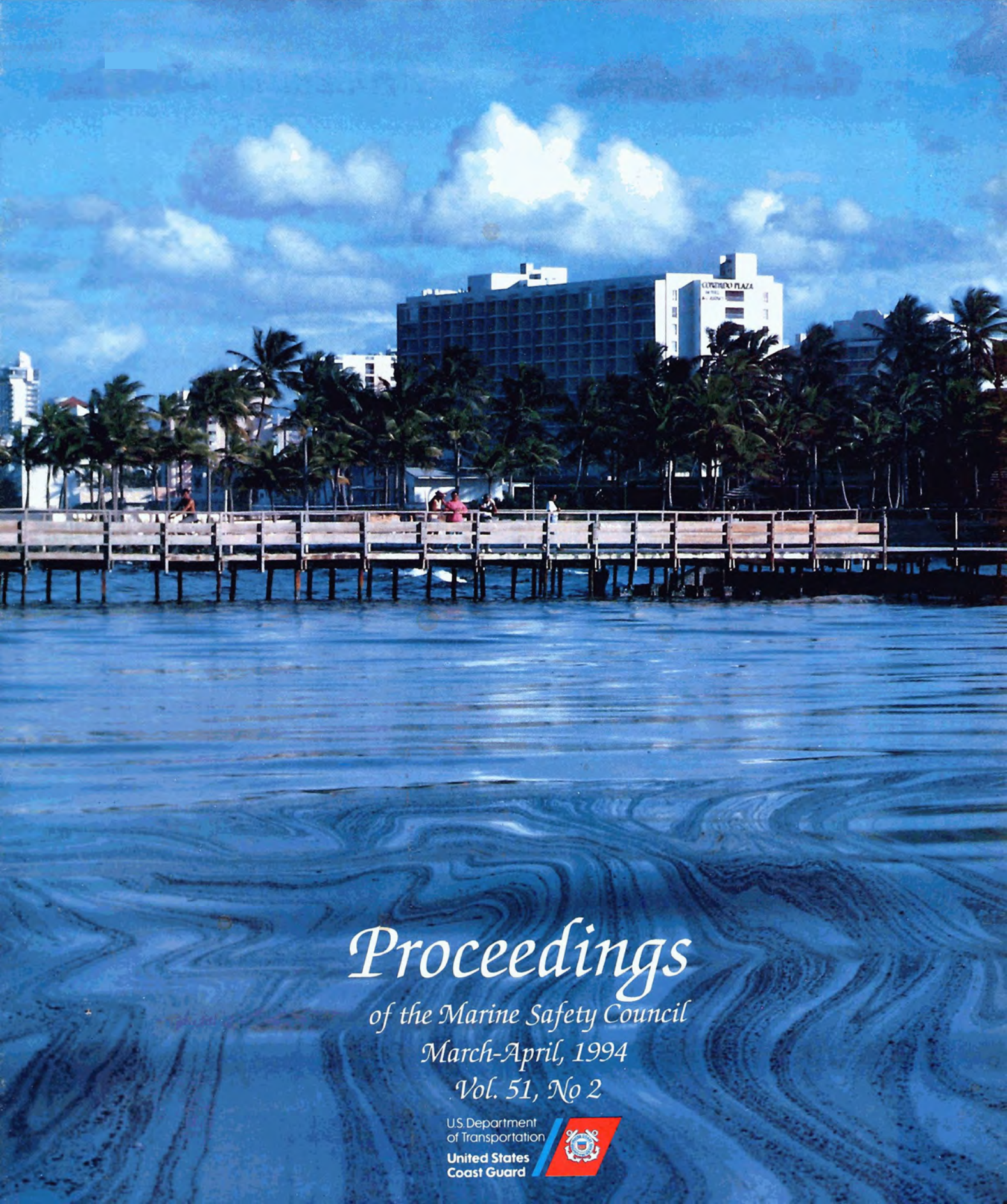

Proceedings

of the Marine Safety Council

March-April, 1994

Vol. 51, No 2

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United States Coast Guard

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Special issue on marine environmental protection

1) **Crafting a global approach to marine environmental protection**
RADM A. E. "Gene" Henn
3) **OPA 90 -- It's Working!**
CAPT Michael J. Donohoe
6) **MARPOL 73/78 How did it come about?**
LCDR Mark McEwen
9) **Has MARPOL reduced intentional oil discharges?**
Mr. Ronald B. Mitchell
12) **Environmental protection at the ends of the earth**
LCDR Mark McEwen
14) **What is the impact of the Abandoned Barge Act?**
LTJG Chris Hayes
17) **Controlling aquatic pests in the Great Lakes**
LT Jonathan C. Burton
20) **Preparing for catastrophic spills**
LTJG John G. White
22) **Preparedness requires exercises**
LCDR Rhae A. Giacoma
24) **Hazardous substances must be covered by response plans**
LCDR Shane Ishiki
26) **New compliance forms end duplication**
LCDR Christopher T. Boegel
28) **Vessel response plans challenge all concerned**
LT Paul M. Gugg
29) **New outreach efforts aim at environmental compliance**
LCDR Mike Farley
32) **On-scene coordinators are today's team leaders**
LCDR D. Michael Smith
33) **Training for spill response**
LCDR Thomas A. Tansey
36) **The polluter pays**
ENS Gregory Rainey
39) **Ten cent screw nearly spells disaster**
LTJG Mark T. Cunningham
41) **Spill removal is classified**
CDR David Giraitis
43) **New response tool assists MSOs**
LCDR Shane Ishiki
45) **Chemical of the month -- *Dichlorvos***
47) **Nautical Queries - Corrections**
49) **Keynotes**
51) **In-situ burning can be safe and effective**
ENS Mark Gordon
55) **Coast Guard containment boom is great "first aid"**
LT John Meehan and CDR Mike Brown

Front and back cover photos

Scenes of January 1994 San Juan oil spill.
Photos by PA1 Alastair Worden.

Crafting a global approach to marine environmental protection

By RADM A. E. "Gene" Henn

The passage of the Oil Pollution Act of 1990 (OPA 90) brought the Coast Guard "full circle" back to the 1970s. When Congress passed the Federal Water Pollution Control Act, and the Ports and Waterways Safety Act in 1972, and the Tanker Safety act of 1978, the Coast Guard was given broad responsibility to develop pollution prevention, preparedness and response programs. In the 1980s, decreasing federal budgets, shifting national priorities and a good industry track record reduced the emphasis on some of our early marine environmental protection programs. As I have said many times — I believe OPA 90 is the next best thing to sliced bread.

I am pleased to report to you that we have constituted many of our programs to reflect the spirit and goals of today's international and domestic shipping community. As we implemented OPA 90, we recognized that an increase in global insistence on a clean environment and the growing stresses on our marine ecosystems called for a serious long-term commitment to environmental protection. To that end, I believe that we have created enduring, responsive programs.

Partnership

The Coast Guard has forged partnerships with federal, state and local agencies through memoranda of agreements and area committees. In July 1993, we held the first in a series of national and regional "summits" with environmental interest groups. We now have national advisory committees with members from government, industrial and environmental organizations.

We are also working with other governments through the International Maritime Organization (IMO) and the World Bank. Bilateral agreements are in place with Canada, Mexico and Russia to promote cooperative efforts in pollution prevention, preparedness and response.

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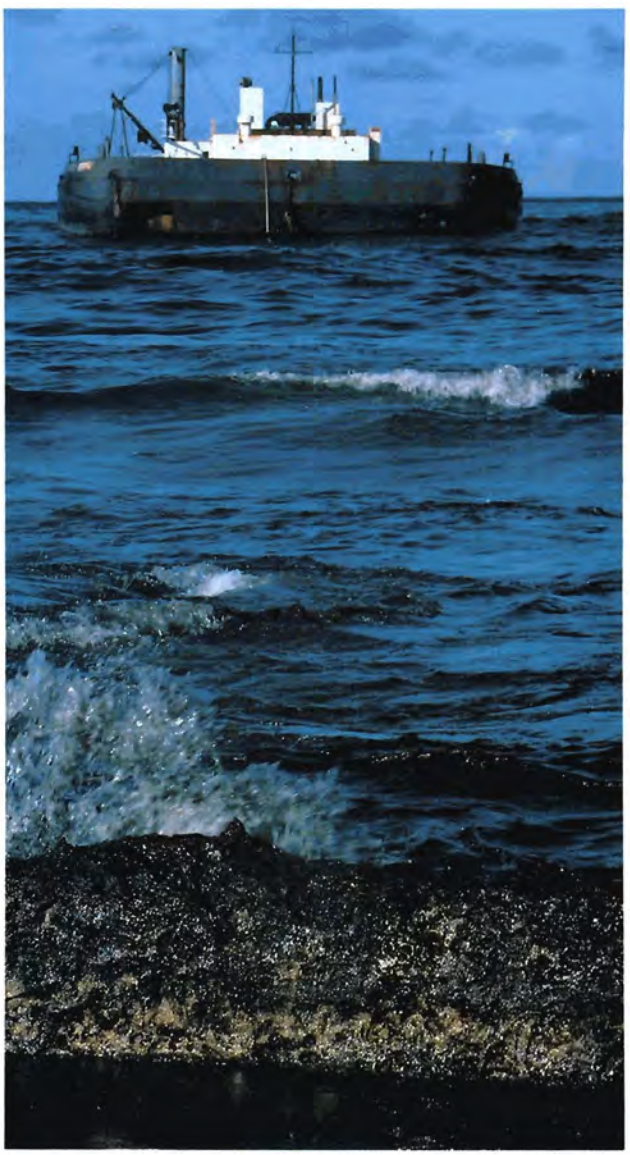

About 750,000 gallons of oil spilled when the barge Morris J. Berman went aground off San Juan, Puerto Rico, on January 7, 1994. Photo by PA1 Alastair Worden.

Coast Guard boom contains oil from San Juan's shoreline after the Morris J. Berman spill. Photo by PA1 Alastair Worden.

"Our mission — marine environmental protection — is diverse and ever changing."

Continued from page 1

More than OPA 90

Much national attention has been focused on oil pollution and the implementation of OPA 90. There are other marine pollutants, however, which merit attention.

The Coast Guard has recently been charged with the responsibility to protect the environment from other hazards, such as zebra mussels and other aquatic nuisance species which are invading the Great Lakes and other bodies of water, debris fouling our beaches and entangling marine mammals and turtles; abandoned barges used for illegal waste dumping and the accidental release of hazardous chemicals at sea.

Our mission -- marine environmental protection -- is diverse and ever changing.

Education

In April 1994, we expect to have a new environmental outreach program in place. This educational effort is designed to inform recreational boaters, marina operators, commercial fishermen, terminal operators, shipping agents and companies, and passenger vessel operators not only of their responsibilities under the law, but also to assist them in developing specific compliance strategies.

The long haul

In his environmental policy statement, the commandant underscored the Coast Guard's "commitment to environmental excellence. . ." in "our joint efforts to provide a clean environment for future generations."

The articles in this special marine environmental protection issue of *Proceedings* reflect this commitment. We believe we are on the right track, and look forward to working with each of you in the years to come. I am excited. I hope you are too!

RADM A. E. "Gene" Henn is the chief of the Office of Marine Safety, Security and Environmental Protection.

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— OPA 90 —
It's Working!

San Juan spill clean-up progresses

By CAPT Michael J. Donohoe

About 750,000 gallons of heavy heating oil spilled when the barge Morris J. Berman went aground on a coral reef about 300 yards offshore of beach front property in San Juan, Puerto Rico on January 7, 1994. In less than three days, 105,000 gallons of oil had been removed from the water by offshore skimming systems and crews working on beaches. In addition, response personnel had transferred about 350,000 gallons of oil from the crippled barge to a second vessel. This represented about half of what was thought to be remaining on board.

This extraordinarily quick response is a tribute to the foresight of OPA 90 in requiring industry to have emergency spill equipment staged throughout the United States. The act also mandated that rapid response plans for "worst case" spills be prepared by oil shipping companies.

This spill is precisely the kind of event that Congress had anticipated in approving OPA 90, the year after the *Exxon Valdez* tanker grounded on a reef and spilled nearly 11 million gallons of crude oil into Prince William Sound.

Continued on page 4

Photo by PA1 Alastair Worden

Coast Guard personnel lower the boom to contain the spill off San Juan.

Photo by PA2 Toni N. Long-Gay.

Continued from page 3

Preparedness

OPA 90 provided the opportunity for a new, improved system of preparedness planning. It includes the updated national contingency plan, vessel and facility response plans, and area contingency plans describing how port communities should respond to an environmental disaster.

OPA 90 mandated the establishment of area committees to produce the area contingency plans. These committees are improving upon previous local response planning processes by obtaining the commitment and cooperation of all levels of government, industry and the private sector. The resulting contingency plans address the full spectrum of discharges by identifying environmental sensitivities in each area and basing response priorities on them.

Within the past months, Coast Guard marine safety offices and district offices have worked hard reviewing and approving all coastal area contingency plans. At this time, all plans are either approved or are in the final approval stages. This new network of contingency plans has dramatically enhanced the nation's preparedness to respond to oil discharges and releases of hazardous substances.

Preparedness is an ongoing process, however, and all area contingency plans must be updated annually. 1994 efforts will focus on incorporating more data on hazardous substance response into these plans. In addition, lessons learned from actual oil spills, pollution response exercises and plan reviews, plus changing economic and scientific realities will modify and enhance the plans.

Another major initiative is the National Preparedness for Response Exercise Program designed to fulfill OPA 90's mandate for exercises and drills. It is described in detail on page 22.

Response

This is where the planning and exercising come together to minimize adverse impacts of oil pollution. In the San Juan incident, there was a true partnership established on the command and control levels as well as in the on-scene recovery efforts.

Within a couple of hours of the spill, three C-130 aircraft were on standby, and within 20 hours had delivered tons of equipment to fight the spill. Almost immediately after the barge ran aground, a response team began a 21-hour-a-day effort to empty it. The Gulf Strike Team spearheaded the effort to siphon the thick black oil from seven damaged tanks.

Pumps on the slippery deck of the *Morris J. Berman* sucked the simmering oil out of the dark tanks below at a rate of 28,000 gallons an hour.

Elsewhere workers labored to retrieve spilled oil from the sea and clean up six miles of shoreline. Within two days after the spill, the oil had spread to a six-mile stretch of shore, blackening many resort beaches. Fifteen-mile-per-hour winds made salvage difficult, but helped contain the oil by pushing it toward shore, mostly onto a one-mile stretch of beach instead of dispersing it farther up and down the coast.

While clean-up operations continue at this time, had it not been for aggressive efforts mandated by OPA 90, this spill could have done a lot more damage.

The opportunities for continued cooperation among federal, state and local governments with the marine transportation industry and the environmental community abound. It is most encouraging to see our initial efforts paying off!

CAPT Michael P. Doehlemann, Chief of the Marine Environmental Protection Division

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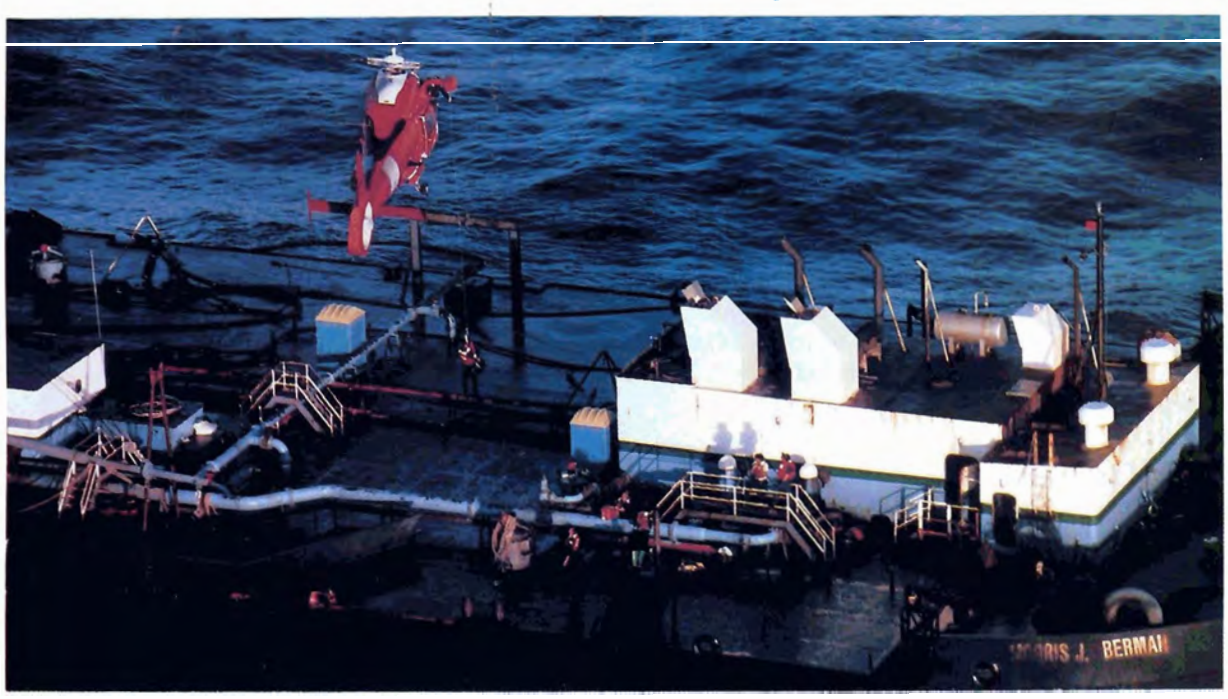
San Juan shore clean-up operations continue. . .

. . .from the Morris J. Berman oil spill.



Photos by PA1 Alastair Worden.

The double-hulled oil tanker, Star Ohio, was launched in August 1992. Photo courtesy of Texaco, Inc.

MARPOL 73/78 How did it come about?

By LCDR Mark McEwen

The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) is one of the most comprehensive marine environmental protection agreements in history. Although only in effect for a little more than a decade, MARPOL 73/78 has reduced ships' operational oil pollution of the oceans by as much as 60 percent, according to a 1990 study by the National Academy of Sciences.

The drafters of this agreement should be rightfully proud, but they should not take full credit for the success of the convention. There were many previous documents which formed a solid base for MARPOL 73/78 to draw upon.

Marine oil transport

MARPOL 73/78 would not have been needed if oil exploitation for energy had not gone commercial.

There are indications that the Chinese obtained small amounts of oil from shallow mines. Also in the Middle East, small quantities of oil were available, but not as commercial commodities.

This changed in June 1859, when a 70-foot well in Pennsylvania provided oil for commercial use. Less than two years later, the *Elizabeth Watts* carried a full cargo of oil across the Atlantic.

Initially, transportation of oil by sea was viewed as unsafe and few vessels were willing to take it on. Fumes from leaking barrels were common below deck, precluding the use of lamps and cooking fires. Needless to say, those early voyages were dangerous and uncomfortable.

