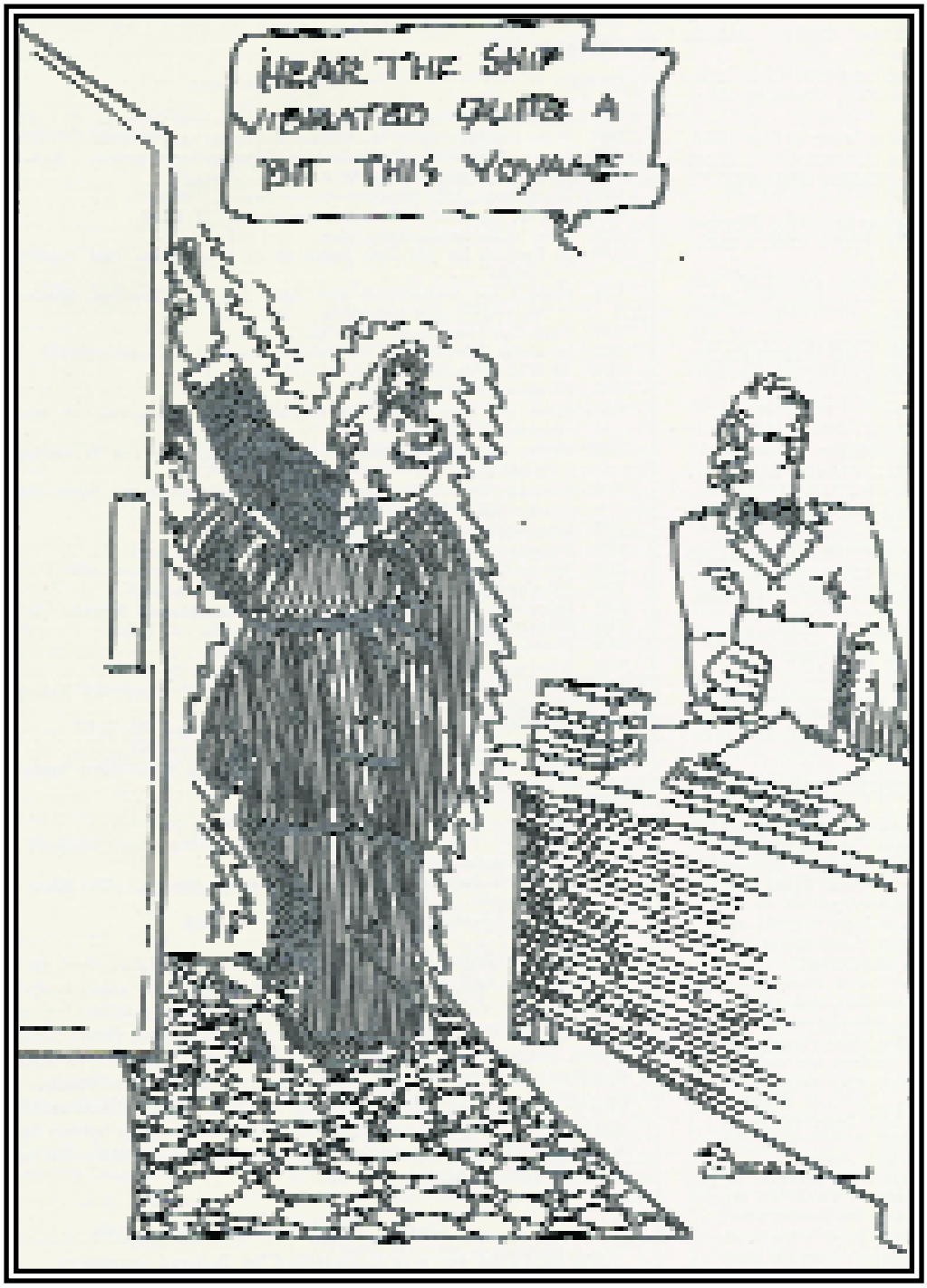
Growth to SOLAS has been consistent throughout the years, but recently it has expanded from material equipment inspection and construction requirements to management and human factor-related recommendations. A significant step in this arena was the adoption of the International Safety Management (ISM) Code as Chapter IX in SOLAS. This allows the safety management system of the company to be audited to the adopted standards of SOLAS, in the company's office and on its ships.

Safety Management[2]

A number of very serious accidents, that occurred during the late 1980s were manifestly caused by human errors, with management faults also identified as contributing factors.

Lord Justice Sheen, in his inquiry into the loss of the *Herald of Free Enterprise*, famously described the management failures as "the disease of sloppiness".[3]

At its 16th Assembly in October 1989, IMO adopted Resolution A.647(16), Guidelines on Management for the Safe Operation of Ships and for Pollution Prevention. The purpose of these Guidelines was to provide those responsible for the operation of ships with a framework for the proper development, implementation and assessment of safety and pol-



lution prevention management in accordance with good practice. The objective was to ensure safety, to prevent human injury or loss of life, and to avoid damage to the environment, in particular, the marine environment, and to property. The Guidelines were based on general principles and objectives so as to promote evolution of sound management and operating practices within the industry as a whole. The Guidelines recognized the importance of the existing international instruments as the most important means of preventing maritime casualties and pollution of the sea, and included sections on management and the importance of a safety and environmental policy.

In 1993, after some experience in the use of the Guidelines, IMO adopted the International Management Code for the Safe Operation of Ships and for Pollution Prevention (the ISM Code). In 1998, the ISM Code became mandatory. The ISM Code establishes safety-management objectives and requires a safety management system (SMS) to be established by "the Company," which is defined as the ship owner or any person, such as the manager or bareboat charterer, who has assumed responsibility for operating the ship. The Company is then required to establish and implement a policy for achieving these objectives. This includes providing the necessary resources and shore-based support.

Every company is expected "to designate a person or persons ashore having direct access to the highest level of management.

SOLAS has also expanded from being not just an instrument of safety and to include maritime security. Even though, throughout the years, recommendations have been developed at IMO regarding vessel security, since September 2001, the security of a state's waterways and domain have been loosely regulated from state to state.

Enhancing Maritime Security[4]

A new, comprehensive security regime for international shipping is set to enter into force in July 2004. The week-long Diplomatic Conference adopted a series of measures to strengthen maritime security to prevent and deter acts of terrorism against shipping. The Conference, held at IMO, was of crucial significance not only to the international maritime community but the world community as a whole, given the pivotal role shipping plays in the conduct of world trade. The measures represent the culmination of just more than a year's intense work by IMO's Maritime Safety Committee and its Intersessional Working Group on Maritime Security since the terrorist atrocities in the United States in September 2001.

The Conference adopted a number of amendments to SOLAS, the most far-reaching of which incorporates the new International Ship and Port Facility Security Code (ISPS Code). The Code contains detailed security-related requirements for governments, port authorities and shipping companies in a mandatory section (Part A), together with a series of guidelines about how to meet these requirements in a second, non-mandatory section (Part B). The Conference also adopted a series of resolutions designed to add weight to the amendments, encourage the application of the measures to ships and port facilities not covered by the Code, and pave the way for future work on the subject.

The Conference was referred to in the United Nations General Assembly. In December 2002, the General Assembly adopted a resolution on "oceans and the law of the sea," which specifically welcomed initiatives at IMO to counter the threat to maritime security from terrorism, and also encouraged states to fully support this endeavor.

Conclusion

Just think, in 2014, the Convention will be 100 years old, and it has changed since the sinking of the *Titanic*. Necessity has willed its existence, and it has changed with the winds, seas and storms of the global maritime industry. Is there a conclusion, as SOLAS has morphed from material inspection standards to human factors-safety management, to port and vessel security-related necessity? What lies in store? There is no crystal ball, but I'd expect that SOLAS will continue to be the core of international safety and security instruments as long as ships sail the seas and man continues to use it as the largest and most successful transportation capability in the world.

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[1] References to SOLAS provided from IMO Web page at **www.imo.org/home.asp**.

[2] References to ISM Code provided from IMO Web page at **www.imo.org/home.asp**.

[3] Department of Transport (UK); *MV Herald of Free Enterprise*. Report of Court No. 8074–Formal Investigation (Hon. Mr. Justice Sheen, Wreck Commissioner), July 29, 1987. London, Her Majesty's Stationery Office, 1987, ISBN 0 11 550828 7.

[4] References to ISPS Code provided from IMO Web page at **www.imo.org/home.asp**.

Coast Guard's Oldest Function Enters the 21st Century

by Thomas Willis
Director, U.S. Coast Guard National Vessel Documentation Center

Vessel documentation is one of the oldest functions of the U.S. government, dating back to the Eleventh Act of the First Congress in 1789. In the earliest days of the republic it became clear that a vessel registration system had to be put in place to establish vessels in foreign trade as vessels of the United States and to ensure unfettered commerce between the states. More than 200 years later, the reasons for establishing vessel documentation remain unchanged.

Establish Nationality

A Certificate of Documentation (COD) is conclusive evidence of nationality for international purposes.[1] A vessel to which a COD is issued is, by definition, a U.S.-flagged vessel, regardless of whether or not it complies with inspection and other port state requirements. A situation during Desert Storm provides a clear example of the effect of documentation: Concerns about the safety of their vessels led the Kuwaitis to transfer several tankers to a U.S.-managed company. Once CODs were issued in the name of that company, the tankers were entitled to the protection of the United States. The fact that all of the stock was foreign-owned was immaterial since the vessels were not engaged in domestic trade in the United States. Also, once the vessels were documented under U.S. law, they had to remain documented as U.S.-flag vessels until the Maritime Administration (MARAD) consented to their being reflagged foreign. In allowing vessels to be reflagged as foreign, MARAD makes a judgment about whether the vessels should remain under U.S. flag to ensure their availability for national defense.

Admit to Restricted Trades

The second reason vessel documentation continues to exist is to admit certain vessels to restricted trades.[2] Under U.S. law, only certain vessels may enter the fisheries of the United States or coastwise trade, commonly known as "Jones Act" trade. Generally, only vessels built in the United States may be employed in the fisheries or coastwise trade. In addition, U.S.-built vessels lose eligibility to engage in those trades if rebuilt outside of the United States.[3] Vessels are deemed built in the United States only if all major components of the hull and superstructure are fabricated in the U.S., and the entire vessel is assembled in the U.S. Engines, items of outfitting, and other components not integral to the hull and superstructure may be of foreign origin, but must be installed in the United States. The Director of the U.S. Coast Guard's National Vessel Documentation Center is responsible for determining if a vessel is built in, or outside of, the United States. In addition, that official is responsible for determining if a vessel that has been built from structural parts of an existing vessel is a new vessel or simply a rebuilt vessel.

NVDC Headquarters, in Falling Waters, W. Va., was established in 1995 to centralize all of the vessel documentation functions. The center enables consistency in vessel documentation policy and regulatory interpretation.

In addition to the U.S. build requirements, U.S.-documented vessels have specific ownership requirements. Except for certain vessels owned by nonprofit oil spill response cooperatives or members of such cooperatives, only vessels wholly owned by U.S. citizens are eligible for documentation under U.S. law.[4] For vessel documentation purposes, the term "citizen" applies to any person; "person" in this context means an individual, corporation, partnership, association, joint venture, government, or other entity that might hold title to a vessel. Corporations and other entities may be deemed U.S. citizens even if there are foreign shareholders, or if important offices are held by non-citizens. A corporation may qualify as a citizen for documentation purposes if its chief executive officer and board chairman are U.S. citizens, and the board meets specific quorum requirements. If the corporate vessels are to engage in coastwise trade or the fisheries, at least 75 percent of the stock and 75 percent of the control in the corporation must be U.S.-owned. If the corporation's vessels are engaged in trades other than coastwise or the fisheries, there are no U.S. stock ownership requirements.

After World War I, much of the U.S. merchant fleet was aging and in a state of disrepair. It was often difficult to find sources of money to improve vessels because of problems with maritime liens. As a general principle, maritime liens take priority over mortgages. Further complicating the situation is the fact that maritime liens arise as a matter of law, need not be recorded anywhere to be effective, and follow a vessel even if it is sold. This made lending very risky. If a vessel owner failed to pay bills for fuel, repairs, wharfage, and other maritime "necessaries," any bank that had loaned money secured by a mortgage on the vessel might find itself out of luck if the vessel were sold in an *in rem* proceeding.

