
Proceedings
of the Marine Safety Council
November-December, 1994
Vol. 51, No 6
U.S. Department
of Transportation
United States
Coast Guard
Sensation
SENSATION
Special maritime industry issue

Proceedings is published bimonthly by the Coast Guard's Office of Marine Safety, Security and Environmental Protection, in the interest of safety at sea under the auspices of the Marine Safety Council. The Secretary of the Office of Transportation has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this agency. Special permission for republication, either in whole or in part, except for copyrighted material, is not required, provided credit is given to Proceedings. The views expressed are those of the authors and do not represent official Coast Guard policy. All requests for subscriptions and changes of address must be in writing, addressed to: Editor, Proceedings Magazine, U.S. Coast Guard (G-MP-4), 2100 Second Street, S.W., Washington, D.C. 20593-0001; (202) 267-1408. Please include mailing label when changing an address.

DIST (SDL No. 132)

A: ac(2); ebfghijklmnopqrsuv(1).
B: nr(50); cefgipw(10); bklqshj(5); xdmou(2); vyz(1).
C: n(4); adek(3); blo(2); cfgijmpqrtuvwxyz(1).
D: ds(5); abcefghijklmnopqrtuvwyz(1).
E: kn(2). F: abcdehjkloqst(1).
List TCG-06.

Proceedings

of the Marine Safety Council

November-December 1994 *Vol. 51, No 6*

Special maritime industry issue

Prevention

is our strategy for safety

BY RADM James C. Card

Prevention is our strategy for safety at sea. The Coast Guard's Office of Marine Safety, Security and Environmental Protection is looking for new ways to work with the maritime industries to prevent accidents, spills and deaths. Solid partnerships between the Coast Guard and industry open lines of communication and encourage information exchange, which all contribute to the development of effective safety programs.

We will emphasize the concepts of quality management, or doing the "right thing" in the "right way." We will identify "model companies" with acceptable safety programs in place. Then quality action teams, consisting of representatives of "model companies" and the Coast Guard, will develop strong alliances between the two groups.

Streamlined inspections

Streamlined inspection programs developed in the Eighth Coast Guard District headquartered in New Orleans, Louisiana, illustrate our new method of conducting business. Several barge companies, and four supply and crew boat companies participated in quality action teams, which improved the efficiency, relevance and time management of inspections. This created a "win-win" situation for industry and the Coast Guard.

Furthermore, the streamlined inspection process will devote less time on model firms, leaving more time to focus on companies with substandard safety operations. Those that do not improve will find it more and more difficult to remain in business.

These pilot programs in the Eighth District demonstrate that quality concepts succeed in the inspection process. They will be employed on a larger scale in the near future.

Continued on page 2

Top photo: Harbor sunset in Homer, Alaska, courtesy of Mr. Jim Herbert.

Bottom photo: Fishing vessels at a herring harvest off Alaska, courtesy of the Alaska Marine Safety Education Association.

Continued from page 1

Human factors

A portion of the total quality picture that has not been adequately addressed is the human element. Training, qualifications, communication, work practices, staffing levels and fatigue are among the factors in the human equation needing attention.

Marine work processes must be studied to reduce the possibility for human error in accidents. Everybody - masters and crews - must be involved in developing effective solutions. People actually doing the job can best identify areas that need improvement. Management, labor and regulators must communicate in a positive way to arrive at the right solutions quickly.

The Coast Guard looks forward to working closely with industry on this vital issue.

Customer service

We will use quality methods internally to improve customer services. We aim to consistently provide excellent services to our customers in the maritime industry. We must make regulations more understandable and easier to follow. We also need to improve methods of data collection and accident investigation, both of which will provide us with the information we need to prevent casualties and promote safety, security and environmental protection throughout the world.

Industry's turn

Now lets hear from industry. This special issue of *Proceedings of the Marine Safety Council* is a platform for the maritime community to speak out and present its views.

This is the first time that *Proceedings* has reserved an issue for maritime industry members to express their ideas and describe their solutions to the vital safety issues confronting us all today. They have much to say and they do so eloquently.