The development of iron-hulled vessels with integral tanks was an early technological breakthrough. The first tanker in 1878 was a sailing vessel, the *Zoroaster*. The first steam vessel constructed to carry oil, the *Gluckauf*, was launched in 1885. (The latter ran aground in 1893 on Water Island, New York.)

It didn't take long for the advantages of transporting oil by water to become apparent. In 1885, 99 percent of the oil exported by the United States, then the world's leading exporter, was transported in barrels. By 1906, 99 percent was carried in bulk.

Pollution protection

Transporting oil by ship began a little more than a century ago, but environmental protection goes back much farther. As early as 1543, laws prohibiting harbor pollution were passed in England. However, enforcement was local and carried minimal penalties.

Early steamships were powered by coal, which was bulky, smoky and dirty, but posed little threat to the ocean. Oil was much easier to use, but produced pollution. Engine rooms yielded significant quantities of waste oil. Sediment and residues left by oil cargoes had to be removed, and most often were dumped at sea.

The first national pollution-control legislation was the Oil in Navigable Waters Act of 1922, passed by Great Britain. In the United States, the Oil Pollution Act of 1924 carried stiffer penalties and was much more strictly enforced.

For the most part, these laws were passed in response to public outcry over oil-befouled beaches. Environmental- and animal-rights groups, such as the Royal Society for the Prevention of Cruelty to Animals and the United States National Coast Anti-Pollution League were building political strength and forming powerful lobbies.

In at least one case, business concerns pushed for tighter regulation of oil dumping. In 1921, New York harbor officials and fire underwriters obtained a prohibition of oil dumping in a 25-mile zone around the harbor to protect more than $11.5 billion in annual trade from fire.

International conferences

In 1926, the United States, then the leading oil producer and a major shipping power, convened an international conference on oil pollution control, which was attended by 13 maritime nations. Scientific theories, such as the fate of oil in the sea, were argued. It was not known at the time whether oil was broken down by the environment, and some thought that, once introduced, oil became a permanent part of the sea.

Many control measures were discussed, which eventually became part of MARPOL 73/78. They included:

- retention of oily wastes on ship,
- a requirement to install oily water separators to process overboard discharges, and
- oil waste reception facilities in all ports.

The conference drafted a convention that would require oil discharges to be made far out at sea, reducing the likelihood of it washing ashore. Only a vessel's flag state was authorized to enforce it. The convention was never adopted.

Public concern was still voiced about pollution, but not enough to prevent an estimated 500,000 barrels of waste oil from being dumped into the sea in 1928.

Continued on page 8

The Gluckhauf, the first true oil tanker, was involved in one of the first tanker accidents when it ran aground on Water Island, New York, in 1893.
Photo courtesy of the Steamship Historical Society, University of Baltimore Library.

OILPOL

The next attempt at international pollution regulation was a mixed success. The International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL) was adoptedin 1954 by the Intergovernmental Maritime Consultative Organization (the predecessor to the IMO), which relied primarily upon the discharge zone concept to keep oil from beaches. It addressed operational pollution.

Reception facilities for waste oils from non-tank vessels were required, even though waste oil quantities from tankers was much greater. Unfortunately, the convention was virtually unenforceable because it was nearly impossible to detect illegal discharges.

1962 and 1969 amendments to OILPOL instituted new concepts such as load on top. This procedure used the tanker as a massive oily-water separator, allowing oil to settle out before discharge. There were claims that 1.6 million tons of waste oil were recovered by this procedure by the end of the 1960s.

The Eagle, a double-hulled tank vessel, was launched in April 1993. Photo courtesy of Mobil Oil Corporation.

Continued from page 7

League of Nations

In 1934, the League of Nations addressed the pollution problem at a meeting of experts from maritime nations. Responses to questions on possible pollution-control measures included many ideas from the 1926 conference, such as reception facilities and on-board retention of oil. With the world still struggling with the effects of the great depression, however, any expensive solutions were tabled.

A 1935 conference attempted to build on the 1926 draft convention. New developments included a requirement for oil record books and a provision for information exchange among members of the League of Nations. This draft convention was never signed, due in part to the advent of World War II.

Conclusion

MARPOL 73/78 owes much to these early oil pollution control attempts. Concepts, such as non-discharge zones, oily-water separators, civil penalties, record-keeping requirements and the establishment of a central administrative agency had to be proposed many times over the years until they were fully implemented in MARPOL 73/78.

From such frustrating beginnings, MARPOL 73/78 oil pollution provisions are now maritime industry standards accepted by more than 90 percent of all ships' tonnage.

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Has MARPOL reduced intentional oil discharges?

By Mr. Ronald B. Mitchell

Most people usually associate oil pollution with massive tanker accidents. Historically, however, intentional oil discharges from tanker operations accounted for twice as much ship-related oil pollution as accidents. During tank cleaning and deballasting, tankers intentionally discharged mixtures of sea water and oil residues clinging to tank walls.

While this clingage represented only about three to five percent of a typical tanker's total cargo, this amounted to discharges of 300 to 500 tons of oil on each voyage. Given the vast amount of oil transported by sea, such discharges started to present a major pollution problem, prompting negotiation of the International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL) in 1954.

Initial regulatory efforts under OILPOL consisted of prohibiting tankers from discharging more than specified amounts within 50 miles of shore. Amendments in 1969 supplemented these "rate and location" limits with restrictions on total discharges.

By the early 1970s, however, environmentally concerned countries, led by the United States, viewed compliance with these standards as inadequate, and successfully urged that all large tankers built after 1979 be required to install segregated ballast tanks as part of revised oil pollution regulations that became Annex I of the International Convention for the Prevention of Pollution from Ships (MARPOL) in 1973.

Revisions in the 1978 protocol produced a three-tiered regulatory structure for large tankers. Those built before 1980 had to install either segregated ballast tanks or crude oil washing equipment. Those built between 1980 and 1982 had to install segregated ballast tanks alone. Those built after 1982 had to install both systems.

MARPOL has had both successes and failures in influencing the behavior of the oil transportation industry.

MARPOL successes and failures

Assessing the effectiveness of MARPOL regulations requires answering three questions.

The tedious, costly job of dispersing intentional oil spills should not be necessary under MARPOL. Photo by PA3 Brandon Brewer.

- ***Do tanker owners and operators comply with the rules?***
- ***Is compliance due to MARPOL provisions or to other factors?***
- ***Has compliance led to decreased intentional oil pollution?***

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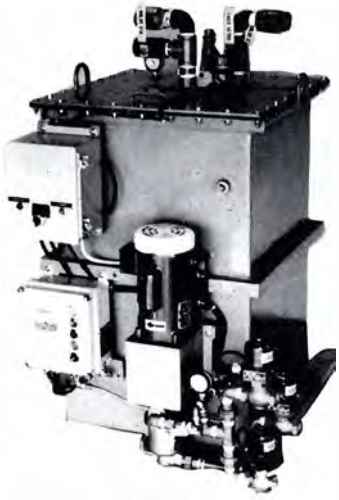
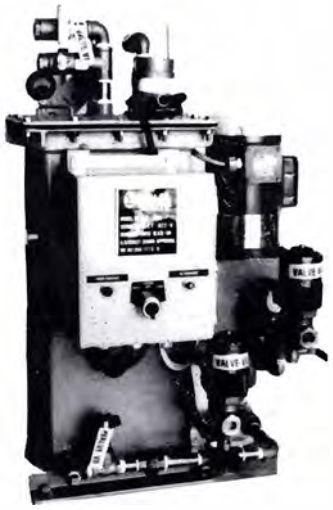
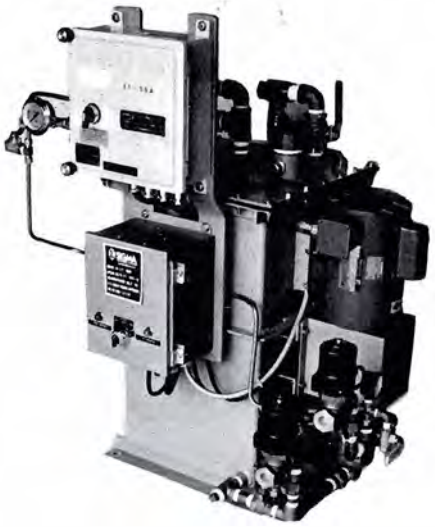
Crude oil washing equipment saves oil tanker operators money.







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Compliance

Available evidence suggests that many tanker operators did not comply with discharge standards prior to MARPOL. The data is spotty, but both the absence of significant decreases in oil slick sightings, the difficulties of detecting, prosecuting and sanctioning violating tankers, and additional anecdotal evidence suggest that tanker operators had few incentives to change their behavior.

The only consistent data collected on actual discharges comes from oil company surveys conducted in the mid-1970s. This data demonstrates that the actual discharges for oil company tankers decreased dramatically from 1972 to 1975, but were still three times the legal limit in 1977. Independent tankers' discharges showed little decline and were more than 30 times the limit in 1977.

With respect to equipment standards, tanker owners have complied almost perfectly with the requirements to install segregated ballast tanks and crude oil washing equipment. Ninety four percent of crude oil tankers constructed before 1980 installed one or the other, as required, and 32 percent installed both. Of the tankers constructed between 1980 and 1982, 98 percent complied with the ballast tank requirement. Of those built after 1982, 98 percent had installed both and all ships had at least one.

Cause

Determining whether MARPOL brought about this compliance requires evaluating the effect of other factors on tanker operations.

For one thing, the timing of the decreases in discharges for both independents and oil company tankers corresponds more with the dramatic oil price hike of 1973 than with the 1969 passage of the total discharge limit and its enforcement in 1978. Oil companies own the oil their tankers transport, which provides a strong incentive to conserve an increasingly valuable cargo. This was reflected in a dramatic decrease in intentional oil discharges by oil company tankers between 1972 and 1975. Independent tankers, lacking such economic incentives, had small decreases in comparison.

Other considerations included the costs and benefits of each type of equipment. Even after accounting for installation costs, crude oil washing equipment saved a tanker almost $9,000 per voyage. It increased the oil delivered by reducing the amount left clinging to tank walls. In contrast, the greater costs of installing segregated ballast tanks had no such offsetting benefits, imposing a net cost of $1,500 per voyage on tanker operators.

The response to these economics is clearly evident. Of tankers built before 1980 that could choose between the two systems, 89 percent installed the washing equipment, while only 36 percent installed the ballast tanks. The washing equipment was also installed on 95 percent of tankers between 1980 and 1982, even though it was not required. However, when required, the segregated ballast tanks were installed. This confirms that many washing equipment installations would have taken place without MARPOL requirements, while most ballast tank installations occurred in response to MARPOL.

The equipment standards were more successful than discharge standards, because they rely on regulations that prevent rather than simply deter violations. Discharge standards tried to make violations less attractive by making violators believe they would be detected and stiffly reprimanded, a difficult task considering the obstacles to effective monitoring and enforcement. In contrast, the equipment standards relied on making violations more difficult, because buying an illegally equipped tanker required the unlikely cooperation of a shipbuilder, a classification society and an insurer.

Results

Demonstrating that compliance with equipment standards has resulted in a cleaner marine environment is difficult. With approximately 98 percent of all tankers having one or the other type of equipment installed, the pressure to discharge at sea has been vastly decreased.

Intentional discharges do seem to be declining, but have not been eliminated. Coast Guard data show that total intentional discharges have declined from almost 600 per year in 1973 to less than 250 in 1982 through 1986, with much of the latter discharges from bilge pumping rather than ballasting.

However, continued oiling of seabirds and lower-than-expected receipt of waste oil in port reception facilities suggest that many tankers continue to discharge waste oil at sea. Even tanker representatives admit that discharge limits are sometimes violated due to the absence of reception facilities in some ports and because of charter agreements requiring arrival with clean tanks.

"...much progress has been made, but much remains to be done."

Conclusion

The most accurate conclusion to be drawn from available data is that MARPOL's standards caused many tanker owners to install segregated ballast tanks when they would not have done so otherwise, that both MARPOL and economic factors led to the installation of crude oil washing equipment, and that together, these installations have reduced intentional discharges of oil.

Such discharges continue, however, because of the difficulties in effectively monitoring and enforcing MARPOL standards, especially on the high seas. In short, much progress has been made, but much remains to be done.

Mr. Ronald B. Mitchell is an assistant professor in the Department of Political Science at the University of Oregon, Eugene, Oregon 97403-1284.

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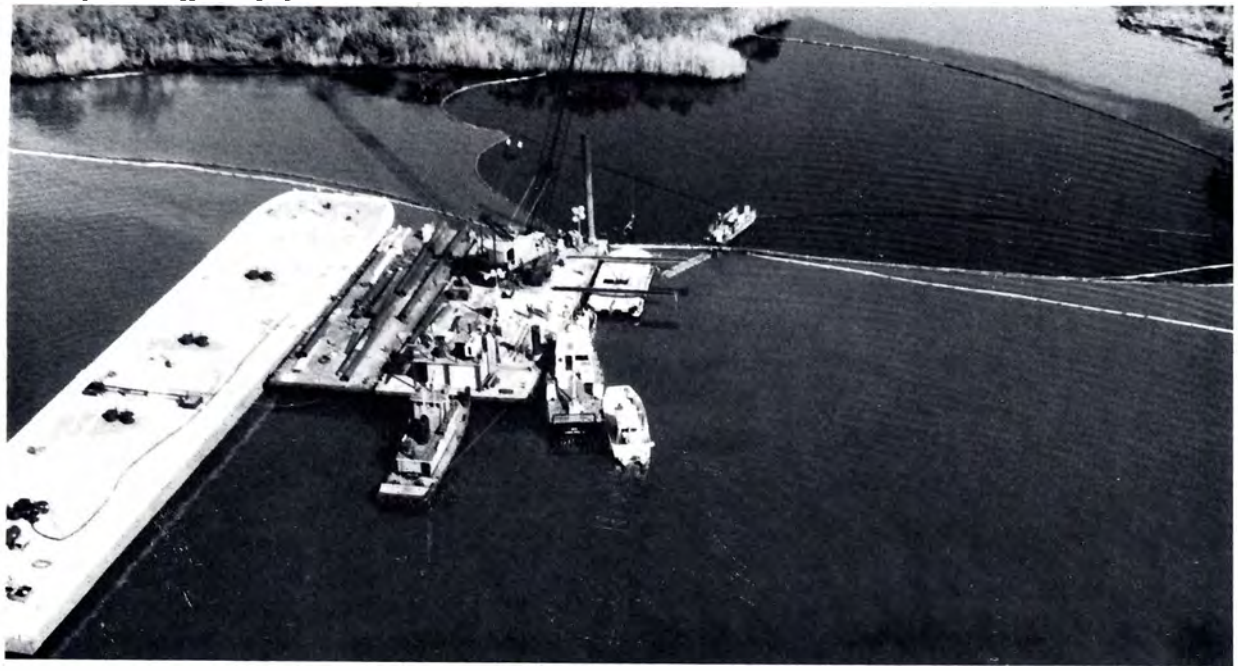
Containment boom and accompanying equipment would be superfluous without oil pollution. Photo by PA3 Jeff Murphy.



Environmental protection at the ends of the earth

By LCDR Mark McEwen

The Coast Guard is not only an environmental protection agency with national scope. It also has worldwide responsibilities. Along with other federal agencies, the Coast Guard assists the Department of State in international negotiations on environmental protection in the Arctic and Antarctic.

In the Arctic --
Researchers from the Coast Guard icebreaker Polar Sea send sonar probe through an ice floe in the Bering Sea.

Arctic

The Coast Guard is involved in a number of environmental protection issues in the Arctic, including the development of the Arctic Environmental Protection Strategy, the United States response to reports of toxic dumping in the Arctic Ocean and the development of a northern sea route.

Strategy

The strategy is an agreement between the eight Arctic nations: Canada, Denmark, Finland, Iceland, Russia, Sweden, the United States and Norway. It focuses on protection of the environment, flora and fauna, while establishing an ongoing monitoring and assessment program. The Coast Guard works through an emergency prevention, preparedness and response working group to determine whether the existing Arctic legal framework can provide adequate protection to the environment.

Leading United States efforts, the Coast Guard created an innovative regional risk assessment procedure, which catalogs potential pollution sources in the Arctic. This procedure also leads national policy makers to determine if there are gaps in the coverage of international agreements.

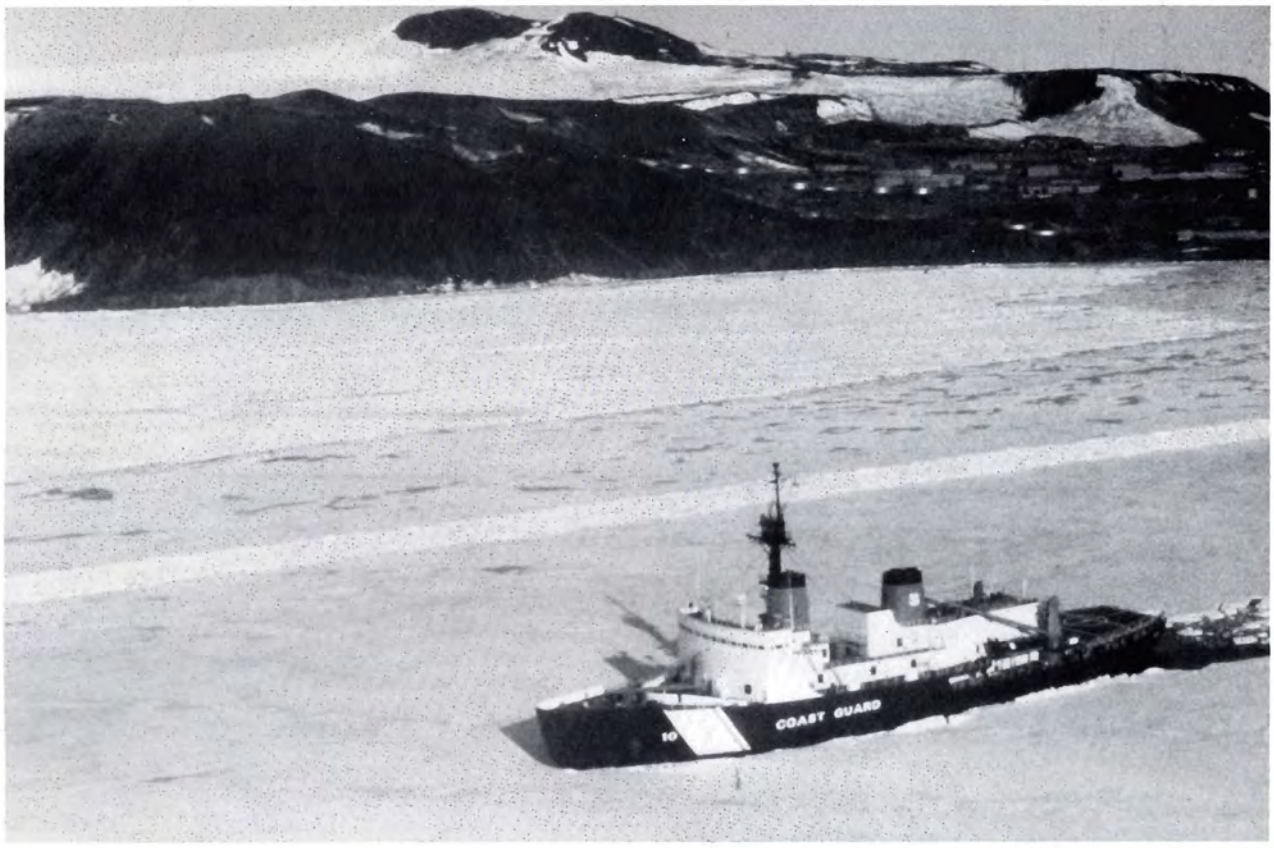
Toxic dumping

The Arctic Environmental Protection Strategy has also been a forum for discussions of dumping of toxic and radioactive materials in the Arctic by the former Soviet Union. The Coast Guard will serve as a scientific research platform for investigating the extent and character of environmental contamination.