To address the situation, Congress enacted the Ship Mortgage Act, 1920 (the Act). The intent of the Act was to make money available to refurbish ships. In doing so, Congress established "preferred mortgages" as maritime liens. Although the Act was not intended to make money available for vessel purchase, vessel owners, sellers, and financers found creative ways to use the Act for that purpose as well. As a result of the Act, personnel involved in vessel documentation work became responsible for recording bills of sale, mortgages, preferred mortgages, notices of claim of lien and other instruments affecting the title of U.S. documented vessels. Although the Act improved the availability of capital for the maritime community, its emphasis on strict compliance made it cumbersome to administer. Further complicating the picture was the possibility of personal liability for vessel documentation personnel. If anyone suffered a financial loss because of a failure "properly to perform...any duty required" under the Act, the responsible official was liable for the amount of that loss.[5] Because of the potential for personal liability, most vessel documentation personnel were very cautious in carrying out duties under the Act and required absolute compliance with every requirement of the Act.

Vessel Documentation Under the Coast Guard

Upon establishment of the Department of Transportation in 1967, responsibility for vessel documentation activities, which had been administered by several different agencies over time, was transferred from the U.S. Customs Service to the

U.S. Coast Guard. However, the Customs Service retained the right to define what activities constituted coastwise trade and the fisheries. Although Customs had performed vessel documentation activities at every port of entry, the Coast Guard reduced the number of ports of documentation to 66, staffed by 142 full-time personnel. At that time there were fewer than 70,000 documented vessels; about 20,000 documents were issued and 36,000 instruments were recorded annually. Shortly before 1967 Customs had begun issuing Yacht Licenses and Enrollments to recreational vessels in addition to issuing documents for commercial vessels.

The Coast Guard soon learned that there was little room for process improvement in vessel documentation. Virtually every element of the program was governed by a statute, meaning that only Congress could make changes. Even such items as the size and style of letters for marking a vessel's name and hailing port were dictated by federal law.[6] Because of the inflexibility of the system, obtaining a document for a new vessel usually required a minimum of eight forms, some of which had to be submitted in duplicate, triplicate, or even quadruplicate. Some of the forms had to be notarized. Others asked for information that had already been required on another form. The situation was further complicated because the governing statutes did not permit all of the forms to be submitted at the same time.

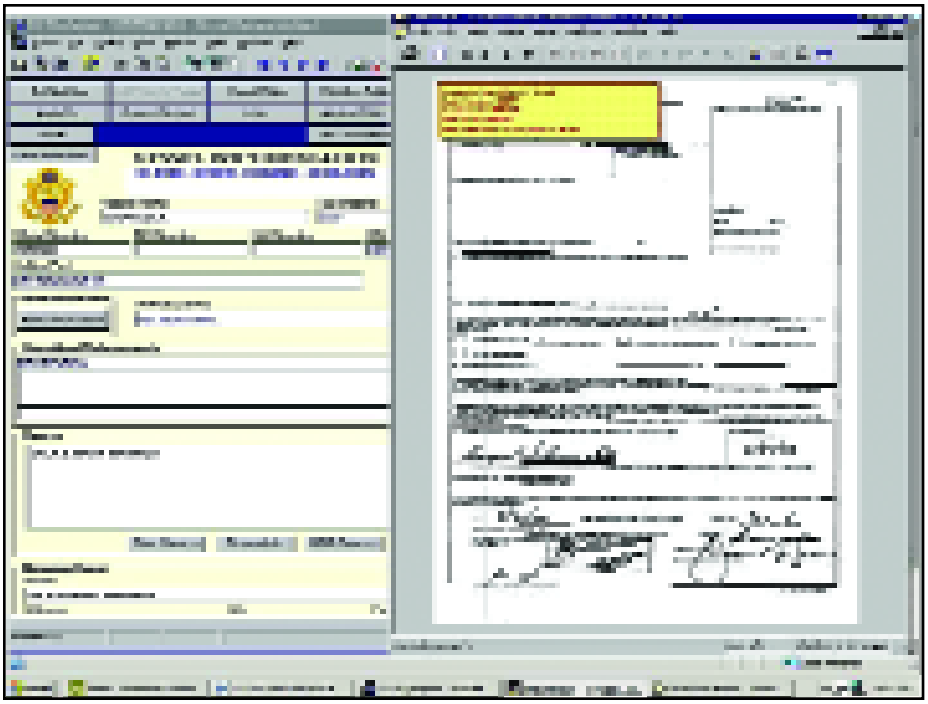
Even after a vessel was documented, there were continuing cumbersome requirements. As an example, the name of the master of the vessel had to be endorsed on the document. When the master was changed, an oath was required before the document could be endorsed. If the change happened at a place other than the home port of the vessel, the documentation officer making the change had to notify the documentation officer at the vessel's home port. An additional burden was put upon the Coast Guard and vessel owner because the same document could usually not be used for both foreign and domestic trade. For certain vessels this meant that documents had to be exchanged several times a year. In some cases, the Coast Guard had to issue as many as 25 documents to the same vessel in a two-month period. In each case several oaths were required along with notification to the home port, and submission of a copy of the document to Coast Guard headquarters.

Fortunately, members of Congress, recognizing some of the problems faced by the Coast Guard,

Incoming mail is scanned into a database.,enabling documentation personnel to track the status of applications and other paperwork.

enacted the Vessel Documentation Act, 1980.[7] As a result, the Coast Guard was able to make significant changes in the vessel documentation process. Regulations that became effective in July 1982 reduced the number of forms needed to obtain an initial document to five in most cases; only one had to be in duplicate, and none had to be notarized. The requirement for endorsement of the master on the vessel document was eliminated, and most significantly, documents could be issued with multiple trade endorsements, eliminating the need for frequent document exchange. In 1983, to reduce program costs and eliminate paperwork required between offices, the Coast Guard reduced the number of ports of documentation to 15.

Despite the improvements permitted by the Vessel Documentation Act, 1980, the Coast Guard saw many other opportunities to deliver better service to its customers. In May 1988, the vessel documentation module of the Marine Safety Information System (MSIS) was deployed. This eliminated the need for typing documents with multiple carbon copies. It also eliminated reports to headquarters and other ports of documentation. No longer were documentation personnel required to type annual notices of expiration for each vessel documented at their individual port. In addition, MSIS provided a shared database for the use of all Coast Guard personnel.



Information captured on the data entry screen (left) is obtained from documents such as the bill of sale (right) scanned into the Vessel Documentation System.

During the 1980s the Coast Guard managers realized that vessel documentation clients, numbering more than 200,000, constituted one of the largest external customer groups served by the Coast Guard. Accordingly, managers carefully considered the challenges facing both vessel documentation customers and the employees providing vessel documentation services. Work with representatives of the Maritime Law Association, the National Association of Marine Bankers, the Maritime Committee of the American Bar Association, and interested congressional staffers resulted in codification of the Ship Mortgage Act.[8] That codification cleared the way for many important changes. For the first time it was possible to obtain documentation of a new vessel with only two forms. For the first time ever, other submissions, such as preferred mortgages, could accompany the initial application. The various changes implemented by the Coast Guard at that time resulted in reducing industry's cost of complying with vessel documentation regulations by more than $7 million per year.

Despite making significant process improvements, Coast Guard managers believed that there were further opportunities to provide better service. As a result, in 1995, the Coast Guard established the National Vessel Documentation Center, centralizing all vessel documentation records and responsibility. The number of personnel involved in vessel documentation was reduced to 100. Prior to centralization there were service backlogs of up to 18 months at some ports. In addition, there were wide variations in interpretation of documentation regulations, resulting in "port shopping" by some documentation agents. Less than a year after centralization, service backlogs had been eliminated. More importantly, the Coast Guard had achieved consistency in vessel documentation policy and regulatory interpretation. In addition, because centralization permitted restructuring of the work force and reduced overhead costs, the Coast Guard has saved more than $1.5 million per year since 1995. Despite the fact that the documented fleet has increased to approximately 235,000 vessels, with more than 60,000 documents issued and 75,000 instruments recorded each year, vessel documentation services cost no more than they did 20 years ago.

Today, the Coast Guard continues to seek ways to improve service both to external and internal documentation customers. The initial phase of the Vessel Documentation System (VDS 1.0) was deployed at the end of 2002. VDS 1.0 produces Certificates of Documentation that are difficult to alter or forge. The second phase of VDS (1.1) holds great promise for the future. In VDS 1.1, incoming mail is scanned into a database. Instead of moving paper about the office, files are moved electronically. Vessel documentation personnel view applications, bills of sale, mortgages, and other paperwork on their computer displays. They are able to fax instruments and other data to customers directly from their computers without the laborious task of making copies and faxing them manually. Although much work remains before VDS can be declared an unqualified success, it holds the promise of the ability to provide true paperless service to many customers.

[1] 46 U.S.C. § 12104(a)
[2] 46 U.S.C.§ 12104(b)
[3] 46 App. U.S.C. § 883, 46 U.S.C. § 12108
[4] 46 U.S.C. 12102(a)
[5] 46 App. U.S.C. § 941(c), repealed by Public Law 100-710, Nov. 23, 1988
[6] 46 App. U.S.C. § 46, repealed by Public Law 96-594, Dec. 24, 1980
[7] Public law 96-594, Dec. 24, 1980
[8] Public Law 100-710, Nov.å 23, 1988

Coast Guard Commences Enforcement of MTSA/ISPS Security Provisions

by Lt. Cmdr. JASON D. NEUBAUER
& SCOTT KUHANECK
U.S. Coast Guard Office of Compliance

The continued security of our nation's maritime infrastructure has been a major area of concern in the wake of the September 11 attacks. Indeed, the attacks underscored the need for increased security efforts including the evaluation, examination, and control of visiting vessels and port facilities with respect to security vulnerabilities and corrective security arrangements and procedures. Along with the Transportation Security Administration (TSA), other fellow Homeland Security agencies and the Department of Transportation's Maritime Administration (MARAD), the U.S. Coast Guard has worked diligently to develop comprehensive national and international vessel and facility security standards. The new standards are designed to substantially strengthen the security of American ports and waterways, while continuing to maintain the free flow of commerce.

Shortly after September 11, both Congress and the International Maritime Organization (IMO) resolved to develop comprehensive maritime security standards. On Nov. 25, 2002, Congress passed the Marine Transportation Safety Act (MTSA), and on Dec. 12, 2002 IMO adopted amendments to the International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS) and the International Ship and Port Facility Security (ISPS) Code. Together, the MTSA and ISPS Code provide the statutory and international instruments to implement security measures for the nation's maritime community.

Maritime Security Compliance

July 1, 2004 marks one of the most significant days in maritime history. On this date every vessel that sails on international waters, and all facilities worldwide that service vessels on international voyages must comply with the new international maritime security standards. The ISPS Code standards are focused upon the following objectives:

- Establishment of an international framework to detect security threats and take preventative measures against security incidents.
- Designation of the respective roles and responsibilities of the maritime community for ensuring maritime security.
- Facilitate the early and efficient collection and exchange of security-related information.
- Provide a security methodology for security

assessments to ensure plans are in place to react to changing security levels.

- Raise overall confidence that proper security measures are in place.

In addition, the regulations implementing the Maritime Transportation Security Act also come into force July 1, 2004. The following is a brief summary of the new domestic security regulations:

- The MTSA applies to all vessels, structures, and facilities located under, in, on, or adjacent to U.S. waters.
- Commercial vessels and facilities are required to conduct comprehensive security assessments, which are conducted by a designated security officer.
- Commercial vessels and facilities must have a Coast Guard-approved security plan, and operations must be in accordance with the plan.
- Security training and exercise standards are defined for all vessel and facility personnel.
- Commercial vessels and facilities are required to keep a two-year record of their security-related activities.

Petty Officer Caroll Batino, boarding officer from Coast Guard Activities New York, inspects living areas aboard an oil tanker. The Coast Guard continues to board vessels in ports throughout the U.S., protecting harbors from potential threats. Public Affairs Officer Mike Hvozda, USCG.

Initial Enforcement Milestones

January 1st of this year marked an important milestone in the overall plan to bring commercial vessels and facilities into compliance with the new domestic and international security provisions. Approximately 10,000 U.S.-flag vessels and 5,000 facilities are subject to new regulations that require owners of vessels and facilities to submit security plans (VSPs and FSPs) to the Coast Guard for approval before Jan. 1, 2004. Foreign-flag vessels subject to the provisions of SOLAS are exempt from this requirement, provided they have been issued valid International Ship Security Certificates (ISSCs) by their flag Administration or authorized Recognized Security Organization. The process for obtaining this certificate would include appropriate security plan approval and verification. Having considered the benefit to both arriving vessels and Port State Control Officers (PSCOs) of a trial period for security enforcement, the period between January 1 and June 30, 2004, has been designated as the Port State Control Pre-enforcement Campaign. This campaign is designed to help Coast Guard PSCOs become familiar with maritime security enforcement and to help commercial interests become familiar with putting security plans and procedures into practice before full maritime security enforcement begins on July 1, 2004.