Merchant mariners, commercial fishermen, shippers, barge and tow operators, offshore oil and gas producers, safety educators and hazardous material carriers are among the Maritime correspondents represented in this special issue. They delve into the gamut of issues involved in safety at sea — everything from the human element and injury prevention methods to hull protection, safe cargo stowage, emergency response plans, safety drills and international standards.

We are gratified with the maritime community response to this special *Proceedings* and plan to open up future issues to air still more views from this vital industry. It is only fitting. The Coast Guard and the maritime industry have a lot in common, particularly when it comes to our deep concern for safety at sea.

RADM James C. Card is the chief of the Office of Marine Safety, Security and Environmental Protection.

Telephone: (202) 267-2200.

Safety at sea . . . is a lot like baseball

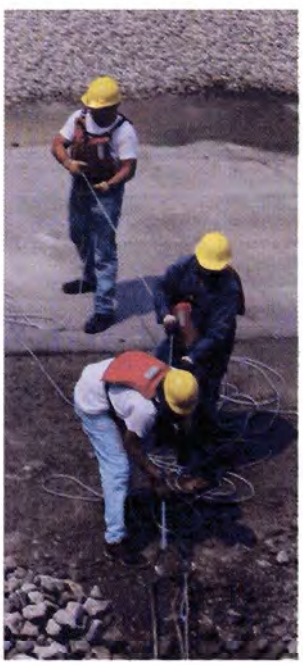
By Mr. Thomas S. Anderson

While injury prevention measures may seem more difficult to execute than a double steal, they needn't be. Keep your eye on the basics, cover all your bases and you should be home safe.

Admittedly, safety at sea is more likely to conjure up an image of a stormlashed ship with the crew desperately trying to save it, rather than a peaceful baseball game. Traditionally, safety aboard ship focuses on saving ship, crew and cargo (and more recently, the environment) from catastrophe.

Safety at sea, however, really comes about through basic prevention measures. A shipboard program with policies and procedures for hazard recognition, safety inspection and auditing mirrors the true image of safety at sea.

Careful attention is required handling mooring cables and getting line handlers ashore.



Five steps

The basics of an effective safety inspection and audit program are a five-step process:

1) **identify problems,**
2) **determine causes,**
3) **formulate solutions,**
4) **implement solutions, and**
5) **follow-up and monitor.**

As with any other workplace process, the employees must be involved to be effective. This is very important aboard ship. Crew members usually know where many of the problems are — and have a pretty good idea about the solutions.

1) Identify problems

An effective mechanism for identifying existing and potential problems is through a formal safety inspection and auditing program, with established policy and procedures. The policy, in broad terms, should state objectives and responsibilities, while the procedures should specifically set forth the who, how and when regarding the inspection or audit process.

Audits are broader in scope than inspections. They include an assessment of the status of the ship's compliance with company policy and applicable state and federal safety, health and environmental regulations. The company safety manager or a qualified consultant should conduct audits.

Inspections are walking tours of particular areas looking for specific safety hazards. They should be conducted by licensed and unlicensed personnel familiar with the vessel and its equipment.

Published check lists are helpful when conducting safety inspections. To ensure a thorough walk through of a space, use landmarks or check points, such as fire stations, which are tagged and dated. Upon entering an area or space, inspectors should pause for about 30 seconds to observe the work in progress, see how personnel are accomplishing their tasks and get a feel for the operation.

Continued on page 4

On deck -- look out for trip, slip and fall hazards.

Continued from page 3

Inspectors should be on the lookout for unsafe practices and conditions (such as trip, slip or fall hazards or inadequate machine guarding). Problems found should either be corrected on the spot or noted on the inspection form for rapid follow-up action. The forms should be reviewed and signed by the appropriate department head.

There is no shame in finding and noting problems. The real risks occur when follow-up corrective action is either untimely or not taken at all.

2) Determine causes

Why does a condition such as spilled hydraulic oil on deck exist? In order to arrive at a satisfactory solution, the root cause of the problem must be determined. It is not enough to simply clean up the spill. It is important to know why the oil was spilled. If a line or pump is leaking, repairs must be made to avoid further spillage.