Northern sea route

There is considerable interest in developing a northern sea route from Western Europe to Asia, which could shorten vessel travel distance by as much as 5,000 miles.

An increase in traffic will require Coast Guard protection of the environment from discharges of oil and other substances. In addition, there will be more requirements for inspecting United States flag vessels in that trade as well as verifying foreign vessel compliance with domestic and international regulations.



In the Antarctic -- ***The Polar Star breaks ice in McMurdo Sound.***

Antarctic

The United States has proposed and the International Maritime Organization (IMO) has adopted no-discharge zones under the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), which would increase the protection of the Antarctic marine environment.

No-discharge zones

In July 1991, no-discharge zones were approved prohibiting the discharge of oil and garbage, including plastics south of 60 degrees south latitude. Generally speaking, before such zones can be enforced, adequate waste reception facilities are required. In an unprecedented move, the amendment required vessels to retain all wastes for ultimate disposal outside Antarctica. The voiding of the reception facility requirement allowed the amendment to enter into force on March 17, 1992, and ensured that ship-generated wastes would be properly disposed of outside Antarctica.

The IMO is now in the process of adopting a further amendment to prohibit discharges of hazardous and noxious substances (essentially hazardous chemicals carried in bulk) in Antarctica.

The no-discharge zones are essentially duplicated in an agreement known as the Protocol on Environmental Protection to the Antarctic Treaty. It was signed by the United States and other treaty parties on October 4, 1991, to preserve the Antarctic environment.

Recognizing that Antarctica is a valuable area for scientific research, the protocol regulates group activities there. Five annexes cover environmental impact assessment, flora and fauna conservation, waste disposal and management, marine pollution prevention and tourism.

The marine pollution annex incorporates MARPOL 73/78 no-discharge zones and includes an added prohibition on discharging untreated ship-generated sewage within 12 miles of land.

A final provision requires contingency plans for ships operating in the area.

Conclusion

Many nations have demonstrated strong interest in protecting the polar environments, which are among the harshest and, at the same time, the most delicate regions in the world. The Coast Guard will continue to play a major role in conserving the marine environment — even at the ends of the earth.

LCDR Mark McEwen is a policy analyst in the Environmental Coordination Branch of the Marine Environmental Protection Division.

Telephone: (202) 267-0423.

What is the impact of the Abandoned Barge Act?

This was an abandoned barge.

By LTJG Chris Hayes

From 1988 to 1992, abandoned vessels caused more than 82 water pollution incidents, 14 of which required Coast Guard intervention, according to a 1992 General Accounting Office (GAO) report. Response to these incidents cost more than $4.4 million.

In 1992, Coast Guard marine safety offices surveyed the number of abandoned vessels on navigable waters of the United States. They identified approximately 1,300 abandoned vessels, including 600 barges.

GAO report

Also in 1992, the GAO submitted a report to Congress on the problems posed by abandoned vessels. Highlights include:

- **abandoned vessels have been and are likely to continue to cause pollution and be used as illegal dumping sites for hazardous materials;**
- **federal laws and regulations dealing with abandoned barges are inadequate;**
- **no federal law prohibits abandonment of vessels or establishes penalties; and**

  barges are not required to be registered with the Coast Guard, making it difficult to locate owners of those that are abandoned.

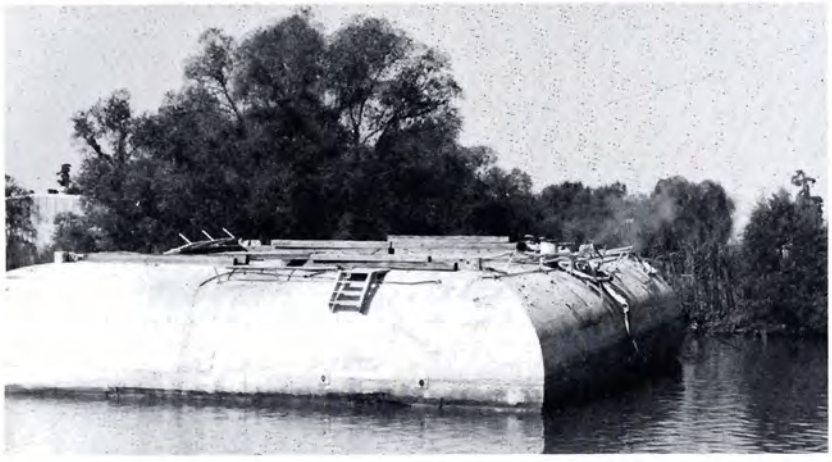
Inventory discrepancy

The GAO audit identified a discrepancy between Army Corps of Engineers and Coast Guard inventories of abandoned vessels. The corps estimated that 4,000 vessels lie abandoned in the nation's waterways as opposed to the Coast Guard's estimate of 1,300. The GAO recommended that the two agencies work together in developing an accurate inventory of abandoned vessels and their locations.

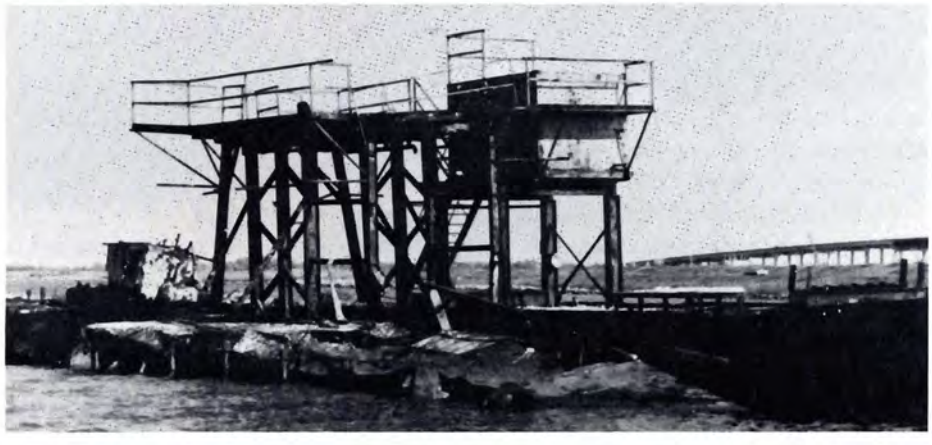
In October 1993, the Army Corps of Engineers provided the Coast Guard with lists of abandoned vessels from each corps district office surveyed by the GAO. These inventories were distributed to Coast Guard district offices to be used as starting points in identifying possible deficiencies in Coast Guard inventories.

An updated list of abandoned vessels with their locations, ownership/identification information, descriptions and assessments of their potential threats will be maintained at each Coast Guard marine safety office. District-wide inventories will be maintained at each Coast Guard district office.

The Coast Guard will continue to work with the Army Corps of Engineers and other agencies to develop a more accurate inventory of abandoned vessels, their descriptions, environmental threats and locations. Field surveys will focus on identifying abandoned barges of more than 100 gross tons. This information will be used to initiate enforcement action under the Abandoned Barge Act of 1992.



More abandoned barges.



The Act

The Abandoned Barge Act attempts to alleviate the problems identified by the GAO concerning abandoned barges of more than 100 gross tons, because, presumably, they pose the greatest threat to the environment.

This act was signed into law as part of the Coast Guard Authorization Act of 1992. The purpose of this legislation is to prevent future marine pollution from abandoned barges. The act contains the following provisions:

- **an owner or operator may not abandon a barge of more than 100 gross tons on the navigable waters of the United States;**
- **the secretary of transportation may assess a civil penalty of up to $1,000 per day for such abandonment;**
- **the secretary may remove an abandoned barge; and**
- **the secretary shall require the numbering of all undocumented barges of more than 100 gross tons.**

Act impact

This legislation should discourage barge abandonment, thus reducing pollution threats. The legislation also empowers the secretary of transportation to remove abandoned barges even if they do not threaten the environment. This authority may increase public demands for removal action by the Coast Guard.

The waterways shipping industry must now bear the financial burden of ensuring that barges no longer in service are disposed of properly. The American Waterways Operators Association maintains that the bulk of abandoned barges is the result of "fly by night" operators that proliferated during the 1980s because of available tax credits. Therefore, the abandonment prohibition should not affect most of the traditional barge industry, which is responsible.

The legislation authorizes the secretary of transportation to remove any illegally abandoned barge, even if it doesn't pose a pollution threat. The Coast Guard must be prepared to justify decisions on whether to remove abandoned barges or not.

Continued on page 16

Continued from page 15

Funding

The section empowering the transportation secretary to remove abandoned barges provides expanded authority without the necessary funding mechanisms.

The Clean Water Act provides for removal activities funded by the Oil Spill Liability Trust Fund for abandoned vessels containing oil. Similarly, the Comprehensive Environmental Response Compensation and Liability Act provides for removal of abandoned vessels containing hazardous chemicals through a special super fund.

The Abandoned Barge Act adds the authority to remove abandoned barges which are potential targets to midnight dumpers, but which do not contain oil or hazardous substances. However, there is no special funding provided for removing barges which do not contain oil or a hazardous substance.

Barges presenting hazards to navigation will be removed under existing agreements with the Army Corps of Engineers.

Future plans

Because most abandoned barges lack numbering and records, it may be difficult if not impossible to locate their owners. Therefore, the Coast Guard is studying rulemaking options for numbering barges for owner identification. In March 1993, Coast Guard representatives met with members of the National Association of State Boating Law Administrators to discuss a numbering program. It is anticipated that states will administer such a program with Coast Guard oversight.

The Coast Guard is developing field guidance for assessing civil penalties and initiating barge removal under the Abandoned Barge Act. Goals include:

- **to establish and maintain an accurate inventory of abandoned barges,**
- **to routinely inspect the condition of each abandoned barge,**
- **to insure immediate action to clean up and remove abandoned barges posing pollution threats,**
- **to compel owners to remove abandoned barges, and**
- **to prevent owners from abandoning any more barges.**

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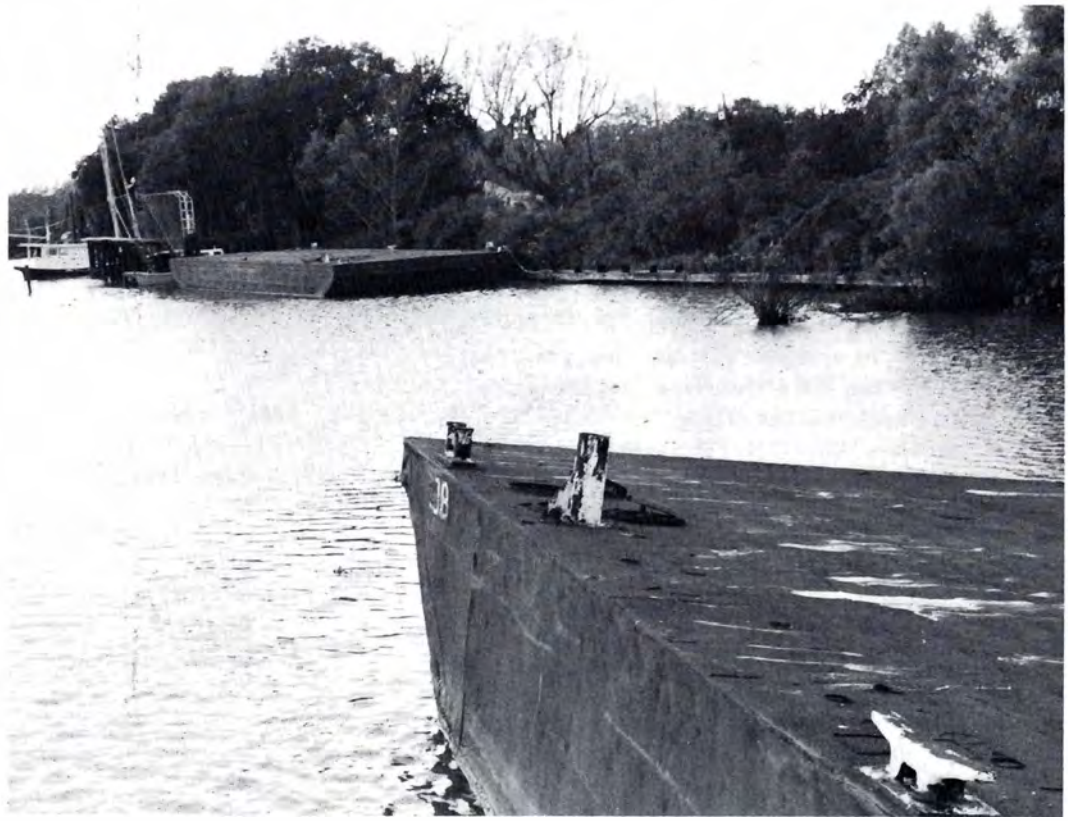
More barges left by their owners on riversides.



Controlling aquatic pests in the Great Lakes

By LT Jonathan C. Burton

On April 8, 1993, the Coast Guard published final rules in the Federal Register requiring each vessel entering the Great Lakes from waters beyond 200 miles offshore of the United States or Canada to practice ballast water management. This rule implements requirements of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990.

Background

Many vessels take on water as ballast in foreign harbors or coastal waters, which is loaded with living organisms. When these vessels arrive in the Great Lakes to take on cargo, they discharge this ballast water and the organisms along with it.

More than 100 nonindigenous fish and other aquatic species have been introduced into the Great Lakes by ballast water discharge of oceangoing vessels. This alters the balance of the ecosystem, often harmfully.

Scientists believe that in the 1980s alone, ballast water discharges have introduced six nuisance species to the Great Lakes. They include two species of zebra mussel, the European ruffe, the spiny waterflea, the tubenose goby and the round goby.

Many of the transplanted species do not survive in the new environment. However, those that do quickly adapt and often thrive, particularly in the absence of natural predators. The zebra mussel is one species that thrives in the new environment with many detrimental effects.

Zebra mussel

This small bivalve mollusk native of the Black, Azov and Caspian Seas of Eastern Europe, was discovered in June 1988 on the Canadian side of Lake Saint Clair, which connects by river with Lake Huron. The next month, it was found on the United States side of Lake Erie. Scientists believe that it was introduced in 1986 in its infant planktonic phase by the discharge of freshwater ballast of vessels from Northern Europe, where it has spread over the last century.

The zebra mussel is a major fouling pest. Hundreds of millions cling to pipes, screens, conduits, boat bottoms, floats, buoys, rocks, submerged objects, and native animals and plants. As a filter-feeding organism, it removes vast quantities of microscopic organisms from the water that young fish and larvae rely upon for their food supply. It also covers rocks and other substrates normally used by indigenous fish for laying eggs.

Continued on page 18

Continued from page 17

Since its introduction, the zebra mussel has reproduced and spread to each of the Great Lakes, the Saint Lawrence River and the Erie Canal. It now affects intakes to municipal water-filtration and electric-power plants in Michigan, Ohio and New York. The economic impact on bordering communities may reach $1 billion by the year 2000.

Natural range expansion and secondary transfer has established the zebra mussel in all connecting waters of the Great Lakes. It is spreading throughout the inland river system of the United States and has been found as far south as New Orleans.

Ballast water control

Currently, the most practical method of avoiding harmful ballast water discharges into the Great Lakes is to retain the ballast water on board or to exchange it in the open ocean beyond the continental

Open ocean water contains organisms that adapt to their native physical, chemical and biological conditions, such as high salinity. These salt water organisms will not likely survive in a fresh water system.

In addition to exchange and retention, there are other ballast water control methods. They include discharging the water into reception facilities ashore, heating or chemically treating it, disinfecting it with ultraviolet light, depriving it of oxygen, installing filters and modifying vessel design. There is a lack of research and practical experience, however, concerning the cost, safety, effectiveness and environmental impact of these methods.

IMO actions

The introduction and spread of nonindigenous species by ballast water has been recognized by the IMO as an international problem. In November 1990, IMO's Marine Environmental Protection Committee formed a working group to consider solutions proposed by member states and other organizations. The group concluded that voluntary guidelines were an appropriate first step.

The Canadian delegation proposed a draft resolution with guidelines calling for ballast water exchange in the open ocean as a primary method of helping to control the introduction of aquatic nuisance species. The resolution and guidelines were reviewed and modified by the working group, and adopted by the Marine Environmental Protection Committee in July 1991.

Canadian guidelines

In May 1989, the Canadian Coast Guard, working with the United States Coast Guard, the Great Lakes Fishery Commission and commercial shipping representatives, introduced the first voluntary guidelines for controlling ballast water discharges into the Great Lakes.

Still operative, these guidelines encourage all vessels inbound for the Saint Lawrence River and the Great Lakes to exchange their freshwater ballast for saltwater ballast collected from the open ocean. This exchange is to take place far enough from any coastline so the ocean ballast water would contain few organisms that could survive in the fresh water of the Great Lakes.

Prevention and control act

On November 29, 1990, the United States enacted the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. This act required the United States Coast Guard, working with the Canadian government, to issue voluntary guidelines to help prevent additional introduction and spread of aquatic nuisance species into the Great Lakes through ballast water discharges by May 29, 1991. Joint United States and Canadian voluntary guidelines went into effect on March 15, 1991.

The act also created a task force to establish a program for United States waters to help prevent the introduction of aquatic nuisance species. Members of this task force include the director of the Fish and Wildlife Service, the undersecretary of the Department of Commerce for Oceans and Atmosphere, the administrator of the Environmental Protection Agency and the commandant of the Coast Guard.

Mandatory United States regulations replaced the joint voluntary guidelines for vessels entering a United States port on the Great Lakes. Vessels proceeding no farther than the last Canadian port on the St. Lawrence River are not subject to the regulations, but are asked to follow Canadian voluntary guidelines. Specifically, the United States regulations apply to every vessel which has visited a port outside of the United States or Canada, and is entering the Snell Lock in Massena, New York, enroute to the Great Lakes. They do not apply to vessels engaged in coast-wise trade from one Canadian and/or United States port to another.