U.S. Flag Vessels

All U.S. flag vessels that carry more than 12 pas-

sengers or that are 500 gross tons or more (as measured under the International Tonnage Convention Measurement System) that embark on an international voyage, regardless of when that voyage began, are required to meet Title 33, Code of Federal Regulations, Part 104 as well as SOLAS Chapter XI-2 and the ISPS Code. Vessels that comply with these national and international standards will be issued an ISSC and a Continuous Synopsis Record (CSR). The Coast Guard will determine compliance with the standards through rigorous plan review and onboard compliance examination. Vessel security plans must be submitted to the Coast Guard for review no later than Dec. 31, 2003; failure to do so may result in a substantial fine. The compliance verification examination must have been completed and the associated documents must be issued by July 1, 2004. Failure to do so will result in the vessel being prohibited from operating internationally.

Interested parties are urged to contact their local Coast Guard Officer in Charge, Marine Inspection (OCMI) to schedule a compliance examination. The regulations provide that applicants seeking this examination provide their request in writing to the OCMI at least 30 days in advance of the actual examination date. The international requirements also apply to vessels previously considered "uninspected," which have not been traditionally examined by the Coast Guard (see table at right). Towing vessels of 500 or more gross tons that operate internationally now fall into the above category. Vessels must use the International Tonnage Convention Measurement System (the tonnage indicated on their International Tonnage Convention Certificate) to determine ISPS applicability, regardless of their build or keel laid date.

Domestic Enforcement Options

Vessels and facilities subject to security plan approval must have submitted their respective security plans (Vessel Security or Facility Security) by Dec. 31, 2003. Failure to do so may result in civil penalty proceedings and a substantial fine at a rate of up to $25,000 per violation. In addition, the Coast Guard has also expanded its ticket program to allow for a more effective process for handling civil penalties relative to MTSA, and ticketing activities commenced after Dec. 31, 2003. After July 1, 2004, vessels and facilities that have not submitted a security plan, or are not in compliance with an approved security plan, may have operations terminated. For vessels, the Coast Guard may remove its Certificate of Inspection; for facilities, the Coast Guard Captain of the Port (COTP) may issue an order prohibiting operations (COTP Order). In addition to these control actions, owners and operators remain liable for potential civil penalties.

Vessel and facility owners who have questions regarding requirements for security plan submission or the status of a specific plan submittal,

ISPS & MTSA Applicability Chart for Foreign and Domestic Vessels

Vessel Type	ISPS	MTSA
Passenger		
0 to 99 GT	X	
100 to 149 GT	X	X
150 to 399 GT	X	X
≥400 GT	X	X
Tank Ships		
0 to 99 GT		
100 to 149 GT		X
150 to 499 GT		X
≥500 GT	X	X
Cargo Ships		
0 to 99 GT		
100 to 149 GT		X
150 to 399 GT		X
400 to 499 GT		X
≥500 GT	X	X

* *GT = Gross Tonnage*

Petty Officer Chad Walder verifies passports during a random boarding on a foreign tanker ship in New York Harbor. Public Affairs Officer Mike Hvozda, USCG.

should contact the local Coast Guard Marine Safety Office for more information.

Foreign Vessels Visiting U.S. Ports

The pre-enforcement effort for foreign vessels will occur in two stages. Port State Control (PSC) Examiners during the months of January, February and March will conduct limited ISPS compliance exams on vessels selected for a Port State Control exam. These exams will check for the presence of new security documents issued in accordance with the provisions of SOLAS Chapter XI and the ISPS Code and will accomplish outreach to shipping companies regarding the consequence of failing to comply by the July 1, 2004 implementation date. Security documents to be examined include the ISSC, which verifies that a vessel's security plan has been reviewed and approved by either the flag state or a recognized security organization on the flag state's behalf, and the Continuous Synopsis Record (CSR), which provides a lifetime record of details such as the vessel's identification, ownership, registration and classification. Beginning April 1, vessels arriving with a valid ISSC will be examined for compliance with the ISPS Code and MTSA. This boarding will be similar in scope to the compliance exams that will be conducted after July 1, 2004, however no enforcement actions will be taken when deficiencies are identified. Coast Guard boarding teams will present written discrepancy letters to non-compliant vessels, and these will reinforce the potential civil penalties and vessel control actions that will be exercised for violations occurring after July 1, 2004. Vessels found compliant with the new requirements during the pre-enforcement campaign will be recorded in the Coast Guard's PSC database, and are less likely to experience delays during the time period immediately following the implementation date. All vessels arriving in the U.S. will be boarded for ISPS/MTSA compliance at their first U.S. port call after the implementation date, unless they have successfully undergone an ISPS/MTSA examination during the pre-enforcement period.

Beginning July 1, 2004, the Coast Guard will aggressively enforce the ISPS code on foreign vessels. Any deviation from an approved VSP or the ISPS code will be considered as "clear grounds" to initiate control actions. Foreign vessels attempting to enter U.S. waters and found to be willfully ignoring the above standards may be ordered out of U.S. waters, delayed, and subject to substantial civil penalties of up to $50,000.

Contact Information

Along those lines, the Coast Guard has developed a one-stop information help desk to answer all questions related to MTSA and ISPS implementation. The help desk operates weekdays from 8 a.m. to 2 p.m. EST and can be reached at (877) MTSA-Aid [(877) 687-2243] or (202) 366-9991. Security questions can also be sent by E-mail to the following address: **uscgregs@comdt.uscg.mil**. In addition, an MTSA Web site has been set up for the general public at: **www.uscg.mil/hq/g-m/mp/port_security_offices.shtml**.

A Coast Guard-manned LCVP from the *USS Samuel Chase* disembarks troops of the U.S. Army's 1st Division on the morning of June 6, 1944 at Omaha Beach.

International Port Security Program

by Lt. Jeff Apps
U.S. Coast Guard Office of Port Security, Planning and Readiness

Due to its international nature, global shipping poses a unique set of challenges to maritime security. Potential acts of maritime terrorism are an international problem that requires an international approach.

In an effort to codify and standardize a comprehensive approach to effective, consistent international maritime security, the U.S. Coast Guard, in its traditional role as the lead federal agency for maritime transportation security, worked closely with the International Maritime Organization (IMO) in the development of the International Ship and Port Facility Security (ISPS) Code. The ISPS Code, adopted by an IMO diplomatic conference in December 2002, is the only internationally accepted blueprint for the implementation of security measures for maritime infrastructure. The Code has an entry into force date of July 1, 2004. At the same time, the Coast Guard worked with Congress in the development of the Maritime Transportation Security Act (MTSA). Because the security situation in foreign ports can have a direct impact on the security of the United States, Sections 70108-70110 of the MTSA require the Coast Guard to assess the effectiveness of antiterrorism measures implemented in foreign ports served by U.S. documented vessels, from which foreign vessels depart on a voyage to the United States, and any other foreign ports the Secretary believes pose a security risk to international maritime commerce.

The Coast Guard's International Port Security (IPS) Program combines domestic law with international requirements to ensure a comprehensive approach to observing maritime security at the countries (and their ports) that trade with the U.S. Beginning in July 2004, the IPS program will engage in bilateral or multilateral discussions to share and align security practices utilizing the recently established IMO standards as well as other international security standards currently under development. For example, the International Labour Organization (ILO) is currently developing an international Code of Practice for Port Security. This ILO Code will be patterned after the Coast Guard's domestic program of port security assessments, port security plans, and port security committees. As part of the visit, the Coast Guard will conduct an information exchange with the host government to learn how that government is implementing the provisions of the ISPS Code.

To conduct the information exchange, an IPS Team has been created at Coast Guard Headquarters. In addition, Port Security Program Coordinators (PSPCs) are being established at locations throughout the world. Typically, a visit to a country will include an observation of:

- The port facility assessment/plan approval process,

- The vessel security assessment/plan approval process leading to issuance of the International Ship Security Certificate,

- The security measures in place at a representative port or series of ports to verify compliance with the ISPS with particular emphasis on access control, screening, and overall security management.

In the event that a country or port is found non-compliant with international standards as a result of the information exchange, the IPS Team will work with that country or port to identify corrective actions required in order to be in compliance. The MTSA stipulates that the country has 90 days from the date of notification to achieve compliance. If, after that time the country has not taken corrective measures, vessels arriving in the United States from ports of that country will be subject to additional Port State Control measures to be identified by the Coast Guard. Furthermore, these additional Port State Control measures may be imposed immediately if the non-compliance in the country is serious enough. Such measures may include:

- At-sea boarding prior to entry into port;
- Controlling the vessel's movement;
- Armed escort;
- Certain time/routing;
- Comprehensive security inspection; and
- Denial of entry.

These measures will remain in place until the country demonstrates compliance.

The IPS Team will coordinate with the Border and Transportation Security Directorate of the Department of Homeland Security by working with the Transportation Security Administration (TSA), Bureau of Customs and Border Protection (BCBP), and other federal agencies to develop a widely acceptable audit process that incorporates current information, intelligence, and best practices from each agency.

Compliance by some foreign port facilities and vessels may require a learning curve in order to interpret and implement the required security measures. The less sophisticated port facilities and developing country flagged vessels which, conceivably, would have the most need for assistance in interpretation of the Code, will often represent the most vulnerable targets. The legislative background of the 46 U.S.C. § 70109 indicates that it was Congress' intent to expand the Maritime Administration's Inter-American Port Security Training Program to provide training to these less sophisticated port facilities and developing country flagged vessels. The Coast Guard's Office of International Affairs manages and provides an extensive and robust international training program. Utilizing both the Maritime Administration and Coast Guard's international training programs to meet the Congressional intent will leverage existing resources to assist those nations achieve compliance.

The Coast Guard has historically been an active partner in the development and implementation of effective international maritime regulations and has amassed a wealth of unique experience as the Flag State Authority for United States vessels and the Port State Authority for foreign vessels calling on the U.S. As a result of the interdependency of global maritime commerce, it is in the security interest of the United States to have full ISPS Code compliance at the hundreds of international ports that send cargo and passengers to the United States on more than 50,000 vessel arrivals each year. Full deployment of the IPS program will greatly enhance the Coast Guard's port security posture by identifying and sharing best practices overseas, thus preventing potential threats from reaching U.S. shores. It is imperative that nations attain compliance with the IMO ISPS Code by the July 1, 2004 entry into force date to avoid a potential disruption of their shipboard international trade.

PTP

Important to Maritime Safety, Today & Tomorrow

by Cmdr. Bryan R. Emond
Chief, U.S. Coast Guard Human Element & Ship Design Division

Since Sept. 11, 2001, as you would expect, the U.S. Coast Guard has concentrated a great deal of time and effort on improving maritime security. But what about our traditional safety related missions? In the words of Rear Adm. Thomas H. Gilmour, the Coast Guard has not lost, and will not lose, its focus on marine safety and environmental protection responsibilities.[1] You cannot be *secure*, or have security, without being *safe*; they are two sides of the same coin.[2]

With limited resources, how is this possible? Focusing on the human aspect of our missions is imperative to efficiently and effectively meet our goals. By using the refined practices of Prevention Through People (PTP), our multi-mission goals are within reach. Why does PTP make sense in today's environment? Where is PTP going in the future? How will efficient prevention strategies continue to evolve? Knowing the answers to these questions will help you succeed in the maritime transportation industry of today—and tomorrow.

What is PTP?
PTP is an approach to marine safety and environmental protection that systematically addresses the root cause of most accidents—the human element. It recognizes that the major portion of these problems come from organizational errors and promotes a cultural change to develop a "do it right" mindset. In cases of security breaches, PTP recognizes that it is the people on vessels and in ports who are key to incident prevention.

Why PTP?
PTP makes sense in today's environment—and there is evidence to prove it. There is both anecdotal and analytic evidence that accidents are still attributable to human and organizational error. Shortly after the Staten Island ferry, the *Andrew J. Barberi*, allided with a dock, a headline appeared in the *New York Times* proclaiming a "History of Human Error Found in Ferry Accidents."[3] Moreover, human element issues remain a mainstay on the National Transportation and Safety Board's (NTSB) official "Most Wanted" list. Human fatigue in transportation operations has remained one of NTSB's Most Wanted Transportation Safety Improvements since 1990.