Safety inspections must find out "why" problems occur, rather than accept conditions on face value as coincidences or as isolated events. Determining problem causes is the only real way to find appropriate solutions.

3) Formulate solutions

Once problems and their root causes have been identified, solutions or fixes can be devised. Problems found during safety inspections should be brought to the attention of the department head. If the solution is anything except an "on-the-spot" immediate fix, a corrective action plan should be documented, designating what will be done, by whom and in what time frame.

Crew member involvement at this stage can be invaluable to the ultimate success of the corrective action. Frequently, this prevents a situation or condition from being made worse by well-intentioned, but unworkable solutions arrived at through unfamiliarity.

4) Implement solutions

Safety inspections and audits should document specific time periods in which corrective action - solutions - will be completed. Responsibility for ensuring that corrective action is taken on schedule should be assigned. Communicating solutions to all affected personnel is essential. Get the word out!

5) Follow-up and monitor

If there were just six words to describe what it takes to administer a successful safety inspection/audit program, they are:

follow-up - follow-up - follow-up.

It does absolutely no good to identify problems and hazards, find their causes, formulate solutions and implement them if there are no provisions for going back to make sure the solutions work. The inspection/audit policy should include a formal process or means for providing follow-up actions, and who is responsible for carrying them out. Audits and inspections should be considered incomplete until follow-up actions are completed and documented.

Conclusion

A safe operation encompasses many components of a thorough shipboard safety program, including inspections and audits. Finding and correcting safety problems prevents injury and damage to vessel and equipment.

The total cost of a disabling injury is significant, considering lost wages, medical treatment, replacement training and potential litigation-related expenses. Gone are the days when these expenditures were "written off " as a cost of doing business.

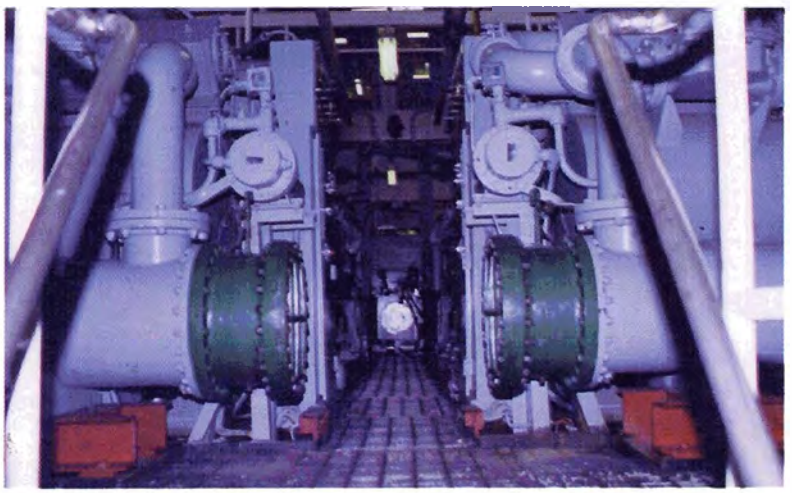
Conducting a vigorous, thorough safety inspection/audit program is the right game plan - in both a business sense and a human sense. It is an essential element in the overall "safety at sea" picture.

Mr. Thomas S. Anderson is the director of Safety and Health of the American Steamship Company, 500 Essjay Road, Williamsville, New York 14221.

Telephone: (716) 635-0222.

Left) Galleys must be spotless.

-- Engine room --
Right) Warning signs must be posted.
Left) Supplies must be secured and ladders clear.
Below right) Gratings must be level, clean and secure.



Left) Bilges should be free of oil.
Right) Safety inspection tags must be affixed to fire stations.
Below) Pause to observe the whole operation.

"Bad actors" don't like reviews . . .
and substandard ships don't like inspections

By CAPT Ken Fullwood

When the Coast Guard published its Port State Control Initiative document on April 8, 1994, quite a stir was raised in the maritime community, both nationally and internationally. Some copies had a picture of a ship marked like a dart board floating above the words, *"Boarding regime to target substandard ships."*

The public announcement of targeted flag states which followed generated little agitation. However, the publication of a list of targeted shipowners caused an absolute furor within the marine industry.