The regulations specify ballast exchange or retention on board as the primary ways to comply. If it is exchanged, it must be done in deep ocean and the ballast water exchanged must have a salinity level of 30 parts per thousand. In addition, records must be kept of the original source of the ballast water to be exchanged, the location of the exchange and where it was discharged in the Great Lakes.

Clusters of zebra mussels.
Photo by LCDR Richard Gaudiosi.

If ballast water cannot be exchanged due to extraordinary conditions, such as severe weather, the vessel can request an alternate exchange site from the Coast Guard in Buffalo, New York.

If the master of a vessel decides to retain ballast water on board while in the Great Lakes, the vessel is subject to having its ballast tanks sealed for the duration of its visit.

Vessels may apply to Coast Guard headquarters for approval of alternative methods of ballast water control, even though the rules specify only exchange and retention.

In any event, the rules prohibit vessels from operating in the Great Lakes if their masters do not certify compliance with ballast exchange or retention requirements by the time they leave the first lock in the Saint Lawrence Seaway.

The act provides for civil and criminal penalties. Any individual who violates the regulations is liable for a civil penalty not to exceed $25,000. Each day of a continuing violation constitutes a separate charge. A vessel operated in violation of the regulations is liable in rem for any civil penalty assessed for that violation. Any person who knowingly violates the regulations will be guilty of a class C felony, punishable by imprisonment of not more than 12 years, and a fine of not more than $250,000 for an individual or not more than $500,000 for an organization.

Educational efforts

The Coast Guard has established a marine safety detachment at Massena to educate mariners on the problems of nonindigenous species introduction and to enforce provisions of the rules. The Massena detachment provides each vessel transiting its locks with a video tape accompanyed by printed material to inform vessel masters of the problem and their responsibilities.

Future action

Concern for this issue is growing. Congress has amended the act to require ballast water management on vessels traveling north of the George Washington Bridge on the Hudson River. These regulations will be in place by November 1994.

The Coast Guard is working with other agencies, industry and environmental organizations to increase awareness of the nonindigenous species problem, not just for the Great Lakes but worldwide. A special effort is being made to identify better methods to treat ballast water to prevent the spread of aquatic pests and to educate mariners in their role to prevent these invasions.

Through all of these efforts, the Coast Guard hopes to reduce the risk of other invasions from threatening the critical ecosystem of the Great Lakes and connecting waters.

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Preparing for catastrophic spills

By LTJG John G. White

A catastrophic spill is an enormous disaster, too severe for local or regional response efforts to begin to subdue. The 11-million gallon *Exxon Valdez* oil spill in Prince William Sound, Alaska, in March 1989, was such an event. Many problems encountered during the *Exxon Valdez* response occurred because of the lack of realistic catastrophic spill planning at the time.

A National Contingency Plan, first adopted by the Environmental Protection Agency (EPA) in 1968, assigns responsibilities in pollution emergencies. EPA and the Coast Guard play key roles in planning and directing responses to substantial oil and hazardous substance spills. They and other federal agencies form the nucleus of the National Response System.

Preparedness progress

Much has been done since 1989 to prepare for a catastrophic spill. The National Contingency Plan was revised to specifically define responsibilities of the Coast Guard and EPA in developing a national crisis organization capable of adequately responding to an *Exxon Valdez*-size spill. This revised plan was published as a notice of proposed rulemaking in the *Federal Register* on October 22, 1993.

Anticipating this mandate, the Coast Guard put together a strategic response organization called the National Incident Task Force, integrating senior federal, state, local and private sector officials to coordinate all available support and response resources.

Defining a catastrophe

Only the commandant of the Coast Guard is authorized to activate the National Incident Task Force after the declaration of a spill of national significance in United States coastal zones. In arriving at a decision, the commandant will consider environmental risks, weather conditions and the potential amount of product spilled.

Significant factors affecting this decision might include:

- **impact on or threat to public health and welfare, wildlife population, economy and property over a broad geographic area;**
- **amount and duration of discharge and potential magnitude of clean up efforts;**
- **height of public concern and demand for action by participants in the event; and**
- **the extent of the area and international borders affected.**

There is no set formula for declaring a spill of national significance. Each situation is unique, posing different environmental, economic and political concerns.

Response activation

Once a catastrophic spill has been declared, an initial response team under the National Incident Task Force will be activated and sent to the scene. This team will determine where, how and to what extent the task force will be implemented.

Comprised of approximately 35 to 40 key individuals, the initial response team will be on scene within 24 hours after the declaration, and should be prepared to operate unassisted for 72 hours. This team will set up a command post, develop a staffing plan and facilitate a transition to a full national task force.

Task force organization

Coordinating government and private sector efforts, and predesignating individuals and agencies to fill specific roles is critical to a smooth operation. It must be remembered that a National Incident Task Force must be flexible, and respond according to the circumstances of the event.

Following is a description of the general positions, roles and responsibilities that could be involved.

National incident commander

The Coast Guard commandant will appoint a vice admiral as the national incident commander to exercise operational and administrative authority over the task force. Assuming the role of federal on-scene coordinator, the national incident commander will direct all federal, state, local and private activities relating to spill control.

Alternate commander

The role of alternate national incident commander will usually be assumed by the Coast Guard district commander in whose area the spill takes place. This alternate will provide short term relief for the national incident commander.

Chief of staff

The chief of staff will be the commanding officer of the National Strike Force Coordination Center, and the principle advisor on response to the national incident commander. The chief of staff will supervise staff departments and area operations coordinators.

Cleaning up after the 11-million gallon Exxon Valdez oil spill.

Area operations coordinators

Each predesignated on-scene coordinator in a spill area will assume the role of area operations coordinator, directly supervising tactical response operations, identifying priorities consistent with overall task force strategy, and directing response resources. The National Incident Task Force will support, direct and coordinate efforts of the area operations coordinators.

Advisory staff

An advisory staff consisting of scientific, legal, and health and safety advisors, will report directly to the chief of staff. Advisors will include representatives of the Coast Guard, and other federal, state and local government agencies.

Five departments will support the national incident commander and the area operations coordinators. They will be made up of personnel from federal, state and local government, and the private sector. They include:

Environmental coordination

An environmental coordination department will assess the spill and extent of its impact, provide technical and scientific coordination, and develop strategic plans for the task force.

Operations

The primary information conduit to and from the field, an operations department will allocate and dispatch resources, develop mission assignments and duty lists. This department has five primary functions: clean-up, air operations, staging of personnel and equipment, wildlife recovery and rehabilitation, and communications.

Logistics

A logistics department will be in charge of personnel, contracting, service and support; ensuring prompt delivery of resources to support operations.

Finance

A finance department will coordinate access to and use of the Oil Spill Liability Trust Fund, account for costs incurred to the fund and assure prompt payment of approved contractor invoices. This $1 billion fund was established by OPA 90 to cover certain removal costs and damages. It is administered by the Coast Guard's National Pollution Funds Center. (See page 36.)

External Affairs

An external affairs department will provide accurate, timely information to the public concerning the spill and response efforts.

Future plans

An optimum level of readiness must be maintained. Hopefully, a catastrophic spill will not occur often. To ensure that the National Incident Task Force is "always prepared," there will be annual training exercises conducted as part of the National Preparedness for Response Exercise Program. (See page 22.)

Conclusion

The development of a protocol for responding to national catastrophic spills is a step in continuing Coast Guard efforts to improve environmental protection. Effectively implementing the National Incident Task Force will be a major focus of Coast Guard activities for years to come.

At the same time, vessel, port and environmental safety improvements must continue to prevent nationally significant spills in the first place.

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Preparedness requires exercises

By LCDR Rhae A. Giacoma

Preparedness was firmly established as the cornerstone of effective pollution response by OPA 90. All vessels and facilities, including offshore oil platforms, domestic oil pipelines, tank ships and barges, and oil storage and transfer operations must prepare and maintain pollution response plans, approved by the primary federal oversight agency for each industry. Response plans must be consistent with government area contingency plans, also mandated by OPA 90.

OPA 90 recognizes that oil-spill response preparedness does not end with writing plans, which, by their very nature, are dynamic and always changing in response to economic and scientific trends. In addition, the best of plans often are untried. In order for such plans to remain valid, they must be periodically tested and evaluated.

The exercise requirements in OPA 90 are intended to do just that.

Preparedness program

The National Preparedness for Response Exercise Program was developed jointly by the four federal agencies with primary regulatory oversight for pollution response exercises - the Environmental Protection Agency (EPA), the Research and Special Programs Administration's Office of Pipeline Safety, the Minerals Management Service and the Coast Guard. This program was designed to provide exercises that fulfill the mandate of OPA 90, and, at the same time, account for operational constraints of government and industry.

Between April and August 1993, the four agencies sponsored a series of four workshops, soliciting comments from federal and state government agencies, the oil and transportation industries, environmental agencies and other entities affected by the exercise requirements. By addressing critical and sensitive issues, the workshops aimed to develop guidelines consistent for all forms of industry, including vessels, facilities and pipelines. Guidelines were drafted outlining the exercise program and providing guidance for compliance with the requirements. This document was approved by all four agencies.

It should be emphasized that participation in the exercise program is voluntary. If plan holders choose not to follow the guidelines, they must comply with the other exercise requirements of their regulatory agency.

Internal exercises

Internal exercises include:

- qualified individual notification drills,
- emergency procedures drills for vessels and barges,
- spill management team tabletop exercises,
- equipment deployment exercises, and
- unannounced drills.

These exercises are evaluated and certified by the plan holder's organization. Each plan holder who chooses to participate in the program must complete 15 core components in a period of three years to satisfy all requirements.

External exercises

The external or area exercises test the interaction of the plan holder with the entire response community in the geographic area specified under the local area contingency plan. The goal of the preparedness program is to conduct 20 of these exercises throughout the United States every year. Six will be led by federal government agency representatives and 14 by representatives of industry.

The exercises will be realistic and practical, including equipment deployment, although they do not have to be conducted on a large scale. They will be designed by a team of federal, state and local government, and industry representatives, and be scheduled by a national scheduling coordinating committee, which will consider the concerns of all participants.

Questions

Two frequently asked questions are:

Q. ***If the guidelines are voluntary, why should anyone comply with them?***

A. If plan holders choose not to participate, they must comply with exercise requirements established by their regulatory agency. The guidelines were designed to provide a consistent, realistic, cost-effective way to comply with OPA 90 exercise requirements.

Q. ***What is the major difference between the preparedness program and other federal exercise requirements?***

A. The **Coast Guard**'s vessel and facility response plan interim final rule exercise requirements are more stringent in several areas. For example, notification drills are required to be conducted monthly, instead of quarterly.

The interim final rule requires each owner or operator of a vessel or facility to conduct a drill covering the entire response plan every three years. The preparedness program is more flexible, permitting the plan to be exercised over the course of the three years, as long as all 15 components are covered.

Another major difference, is that the preparedness program limits the number of unannounced exercises to four per area per year that the Coast Guard may impose on vessel and facility plan holders. Under the interim final rule, the number is unlimited.

The **Minerals Management Service** is developing a notice of proposed rulemaking to address exercise requirements for offshore facilities. These requirements will be consistent with those in the preparedness program.

EPA published a notice of proposed rulemaking in the *Federal Register* for non-marine transportation-related facility response plans. This notice stipulated that facility owners and operators must describe their exercise programs in their response plans. For the final rule, the EPA will allow facilities to either comply with the preparedness program guidelines, or will evaluate individual exercise programs on their merits.

The **Research and Special Programs Administration** requires facilities to deploy and test their response equipment annually as opposed to the biannual requirement of preparedness program guidelines. The administration also requires a single drill to exercise the entire plan for each response zone every three years, like the Coast Guard's interim final rule.

Response personnel demonstrate protective booming measures.

Don't panic

It must be kept in mind that the National Preparedness for Response Exercise Program is brand new. Flexibility is a must as the usual "bugs" are worked out. This is to be expected.

The main thing is not to panic. The government, and the oil and transportation industry are in this together and will cooperate to produce a strong exercise program to benefit all concerned.

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Hazardous substances must be covered by response plans

By LCDR Shane Ishiki

OPA 90 amended the Federal Water Pollution Control Act to require hazardous substance discharge response plans by owners or operators of tank vessels or marine transportation-related facilities, which, by reason of location, could be expected to cause substantial and/or significant harm to navigable waters or adjoining shorelines. OPA 90 requires these owners and operators to also submit plans for responding to a worst-case discharge of a hazardous substance. The Coast Guard is responsible for issuing the regulations under OPA 90.

Deadlines

Unlike the oil discharge response plans, there is no OPA 90deadline for implementation of regulations for hazardous substance response plans. However, the Coast Guard is expediting regulation development to minimize harm to human health and the environment from hazardous substance pollution incidents.

Work group

In March 1992, the Chemical Manufacturers Association formed an OPA 90 work group to advise the Coast Guard in developing regulations. Other members of the group include representatives of the American Waterways Operators, the Chemical Carriers Association, the Independent Liquid Terminals Association, the Chlorine Institute, the Canadian Chemical Producers Association, and the American Coke and Coal Chemicals Institute.

In January 1993, the Canadian Coast Guard and the Marine Environmental Protection Division of the United States Coast Guard were also invited to participate in the group and since have been active non-voting members.

The Chemical Manufacturers Association OPA 90 work group is funding a phase I data acquisition study. In a separate move, the Coast Guard has formed its own group to develop the regulations, and is funding a phase II analysis study.

Phase I

The data acquisition study, which was completed in January 1994, contained research on the bulk hazardous substances shipped, transferred, stowed and handled by United States and Canadian vessels and facilities over the last ten years.

Data was collected on cargo flows in tons by groups for import/export, domestic ocean and inland moves. In addition, information was gathered on routes, vessels, port calls, lot sizes, and terminal and vessel design and criteria.

The Chemical Manufacturers Association also researched and provided information on:

- hazards analysis and risk assessment technologies;
- marine chemical spill incidents and response effectiveness for the past ten years;
- fate and effects of marine releases of chemicals; and
- spill response prevention techniques and resources.

The United States Coast Guard is not bound by the scope of the phase I study, which amassed a composite list of nearly 1,000 chemicals considered hazardous substances.

Phase II

The development of regulations for response plans for hazardous substance releases is much more complex than those concerning oil. Unlike oil, chemicals may differ significantly in their physical properties and hazards.

In addition, planning for a worst-case chemical spill could be complicated by inadequate technology to mitigate the effects, along with uncertainty as to what constitutes an appropriate response.

Consequently, further data is required to develop feasible, cost-effective response plan regulations. Therefore, the Coast Guard will analyze information from various sources, including the phase I study.

The phase II study will evaluate:

- hazards associated with polluting substance spills by tank vessels and marine transportation facilities;
- the adequacy of current prevention measures and resources; and
- the adequacy of current response measures and resources.

The phase II study will recommend:

- improved spill prevention and response measures to significantly decrease the risk of hazardous substance transportation;
- practical approaches for responding to and mitigating the effects of spills; and
- equipment aboard vessels to contain, control and remove hazardous substance spills, and training in its use.

Conclusion

The Coast Guard is developing comprehensive regulations for vessel and facility response plans to improve the capability of the owners and operators to prepare for and respond to hazardous material discharges within the United States. Once the rulemaking process begins, contributions of data and suggestions from interested parties will be solicited.

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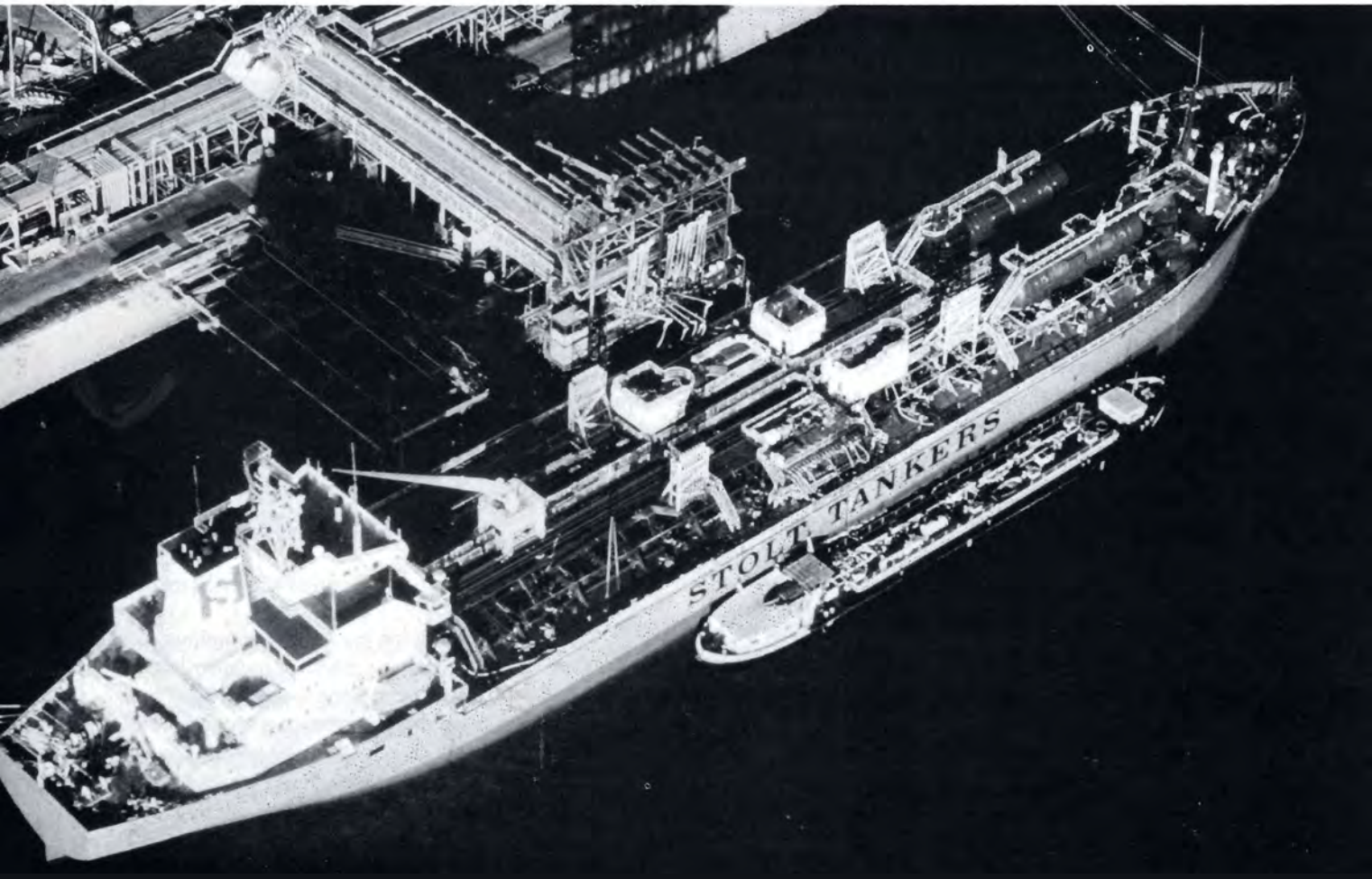
Under OPA 90, this large parcel tanker must have hazardous substance discharge response plans. Photo by Aerocamera Hoffmeester.