Analytic support for PTP is evident in the American Waterways Operators (AWO) Bridge Allision Working Group Report. This report identified improved operator decision-making as a critical element to reduce bridge allisions:

"The human element, in particular decision-making errors, is the predominant factor in bridge allisions. This does not mean that towing vessel operators are poor decision makers. Indeed, the fact that the over-

whelming majority of bridge transits take place without incident–and that most bridge allisions that do occur result in no damage to people, property, or the environment–testifies to the skill and professionalism of towing vessel operators who do a difficult job under challenging conditions, with very little margin for error."

This report continues, recommending Crew Endurance Management, a PTP initiative, to improve operator safe performance. Additional analytic support for PTP is summarized in the June 2002 *Proceedings* article titled "Recent Towing Spills Point to HOF as Cause." This article discussed casualty data for all oil spills of 10 gallons or more originating from a towing vessel or barge for the period 1994-2000. The author pointed out that addressing PTP could have prevented more than 30 percent of the documented spills.[4]

Where is PTP going?

PTP is the key to continuous improvements in maritime transportation safety, security, and environmental protection. PTP provides the Coast Guard's best approach to truly address the most common causes of safety and environmental accidents like those mentioned above. The PTP approach has enabled the development of tangible, substantive solutions like Risk-Based Decision Making (RBDM), and the Crew Endurance Management System (CEMS).

The Maritime Community Model of Security

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PTP also promotes partnerships with and the sharing of best practices within the industry. In this way, PTP allows us to find the paths that will take us to a safer, cleaner maritime operating environment.

But what about security? Once you have a security plan, some guards, and a few weapons...what's next? To prevent a security incident, the nation's guardians must identify and address each potential vulnerability; the evil-doer needs only find one. While the daunting task of inspecting, certifying, and validating all travelers and cargoes coming across U.S. borders is an important part of the overall homeland security strategy, to rely upon such methods alone would be imprudent. Using the classic PTP practices of partnering and sharing information, the Coast Guard has already begun to sharpen its operational focus on threats in the U.S. maritime domain. This is Maritime Domain Awareness (MDA). According to the U.S. Coast Guard Maritime Strategy for Homeland Security, "[MDA] will constitute a significant force multiplier as missions expand against a background of limited resources."[5] In other words, MDA information sharing can prevent security lapses through:

Using people and organizations as detectors
People pick out abnormalities. Who knows better than the mariner?

Using people and organizations as communicators
If crews don't have a way to communicate what they detect within their companies, and to government authorities, then nothing happens!

Using people and organizations as responders
As with vessel or environmental casualties, vessel crews will likely be the first upon a maritime security incident. How they react may eliminate, mitigate, or exacerbate the consequences of an incident.

The people-centered approach of MDA is nothing new. In fact, many of the relationships established through Harbor Safety Committees, Port Security Committees and similar organizations were tapped immediately after the events of September 11. But, in the spirit of continuous improvement, these relationships continue to evolve. Once the security plans are written, it's the people and organizations of the maritime community (government and law enforcement responders, companies, and mariners) that will make or break our future successes. The graphic on the previous page titled The Maritime Community Model of Security illustrates the importance of people and organizations to preventing or mitigating a security incident.

Like accident prevention, the maritime community must follow classic PTP guiding principles to achieve success in the security domain. Following are some of those guiding principles as they apply to security.

Honor the Mariner–Mariners are your best source of MDA. Who knows better what is normal and what is unusual in and around our nation's waterways than the people who work there everyday? And as many found out after September 11, the relationships formed to respond to pollution incidents or to consider local waterways issues were essential to preventing, preparing for, and responding to security incidents.

Take a Quality Approach–Look for continuous improvement to security. While our first efforts to meet the security regulations will be a challenge, sustaining the integrity of the maritime security system will take continued vigilance and resolve. Time and technology will change how and where our enemies attempt to attack us. Only by continuing to work together to identify and address vulnerabilities can we prevent a maritime security incident.

Seek Non-Regulatory Solutions–While much is legislatively mandated under security, the long-term effectiveness of these requirements depends greatly upon the relationship and cooperation between stakeholders. Port security committees, joint law-enforcement task forces, and cooperative working groups are essential to effective, efficient prevention and response.

Share Commitment–As September 11 made clear, security is an issue critical to everyone. Deterring, detecting, and defending against a security incident involves commitment from all levels of government (federal, state and local), from both the public and private sector, and from all levels of the company or organization.

Manage Risks–Clearly it won't be possible to provide Fort Knox-like security to protect everything, everywhere, all the time. Consistent with the President's Homeland Security Strategy, the Coast Guard promotes a risk-based approach to managing security risks. For example, regulations developed under the Maritime Transportation Security Act of 2002 (MTSA) were based heavily upon the

Corbis.

National Risk Assessment Tool (NRAT).

How will efficient accident prevention strategies continue to evolve?

Policy and pressures change companies' attitudes toward risk. A safety program is only as effective as the culture that supports it. While laws and regulations can create strong incentives and disincentives that encourage an organization to operate safely, only a strong safety culture can proactively ensure long-term reduction in the risk of an incident.

PTP has evolved—and will continue to evolve—with technology, and political and market pressures. As technology progresses, old hazards may become less of a concern and new hazards may develop. As time passes, political or market pressures may change, leading companies to reduce or accept varying levels of risk. An organization with a solid safety culture can identify and manage current risks, greatly reducing the risk of incidents that may lead to severe losses, costly or arduous reforms, or loss of public image.

One way an organization can take charge of its safety culture is through a Behavior Based Safety (BBS) program. BBS takes a holistic approach to reducing risks throughout an operation. The December 2003 issue of *Professional Safety*, a peer-reviewed journal of the American Society of Safety Engineers, discusses BBS. The article entitled "People-Based Safety: The Psychology of Actively Caring" provides examples of how behavioral techniques foster improvements in safety and health, and are the first step in creating a positive safety culture.[6] CEMS is an example of BBS at work.

Safety Cultures Evolve Worldwide

As we learn ways to improve safety, security, and environmental protection domestically, we will share our lessons with the world. Efforts, such as the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code), have been a major step toward improving the safety culture in the maritime industry. The ISM Code addresses the responsibilities of the people who manage and operate ships and provides an international standard for the safe management and operation of ships and for pollution prevention. Upon the foundation of ISM, and in the spirit of PTP, we need to continue to build support systems that foster improved safety culture. Much of this work will take place through partnerships at all levels, from the Commandant to field level Commanders.

Other international efforts, such as those under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended, have also been integral in improving safety culture. The IMO is currently developing a model course on fatigue.

Just as we will share our lessons with the world, we will also look to learn from those around us. Currently, the United States is working with the United Kingdom on developing human element policy strategy.

Success in Our Future

It's 2004. Changes in the Homeland Security threat level remind us of the importance of continued security vigilance. And we are reminded of the importance of continuous improvements in safety and environmental protection with tragedies like Staten Island ferry *Andrew J. Barberi*. Security incidents and mishaps alike provide the political pressure that is continuously influencing organizational culture change—as well as homeland and global policy changes. In a rapidly changing world, PTP is a cost-effective means to achieve safety, security, and environmental protection in the maritime transportation industry of today and tomorrow. Make this the year that you implement the PTP practices that carry your organization into the future. Contact the Coast Guard about CEMS, RBDM, and MDA as your first, proactive step to incident prevention.

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[1] Rear Adm. Thomas H. Gilmour, Assistant Commandant for Marine Safety, Security and Environmental Protection. (2003). American Society of Mechanical Engineers (ASME)/Society of Naval Architects and Marine Engineers (SNAME) Marine Environmental Engineering Technology Symposium.

[2] ---, MarineLog Conference on the Human Element

[3] McIntire, M. (2003, Nov. 1) History of Human Error Found in Ferry Accidents. *New York Times*, p. A1:C3, Late Edition

[4] Abernathy, W. J. (2002). Recent Towing Spills Point to HOF as Cause. *Proceedings of the Marine Safety Council*, 59-62, 35-37.

[5] U.S. Coast Guard Maritime Strategy for Homeland Security, December 2002.

[6] Geller, S.E. (2003). People-Based Safety: The Psychology of Actively Caring. *Professional Safety Journal of the American Society of Safety Engineers*, 48, 33-43.

Merchant Mariner Documentation

An Overview of a Credential's Evolution

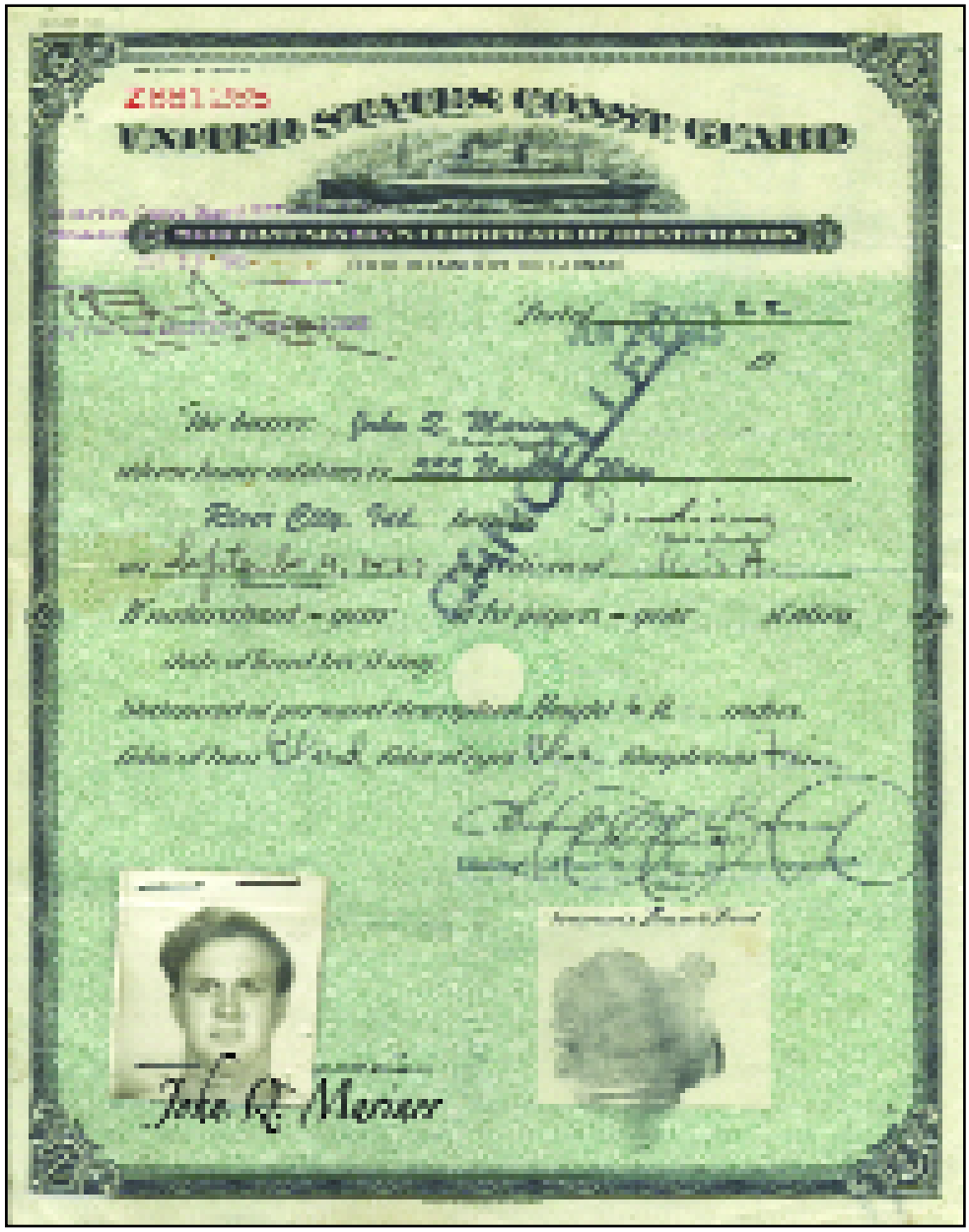
by R. Jon Furukawa
National Maritime Center

Merchant Mariner documentation has evolved throughout the years to meet the changing requirements of the maritime community and today's national security requirements. As time and technologies have changed, so has the mariners' documentation. Today's merchant mariners carry credentials that would be unrecognizable to yesterday's mariners.

> The emphasis on security of the marine transportation system has given rise to other credentialing efforts that undoubtedly will influence the future of the MMD.