In my view, the oil industry should welcome this Coast Guard initiative as a major step in the drive toward improving marine safety and enhancing the protection of our environment. This initiative is based on a greatly strengthened ship inspection program. Be they private or government-sponsored under port state protocols, vessel inspections are fundamental to the effort to minimize the risks associated with seaborne transportation of petroleum.

A few bad actors

That this is so is regrettable, because it results from a failure by some individuals and organizations to properly perform their functions. Fortunately, these individuals and organizations represent a very small segment of the shipping community, which is made up mostly of conscientious, hardworking, competent individuals trying to do the best job they can under sometimes difficult circumstances.

The few bad actors, unfortunately are spread throughout the maritime world. They include: certain flag states which do not, and indeed often cannot, shoulder their responsibilities in a competent and conscientious manner; some classification societies that lowered standards to avoid driving business away; and, finally, a small number of seafarers who are simply not competent to perform the work they are asked to do.

All of this is of great concern to the responsible charterer. No one wants to be involved in an environmental tragedy. Aside from the actual damage to the environment and wildlife, the market impact and financial fallout from a major pollution incident can destroy the charterer as well as the shipowner. This explains why some of the regulated are handing out accolades and throwing bouquets at their regulators — a highly unusual, if not unique state of affairs.

Two Moran tugs maneuver the Winamac, a "good actor" in the tanker fleet, into a refinery dock.

In the early days

In my early days at sea in the 1950s, inspections outside scheduled repair periods were few and far between. Nevertheless, ships were very well kept and very well operated — a least the ones I sailed on.

Occasionally, a gentleman in a derby hat would appear at the gangway and introduce himself with a very businesslike, "Good morning, captain, Lloyd's of London here." He would be welcomed aboard with the deference due to a Lloyd's surveyor and accompanied on a tour of the ship to inspect all closures prior to revalidating the load line certificate.

In the view of the ship's master, this was a tolerable, although not particularly welcome interruption of the normal heavy routine of port activities. All other inspections were carried out in shipyards, and, in those days, it seemed to be a very adequate system.

Things are different

Things are quite different today. I have heard of cases where large tankers were inspected by representatives of nine different organizations during one port call. This is, of course, outrageous and does absolutely nothing to further the cause of marine safety and environmental protection. In case you wonder why nine organizations could be so interested in one ship — five of the inspectors were from oil companies (potential charterers), one was from the flag state, another from the port state, one was from a classification society and the last was from hull/machinery underwriters.

In that case, the flag state and classification society inspectors were properly attending to their business. The concerns of the other inspecting parties, however, are too often well founded as is shown by the number of questionable and downright substandard ships identified during inspections. Nevertheless, nine inspectors milling about during a port call is an outrageous imposition on the ship master. The concerns could have been adequately handled by one inspector.

I don't mean to imply that every ship is substandard. This is not the case. However, the spectacular, tragic and, in some cases, incredibly costly disasters of recent years — costly in terms of life and environmental damage, not to mention the balance sheets of the shipowners and insurers — dictate that every effort must be made to minimize risk in the seaborne movement of oil. Persuading substandard ship operators to change their heinous ways is a good start.

The few unscrupulous, substandard operators have given the entire industry a bad name. Tankers are not news unless they are bad news. Launchings of new double hull, environmentally friendly state-of-the-art ships costing more than $100 million each are only briefly mentioned in the trade press. The public does not hear about the strenuous effort made by most in the industry to do a really good job.

Lloyd's Coffee House in 18th century London.

Inspection plethora

No shipmaster enjoys the plethora of inspections imposed today. Competent shipmasters, employed by responsible shipowners, regard them as unnecessary and an insult to their professionalism.

The less than competent, or perhaps just unlucky, shipmasters driving decaying ships and polyglot crews around the world do not like them either. They like them even less than their more fortunate colleagues, because if the deficiencies of their ships, managers and crews are discovered, they will be unemployed. However, it is such shipmasters with those kinds of ships and owners which drive the entire inspection effort.