New Compliance forms end duplication

By LCDR Christopher T. Boegel

A proliferation of one-of-a-kind compliance forms used by 47 different captain of the port offices throughout the country resulted in excessive data collection, duplication and inconsistency. **Standardizing multiple forms for pollution prevention compliance of commercial vessels and waterfront facilities will eliminate these problems.**

The Coast Guard is standardizing its compliance forms and reports to strengthen its regulatory programs for bulk liquid facilities and transfers.

These documents are already standardized:

1- waterfront facility file folders,

2- bulk liquid facility inspection booklets, and

3- pollution prevention compliance reports.

Problems acknowledged

In June 1991, the Government Accounting Office (GAO) reported to Congress on the waterfront facility inspection program, highlighting some serious problems with Coast Guard record keeping. The GAO suggested that the problems stemmed from a lack of emphasis on waterfront facility inspections.

The secretary of transportation and the commandant of the Coast Guard acknowledged the problems in a report to Congress and promised corrective actions.

Facility file folder

Standard facility file folders (form CG-5562) were produced and distributed to all captain of the port offices in June 1993. The folder is designed to maintain up-to-date records of essential information on comcial waterfront facilities inspected by the Coast Guard. Records are kept on bulk liquid facilities subject to United States pollution prevention regulations, along with bulk solid, packaged material and liquefied gas facilities subject to United States port safety regulations.

The folder contains Coast Guard facility inspection reports and compliance checks, special permits, deficiency and violation records, physical data and general correspondence.

Inspection booklet

A standard bulk liquid facility inspection booklet (form CG-5562A) was distributed in September 1993. It documents Coast Guard inspections of waterfront facilities handling oil and hazardous liquids. Intended as an inspection guide, the booklet contains expanded information on facility equipment and operation requirements, including new response plan regulations from OPA 90. It also has a section on MARPOL reception facility regulations.

The booklet focuses on the material condition and emergency preparedness of a facility. Initially, the inspections may take longer using the new booklet, but they should taper off as inspectors and facility operators get used to the format.

This new inspection program will result in more complete documentation of facility deficiencies and corrective actions. The Coast Guard will issue a letter to each facility, summarizing inspection results and enclosing a list of discrepancies with deadlines for corrective action. The booklet and letter will be filed in the facility file folder.

Compliance reports

A standard pollution prevention compliance report (form CG-5562B) was scheduled for distribution in February 1994. This streamlined one-page form has been designed to document compliance with pollution prevention and safety regulations during oil and hazardous liquid transfers to and from commercial vessels and waterfront facilities.

Coast Guard officers conduct pollution prevention inspection.

As the pollution prevention compliance program is implemented, there will be an increased presence of Coast Guard inspections during bulk liquid transfer operations.

The report will:

- **define the scope and purpose of Coast Guard examinations during transfers,**
- **focus on spill and accident prevention,**
- **emphasize operational and human factors,**
- **ensure attentive work practices by transfer personnel,**
- **eliminate excessive information collected by the Coast Guard, and**
- **encourage quick, efficient, frequent compliance checks at transfer operations.**

Compliance targeting

The Coast Guard will target high-risk bulk liquid transfer operations for compliance inspections.

Targets will be based upon:

- **rate of spill cases,**
- **heavy transfer activity,**
- **bunkering,**
- **lightering,**
- **night transfers, and**
- **new/infrequent operations.**

Compliance checks at transfer sites will be conducted day and night, instead of predictable "working hours" harbor patrol visits. The pollution prevention compliance program is designed to be a "quick-hit" check for compliance.

If a transfer operation appears to be in order and the personnel seem alert and in control, then the compliance team should finish the check in 15 to 20 minutes, and move on to the next target. If, on the other hand, significant problems are noted, the check may be expanded accordingly.

Future actions

The new forms will be used to update the marine environmental protection curriculum of the Marine Safety School at Yorktown, Virginia.

The steps toward standardization should promote more consistent enforcement throughout the United States, and eliminate the need to retrain Coast Guard personnel after each reassignment.

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Vessel response plans challenge all concerned

By LT Paul M. Gugg

Of nearly 100 legislative initiatives stemming from OPA 90, few present a challenge equal to that posed by the vessel and facility response plan requirements of Section 4202.

OPA 90 amended the Federal Water Pollution Control Act to require owners or operators of vessels with bulk oil cargo and all facilities transferring oil to and from vessels with more than 250-barrel capacity, to submit spill-response plans to the Coast Guard. To continue operating in the United States, vessels and facilities had to submit response plans by February 18, 1993, and were required to be operating in full compliance with these plans by August 18, 1993.

Vessel and facility plan regulations issued under OPA 90 were published on February 5, 1993, in the *Federal Register* in the form of interim final rules, 33 CFR parts 154 and 155, respectively.

More than 1,600 vessel plans covering more than 6,500 vessels had been received by early December, 1993. The plans are being reviewed for approval by the Marine Environmental Protection Division. Response plans for facilities are being reviewed by the Captains of the Port in their zones. By early December, about 2,500 facility plans had been received.

Review process

To operate vessels or facilities after August 18, 1993, plans must have been either approved by the Coast Guard or written authorization must have been granted to continue operations.

Due to the time required to review response plans, a preliminary review process was adopted to check for the presence of key elements, such as notification procedures, the naming of individuals to act on behalf of the owner or operator, and the identification of oil-spill removal organizations. Owners or operators also had to certify that they had arranged for the necessary response resources for a worst case discharge.

All plans received before August 18 received a preliminary review by that date. Vessels and facilities which submitted satisfactory plans with appropriate certification could continue to operate. Thus, an interruption of deliveries to and from United States ports was avoided.

Plans received after August 18 have been reviewed similarly. However, any vessel owner or operator now must submit their plans at least 60 days before delivering or taking on oil in the United States.

Started in early December, the next step in the process involves a detailed review to ensure that spill response planning requirements were completely carried out, and that all necessary contracts and arrangements were made. This thorough review phase sometimes takes more than ten hours per plan.

Although there is a standard format for response plans, there is intentional flexibility to allow companies to tailor their plans to reflect their corporate structures and standard operating procedures. This flexibility, coupled with a wide variety of vessel and facility sizes and complexities, accounts for a tremendous range in plan sizes from under ten pages to more than 1,000.

The Coast Guard expects to complete all plan reviews well before their operating authority expires. Plan approval, following a satisfactory comprehensive review, is valid for up to five years.

Conclusion

The high level of effort expended by the marine transportation industry in preparing response plans and the cooperation it has demonstrated throughout the rulemaking and plan review processes has been very encouraging. The Coast Guard is confident that the resulting increase in preparedness will greatly reduce the impact of future oil spills.

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New outreach efforts aim at environmental compliance

By LCDR Mike Farley

A brand new educational outreach program of the Marine Environmental Protection Division should be in full swing very soon. This comprehensive, cooperative effort aims to increase compliance with marine environmental laws and regulations by informing the marine public of their roles and responsibilities in protecting our seas and shores. The target audience includes commercial fishermen, marina operators, recreational boaters and members of the Coast Guard.

Budget and resource limitations dictate that we find alternative means of achieving regulatory compliance among the vast marine user population outside the deep-draft commercial vessel sector. This new program represents a giant step in that direction.

By forging partnerships and working creatively with other federal and state government agencies, including the Environmental Protection Agency (EPA) and the National Oceanographic and Atmospheric Agency (NOAA), industrial firms and environmental groups, the Coast Guard is leveraging all available resources toward the objective of marine environmental excellence.

A fresh, dynamic strategy integrates education and outreach efforts with more traditional prevention, response and enforcement activities to achieve a balanced approach to compliance with environmental protection regulations. This strategy multiplies and magnifies the tools available to Coast Guard marine safety program managers to achieve long-term compliance.

Continued on page 30

Environmental education and outreach efforts target commercial fishermen.

New Coast Guard environmental policy statement

The commandant recently signed an environmental policy statement specifically defining the Coast Guard's commitment to environmental excellence. The statement cites special programs and regular day-to-day activities through which every member of the Coast Guard would protect and enhance the marine environment. Five distinct areas with specific long- and short-term goals are identified.

1. Marine emergency preparedness

This comprehensive program is designed to ensure immediate effective responses to man-made and natural marine disasters, such as catastrophic oil discharges, hazardous chemical releases, shipboard fires and hurricanes.

2. Marine transportation management

The long-term objective in this area provides for a safe, efficient national marine transportation management system. It includes aids to navigation, vessel traffic services and operating regulations and standards for mariners, vessels and facilities.

3. Environmental law enforcement

Enforcing United States laws and treaties at sea is necessary to conserve vital environmental resources.

4. Pollution response

The Coast Guard coordinates response efforts of all levels of government and private industry. Industry must take primary responsibility to maintain or contract for pollution response equipment for clean-up operations under Coast Guard oversight.

5. Coast Guard compliance

An aggressive internal environmental program ensures that all Coast Guard vessels and facilities comply with the law.

Copies of this environmental policy statement can be obtained by contacting:

Commandant (G-MEP)
Coast Guard headquarters
2100 2nd Street, S.W.
Washington, D.C. 20593-0001
Telephone: (202) 267-0518

Continued from page 29

Internal outreach

The Coast Guard has redeveloped and strengthened its own environmental policy statement, defining specific responsibilities each member must bear. (See sidebar at left.)

Booklets defining this new policy statement will be distributed throughout the Coast Guard by early summer 1994.

External outreach

New educational programs are being developed by the Marine Environmental Protection Division for the large community of recreational boaters, commercial fishermen and marina operators who have been relatively untouched by traditional enforcement efforts. These programs will identify marine user impacts on the environment and actions they can take to prevent pollution.

To raise public awareness of marine pollution problems and to further promote environmental protection, the Coast Guard is sponsoring a National Citizen Reporting Campaign to take place in mid-1994. One goal is to inform and motivate the public to use the National Response Center's telephone hot line (1-800-424-8802) to report marine pollution incidents. Numerous posters and placards will be displayed this summer at marinas, cruise ship terminals, boat and marine supply dealers and other visible locations to convey this message. Radio and television public service announcements will encourage pollution prevention and reporting. Citizen report forms for marine pollution sightings will also be widely distributed.

National summit

In July 1993, the commandant of the Coast Guard hosted a one-day summit with 13 national and regional environmental organizations to promote on-going communications and cooperative efforts. The organizations include the American Oceans Campaign, Center for Marine Conservation, Chesapeake Bay Foundation, Council on Ocean Law, Defenders of Wildlife, Environmental Defense Fund, Greenpeace USA, Natural Resources Defense Council, People for Puget Sound, Save the Bay, Sierra Club, Sierra Club Legal Defense Fund and World Wildlife Fund.

Recreational boat owners/operators, and marina operators also receive pollution prevention education under the new environmental program.

Areas of focus at the summit included pollution prevention, preparedness and response; fisheries law enforcement; waterways management and internal compliance. Specific issues discussed included interagency and inter-jurisdictional coordination, oil spill response, and OPA 90 legislation.

Discussions were productive, visions were shared and the meeting was considered extremely successful. Avenues of productive communication were opened between the participants which should continue for as long as pollution problems exist.

A follow-up summit is being planned to coordinate efforts of other federal agencies involved in environmental protection, as well as independent organizations, industry and members of the Coast Guard.

MARPOL committee

A MARPOL Coordination Committee was established in February 1993 by more than 20 federal and state agencies, industry and environmental groups to discuss MARPOL implementation issues, such as the harmonization of education and enforcement efforts, and strategies for monitoring compliance effectiveness.

The committee has convened quarterly since it was formed and has established close coordination between the various agencies overseeing MARPOL compliance, including the Department of Agriculture's Animal and Plant Health Inspection Service, EPA, NOAA and the Coast Guard.

Other initiatives

Many other educational projects are planned for this spring and summer. Included is a teaching aid, "Coast Guard Cutter - My Class," which turns classrooms into vessels to illustrate waste management issues faced by mariners in dealing with ship-generated garbage.

Two publications, "Managing Oily Waste and Garbage from Ships" and "Managing Waste at Recreational Facilities" have been developed as guides to eliminate oil and garbarge disposal at sea.

A marine pollution compliance video is being developed to educate commercial fishermen on how international marine environmental protection conventions, United States laws and regulations apply to their operations, and to prescribe actions they can take to protect the marine environment from pollution.

Another video will inform marine users of the Coast Guard's role in carrying out environmental protection legislation and how the laws apply to various members of the marine community.

These and other initiatives should go a long way toward pollution prevention and the promotion of environmental excellence throughout the nation.

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On-scene coordinators are today's team leaders

By LCDR D. Michael Smith

One of the most important changes to the Federal Water Pollution Control Act by OPA 90 concerns the authority of the federal on-scene coordinator to direct all response efforts after an oil spill, even though the responsible party takes appropriate actions.

In the past, every effort was taken to ensure that responsible parties conducted all spill removal activities. The Coast Guard went to great lengths to encourage these parties to respond appropriately, even to the extent of not charging for oversight expenses. This policy often led to delays in containment and clean-up, and, on occasion, resulted in minimal oversight of removal actions.

Response team

The Coast Guard's present response philosophy is founded on a team concept. If response operations are regarded as team efforts on the part of government agencies and the marine industry, many traditional roadblocks and inconsistencies hindering efficient response efforts tend to resolve themselves.

An example of this team concept is the coordination between vessel and facility response plans, and area contingency plans. All of these plans are interdependent with each serving the on-scene coordinator with a "game plan" for removal activities.

Partnership

As with any team, there needs to be a captain. In the oil spill response arena, the captain is the on-scene coordinator. Under the National Contingency Plan, the on-scene coordinator is fully responsible for ensuring an "effective and immediate removal of a discharge, and mitigation or prevention of a substantial threat of a discharge of oil or a hazardous substance."

To assist the coordinator in this responsibility, new concepts of conducting and supervising response efforts have been introduced. If an on-scene coordinator believes that a response effort can be expedited or conducted more efficiently, he or she is legally empowered and bound to ensure that all necessary actions are taken and/or additional resources brought to bear. This may involve requiring a responsible party to acquire additional equipment, materials or labor.

Here the concept of community effort enters the picture. Before the passage of OPA 90, if the on-scene coordinator thought the efforts of a responsible party were inadequate, he or she would federalize the spill. This process created an adversarial relationship with the responsible party.

Under OPA 90, the Coast Guard is no longer required to make this type of determination. The Coast Guard now must ensure that "effective and immediate removal actions are being undertaken" in every case. The degree of the on-scene coordinator's involvement in clean-up efforts now depends on the severity of the event, the complexity of the response operations and the actions of the responsible party.

Shoot first

A visible manifestation of the policy change is the commandant's directive to all on-scene coordinators, often referred to as the "shoot first and ask questions later" message. Many individuals interpreted this to imply that the coordinators are to take unilateral response actions with or without involving responsible parties. This is not true.

An on-scene coordinator must take those actions deemed to be in the best interest of human health and the environment. When a coordinator feels that time is critical, he or she is expected to act with or without the concurrence of the responsible party. This does not mean that the coordinator should always act independently. In fact, it is fully expected that he or she will consult with all parties involved in response efforts before bringing resources to bear, unless prevented by circumstances.

Response concepts and responsibilities are evolving. All parties must be flexible and evolve with them.

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Training for spill response

By LCDR Thomas A. Tansey

OPA 90 significantly amended the Clean Water Act of 1977 to require tank vessel and facility plans to prepare owners and operators to respond to oil and hazardous substance spills. These response plans must also describe the training of individuals on vessels or at facilities carrying or transferring oil or hazardous substances in bulk. This training is required for vessel and facility safety, and to mitigate or prevent oil or hazardous substance discharges.

Vessel and facility owners and operators must also ensure that all shore-based response personnel are trained to meet Occupational Safety and Health Administration (OSHA) standards for emergency response operations.

On February 5, 1993, the Coast Guard published interim final rules in the *Federal Register* requiring vessel and facility owners to identify the training of each individual with responsibilities under the company response plan. The Coast Guard regulates, reviews and approves all deepwater port, vessel, and marine transportation-related facility response plans. The Environmental Protection Agency (EPA), the Minerals Management Service, and the Research and Special Programs Administration regulate non-transportation-related onshore facilities, offshore facilities and pipelines, respectively. These three agencies have issued or are proposing training requirements for the industries they regulate.

Course curricula

The Coast Guard has worked closely with the IMO and the Canadian Coast Guard to develop course curricula for oil spill response. In August 1993, the Coast Guard distributed two drafts of voluntary oil pollution response training guidelines, which modify material to be used by the IMO in training members of the international community.

The Coast Guard guidelines were presented in the form of job performance outlines for two separate training courses: one for supervisory and the other for non-supervisory operational personnel.

Continued on page 34

Workers need technical training to clean up oil effectively and efficiently.

Worker is wearing personal protective equipment and is well trained to safely rake oiled debris.

Continued from page 33

Job performance

Job descriptions are broken down into specific performance elements referred to as tasks and sub-tasks. For example, the task of transferring oily waste is subdivided into three sub-tasks:

- categorizing and quantifying collected materials;
- selecting pump, conveyors and other equipment; and
- safely operating transfer equipment.

The knowledge and skills which must be taught in each sub-task are outlined. A trainer may customize this material to suit specific employee job responsibilities and roles under vessel and facility response plans.

The Coast Guard intended that the guidelines be used as a menu of recommended subject areas from which to select relevant topics for individual employees. This establishes a direct correlation between a job and the training provided to perform it.

Rather than to dictate rigid training requirements, the Coast Guard allows vessel and facility owners and operators the flexibility to choose the manner in which they describe training in their response plans. Although intended for vessel owners/operators, deep-water port and marine transportation-related facilities, the guidelines can be useful to any industry which handles, stores or transports oil, as well as state agencies and response organizations.

Training sources

The Coast Guard encourages private industry and training institutions to develop and refine courses on oil and hazardous chemical spill prevention and response. In particular, training for spill prevention should be improved. This is often best accomplished by in-house training programs designed by companies which are more familiar with their employee operational job requirements.

Private sources have developed highly professional training courses for oil and chemical industry employees. For example, the International Tanker Owners Pollution Federation, Limited, has published an excellent manual for oil spill response titled *Response to Marine Oil Spills*, accompanied by training video tapes. The National Spill Control School in Corpus Christi, Texas, and the Texas A & M University in Galveston each offer a wide variety of courses on oil and hazardous chemical spill prevention and response. The Massachusetts Maritime Academy has also developed courses for "qualified individuals" and supervisory personnel.