Before World War II, seagoing or Great Lakes mariners were required to carry two primary documents. The first of these was the Merchant Seaman's Certificate of Identification. It was a handsomely engraved, high quality eight-inch by 10-inch paper certificate supplied by the U.S. Bureau of Engraving. When issued by the U.S. Coast Guard to a mariner, the certificate included the full name, date and place of birth, physical description, photo and a thumbprint. The Certificate of Identification established the mariner's identity and assigned him a unique mariner number called a "Z number." Once issued, the certificate never expired. Accompanying the identification certificate was the mariner's Certificate of Service. The Certificate of Service was a smaller document, but was similar in style to the identification certificate. Its purpose was to document mariner qualifications to serve in various unlicensed capacities aboard ship. Like the identification certificate, the Certificate of Service never expired. Both these certificates were typically prepared by hand in the licensing department of the Coast Guard Marine Inspection Office.

While there are no records to substantiate it, it can be imagined that carrying two large, paper credentials was a burden to the mariner whose life was constantly on the move. Around the close of World War II, the issue was addressed by the move to the



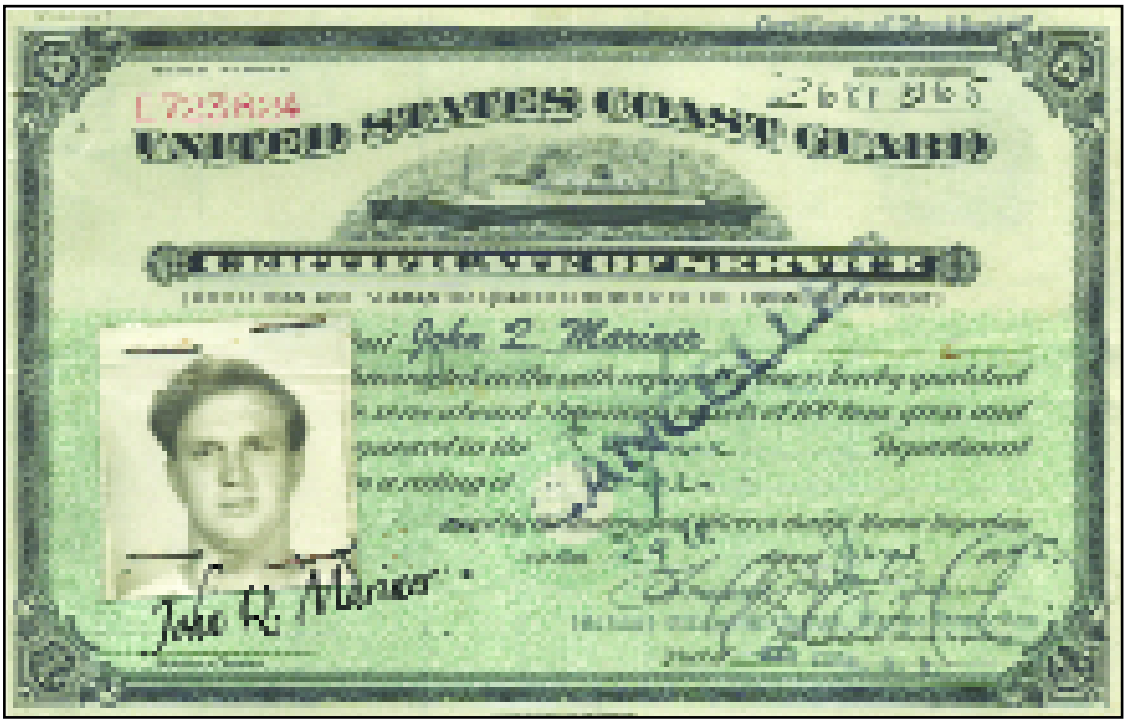
Prior to World War II: Mariners were required to carry the Merchant Seaman's Certificate of Identification (left). The Certificate of Service (right) accompanied the Certification of Identification. Both pieces of loose paper were typically prepared by hand.

first U.S. Merchant Mariner's Document, or MMD. This new credential replaced both of the former credentials. The card provided the identity information on one side, including the photo, name, etc., and the unlicensed qualifications on the reverse. In keeping with the technology of the day, the cards were produced by typewriter on Bureau of Engraving paper stock. These cards were about the size of a playing card and after being signed and sealed by the issuing office, they were laminated in heat-sensitive clear plastic. Like their forebears, the MMD (or Z-card, as they came to be known) was issued for life; it never expired. Mariners now had a more portable and more durable credential to accompany them on their travels.

The Z-card remained essentially unchanged for nearly 30 years. Only the mariner's identifying number changed during this period—the Z-number giving way to the more universally accepted Social Security Number.

In the aftermath of the *Exxon Valdez* oil spill, Congress determined that the MMD should no longer be issued for life. The Oil Pollution Act of 1990 required that the credential be renewed at five-year intervals. This led to the next step in the evolution of the MMD. The laminated paper card, produced by typewriter, was abandoned in favor of today's credit card style plastic card produced entirely by computer. For the first time, the card carried an expiration date. The evolution to computer production of the MMD was a troubled one, as a credentialing program rooted in tradition adjusted to the world of rapidly changing technology. The plastic card encountered several minor changes before the current version was fielded in February 2003. The current MMD uses high-quality, pre-printed cardstock incorporating a variety of security features.

The events of September 11 set in motion the process for further change to the Merchant Mariner's Document. While the emphasis in years past has been on documenting the mariner's qualifications, September 11 has given greater focus on the identity features of the MMD. In addition, the emphasis on security of the marine transportation system has given rise to other credentialing efforts that undoubtedly will influence the future of the MMD. Domestically, the Transportation Security

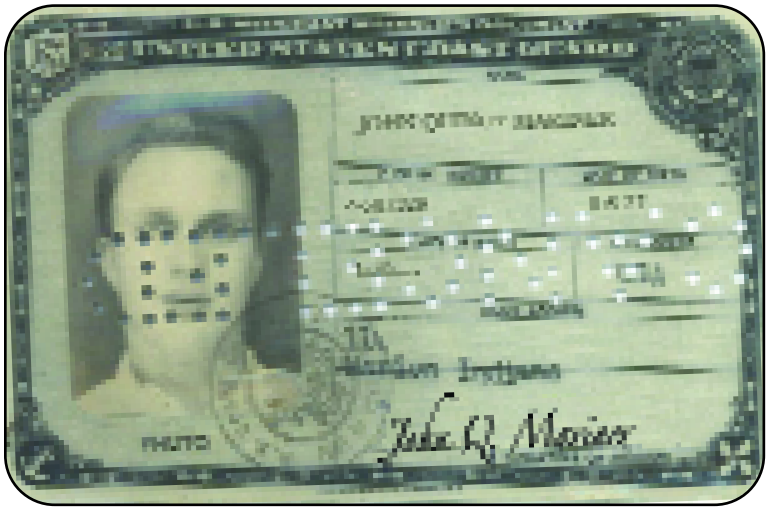


Administration is working on the development of a state-of-the-art transportation worker's ID card (TWIC) that will be required of all persons needing access to the marine (and other) transportation systems. These cards will incorporate new biometric and other technologies for confirming the identity of the cardholder. Internationally, the International Labor Organization (ILO) is developing a new standard for the seafarers' identity documents. Balancing the robust new technologies available with the broad spectrum of nations' available resources, combined with the complexities of cultural differences in approach to individual identity have made this a daunting task.

Today's technology and changes in international standards invite and encourage additional evolution of the MMD. With the advent of the International Convention on Standards of Training, Certification and Watchkeeping, 1978, as amended (STCW), most mariners required to carry an MMD are also required to carry a separate STCW certificate. Licensed mariners, in addition, must carry their Coast Guard license. The technology is available that would allow all of these credentials to be combined. Available technology also would allow the MMD to record sea service and other administrative information. The Ship Operations Cooperative Program, under the auspices of the U.S. Maritime Administration, has been bringing industry and government together to test new smart card technologies' potential for administrative use. The resulting Mariner Administrative Card, which could include a full spectrum of employment information, could also serve to

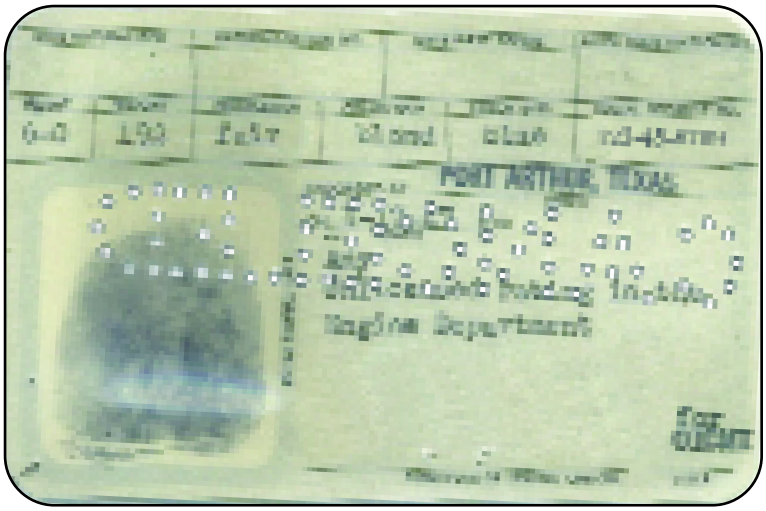
Today's technology and changes in international standards invite and encourage additional evolution of the MMD.

The technology is available that would allow all necessary credentials to be included in the MMD. Available technology also would allow the MMD to record sea service and other



End of World War II:
The Merchant Mariner's Document (left, top) replaced both the Certificate of Identification and Certificate of Service. Identification information appeared on the front of the card, while the unlicensed qualifications showed on the back (left, center). These cards were produced by typewriter and then laminated for durability.

Currently:
The new Merchant Mariner's Document (bottom) is produced by computer and carries an expiration date. This latest card also has a variety of security features.



automate sign-on/sign-off, simplify shipping article preparation, record sea service, and generate a host of other efficiencies.

With a history of active evolution, the merchant mariner documentation has exemplified the Bard's observation: "What's past is prologue; what to come in yours and my discharge." The future of this documentation is certain to be dynamic as maritime safety and security provide challenges, and technology offers opportunities to meet them. It will be incumbent on government and industry working together to ensure that mariner documentation evolves with balance to serve the needs of the marine transportation system.

Post OPA-90

The Evolution of Coast Guard Response

by Ensign SARA ELLIS
U.S. Coast Guard Office of Response

Pre-*Exxon Valdez* Climate
The transportation of oil in bulk at sea has been a vital link in our economy for many years. Unfortunately, moving this much oil occasionally results in spills. The effects of these spills, some large and others small, began to drive U.S. Coast Guard actions to prevent spills, while at the same time, improve our capabilities to prepare for and respond to spills if our prevention efforts failed. Throughout the 1970s and 1980s, prevention efforts focused on improving operational controls and operating procedures on oil tankers and at oil transfer facilities. From a preparedness and response perspective, contingency plans were written and exercised systematically by individual government and industry organizations, but these internal efforts fell short of full engagement of other stakeholders (trustee agencies, states and private sectors).

The *Exxon Valdez* Incident
Just after midnight on March 24, 1989, the Coast Guard Marine Safety Office in Valdez was informed that the M/V *Exxon Valdez* was hard aground on Bligh Reef in Alaska's Prince William Sound.

What followed was the largest oil spill in U.S. history. Eleven million gallons of crude oil impacted one of the nation's most sensitive ecosystems, eventually spreading over 3,000 square miles and onto 350 miles of shoreline in Prince William Sound alone. That spring, the oil moved along the coastline of Alaska, contaminating several national and state natural treasures.

Both the Coast Guard and Exxon implemented response organizations that far exceeded the organizational models envisioned by the National Contingency Plan. Several thousand workers cleaned shorelines using techniques ranging from manually cleaning rocks to high-pressure hot-water washing to applying tiny microbes to oiled shorelines. But the response was hindered by lack of coordination between government and industry plan holders as well as unrealistic public expectations regarding oil spill response effectiveness. Natural resource trustee agencies, and the public, who had played only marginal roles during the preparedness process, were outraged that the spill was not prevented in the first place and concerned that response actions did not fully match their natural resource protection priorities.

Congressional Response
Congress responded with unanimous passage of the Oil Pollution Act of 1990 (OPA-90). OPA-90 fundamentally changed oil spill prevention and response by making companies that handle oil and

A Coast Guard officer cleans oil from the water during the *Exxon Valdez* oil spill in Alaska in 1989.

hazardous substances ultimately responsible for their actions, and by charging government agencies with taking a more direct role in cooperating with and oversight of industry in incident prevention, preparedness, response, liability and compensation, and research and development.