Clearly, ship inspection programs are not the prerogative of governments. The ship inspection programs introduced by the major oil companies during the last few years have had a tremendous impact on the quality of tanker tonnage. I believe that these companies are very selective in the vessels they charter, and they do everything possible to ensure that they do not become involved with substandard ships and operators.

The goal of the Mobil Shipping and Transportation Company's Ship Inspection and Loss Prevention Survey Program is, "to prevent marine-related accidents by ensuring that all vessels used by Mobil or using Mobil facilities meet acceptable standards of construction, operation and maintenance." We have the same environmental goal as the Coast Guard -- the difference in programs is largely one of degree. Mobil's program protects the interests of a corporation. The Coast Guard's program protects a nation.

Continued on page 8

Continued from page 7

Industry "SIRE" program

In September 1993, motivated in part by a desire to reduce duplicate, triplicate, quadruplicate and even quintuplicate inspections, the major oil companies, in cooperation with the Oil Companies International Marine Forum, developed the Ship Inspection Report Program (SIRE). This established a readily available pool of vital ship quality information.

SIRE's goal is to expand the availability of tanker inspection information, and, thus, enhance tanker safety by reducing pollution. It also aims to reduce the duplication of effort by inspecting organizations, thus lightening the burden placed on tanker crews by over inspection.

SIRE now has an expanding database of technical information on the condition and operational procedures of tankers. Available to members of the Oil Companies International Marine Forum and qualified non-members, this data, hopefully, will encourage shipowners to keep the highest standards in maintenance and operational procedures. Participation in the SIRE program is entirely voluntary, and most Oil Companies International Marine Forum members do participate.

When a participating Oil Companies International Marine Forum member inspects a tanker under its own in-house system, a copy of the inspection report is sent to the operator of the tanker and another to a computerized database in London. Information from this database is released upon request to forum members and qualified non-members.

(Potential tanker charterers, bulk oil terminal operators, port and canal authorities, and government agencies having a direct and common interest with Oil Companies International Marine Forum members in tanker safety may withdraw reports from the database.)

A 50 pound ($75) fee covering overhead costs is charged for each report withdrawn from the SIRE system. This is a bargain compared to the expenses incurred by individual members in inspecting ships and in developing reports at about $2,000 per ship.

There is no set format for SIRE reports, which are submitted by members exactly as they receive them from their inspectors, except there is no rating or indication of the inspector's identity. The reports must be reviewed by professionals who know tanker operations.

Hardware vs humans

Ship inspections tend to focus on the hardware. It is true that there have been, and still are, ships plying the seas in horrible condition. Occasionally, they break up at sea and sink with tragic loss of life and major pollution, or large pieces fall off and the ships limp into the nearest port that will accept them.

We must believe, however, that the *"Guidelines for the enhanced program of inspections during survey of bulk carriers and oil tankers"* adopted at the 18th assembly of the International Maritime Organization (IMO) in November 1993 as resolution A.744(18) will soon take effect and significantly reduce, if not eliminate entirely, structural failures.

The greater risk lies with the quality of ships' crews. It is widely quoted that 80 percent of marine casualties are due to human error. Thus, the greatest risk faced by shipowners and charterers is that posed by a crewmember, particularly a deck officer, making a mistake. One mistake may be all it takes, but generally a major casualty is the result of the cumulative effect of several minor errors or bad decisions which go hand in hand with a sloppy operation.

Clearly, ship inspectors must do all they can to assure themselves that crews have the abilities to match their certificates of competency. This is not to suggest that ship inspectors should attempt to administer mini-examinations to test the competence of ships' officers. A few well chosen questions by an experienced inspector will determine whether or not the shipowner has sound operating directives in place and if the crew understands the need for them and follows them.

Crew competence is critical to safety and environmental protection. A brand new ship fitted with every state-of-the-art navigational and safety device can still be a menace in the hands of a poorly qualified and inexperienced seafarer.

Welcome aboard

The Coast Guard is to be commended for its strengthened port state control initiatives, which are not dissimilar from the quality controls used by major oil companies.