Government courses

In the government arena, the Federal Emergency Management Agency's National Fire Academy and the EPA have taken the lead in developing and providing courses on hazardous chemical response primarily for federal, state and local government response personnel.

The Coast Guard provides oil and chemical spill response training for its own personnel at the Marine Safety School in Yorktown, Virginia. The Coast Guard's three national strike teams also conduct annual refresher training to all operational personnel via traveling "road shows." Advanced training is available for Coast Guard personnel at various commercial and government schools.

Under an interagency agreement with the Department of Transportation, the Federal Emergency Management Agency's Emergency Management Institute led a national team in developing a hazardous material training manual. The first edition, *Guidelines for Public Sector Hazardous Material Training*, will be available to the public in the spring of 1994.

Another Federal Emergency Management Agency office, the National Audiovisual Center, is the central repository for more than 8,000 video programs, films, slide presentations and other training material on hazardous substances and spill response produced by or for the federal government. These courses may be ordered through the center at 8700 Edgeworth Drive, Capital Heights, Maryland 30243-3701, telephone, (301) 763-1896.

Spreading sorbent boom to collect oil along a beach requires specific skills that must be taught.

International courses

The IMO has taken the lead in developing training courses for oil spill response. After analyzing responses to major oil spills, the IMO recognized that the capability of a nation to respond to an oil spill depends on the availability of adequate equipment and trained operators.

A special need to provide developing countries with response training was identified. Consequently, the IMO invited member governments to help develop training programs in preparedness and response. IMO working groups then identified three levels of response training: first responders, middle management and senior decision makers.

The Canadian Coast Guard agreed to coordinate the design of the IMO courses, and thus far has completed two. Remaining stages of course production, including developing individual lesson plans, testing and publication are awaiting more funding by IMO member nations or increased volunteer participation.

The United States Coast Guard is encouraged by the IMO efforts and actively participates on its Marine Environmental Protection Committee, which is responsible for the project. With the increased emphasis on spill prevention and response training by private industry, government and international organizations, major polluting incidents should occur less frequently, and when they do take place, they will be easier to control.

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The polluter pays

By ENS Gregory Rainey

Title I of OPA 90 is based on the "polluter pays" principle. It assigns specific financial responsibility to vessel owners and operators for damages from and clean up of oil spilled from their vessels, and seeks to ensure prompt payment.

If no responsible party can be identified or if he or she has spent to his or her limit of liability, an oil spill liability trust fund pays for the uncompensated removal costs and damages. This billion-dollar fund is administered by the National Pollution Funds Center, a Coast Guard headquarters unit in Arlington, Virginia.

Should the polluter be identified later on, all expenses from the trust fund would be billed to this responsible party. If a polluter denies designation as the responsible party, the fund will temporarily pay for removal and damages while legal action against the polluter is pursued.

[OPA 90 is enforced by the Coast Guard in the coastal zones and by the Environmental Protection Agency (EPA) in the inland zones.]

Damage categories

Costs associated with pollution incidents are either for damages or removal. There are six categories of damage described in OPA 90:

1- **natural resources (the destruction or loss of the use of natural resources and the costs of assessing damage);**
2- **damage to or destruction of personal or real property;**
3- **loss of subsistence use of natural resources;**
4- **net loss of government revenues (taxes, royalties, rents, fees or profit);**
5- **loss of profits or impairment of earning capacity resulting from injury to property or natural resources; and**
6- **costs of providing increased levels of public services in response to the incident.**

When it comes to oil pollution,
"tis better to be over insured than not insured at all."

Liability

OPA 90 holds a responsible party liable for all federal costs, including that of monitoring the potential threat of a spill. Government costs to assess whether further action is required will usually not be charged to a responsible party. However, in cases where the federal on-scene coordinator finds that an oil pollution incident or a substantial threat of one has occurred, all federal costs, including those for monitoring, will be charged to the responsible party. (OPA 90 treats a substantial threat of a spill in the same manner as it treats an actual spill.)

The maximum amounts of liability in OPA 90 are based on vessel type and tonnage. (OPA 90 increases a responsible party's limits of liability over those in older legislation, and broadens the scope of damages that party should be required to pay.)

Liability limits

- **for tank vessels 3,000 gross tons or less are $1,200 per gross ton, or $2,000,000 total, whichever is greater;**
- **for tank vessels greater than 3,000 gross tons are $1,200 per gross ton, or $10,000,000 total, whichever is greater; and**

for all other vessels, $600 per gross ton, or $500,000 total, whichever is greater.

Continued on page 38

A high price to pay -- Nine lives were lost and 30,000 barrels of oil spilled when the tank vessel Sansinena exploded in Los Angeles Harbor in 1976.

Continued from page 37

These liability limits are not absolute. Under some circumstances, OPA 90 may subject a responsible party to unlimited liability. The circumstances include: negligence; vessel-related federal safety or operation regulation violations, which are the proximate cause of a casualty; failure to report an incident or refusal to cooperate with government officials. Under such circumstances, a responsible party may be liable for all removal expenses and damages.

Financial responsibility

The government ensures that responsible parties can meet their liability limits by issuing certificates of financial responsibility. The Coast Guard issues the certificates to owners or operators of vessels who submit evidence that they can meet their maximum levels of liability for potential clean-up costs and damages. All vessels over 300 gross tons operating in United States waters are required to have these certificates on the vessels for which they are issued, and are subject to Coast Guard and customs inspection.

Owners and operators of vessels up to 300 gross tons do not have to have certificates of financial responsibility, but they are still subject to OPA 90 liability provisions. If a small uninsured vessel 300 gross tons or less is designated as a source of oil pollution, the owner or operator would still be liable for removal costs and damages associated with the spill, up to his or her limits, as established by OPA 90.

Conclusion

OPA 90 significantly increases the costs that spillers are required to pay. All shippers must ensure that they can pay for the full scope of potential costs as outlined in the law.

It is said that "an ounce of prevention is worth a pound of cure." For vessel owners and operators insuring themselves against oil pollution or the threat of a spill, this is particularly true.

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National Pollution Funds Center

The use of a one-billion dollar oil spill liability trust fund was established under OPA 90 to cover certain uncompensated oil removal costs and damages incurred after marine oil spills by vessels or facilities. The administration of this fund was delegated to the National Pollution Funds Center, an independent Coast Guard unit established on February 20, 1991.

The National Pollution Funds Center is the fiduciary agent for the oil spill liability trust fund and the portion of the EPA super fund accessible to the Coast Guard. (The super fund was established by the Comprehensive Environmental Response Compensation and Liability Act for response and remediation of hazardous waste incidents.) Both are federally-managed funds that distinctly support liability and compensation regimes pertaining to pollution from oil or hazardous substances, respectively.

In accordance with OPA 90 and other pertinent laws and regulations, the National Pollution Funds Center conducts programs to accomplish five principal objectives:

- provide funding to permit timely removal actions;
- initiate natural resource damage assessments (oil only);
- compensate claimants who demonstrate that certain damages were caused by oil pollution;
- recover that which is owed by parties responsible for oil pollution costs and damages; and
- certify the financial responsibility of vessel owners and operators.

Ten cent screw nearly spells disaster

By LTJG Mark T. Cunningham

At about 5 p.m. on August 30, 1993, Marine Safety Office (MSO)/Group Los Angeles - Long Beach was notified of a suspected hazardous material leak from a portable tank on the *Cape Charles,* a container ship. While traveling north from the Panama Canal, the ship's crew noticed red streaks and corrosion down the sides of two tanks, one on top of the other, on the forward deck stowage area. There was also significant corrosion on the deck.

The suspected cause was trimethylchlorosilane in the top tank. This is a flammable, corrosive liquid which produces phosgene gas when ignited. The chemical and its vapors are extremely reactive with water, producing hydrochloric acid and hydrogen gas. The shipment was produced by General Electric (GE) Silicones in Waterford, New York.

The ships' crew was immediately ordered to stay clear of the area of exposure.

Initial response

First of all, MSO officials contacted the Los Angeles Fire Department, port police, county health department, affected shipping representatives and ANCON Marine, a hazardous materials response contractor. In the meantime, the *Cape Charles* was directed to an anchorage while a tractor tug held it in position to keep the crew upwind of the material. Two ANCON Marine level "A" teams in fully encapsulated suits boarded the vessel to learn the cause of the release and the condition of the tank with the chemical.

A full view of the tank was impossible, but it was determined that the product was trimethylchlorosilane, the leak was from the top of the tank and had apparently stopped. Readings indicated negative flammability. The tank's pressure gauge had a range of 0-300 pounds per square inch (psi) and was indicating 0 psi.

It was suspected that a faulty pressure relief valve was the cause of the leak. Tank integrity was a real concern.

The *Cape Charles* was moved to a berth and the obstruction preventing full inspection was removed.

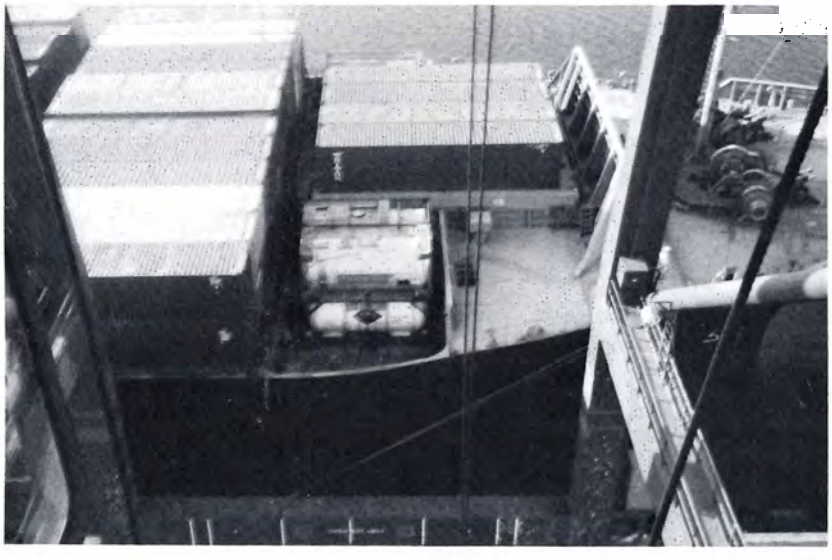
Second operation

Two level "A" teams from ANCON Marine and two from the fire department went aboard the vessel to inspect the tank, which was in fact sound and could be moved to an isolation area ashore. Flammable and organic vapor readings were negative.

To keep the internal pressure from increasing, the tank was shrouded from the next day's sun and continually monitored for temperature and flammable vapors.

On the morning of September 1, GE engineers met with ANCON Marine and Coast Guard personnel to plan the operation. Preparations were made to inspect the pressure relief valves and related gear to find out if repair was possible, and, if not, if the contents could be transferred to another tank.

Continued on page 40



The Cape Charles awaits removal of the leaking tank on the end of the outside bottom row.

Faulty pressure relief valve assembly.

Sun-shielded tank rests on truck.

Entry team checks tank pressure.

Continued from page 39

Preparations included obtaining 68,000 cubic feet of nitrogen gas to power pneumatic chemical pumps to prevent moisture from coming in contact with the product. A custom sodium hydroxide vapor scrubber was obtained to neutralize the acidic vapors. Also amassed were a replacement pressure relief valve, assorted valve gear, video and weather monitoring equipment, and necessary level "A" gear.

First entry

On the evening of September 2, the first entry into the tank was made. The tank's pressure was measured at 4 psi. Using ammonia spray, a small leak was detected between the pressure relief valve and the rupture disk assembly. (The latter is a safety valve, designed to rupture before the tank to bleed off excess pressure.) Four of the six bolts holding the assembly together were loose.

It was decided to conduct a second entry into the tank to retorque the bolts, rather than replace the whole valve assembly. All involved were confident that the loose bolts caused the leak.

After securing the bolts, the valve showed no further signs of leaking. The tank was deconned and staged for observation.

Second leak

A week later on September 9, the valve again showed slight signs of leaking. After consulting with the GE engineers, it was decided to replace the valve. The next day, an entry team entered the hot zone and connected a scrubber to the tank to remove all contaminants. The tank was slowly depressurized as the team monitored the vapor as it came out of the scrubber.

After the tank had reached ambient pressure, a second entry team removed the pressure relief valve and blocked off the opening. A new valve assembly was installed and the tank was brought up to 1 psi with nitrogen. The old valve was removed and dismantled.

The old valve assembly was inspected, it was learned that an improper machine screw was used. As with many potential and actual large pollution incidents, this leak was caused by something very minor — a ten cent screw!

Lessons learned

Just one week before this leak was discovered, the MSO had signed a memorandum of understanding with the Los Angeles Fire Department, which clearly defined their respective roles in a hazardous material incident. The operation would never have run as smoothly if it had not been for the cooperation between the Coast Guard, the fire department and the responsible party. People communicated their concerns and possible solutions through the Incident Command System, which made a prompt, safe and efficient response possible.

Having the GE engineers providing expert technical advise on the scene aided in all response efforts. ANCON Marine's operations were handled in a text book manner. Finally, Coast Guard representatives reported that it was a pleasure to work with a contractor who took safety so seriously.

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Spill removal is classified

By CDR David Giraitis

OPA 90 requires vessels and facilities involved in marine transportation and storage of oil to submit detailed plans describing how they would respond to accidental discharges. (Guidelines for the plans are in the interim final rule stage and are found in 33 CFR parts 154-155.)

The Oil Spill Response Organization program was established in late 1992 by the National Strike Force Coordination Center in Elizabeth City, North Carolina, to help vessels and facilities carry out their responsibilities under OPA 90.

Requirements

Response plan requirements are broad. Oil-carrying or storing vessels and facilities must own or have access to sufficient spill removal equipment and resources to handle three spills of different magnitude. They are:

- **Average most probable discharges** - Spills of less than 50 barrels (2,100 gallons) occurring during transfer operations. Anyone involved in such operations must be able to have containment boom on scene in one hour and recovery equipment in place in under two hours.

- **Maximum most probable discharges** - Spills of less than 2,500 barrels from vessels or 1,200 barrels from facilities. Maximum response times vary from six to 24 hours, according to location. The capability to respond to such spills must be present at all times.

- **Worst case discharge** - The big one! It involves the loss of an entire load. Specific equipment must be on scene in waves within specified time frames. The first wave varies from six to 24 hours, while the second and third waves are 24 hours apart.

Vessel and facility owners may not own response equipment, but can hire contractors to remove spills. OPA 90 places the burden on these owners to ensure that their contractors have sufficient resources in good working condition available. All resources must be described in detail in vessel and facility response plans, along with complete calculations on their effective daily recovery capacities.

To simplify this process and lessen the burden on the vessel and facility owners, the Coast Guard developed the contractor classification program. Owners can hire oil removal contractors who belong to this program without worrying about equipment verifications and recovery calculations. The Coast Guard's National Strike Force maintains a list of all contractors belonging to the Oil Spill Response Organization program.

Classification system

The system allows response plan writers to match their planning volumes to the classified recovery capabilities of a member contractor. A list of contractors and their capabilities is continually updated as new applications are received and processed by the National Strike Force Coordination Center.

Continued on page 42

Gulf Strike Team member inspects boom to properly classify applicant. Photo by PA2 Adam Wine.

Continued from page 41

Spill removal organizations are issued classification letters, which list their resources by location. If an organization and a vessel or facility owner agree that the resources can be provided in the required time frames, then the response plan simply names the contractor and encloses the classification letter.

Oil removal contractors apply for classification by submitting the information requested in Navigation and Vessel Inspection Circular (NVIC) 12-92 to the National Strike Force Coordination Center. The classification takes place in two phases.

Initially, the center reviews the application and issues an interim classification letter based on the resources listed. This letter specifies the response sites claimed by the contractor and summarizes the resources at each site. This summary indicates the capabilities of the contractor to respond to each of the three spills.

The second phase of the system involves a visit by National Strike Force representatives to the contractor for an on-site inspection of the resources. If they are found adequate and in good operating condition, the contractor is issued a final classification certificate. If the resources are less capable than the contractor stated in his or her application, the classification will be revised accordingly. During 1993, over 200 resource sites were inspected by strike force personnel.

Members

Nearly all major spill response organizations and many small local contractors have requested classification under this voluntary program. As of December 1993, 85 acceptable applications had been received. Since contracting organizations can network or merge their resources to form entities large enough to handle worst case discharges, these 85 applications represent more than 150 individual companies.

Nearly all vessel response plans and most facility plans list one of these classified contractors for their planned worst case discharge responses.

Room for improvements

Spill clean up is not an exact science, and many types of equipment have been used with varying degrees of success in the past. Classifying the many resource varieties is no easy task and has been open to a number of different interpretations.

Also, the spill clean-up industry has not been closely regulated, at least with respect to standard business practices. Networking with one another to form organizations large enough to handle worst case discharges is a new concept that has not been perfected. Formalizing these arrangements to satisfy OPA 90 requirements is challenging for both industry and the Coast Guard. Like any new process, it is subject to trial and error.

The Coast Guard will conduct a series of public workshops beginning in January 1994 to solicit industry concerns and recommendations on the classification system. Guidelines based on these recommendations will be drafted to improve the whole process.

Resource inventory

The data collected in classification applications is entered into a computerized response resource inventory at the National Strike Force Coordination Center. This data on worldwide oil spill recovery resources is available to the public through a computerized bulletin board at the center.

This inventory facilitates updating of site and resource information, and provides a comprehensive analysis of capabilities. This will permit an efficient identification of response resource strengths and weaknesses.

Conclusion

The Oil Spill Removal Organization program is a tool that works. It will be updated and improved constantly, and will assist response planning, recovery efforts during actual spills, and benefit both industry and the Coast Guard for many years to come.

CDR David Giraitis is chief of the Operations Division of the National Strike Force Coordination Center, 1461 Highway 17 North, Elizabeth City, North Carolina 27909.

Telephone: (919) 331-6000, ext. 3005.

Contractors begin oil clean up after ship-barge collision off Tampa, Florida, in August 1993.

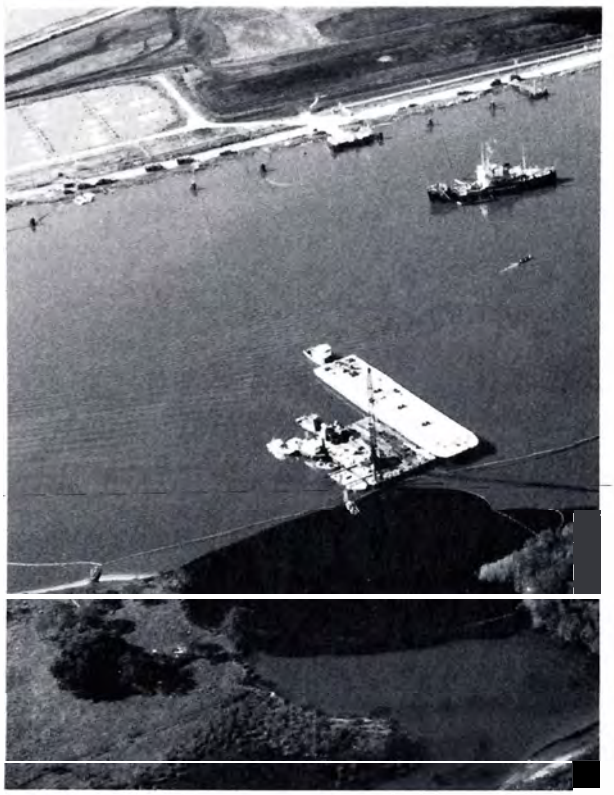
Photo by PA2 Dennis Uhlenhopp.