Prevention
We know that the best way to protect the environment is to stop accidents from occurring. OPA-90 directed the Coast Guard to initiate a new set of regulations to substantially reduce the chances of an incident and to ensure increased preparedness, including:

- Double hull requirements for tank vessels;
- Operational measures to reduce oil spills from existing single-hull tank vessels;
- Access to national drivers register and criminal records review; and
- Enhancements to civil and criminal penalty provisions.

Statistics support the success of these new prevention initiatives by the Coast Guard: oil spills in the United States (more than 10,000 gallons) were cut in half compared to pre-OPA-90, and there have been no oil spills more than one million gallons since 1990.

Preparedness
OPA-90 mandates the formation of Area Committees comprised of federal, state and local response and natural resource trustee officials. The Act charged area committees to work with the oil handling and transportation industries in planning for responding to oil spills and hazardous substances releases consistent with the National Contingency Plan. Under the direction of the Federal On-Scene Coordinators, Area Committees are responsible for developing Area Contingency Plans (ACPs) that reflect the consensus of the entire response community regarding response priorities, capabilities, and expectations. Government, industry, and trustee agencies now routinely plan and prepare together.

Vessel Response and Facility Response Plans serve to coordinate Responsible Party actions with the Federal On-Scene Coordinators and local response strategies. They ensure required resources are planned for and available for immediate use. Today, virtually all marine transportation-related oil handling facilities and oil tankers have approved response plans.

A valuable lesson from the *Exxon Valdez* was the need to exercise the entire response community for a spill as realistically as possible. The Preparedness for Response Exercise Program (PREP) was developed to establish a workable exercise program. PREP facilitates regular joint exercises of the entire government and industry response community in each ACP planning area.

Response
As pre-designated Federal On-Scene Coordinators under the National Contingency Plan, the Coast Guard's responsibility is to ensure a safe and effective response to all discharges into the marine environment. Since the passage of OPA-90, our response capability and readiness have increased substantially through a number of initiatives, including:

- Adoption of the National Interagency Incident Management System (NIIMSICS) as the standard mechanism for managing spill response;
- Enhancement of National Strike Force capability;
- Strategic placement of first aid response equipment around the United States; and
- Creation of District Response Advisory Teams to ensure the preparedness and integration of district-wide Coast Guard assets in support of port-level response activities.

Together, these assets make up a package that has significantly enhanced our ability to respond to disasters when they occur.

Liability and Compensation
OPA-90 mandated the creation of the National Pollution Funds Center to manage the Oil Spill Liability and Compensation Trust Fund (OSLTF). The OSLTF ensures adequate funds are available to aggressively and completely respond, as well as to compensate, for environmental damages stemming from all oil spill incidents.

Research and Development
The Coast Guard, as a leader in cooperative

Above and Opposite: Clean-up continues during response to the *Exxon Valdez* oil spill, in which workers steam-blast rocks and wash down shorelines soaked in crude oil. The Coast Guard's responsibility is to ensure a safe and effective response to all discharges into the marine environment. Since the passage of OPA-90, response capability and readiness have increased substantially.

research and development efforts, is actively working with other federal agencies, industry, and research partners from abroad to share resources for more than 30 prevention, preparedness, and response initiatives since 1989.

Risk Communications and Awareness Initiatives
Two of the most fundamental aspects of accident prevention, preparedness, and response are understanding where the greatest risk of an incident might occur and understanding how human interactions impact the chain of events that may increase or decrease the risk. Improved risk awareness and communications are fundamental to the success of Area Contingency Planning, the PREP program, management of the OSLTF, and even the R&D projects. The Coast Guard has been developing a suite of tools and processes to readily support all of these initiatives. This understanding led to the development of several initiatives:

- **Prevention Through People (PTP)**—a systematic, people-focused approach to reducing casualties and pollution;
- **Risk-based Decision Making**—provides a process that ensures that all available information is considered and balanced to obtain the best decision, given the information, values, and goals for the particular situation; and
- **Stakeholder Input**–Area Committees, public meetings, conferences, and workshops advertise and receive input on virtually every response initiative in the last 10 years.

In the Wake of September 11 Terrorist Attacks
On Sept. 11, 2001, the Coast Guard was faced for the first time with a catastrophe greater than that of the *Exxon Valdez*. No longer is a catastrophic oil spill perceived to pose the greatest response challenge to the Coast Guard. Acts of terrorism and employment of weapons of mass destruction (WMD) threaten destruction on a scale not previously conceived of by the general public or Coast Guard's prevention, preparedness and response programs. On a basic level, the Coast Guard reacted by forming an integral bond between the prevention aspect of response and port security. Priorities shifted.

As a result, the Coast Guard has shifted its prevention tactics. Previously, emphasis had almost exclu-

sively been on *accidents* involving oil and hazardous substances. Now our attention has shifted to include the prevention, preparedness and response to all incidents, hazards, and especially to *intentional* events, committed against the United States with malice. New prevention tactics employed by the Coast Guard include: increased boarding of vessels to search for threats and accurately identify crewmembers, creation of Marine Safety and Security Teams to aid in port security, and the "pushing out of our borders" with the goal of detecting threats before they reach American waters. Coast Guard Strike Teams have gained first-hand experience in dealing with WMD. As one of the largest components of the new Department of Homeland Security, with its long history and experience as first responders and as leaders in preparedness for multi-agency emergency response operations to all hazards, the Coast Guard is contributing to our national efforts to improve our response management doctrine and capabilities.

The Future

While we have made positive strides in incident prevention and in preparing for and responding to all incidents, we must look to our customers, the American public, for the future. The new awareness of the threats posed by terrorists will continue to stretch and stress our resources. Over the next few months and years, we must vigorously assess the strengths and weaknesses of our prevention, preparedness and response infrastructures, to ensure they remain relevant and effective in balancing between the transportation, energy, and industrial needs of the country and our environmental heritage. Priorities should include:

- Defining critical success factors for a best response;
- Improving salvage and firefighting;
- Rapidly identifying resources at high risk;
- Enhancing command and control organizations and response equipment capabilities;
- Using more effective "lessons learned" systems; and
- Fostering strong partnerships with stakeholders, despite the need to preserve information security, to ensure that the direction the Coast Guard takes for the future meets the needs of our customers.

Since implementation of OPA-90, prevention efforts have reduced by some 50 percent the number of significant oil spills, and there have been no spills larger than one million gallons. Yet, spills do occur and public concern regarding potential impacts remains high. Furthermore, despite our successes in prevention, threats of significant spills may now be increasing parallel with the increased risk of terrorist activity. New awareness of this intentional threat has increased our assessment of the risk of a major spill or multiple spills that may be aimed at impacting America's waterways transportation system and environment.

Coast Guard response personnel have better systems to fulfill their missions. Both industry and government assets are strategically distributed and well maintained. Funding mechanisms have been refined and increased the ability to manage large spills, and have advanced response technology and prevention through active partnerships. Although our nation's preparedness for all incident/hazard response is at an all-time high, the ability to respond to multiple intentional incidents is still being assessed. The Coast Guard's personnel with real incident management experience in large and small oil spill emergency is dwindling because of the reduction in spills. Despite this challenge, the nation's ability to prevent, prepare, and respond to oil spills will continue to improve with the Coast Guard's emphasis on active customer outreach and engagement, and its philosophy of measuring its preparedness and response success by its ability to safely meet the needs of all response stakeholders.

An Advancement in Safety

by Bill Abernathy
& Naomi Chang

Are you familiar with the lone duck featured on a series of AFLAC television commercials? He insistently quacks the company name (AFLAC!) with increased frustration, while the oblivious humans ask about the qualities of secondary insurance and who can provide it. In some respects, the U.S. Coast Guard's Prevention Through People (PTP) program is like that duck: always present but never quite heard. The program values the human element, and is so embedded throughout the Coast Guard and the commercial maritime industry that it needs to "quack"—vigorously—to get heard.

Why the need for PTP?

Historically, safety was promoted through developing and enforcing engineering and technological standards—i.e., making sure the machines were working okay or the necessary equipment, such as lifesaving or firefighting apparatuses, were accessible onboard vessels. This was the way for almost 200 years. But 80 percent of marine casualties were due to human error, and there was a need to manage the risks of casualties and prevent accidents from occurring. Before PTP, few managers identified and analyzed high-risk operations, looked at root causes of accidents, or even shared analyzed results and "lessons learned." Focusing on one or two of these aspects would be insufficient; all need to work in tandem to effectively prevent casualties. Hence, there was a need for a systematic way to focus on human error, and the need for PTP.

What started it all?

In 1995 the Coast Guard took the initiative to increase maritime safety by forming a quality action team (QAT) with other parties to find solutions.

Courtesy AFLAC.

The QAT found four components that affect how safely people perform maritime operations:

- Management: standards, legislation, poor communication and/or coordination;
- Behavior: fatigue, carelessness;
- Knowledge and Decision Making: poor judgment, inadequate knowledge and/or information: and
- Work Environment and Technology: equipment design, hazardous natural environment.

The team then developed a long-term strategy to rebalance these components by examining prevention efforts from a systems perspective of casualties caused by human error. The QAT's strategy included collaborating with agencies and organizations, using risk management tools, employing prevention methods, and improving investigation techniques. Incorporating this strategy with the four components stated above, PTP was created.

What has been accomplished since then?

Partnerships and Advisory Committees

The Assistant Commandant for Marine Safety, Security and Environmental Protection (G-M) has developed formal relationships with some organizations to further the use of PTP in the maritime industry. Partnerships and advisory committees are both formalized alliances between industry groups and the Coast Guard that are committed to common goals,

based on the philosophy of quality, that promote maritime safety, security and environmental protection. Partnerships and advisory committees, however, do not serve the same function. Partnerships provide non-regulatory, cost-effective measures to improve practices in the maritime industry, but do not provide advice or recommendations on Coast Guard policies or regulatory issues; however, advisory committees, sometimes referred to as safety advisory committees, or SACs, do provide recommendations on Coast Guard policy and regulatory issues, and are even federally funded to do so.

Partnerships have provided opportunities to find solutions to commonly perceived maritime problems. Two such partnerships are with the American Waterways Operators (AWO) formed in 1995, and the Passenger Vessel Association (PVA), formed in 1996, and both have advanced practical solutions. For example, the *Crew Endurance Management Guide to Maritime Operations* was created with support from AWO in an effort to solve the problems of crew fatigue and productivity issues.

Leaders of industry corporations and mariner organizations that comprise advisory committees have provided invaluable recommendations and advice to G-M policymakers over the years. Several advisory committees, such as the Chemical Transportation Advisory Committee (CTAC), have created PTP subcommittees to address human element-related issues. The *PVA Risk Guide* was created specifically for passenger vessels and their issues, while the *Marine Operations Risk Guide*, created with support from the PTP subcommittee of CTAC, deals with risks for an array of vessel types and situations.

Both the partnerships and advisory committees work with the Coast Guard in providing support—and fulfilling the need—to identify root causes and cost-effective preventive measures for casualties and near-miss events.

Publications and Deliverables

More than ever before, maritime managers now have resources to assess and manage their operational risks. In addition to the materials mentioned above, the Coast Guard has developed materials such as the *Risk-Based Decision Making (RBDM) Guidelines* to provide in-depth guidance for all steps of the process, and the Risk Hotline to provide individualized support. Those who need information on-demand can go to our Risk Web site for pertinent advice. In contrast, those who need an overview may find our RBDM pamphlet helpful. Curious about the specific risks of fatigue? Specialized Crew Endurance Management (CEM) resources are available for those who

An example of both the human causal factor and group cooperation is the 2001 bridge collapsing in Texas, in which a tug and four barges allided with a causeway, causing 10 cars to fall into the water. Chief Warrant Officer Robert Wyman, USCG.

are interested in solving fatigue and endurance issues. The CEM Web site includes a downloadable version of the CEM pamphlet, which provides a basic introduction about the program, and the *CEM Guide to Maritime Operations*, which provides great detail on the program. Various PTP, CEM, Risk reports, and published studies are available through the National Technical Information Service (NTIS).

Proceedings of the Marine Safety Council has been an important vehicle for PTP. Since the magazine's launch, references and articles advocating the mariner, encouraging non-regulatory solutions, sharing commitment, presenting systematic approaches to casualties, risk, and human factors, and managing risk can be found in about every issue. Readers in the maritime industry and government realm have come to appreciate the use of these PTP principles and their implementation across a wide spectrum of maritime interests.

Events and Workshops

MarineLog magazine sponsors an annual conference on the human element, focused on applying practical solutions, retaining qualified seafarers, implementing the correct safety practices, and learning of proposed regulations. Participants come from diverse backgrounds, including academia, government, and industry. For Coast Guard districts, workshops are given on employing human error detection, assessment, and prevention techniques for use as part of vessel boardings, exams, and inspections. Work continues at all levels of the Coast Guard, in the field and at headquarters, to improve investigative methods, data collection, analyses, and feedback.

Incorporation of PTP

Aspects of PTP have been incorporated in numerous domestic and international regulations and guidance: the Code of Federal Regulations (CFRs); Navigation and Vessel Inspection Circulars (NVICs); the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW); the International Convention for the Safety of Life at Sea (SOLAS); and the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code) to name a few. Although PTP is not explicitly mentioned by name, such documents address the human element and the potential human error issues that directly impact crewmembers and maritime operations.

Where are we going with PTP?

Progress continues everyday, but there is still much to do. Hence, PTP will continue to "quack." Incorporating security tactics alongside safety can certainly work together successfully. Changing a safety culture to work well within an organization must have support at all levels of management working together with the mariners. After all, the need to prevent maritime accidents and casualties is a commitment to a safe environment, the public, and the people who conduct maritime operations. That commitment is what *Proceedings* has shown over the years: it has showcased PTP and has demonstrated its principles through articles, such as educating the mariner and sharing best practices. Because of this, the Human Element and Ship Design division would like to take the time to "crow" about the efforts of *Proceedings*. Because, without that commitment, the communication of the efforts to reduce errors will go the way of the AFLAC duck: always present but never quite heard. Thanks for your support, *Proceedings*!

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Naomi Chang is a Potomac Management Group, Inc. technical writer for the Human Element and Ship Design Division (G-MSE-1) in Washington, DC.

General Slocum Memorial Services in New York City

June 15, 2004 marks the 100th year since the *General Slocum* fire and sinking. In June 1904, more than 1,000 lives were lost in New York's East River.

Each year on or around June 15, the anniversary of the *General Slocum* disaster, two organizations, The General Slocum Memorial Association and the Maritime Industry Museum at SUNY Maritime College, hold memorial services in honor of the victims, survivors, and rescuers. Both are open to the public. Click on the link for detailed information: **www. general-slocum.com/0society.htm**.

In addition, the Greater Astoria Historical Society will host an event on June 15, 2004 at Hell Gate in Astoria Park, along Shore Road. See the GAHS Web site for event details: **www.astorialic.org**.

Liberty Ships

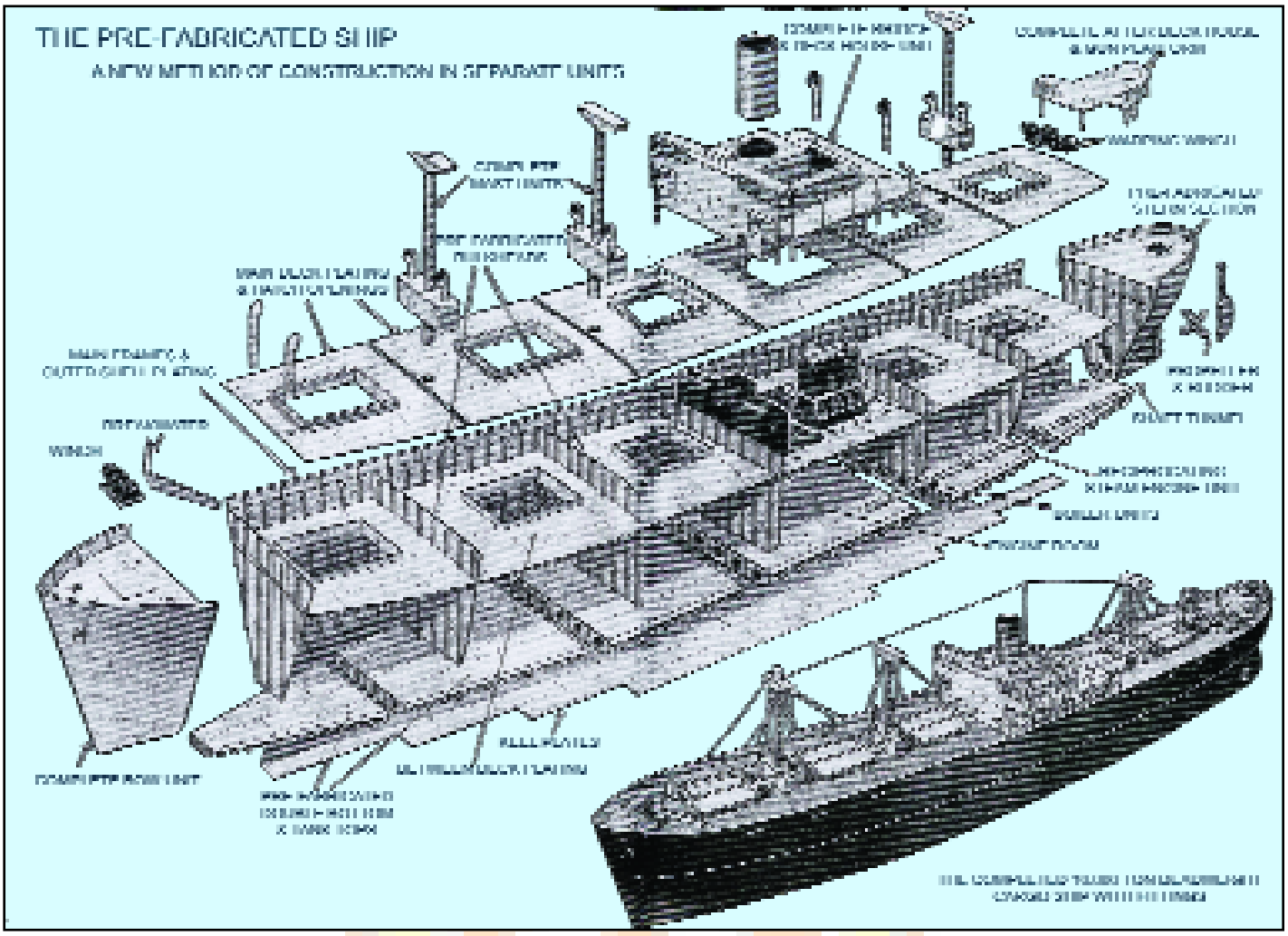
by Lt. Jim Ferguson
National Maritime Center

Designated EC2-S-C1, they were originally referred to as "emergency ships." One of their more common nicknames was "Ugly Duckling," which stemmed from their no-frills appearance. When the first of these new ships, SS *Patrick Henry*, was launched in 1941, President Franklin Roosevelt referred to the Virginia patriot's demand, "Give me liberty or give me death." FDR promised that these ships would bring liberty to Europe. From then on, they were known as Liberty ships.

Adapted from the plans for the hull of a British tramp steamer of 10,000 deadweight tons, Liberty ships were built as rapidly and cheaply as possible. They were designed to last only five years, unless sunk first. As the United States entered World War II, it launched a $350 million shipbuilding program that would involve building, in just three years, the equivalent of more than half of the pre-war merchant shipping of the world. The urgent need for the new cargo ships came when the facilities for producing modern marine equipment were fully engaged in building the greatest fleet of fighting ships in history. A shortage of raw materials and limited shipyard capacity dictated how Liberty ships were built. Experienced shipyards built complex vessels, such as warships. New shipyards, which opened almost overnight throughout the country, generally built less sophisticated ships. A syndicate formed by Henry J. Kaiser and Todd Shipyards was key to the creation of new shipbuilding facilities; the former built more Liberty ships than anyone else. Eighteen shipyards produced Liberties:

- Alabama Drydock and Shipbuilding
- Bethlehem-Fairfield Shipyard
- California Shipbuilding Corp.
- Delta Shipbuilding Corp.
- JA Jones (Fla.)
- JA Jones (Ga.)
- Kaiser Company
- Marinship
- North Carolina Shipbuilding
- New England Shipbuilding West Yard
- Todd-Bath Iron Works
- Oregon Shipbuilding
- Permanente Metals Corp. No. 1 Yard
- Permanente Metals Corp. No. 2 Yard
- Southeastern Shipbuilding
- St. Johns River Shipbuilding
- Walsh-Kaiser Company

By welding prefabricated sections, shipyards were able to produce a Liberty ship in a matter of weeks, a few were produced in a matter of days. On the average, it took 592,000 labor hours to build a Liberty ship. The construction of one Liberty ship required 3,425 tons of hull steel,



By welding prefabricated sections, shipyards were able to produce a Liberty ship in a matter of weeks, sometimes days. The emergency shipbuilding program produced about 2,500 vessels that found service in World War II. USCG rendering of a graphic reproduced courtesy of Peter Elphick, *Liberty—The Ships That Won the War*, Chatham Publishing.

2,725 tons of plate, and 700 tons of shapes, which included 50,000 castings. Their mission was to transport cargo and troops, first in convoys to Europe and later in the Pacific theater as well. They delivered their payloads to far-flung fighting fronts and made beachheads along with the assault forces. Nonetheless, they were considered to be disposable and thought to be cost-effective if they completed more than one round-trip.

Liberty ships crossing the Atlantic during the early months of World War II coincided with the Coast Guard assuming a greater role in the safety of merchant mariners. In February 1942 under Executive Order 9083, President Roosevelt transferred to the Coast Guard the licensing and inspection duties from the Bureau of Marine Inspection and Navigation (BMIN). The new duties involved taking precautionary measures to ensure that accidents did not happen due to failures in material or training. Uniform licensing and inspection strived to make certain that merchant ships and their crews would be at peak efficiency before they entered a war zone. Merchant seamen faced many of the same dangers as the armed forces, but their ships were not designed to withstand enemy attack.

Coast Guard Commandant Russell Waesche considered marine inspection to be one of the service's primary missions. Following the Coast Guard assumption of BMIN licensing and inspecting duties, inspectors from the bureau received Coast Guard commissions upon request. Inspectors approved both merchant vessel designs and equipment for the ships, including lifeboats, life rafts, and survival suits. Approval of new designs often involved competitive tests, which examined thoroughly the utility

The *John W. Brown* was drydocked in October 2003 to satisfy Coast Guard hull inspection requirements. Louis Jerbi; courtesy Project Liberty Ship and SS *John W. Brown*.

of various types of equipment. Life rafts, for example, were dropped from 45 feet, set afloat in burning oil, and strafed with gunfire. Only rafts that survived all three were certified for use onboard American merchant vessels. While these standards may appear extreme today, the reality was that 196 Liberties were lost in combat during World War II. Enemy torpedoes presented the biggest threat. The odds of a merchant seaman surviving and being rescued were poor. Even those who managed to make their way into a lifeboat or raft were often left behind because it was too dangerous for another ship to stop for them. Six thousand U.S. merchant mariners were lost during World War II.

Marine inspectors were mindful of these life and death consequences as they discharged their various responsibilities. They visited ships to monitor ship stability, hull strength, and boiler and pressure-valve safety. They ensured that the ships complied with requirements regulating load line, cargo loading, fire safety, and lifesaving gear. Certificates of inspection were issued only when vessels complied. The Coast Guard scrutinized the training of shipboard personnel just as carefully. Merchant marine deck and engine room personnel had to meet standards of competency before they were licensed or certified.

The Coast Guard licensed merchant mariners and approved much of the safety equipment onboard Liberties. However, these ships were exempt from some inspection standards during construction due to the exigent circumstances of the emergency shipbuilding program. Structural failures hindered Liberty ships. There is debate as to whether the lack of rivets or the scarcity of ductile steel was more to blame. In any case, hull repairs were frequent as cracks propagated, and some ships literally broke in half. Propeller shaft problems were also common. The fact that more of these ships did not break down is a credit to the hard work of the women and men at their respective shipyards.

The emergency shipbuilding program produced more than 2,700 Liberty ships, but only about 2,500 of these vessels were completed in time to find service in wartime. Approximately half of the Liberty ships that survived World War II were sold at war's end, and some remained in service into the 1970s. Others were scrapped or sunk as artificial reefs, and many were transferred to the reserve fleet (often just a temporary reprieve). During the 1970s, separate non-profit organizations identified two Liberty ships to serve as memorials: one on each coast. The National Liberty Ship Memorial, Inc. chose the SS *Jeremiah O'Brien*[1]. Project Liberty Ship picked the SS *John W. Brown*[2]. The Coast Guard renewed its regulation of these ships as restoration efforts increased.