New response tool assists MSOs

By LCDR Shane Ishiki

In cooperation with the National Oceanographic and Atmospheric Administration (NOAA), the Coast Guard has developed a spill planning, exercise and response system to provide on-scene coordinators with an information management tool for responding to oil and hazardous materials spills. (The Coast Guard refers to this system as "SPEARS.") Adapted to Apple Macintosh computers, the system also organizes and stores data for future use and historical reference.

Ultimately the Coast Guard will incorporate similar provisions to those found in this system in a standard computer workstation-based ports and waterways management information system, which should be established in about three years.



MSO Port Arthur, Texas. monitors oil spill clean up in Naches River in April 1993.

Photo by PA1 Jeff Murphy.

The need

Effective crisis management relies upon the on-scene coordinator's ability to plan ahead, manage information, and carry out response actions efficiently and rapidly. It also ensures that the performance is recognized through the media. Although this system will not in itself ensure an effective response, it will lay a foundation for success using state-of-the-art technology to manage information and support decision making.

The need for such a system has been evident for some time, especially in the *Exxon Valdez* spill, which sorely lacked decision support and information management capabilities. For such a catastrophic spill, the amount of information can be so overwhelming as to stymie response operations.

On-scene coordinators must acquire massive amounts of information, assimilate and analyze it, and write comprehensive plans to ensure successful response efforts. OPA 90 places greater responsibilities on the on-scene coordinator by mandating more comprehensive plans at the local and regional levels, as well as an integrated approach. Furthermore, spill response continues to become more complex as more data and technologies are being developed.

Sufficient information is now available for most tasks. However, it is neither centrally located nor easily accessible from a myriad of sources, including manuals, computer models, mainframe computer data bases, local emergency planning committee data bases, response resource inventory lists and Coast Guard Marine Safety Information System facility data. The new system integrates these resources and provides easy-to-understand cross referencing and data analysis.

Definition

The spill planning, exercise and response system is an integrated planning and response tool primarily for chemical incidents, but it can also be effective for oil spills. It uses components from four sources:

(1) The NOAA and Environmental Protection Agency Computer-Aided Management of Emergency Operations System;

(2) The Coast Guard's Marine Safety Information System;

(3) Coast Guard and NOAA port studies; and

(4) NOAA and Coast Guard spill tools.

Continued on page 44

Continued from page 43

The **first component** of the new system takes advantage of computer software already in national use by incorporating key portions of the Computer-Aided Management of Emergency Operations System. These portions include:

- aerial location of a hazardous atmosphere system, which can pinpoint over 700 chemicals using a physio-chemical properties data base;
- a chemical data base with information on more than 4,000 chemicals from 12 sources; and
- a mapping application for response, planning and local operational tasks program, which uses Bureau of Census maps to identify coastlines, rivers, roads, etc. and provides a geographical reference for user-entered data.

The **second component** takes advantage of existing Coast Guard Marine Safety Information System mechanisms and data. Transferring this existing data to the new system quarterly eliminates duplication of efforts.

The **third component** builds upon Coast Guard/NOAA port studies management information. Started in the early 1980s, these studies provide a comprehensive analysis of the types, amounts and frequencies of commodities flowing through 26 ports around the country. They also identify unique environmental concerns of the ports, and potential strategies to control spills in the areas.

The **final component** incorporates old and new spill management tools such as an automated data inquiry for past oil spills, an oil properties data base, a dispersant use calculator, an in-situ burn calculator and a spill activities tracking log.

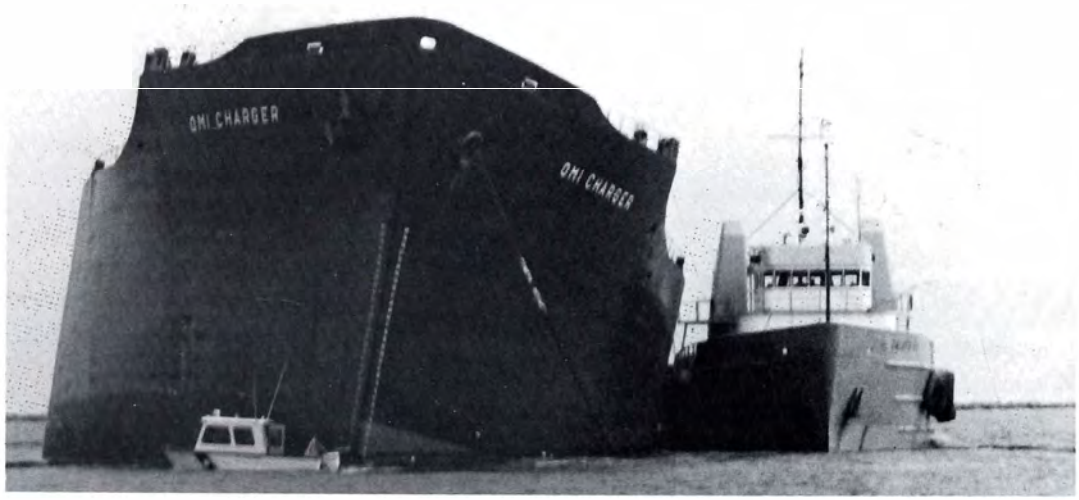
Conclusion

The new system will give the Coast Guard a powerful tool to leverage information management and resources to improve the country's level of preparedness and ability to successfully mitigate pollution incidents. By providing captains of the port and on-scene coordinators with a wealth of useful information, the ability to manage it and state-of-the-art technology to support decision making, this system will sustain the Coast Guard's position as a world leader in environmental protection and response.

LCDR Shane Ishiki is a policy analyst with the Pollution Response Branch of the Marine Environmental Protection Division.
Telephone: (202) 267-6449.

MSO Galveston, Texas, small boat patrols safety zone around tanker OMI Charger that exploded in anchorage in October 1993.

Photo by PA3 Brandon Brewer.



Dichlorvos

Dichlorvos is a nonflammable liquid organophosphate ranging in color from amber to clear. It has a slight chemical odor. Organophosphates have become more popular as pesticides in recent years because they are safer than chlorinated hydrocarbons, which dominated the pesticide market at one time.

Patented by the Shell Oil Company in 1960, dichlorvos was not widely used until the 1970s. It is used as a commercial and household insecticide, and is usually found in vapor strip or aerosol form. It is also applied on farms as an outdoor fogging insecticide, and is commonly found in animal buildings, hospitals, restaurants, aircraft and on animal collars.

Health hazards

The chemical can enter the body through inhalation, ingestion and skin contact. Short-term inhalation can cause tightness in the chest, wheezing, bluish skin coloration, small pupils, headaches, blurred vision, tearing, runny nose and watering of the mouth. If swallowed, dichlorvos can cause nausea, vomiting, abdominal cramps and diarrhea within two hours. If it is absorbed through the skin, sweating and twitching usually occur from 15 minutes to four hours.

Dichlorvos can affect the central nervous system, causing giddiness, confusion, slurred speech, convulsions and loss of coordination. Severe exposure to the chemical can result in general weakness, paralysis, cessation of breathing and coma. Long-term exposure will make the victim more susceptible to the effects of this and related chemicals. Repeated exposure to small amounts of dichlorvos can eventually cause the same symptoms as those listed above.

Precautions

When handling dichlorvos, workers should wear impenetrable clothing, gloves, face shields and slash proof goggles. A respirator approved by the National Institute for Occupational Safety and Health should also be used.

Clothing contaminated with dichlorvos should be stored in a closed container until disposed of or cleaned thoroughly. If penetrable clothing is contaminated, it should be taken off immediately and not worn until thoroughly cleaned. If the clothing is to be laundered or otherwise cleaned to remove the dichlorvos, the person doing the cleaning should be informed of the chemical's hazardous properties.

If the chemical contacts the skin, it should be washed off immediately with soap and water. If eyes are exposed to dichlorvos, they should be thoroughly rinsed with an eyewash. If the chemical is swallowed, the victim should drink large quantities of water or milk, and induce vomiting. In all cases of contact with dichlorvos, medical attention should be sought immediately.

If dichlorvos is leaked or spilled, anyone not wearing protective clothing and equipment should be evacuated. Next, ventilate the area and collect the spilled portion or soak it up with vermiculite, soil, sand or similar material. Dispose of it by putting it in a secure landfill.

If fire fighting is conducted in an area with dichlorvos present, each fire fighter should wear a self-contained breathing apparatus with full facemask.

Classifications

Dichlorvos is listed as an OSHA air contaminant and a CERCLA hazardous substance included in section 311(b)(4) of the Clean Water Act, with a reportable quantity of 10 pounds.

It is classified either as a class 3.2 flammable liquid or class 6.1 poisonous material (based on the properties of the solution) in the Code of Federal Regulations and the IMO IMDG Code. When shipped, it must be labeled according to the hazard class and marked with a proper shipping name followed in parenthesis by the name "dichlorvos" and its concentration in solution. The proper shipping names and U.N. numbers are:

Class.	UN#	Description
3.2	2784	Organophosphorus pesticides, liquid, flammable, toxic, n.o.s.
6.1	3017	Organophosphorus pesticides, liquid, toxic, flammable, n.o.s.
6.1	3018	Organophosphorus pesticides, liquid, toxic, n.o.s.
6.1	2783	Organophosphorus pesticides, solid, toxic, n.o.s.

Continued on page 46

Continued from page 45

Dichlorvos

Chemical name: Dichlorvos
Formula: $C_4H_7CL_2O_4P$
Synonyms: DDVP; dichlophos; vapona and 2,2-dichlorovinyl dimethyl phosphate
Description: Colorless to amber liquid with slight chemical odor

Physical properties:

Boiling point:	140°C (284°F)
Freezing point:	n/a
Vapor pressure:	0.032 mm Hg at 32°C (90°F)/skin

Threshold limit values:

Time-weighted average:	0.1 ppm (0.90 mg/m^3)
Short-term exposure limit:	None

Combustion properties:

The material itself is a non-flammable solid.
However, it is ordinarily shipped dissolved in flammable solvents.
The solution's combustion properties are those of the solvent used.

Densities:

Vapor (water=1):	1.415 at 25°C

Identifiers:

CHRIS code:	DCV
Cargo compatibility group:	Not listed
CAS registry number:	62-73-7
U.N. number:	2784, 3017, 3018 and 2783
IMDG Code:	See "Pesticides table"

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

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

The following deck questions are included in the license examinations for the operation of vessels of more than 100 gross tons. They are based on chart 12221TR, Chesapeake Bay Entrance, and the supporting publications.

DECK

Your vessel has a draft of three meters (10 feet) and your height of eye is 6.1 meters (20 feet). Use 10° W variation where required. The gyro error is 3° E. The deviation table is:

HDG. MAG.	DEV.	HDG. MAG.	DEV.	HDG. MAG.	DEV.
000°	0°	120°	2° W	240°	3° E
030°	1° W	150°	1° W	270°	3° E
060°	2° W	180°	1° E	300°	2° E
090°	4° W	210°	2° E	330°	1° E

1. You are on course 192° pgc at 12 knots. You obtain a loran fix at 1900 using the following data:

9960-X-27120
9960-Y-41623
9960-Z-58729

What is your latitude and longitude at 1900?

A. LAT 37°21.5' N, LONG 75°34.8' W.
B. LAT 37°22.4' N, LONG 75°34.9' W.
C. LAT 37°22.6' N, LONG 75°35.7' W.
D. LAT 37°22.9' N, LONG 75°36.2' W.

2. What course should you steer with standard magnetic compass to make good a course of 192° pgc?

A. 188° psc.
B. 195° psc.
C. 203° psc.
D. 205° psc.

3. At 1920, the buoy off your starboard bow is ____.

A. an interrupted quick flashing buoy
B. Hog Island Lighted Bell Buoy
C. South Light Buoy
D. Sand Shoal Inlet Lighted Bell Buoy "A"

4. At 1930, your position is LAT 37°16.7' N, LONG 75° 37.7' W. The water depth is about _____.

A. 30 feet (9.1 meters)
B. 40 feet (12.1 meters)
C. 50 feet (15.1 meters)
D. 60 feet (18.1 meters)

5. At 1950, your position is LAT 37°12.3' N, LONG 75° 38.6' W. The set and drift from 1930 to 1950 were _____

A. 142° T at 0.6 knot
B. 150° T at 1.6 knots
C. 218° T at 0.9 knot
D. 333° T at 1.4 knots

6. Assume set and drift have no effect on your vessel. If you change course to 187° pgc from your 1950 position, how close will you pass Cape Charles Lighted Bell Buoy "14?"

A. 0.1 mile.
B. 0.5 mile.
C. 1.1 miles.
D. 1.7 miles.

7. At 2020, you obtain a fix using the following information:

9960-X-27112
9960-Y-41432

Cape Charles Lighted Bell Buoy "14" bears 333° pgc. Your longitude is _____

A. 75° 38.9' W
B. 75° 39.1' W
C. 75° 39.3' W
D. 75° 40.5' W

Continued on page 48

Continued from page 47

Corrections

1) The caption on the right of the photograph on page 23 of *Proceedings* January-February 1994 issue should have read, "Towboat operators have to be tested when raising the grade of their licenses."

2) Same issue, page 14 under "1990 Casualties," the number 5,496 should be 5,467 and 5,069 should be 5,067. Also, on page 18 in Table 3, the MODU LT300 GT row should be deleted, and the U.S. TOTALS should read: 164, 155, 1234, 1691, 1226, 42, 555 and 5067.

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8. At 2020, what course do you steer to enter the inbound lane of North Chesapeake Entrance traffic separation scheme if a northwesterly wind causes 3° of leeway?

A. 227° pgc.
B. 224° pgc.
C. 221° pgc.
D. 215° pgc.

9. If you make good 12 knots, what is the ETA at North Chesapeake Channel Entrance Buoy NCA?

A. 2116.
B. 2111.
C. 2106.
D. 2101.

10. At 2100, Cape Charles Light bears 321° pgc and Cape Henry Light bears 247° pgc. Your latitude is _____.

A. 37° 00.0' N
B. 36° 59.7' N
C. 36° 59.4' N
D. 36° 59.1' N

11. If the visibility is three miles, at what range will you lose sight of Chesapeake Light?

A. The light has never been visible.
B. 6.4 miles.
C. 8.3 miles
D. 12.1 miles.

12. At 2100, you alter course to 250° T and reduce speed to seven knots. You enter the traffic separation scheme on the inbound side. At 2200, your fix shows you crossing a broken purple line on the chart and you observe North Chesapeake Entrance Lighted Gong Buoy "NCD" to port. This area is _____.

A. a precautionary area centered on buoy "CBJ"
B. a pilotage area
C. an area with local magnetic disturbances
D. in inland waters

13. What course per standard magnetic compass is the same as 247° pgc?

A. 240° psc.
B. 246° psc.
C. 257° psc.
D. 260° psc.

14. At 2215, Cape Henry Light bears 242° pgc; Cape Charles Light bears 010.5° pgc and Chesapeake Channel Tunnel North Light bears 319° pgc. You are heading 271° pgc. What is the relative bearing of Thimble Shoal Light?

A. 280°.
B. 332°.
C. 014°.
D. 017°.

15. While navigating in Thimble Shoal channel system you must _____

A. navigate in the main channel when between trestles A & B
B. maintain a minimum speed of six knots
C. remain 1,500 yards (1,360 meters) from large naval vessels
D. use the north auxiliary channel

ANSWERS

1-C, 2-C, 3-D, 4-C, 5-B, 6-C, 7-D, 8-C, 9-B, 10-C, 11-C, 12-A, 13-C, 14-C, 15-D.

If you have any questions concerning "Nautical Queries," please contact the Coast Guard (G-MVP-5), 2100 Second Street, S.W., Washington, D.C. 20593-0001.

Telephone: (202) 267-2705.

Final rule

CGD 93-054, Oil pollution placard language (33 CFR part 155) RIN 2115-AE55 (November 26).

The Coast Guard is revising the placard language required to be posted on ships of 26 feet in length or greater stating the Federal Water Pollution Control Act's oil discharge prohibition and the penalty for violation of it. Because OPA 90 amended the penalty provisions of this act, the required placard language is outdated. This rule revises it to reflect current authority.

EFFECTIVE DATE: November 26, 1993.

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

For further information, contact: LT Jonathan C. Burton, Marine Environmental Protection Division (G-MEP-1). Telephone: (202) 267-6714.

Notice of proposed rulemaking

CGD 93-051, Proof of commitment to employ aboard United States merchant vessels (46 CFR parts 12 and 16) RIN 2115-AE54 (December 6).

The Coast Guard proposes to amend its regulations covering applicants for merchant mariner's documents to eliminate the requirement that the applicant provide proof of a commitment of employment as a member of the crew of a United States merchant vessel. Because of new requirements pertaining to applicants of merchant mariner's documents, this requirement is no longer necessary. This action will relieve applicants and employers of an unnecessary regulatory burden.

Dates: Comments must have been received by February 4, 1994.

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

For further information, contact: Mrs. Justine Bunnell, Merchant Vessel Personnel Division. Telephone: (202) 267-0234.

Interim final rule

CGD 90-068, Discharge removal equipment for vessels carrying oil (33 CFR part 155) RIN 2115-AD66 (December 22).

The Coast Guard is issuing regulations that require vessels carrying oil in bulk as cargo to carry discharge removal equipment, and install spill prevention coamings and emergency towing arrangements. Vessels must have a pre-arranged capability to calculate damage stability in a casualty. Regulations requiring removal equipment are mandated by OPA 90 to reduce the risk of oil spills, improve vessel oil spill response capabilities and minimize the impact of oil spills on the environment. The Coast Guard issues this rule to solicit further public comment and information on emerging technologies that prevent, contain or remove discharges of oil from vessels into the marine environment.

Dates: This rule was effective January 21, 1994. Comments must have been received by February 22.

For further information, contact: Mr. Frank Wood, project manager, Division of Marine Environmental Protection (G-MEP). Telephone: (202) 267-6414.

Final rule

CGD 91-019, Chemical drug and alcohol testing of commercial vessel personnel; collection of drug and alcohol testing information (46 CFR part 16) RIN 2115-AD84 (December 23).