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[1] Visit **www.liberty-ship.com** for more information.

[2] Visit **www.ssjeremiahobrien.com** for more information.

Jeremiah O'Brien was launched June 19, 1943 at the New England Shipbuilding yard in South Portland, Maine. Soon thereafter, it began convoy duty. After its fourth trip across the Atlantic, *Jeremiah O'Brien* diverted for shuttle runs between England and beachheads at Normandy. In 1945 it steamed through the Panama Canal and began operating out of San Francisco. In 1946 *Jeremiah O'Brien* joined hundreds of its sisters in the reserve fleet near San Francisco.

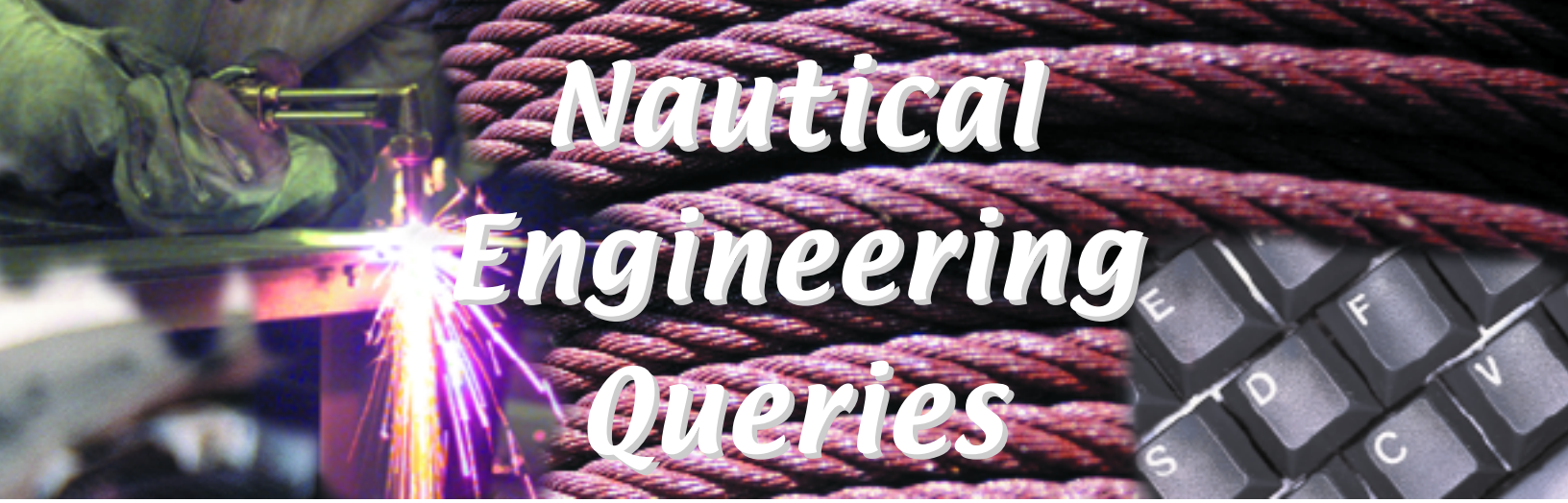
The *Jeremiah O'Brien* steams across the English Channel in May 1994 for the anniversary of the invasion of Normandy. Courtesy Royal Navy.

Jeremiah O'Brien was on the scrap list before returning to service in 1979. It completed its first cruise the following year and has been operating out of its homeport of San Francisco ever since. In 1994 its board of directors decided that *Jeremiah O'Brien* would return to Normandy to participate in the 50th anniversary of the allied invasion. Returning to ocean steaming required that the ship be recertified, and Coast Guard marine inspectors were essential to this process.

John W. Brown was launched Sept. 7, 1942 at the Bethlehem-Fairfield Shipyard in Baltimore. Its maiden voyage was to Russia via the Panama Canal and the Indian Ocean, arriving on Christmas Day, 1942. Upon returning, *John W. Brown* was modified to carry troops and prisoners of war. This configuration allowed it to continue to operate after the war as a nautical high school for New York City. Project Liberty Ship targeted *John W. Brown* for historic preservation in 1978. While the federal government retained ownership of this vessel, Project Liberty Ship relieved New York City of management and operation. *John W. Brown*'s new trustee was unable to find it a suitable berth in New York, so the ship was returned to the reserve fleet in 1983. Five years later it found a new home in Baltimore. *John W. Brown* is now one of the few *National Register* ships in the country.

Underway steaming of these two Liberty ships is generally limited to occasional daytrips from their homeports. Since these trips exceed their Certificates of Inspection, operators can request that the Coast Guard issue a one-time excursion permit. An excursion permit requires that marine inspectors check firefighting and lifesaving equipment onboard, and evaluate the vessel's seaworthiness for the trip. The Coast Guard issues these permits often for *Jeremiah O'Brien* and *John W. Brown* to carry hundreds of passengers and leave inland waters during these daytrips.

The Coast Guard embraced its new responsibilities of marine inspection at the same time that Liberty ships assumed their mission to deliver troops and cargo to battle fronts. Just as Liberty ships have endured for more than 60 years, so has the Coast Guard's mission of commercial vessel safety. *Jeremiah O'Brien* and *John W. Brown* helped ensure liberty for millions during World War II, and they provide a glimpse of history to thousands who enjoy that liberty today.



1. Which of the following represents the function of the diffuser used with a mechanical atomizing oil burner?

A. Provide flame stability at the atomizer tip.
Correct: The diffuser limits the amount of primary air by partially shielding the atomizer tip preventing the flame from being blown away from the burner tip.

B. Control the amount of secondary combustion air.
Incorrect: Controlling the amount of secondary combustion air is a function of the forced draft fan speed and damper openings.

C. Complete the vaporization of the fuel for combustion.
Incorrect: There is a difference between the physical process of atomizing into fine particles and the next step of adding heat to the fine particles of fuel to cause vaporization. Through the preheating of the fuel, the use of the correct sprayer plate, and the mixing with heated air provide for vaporization of the fuel.

D. Finely divide the fuel particles into a cone-shaped spray.
Incorrect: The burner sprayer plate develops the cone-shaped pattern, dividing the fuel into a fine spray in the process.

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2. In a two stage flash evaporator, operating conditions in the second stage, as compared to the first stage, are _____.

A. higher temperature and higher absolute pressure
Incorrect: In conjunction with the lower absolute pressure in the second stage, the saturation temperature must also be lower.

B. higher temperature and lower absolute pressure
Incorrect: The second stage saturation temperature must also be lower in relation to a lower absolute pressure, than that found in the first stage.

C. lower temperature and higher absolute pressure
Incorrect: The second stage absolute pressure is lower than that of the first stage absolute pressure. As absolute pressure of a heated fluid increases, the saturated temperature of the fluid must also increase.

D. lower temperature and lower absolute pressure
Correct: In order to promote flow from the first stage to the second stage, vacuum in the second stage must be higher. Vacuum is a converse statement of absolute pressure; i.e. as vacuum increases, absolute pressure decreases proportionally and the saturation temperature of the fluid decreases as the absolute pressure decreases.

3. When renewing sections of pipe in a hydraulic system, the nominal pipe size of the piping always indicates the ____.

A. actual inside diameter
Incorrect: The outside diameter remains constant for a given pipe size while the internal pipe diameter varies according the pipe wall thickness for the service as necessary.

B. actual outside diameter
Incorrect: The actual value of the outside diameter is always greater than the nominal value up to 14 inches, but remains constant regardless of the wall thickness.

C. wall thickness
Incorrect: Pipe wall thickness may be expressed in terms of Standard, Extra Strong, and Double Extra Strong. The external diameter remains constant for each pipe size, where the internal diameter decreases as the wall thickness increases.

D. size for threaded connections
Correct: The nominal pipe size is a relative term indicating a convenient numerical value that is less than the outside diameter, greater than the inside diameter, but is always the same value regardless of wall thickness, and is usefully applied as a convenience in thread sizing.

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4. The function of the loop seal, as typically provided on a flash type evaporator, is to _____.

A. aid in establishing a vacuum in the first stage via the second stage
Incorrect: the air ejectors establish second stage vacuum. The first stage vacuum is established by the use of an external vacuum line or by one or more orifice plates installed in the division wall between the second and first stages.

B. transfer the distillate produced in the first stage to the second stage
Correct: Distillate produced in the first stage is forced to transfer to the second stage condenser section as a result of the pressure differences between the stages and the path provided by the loop seal. Distillate in the loop maintains the pressure differential between the stages.

C. aid in establishing a vacuum in the second stage via the first stage
Incorrect: Second stage vacuum is initially established at a high value by the direct connection to the air ejector equipment. A slightly lower vacuum is developed in the first stage by the second stage.

D. aid in developing a vacuum in the shell of the salt water feed heater
Incorrect: An external line connected between the first stage of the evaporator shell to the shell of the salt water feed heater is provided to initially develop a lower vacuum in the heater shell than that of the first stage, slightly higher than that of the main steam turbine L.P. bleed.

1. Which magnetic compass corrector(s) can be set while the vessel is on a heading of magnetic north or magnetic south?

A. Quadrantal spheres
Incorrect: The quadrantal spheres should only be adjusted while the vessel is on the magnetic intercardinal headings of NE, SE, SW and NW.

B. Heeling magnet
Correct: One of the criteria for the vertical height adjustment of a compass' heeling magnet is the vessel's magnetic latitude. It should be lowered–away from the compass card–as the vessel approaches the magnetic equator. Upon crossing the equator, it may be necessary to invert the magnet before raising it.

C. Flinders bar
Incorrect: The Flinders bar is normally adjusted in port, after having acquired deviation data from two widely separated magnetic latitudes. If the length of the Flinders bar has to be changed, the deviation on magnetic headings east and west should be checked and any needed adjustment made by adjusting the position of the fore-and-aft magnets.

D. Fore-and-aft magnets
Incorrect: Fore-and-aft magnets are to be adjusted while the vessel is on the magnetic cardinal headings of east and west, versus the adjustment of the athwart ship magnets while the vessel is on the magnetic headings of north and south.

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2. Individual wires used in systems greater than 50 volts, _____.
The details of Cable and Wiring Requirements for Small Passenger Vessels are cited in Title 46 CFR 183.340.

A. should be supported at 24-inch intervals with plastic tie wraps
Incorrect: Cables and wires are required to be installed with metal supports, spaced not more than 24 inches and using plastic ties only for the purpose of bundling the individual wires.

B. should never be located in a tank
Incorrect: Wires may only be located in a tank if they provide power to equipment in the tank and provided that their insulation is compatible with the fluid in the tank.

C. must be installed in conduit
Correct: If individual wires, rather than cable, are used in systems greater than 50 volts, the wires must be placed in a sealed conduit. The wiring noted in choice "B" must be placed in conduit if the voltage exceeds 50V.

D. All of the above
Incorrect: Only one of the three answers above is correct.

3. You are underway on course 50°T and your maximum speed is 12 knots. The eye of a hurricane bears 80°T, 100 miles from your position. The hurricane is moving toward 265°T at 22 knots. What course should you steer, at 12 knots, to have the maximum Closest Point of Approach (CPA)?
Maximum CPA is the greatest possible distance, from the hurricane's center, at the (maximum) ship's speed of 12 knots.

A. 219°
Incorrect: This course will provide a CPA of 59 miles, but not the greatest CPA of the four choices.

B. 208°
Correct: This course will provide a CPA of 62 miles, and the maximum possible distance at 12 knots.

C. 199°
Incorrect: This course will provide a CPA of 60 miles, but not the greatest CPA of the four choices.

D. 190°
Incorrect: This course will provide a CPA of 57 miles, but not the greatest CPA of the four choices.

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4. Radiation spreads a fire by _____.

A. transferring heat across an unobstructed space
Correct: Heat may be transferred through an unobstructed or empty space by radiation.

B. heated gases flowing through ventilation systems
Incorrect: Convection is the natural flow induced by the heating of fluids, such as gases, through ventilation ducts, passageways, etc.

C. burning liquids flowing into another space
Incorrect: The spread of fire through the movement of burning liquids is accomplished by the gravitational conveyance of the liquid versus natural heat transfer.

D. transmitting the heat of a fire through the ship's metal
Incorrect: Transmission of heat through metal bulkheads and decks is accomplished by conduction.

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