This final rule revises the Coast Guard's regulations for chemical drug and alcohol testing of commercial vessel personnel to include information collection requirements regarding marine industry drug and alcohol testing programs. The Coast Guard will collect this data to assess the effectiveness of the marine industry drug and alcohol testing programs.

EFFECTIVE DATE: January 1, 1994.

Addresses: Unless otherwise indicated, documents referenced in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA/3406), Coast Guard headquarters, between 8 a.m. and 3 p.m., Monday through Friday, except holidays. Telephone: (202) 267-1477.

For further information, contact: LCDR Mark Grossetti, Division of Marine Investigation (G-MMI-2). Telephone: (202) 267-1421.

Continued on page 50

Continued from page 49

Notice of eligibility

CGD 93-092, Passenger Vessel Safety Act of 1993 (January 6).

The Passenger Vessel Safety Act of 1993 clarifies the criteria determining when vessels must be certificated by the Coast Guard to carry passengers. To accomplish this, the act, among other things, redefines the terms "passenger," "passenger vessel," "small passenger vessel" and "uninspected passenger vessel," and defines "passenger for hire" and "consideration."

The act establishes an extension period for its applicability to charter vessels to operate without crew. The extension period is only for vessels whose owners apply to the Coast Guard by June 21, 1994.

The act further calls for the possible modification of existing requirements for certain charter vessels of over 100 gross tons, and the establishment of new requirements for uninspected passenger vessels of at least 100 gross tons carrying not more than 12 passengers.

For further information, contact: LT Brian Poskaitis, project manager, Merchant Vessel Inspection and Documentation Division (G-MVI-1). Telephone: (202) 267-1464.

Supplemental notice of proposed rulemaking

CGD 85-080, Small passenger vessel inspection and certification (46 CFR parts 114 through 139, 170, 171, 173 and 175 through 185) RIN 2115-AC22 (January 13).

The Coast Guard is revising its original proposal, published as a notice of proposed rulemaking in the *Federal Register* on January 30, 1989, to amend the regulations governing small passenger vessels. This supplemental notice contains a complete revision of the proposed regulations affecting these vessels based on numerous comments received after the original notice.

In this notice, the Coast Guard proposes significant changes including: the creation of separate regulations for small passenger vessels carrying more than 150 passengers or with overnight accommodations for more than 49 passengers; alternative requirements to certain lifesaving equipment; greater allowance of non-Coast Guard-approved noncombustible materials; and the establishment of new upper limit breakpoints above which a vessel would have to comply with the construction and outfitting requirements applicable to a passenger vessel over 100 gross tons. These revisions are expected to simplify the original proposed regulation.

Dates: Comments on this notice must be received by June 13, 1994.

Addresses: Written comments should be submitted to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 85-080), Coast Guard headquarters. Comments may be delivered to and will be available for inspection or copying and the materials referenced in this notice will be available at the Marine Safety Council, room 3406, between 8 a.m. and 3 p.m., Mon-day through Friday except holidays. Telephone: (202) 267-1477. Comments on collection of information re-quirements must be mailed also to the Office of Infor-mation and Regulatory Affairs, Office of Management and Budget, 725 17th Street, N.W., Washington, D.C. 20503. Attn: Desk officer, U.S. Coast Guard.

For further information, contact: LCDR Marc C. Cruder, project manager, Standards Development Branch, Merchant Vessel Inspection and Documentation Division (G-MVI-1). Telephone: (202) 267-1181.

Supplemental notice of proposed rule

CGD 78-174, Hybrid PFDs, establishment of approval requirements (46 CFR parts 25 and 160) RIN 2115-AA29 (January 18).

On August 22, 1985, the Coast Guard published an interim final rule in the *Federal Register* establishing structural and performance standards and procedures for approval of hybrid inflatable personal flotation devices (PFDs). This allowed approval of several hybrid PFDs, but not enough were made and sold to make a significant difference in the number of lives saved by this superior performing and more comfortable PFD. The proposed changes are designed to make hybrid PFDs more affordable and attractive to recreational boaters by lowering manufacturing costs by reducing the amount of repetitive testing required. Increases in buoyancy are proposed to compensate for removing of the Type V criteria of being "REQUIRED TO BE WORN" to allow approval of hybrids Type I, II and III, in addition to the existing Type V category. This notice also proposes approval of hybrids for youths and small children. These proposals are in hopes that hybrid PFDs will be more widely used and potentially save more lives.

Dates: Comments must be received by April 18, 1994.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 78-174), Coast Guard headquarters. Telephone: (202) 267-1477.

For further information, contact: Mr. Samuel Wehr or LTJG Roger Smith, Division of Merchant Vessel Inspection, (G-MVI-3/14). Telephone: (202) 267-1444.

In-situ burning can be safe and effective

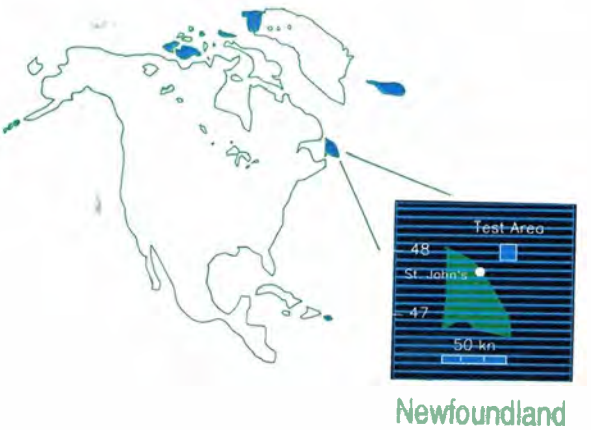
Newfoundland burn test results affirm

By ENS Mark Gordon

In August 12, 1993, a full-scale in-situ burn experiment was conducted in the cold waters off the coast of St. John's, Newfoundland. The test demonstrated that an oil spill can be safely mitigated or subdued at the scene of an accident by "in-place burning."

The burn test also measured the emissions and physical parameters of actual burns, verified data produced by other large scale land tests, and demonstrated correct operational procedures for in-situ burning.

The results were extremely well documented by representatives of Environment Canada (the Canadian environmental protection agency), the Canadian Coast Guard, the United States Coast Guard, the United States Mineral Management Service, the United States Environmental Protection Agency (EPA) and a host of industry sponsors.



Risks minimized

Long range careful planning by the participants included extensive studies of possible environmental effects. Countermeasures were developed to offset any potential risk.

For example, a conventional boom was towed behind a fire-proof boom to collect escaped oil for subsequent mechanical removal. All boats carried sorbent pads to assist cleanup efforts and noise makers to scare away indigenous birds. Also, in an emergency, a skimmer used to discharge the oil into the fire boom could have been reversed to collect unburned oil.

Two burns were planned with 13,200 gallons of Alberta sweet crude oil inside the fire-proof boom, which consisted of ceramic floats joined by stainless steel mesh and coated with plastic.

Continued on page 52

Canadian Coast Guard vessel Ann Harvey.

Continued from page 51

First burn

Five aircraft and 16 vessels, belonging mostly to the Canadian Coast Guard, took part in the test, which was conducted in the North Atlantic Ocean 42 kilometers northeast of St. John's. After a false start on August 7, which was canceled due to heavy fog, the fleet left St. John's on August 12. The weather was perfect with sunshine, calm seas and five-knot winds.

At first light, preparations began. The back-up boom was deployed, followed by the fire boom. In the meantime, small boats to be used as sampling platforms were unloaded from the Canadian Coast Guard vessel, *Ann Harvey.*

Once all the vessels were in place, the sampling boats took control samples of air and water before the burn to provide a basis for comparison with conditions during and after the burn.

At about 11 a.m., crude oil aboard the Canadian Coast Guard vessel, *Sir Walter Grenfell,* was released into the fire boom and ignited by helitorch, an efficient means of ignition. (Basically a canister of jellied gasoline or napalm slung under a helicopter, a helitorch ignites the gasoline over an external flame and releases it up current and above the oil.)

After ignition, 12,800 gallons of oil was burned in an hour and a half, a half hour over the time predicted. The delay was attributed to the effect of the wind and towing speed of the fire boom.

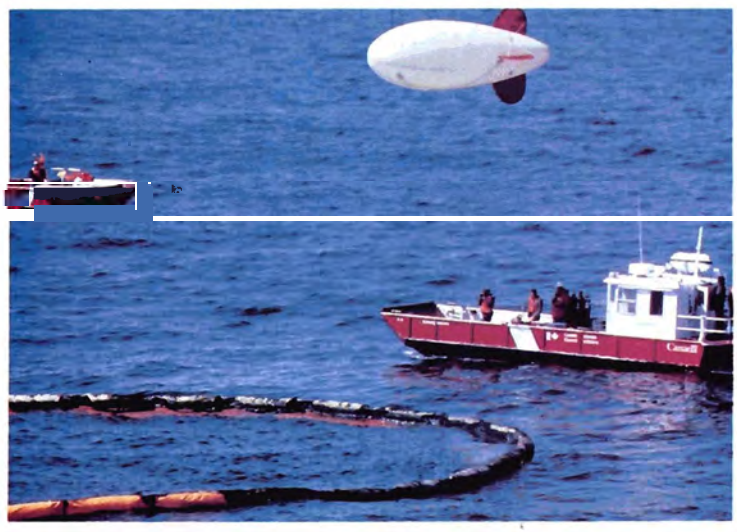
Oil discharge was stopped several times during the burn when flames extended from the apex of the boom to the discharge hose. Oil was frequently observed wicking up the sides of the boom and actually burning outside the boom. In theory, the oil outside the boom should be quickly extinguished from sheening, a rapid spread of oil on the water, which thins it to a point of non-combustibility. However, little sheening was observed. This departure from theory emphasizes the need for more open water testing.

The National Institute of Standards and Technology set up a blimp to take samples from the smoke plum about 100 meters down wind. Remote-controlled helicopters and boats sampled the air and water close to the fire. The EPA had a remote-controlled submersible filming under the boom and the University of Washington sampled downwind emissions with a C-131A Convair airplane.

This first burn was very successful with an estimated 99 percent efficiency. Some 106 gallons of residue remained after the burn. Upon examination, the boom was found capable of containing another burn.

"In-situ burning can be an effective, safe means of removing oil quickly from water."

Small boats, blimp and boom are ready for the burn.



After ignition, 12,800 gallons of oil were burned in an hour and a half.

Second burn

A more "typical" burn, the second effort lasted one and a quarter hours and burned 7,700 gallons of oil. The oil discharge was reduced to compensate for an increase in wind velocity. This alleviated the overflow problem and eliminated burning at the discharge hose.

Although less spectacular and more controlled, the second burn was stopped after a portion of fire boom broke loose. A small amount of oil was observed burning outside the boom when the section broke off. Theoretically, this oil should have rapidly spread out into sheen, becoming too thin to support combustion. . . again demonstrating the need for further testing.

Despite the boom's failure, its apex retained structural integrity and continued to support combustion until the oil was burned off. The breakdown occurred on the side and hardly affected the majority of trapped oil. The second burn was about 97 percent efficient.

The entire operation was successful with nearly 21,200 gallons of oil removed from the water in less than three hours with little residue. The Canadian Coast Guard proved that **in-situ burning can be an effective, safe way to remove oil quickly from water.**

Surprises

In most experiments there are surprises, and this one was no different. For one thing, fire booms have been burned without breaking up to 48 hours in tank tests. But these tests don't measure the effects of weather or towing stresses.

The burns were also hotter and longer than predicted. The burning process was very dependent on wind velocity and direction, which are also hard to measure in tank tests. Future testing should take various weather conditions into account.

The in-situ burns were much u-e ter than the tank tests. In addition, these burns did not have the rapid boiling phase observed in tank tests.

Apparently, the strongest smelling air pollution was caused by vessel exhaust fumes, which contributed to a good deal of sea sickness among the participants.

Pollution and safety

In-situ burning is not a panacea. There are air pollution and safety concerns which must be addressed before any controlled burning takes place.

Water and beach contamination are often traded off for air pollution. However, the ramifications of air pollution are relatively minor, compared to lengthy and costly shoreline cleanups. For example, there should be little or no health risks beyond 650 feet of a burn.

Safety is a primary consideration, as there is always a chance of fire getting out of control, and igniting the discharge source or a responding vessel.

Continued on page 54

During the second burn, the apex of the boom retained structural integrity.

The operation was successful, although it had its messy moments.

Fire-proof boom can remove up to 99 percent of spilled oil with relatively little logistical support.

Continued from page 53

Advantages and limitations

There are situations where in-situ burning is not a viable option. However, there are circumstances where it can have pronounced advantages. It can remove up to 99 percent of spilled oil with relatively little logistical support. A minimum of two towboats, fire-proof boom and minimal resources to remove small residues are required.

On the other hand, mechanical methods typically remove only about 30 percent or less of the oil, and need considerable logistical support.

One drawback, however, is that the oil has to be at least two millimeters thick to burn on water. Any thinner, and the heat absorption of the water keeps the oil below its flashpoint.

The relatively new fire-proof boom allows the oil to be collected in burnable thicknesses by piling up thin slicks within its perimeters. This boom also permits the oil to be towed safe distances from the spill source before burning.

Another limitation is the time factor. Oil must be burned before it mixes with too much water. To be most effective, oil should be burned within 24 hours after a spill.

Future testing

The United States Coast Guard has been pursuing both open ocean operational testing and tank experiments on this technology for many years.

Extensive tank testing has been conducted for the past seven years in the Fire Safety Laboratories in Mobile, Alabama.

Operational testing has been infrequent, although an in-situ burn was conducted during the *Exxon Valdez* oil spill in Prince William Sound, Alaska, in March 1989. It eliminated almost 15,000 gallons of oil in four hours before it was halted due to smoke concerns. There have been subsequent attempts, but none have received permits to intentionally discharge oil.

Based on the success of this effort, the next step in evaluation should be a warm water burn, which could answer many questions not possible with tank testing alone. There is government and industry interest in pursuing this in the Gulf of Mexico.

In any event, public concerns over the environmental effects of in-situ burning need to be alleviated. Comprehensive tests should be conducted in the near future to determine the exact operational procedures of the technology. It could be the most effective solution for future oil spills under the right conditions.

Photos accompanying this article are courtesy of the Newfoundland Oil Burn Experiment Committee.

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Coast Guard containment boom is great "first aid"

Left: Coast Guard boom contains fuel oil discharged from the W. L. Tolen in the Ohio River in October 1992.

Bottom: The boom surrounds a heavy oil slick as tow boats begin to raise the W. L. Tolen.

By LT John Meehan and CDR Mike Brown

Coast Guard prepositioned containment boom has proved to be an extremely effective tool in responding to oil spills on the inland river system, particularly in the upper Ohio Valley. Purchased with OPA 90 funds in 1992, boom and trailers were set up (prestaged or prepositioned) at various locations on the Ohio and adjoining rivers for use as "first aid" in spill responses. (The trailers are enclosed two-wheel tandem vehicles, each containing 800 feet of boom and the equipment needed for deployment.)

These "success stories" underscore its value.

- *June 1992* - A tank truck overturned on a bridge in downtown Pittsburgh, Pennsylvania spilling 4,000 gallons of lube oil into the Monongahela River. Prestaged Coast Guard boom contained the spill, recovering about 95 percent of the oil.

- *October 1992* - The tow vessel *W. L. Tolen* struck a submerged water pipe on the Ohio River and sank near Wheeling, West Virginia, with more than 30,000 gallons of #2 fuel oil on board. Prepositioned boom was located at Pike Island lock and dam three miles from the spill site. It was adjacent to work boats owned by the United States Army Corps of Engineers. The boom was quickly deployed downstream from the sinking by Coast Guard and Army Corps of Engineers crews, contributing to the recover of 85 to 90 percent of an oil spill in excess of 10,000 gallons.

Continued on page 56

- ***January 1993 - The tow vessel A. A. Vestal sank in the Ohio River near Natrium, West Virginia. Response workers again used the boom at Pike Island lock and dam to successfully contain the oil discharged from this vessel.***

Continued from page 55

- ***March 1993*** - Prestaged boom at the Pittsburgh River Safety Center was used for a first response effort to contain several hundred gallons of vegetable oil spilled from an industrial plant on the Allegheny River in Pittsburgh.

- *June 1993* - Coast Guard boom prestaged at the Beaver County Emergency Management Agency contained a 200-gallon oil spill into an Ohio River tributary from an overturned truck near Vanport, Pennsylvania.

- *June 1993* - United States Army Corps of Engineers personnel deployed boom prestaged at a Tennessee Valley Authority facility to contain a 50-gallon hydraulic oil leak on the Tennessee River at Gunterville, Alabama.

- *July 1993* - Prestaged boom contained a 50-gallon mystery spill on the Ohio River near Sewickley, Pennsylvania.

- *September 1993* - Boom was deployed by Beaver County personnel to prevent a 1,500-gallon fuel oil spill from an overturned truck from reaching the Beaver River at New Brighton, Pennsylvania.

- *October 1993* - Coast Guard crews deployed prestaged boom to stop a 1,100-gallon crude oil spill from a production well from pouring into the Ohio River near Osborne Township, Pennsylvania.

- *November 1993* - Boom prestaged at Old Hickory Lock and Dam contained a 20-gallon hydraulic oil leak on the Cumberland River in Davidson County, Tennessee.

Timing

Although the Environmental Protection Agency is officially designated as the federal on-scene coordinator for inland waterway incidents, the Coast Guard usually responds to vessel oil spills and often acts as the first federal official on the scene for other types of spills because of its proximity, expertise and 24-hour availability. In all of these instances, as in any response, time was critical.

Inland water currents are often very rapid, and once oil is swept over a lock and dam system, it usually emulsifies, making recovery extremely difficult, if not impossible.

All of the incidents described required immediate response to prevent the spills from spreading along the river banks. This would have been impossible without ready access to the prepositioned boom.

Left: MSO Pittsburgh crew deploys boom from a prepositioned trailer.

Below: The sunken towboat ~~Alan R.~~ is girded by boom with the Pittsburgh skyline as a backdrop.

Key elements

Two factors are responsible for the successful use of the prepositioned boom: proper siting and cooperative arrangements.

To select appropriate sites for the boom, the Coast Guard studied spill and accident history in the region along with available local response resources and storage facilities. By picking sites where accidents were most likely to occur, the boom was in the right place at the right time.

Equally important is the cooperative arrangements made by the Coast Guard with other federal, state and local government agencies to deploy the boom either by themselves or with Coast Guard assistance. The inland region has small Coast Guard units with long stretches of river in between. In most of the cases described, other agencies provided small boat and labor resources to "leverage" limited Coast Guard resources to achieve timely, effective responses.

Conclusion

Coast Guard prepositioned boom has proven to be extremely beneficial, but it must be noted that it is only a "first aid" response asset. In most situations, this boom contained the discharges until a commercial spill response contractor could recover the spilled product. It does not replace, but rather supplements private sector clean-up resources. In this respect, it is an extremely cost-effective investment.

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