We note the mixed public and maritime industry reaction to the Coast Guard's initiative - which is much the same reaction the Oil Companies International Marine Forum experienced when introducing SIRE.

We would say to the Coast Guard and any government or private organization working to improve the quality of the world fleet, "Welcome aboard!"

CAPT Ken Fullwood is a vice president of Mobil Shipping and Transportation Company, 3225 Gallows Road, Fairfax, Virginia 22037-0001.

Telephone: (703) 846-2733.

Human error *can be controlled*

By CAPT John L. Acomb

Over the past few years, it has been recognized by many players in the shipping field, including the Coast Guard and the International Maritime Organization (IMO) that more than 80 percent of all the marine accidents worldwide can be attributed to human error.

It has also been proven by numerous studies that these human errors, for the most part, can be controlled by management. This can be achieved through proper training, uniform work procedures and practices, appropriate staffing levels and improved communications between crews, officers and management.

Human errors

The human element in shipping influences safety in a significant manner. For example, the *Exxon Valdez* was one of the most modern tankers in the world with no apparent technical flaws when it was grounded on Bligh Reef in Prince William Sound, Alaska, in March 1989. The National Transportation Safety Board cited many contributing causes to the accident in their report of the incident. Almost all the causes involved the human element.

History is replete with such incidents. Not the least was the *Titanic* proceeding at full speed through iceberg infested waters off the coast of Newfoundland because of schedule considerations in April 1912.

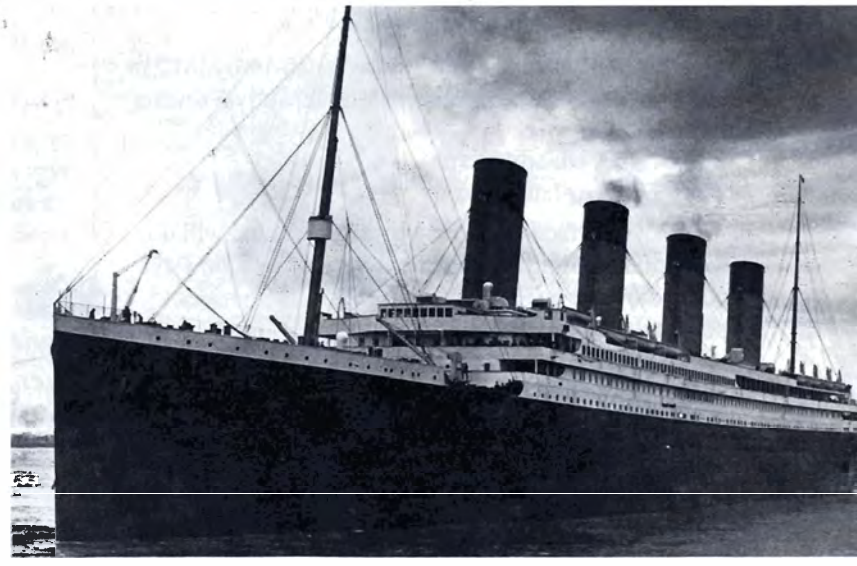
An even more striking example was the capsizing of the *Herald of Free Enterprise* in the English Channel in March 1987. The vessel departed the ferry dock with its bow doors open. Consequently, a large gush of water capsized it. The causes were proven to be a lack of adequate procedures for securing at sea, crew fatigue from reduced manning, and commercial pressure stressing maintenance of schedule rather than safe operation.

ISM code

Recent casualties led the IMO to reexamine its priorities as the premier international maritime regulatory agency. If technical causes contributed to only 20 percent of the accidents, then all the technical codes and requirements which IMO had traditionally stressed could not help prevent 80 percent of the accidents.

The IMO realized that a shift in emphasis was required. This was demonstrated by the IMO Resolution A.647(16), the *IMO Guidelines on Management for the Safe Operation of Ships and for Pollution Prevention* in 1988. Since then, the resolution has been revised several times, becoming the *International Safety Management Code* (ISM code). This code will become chapter IX in SOLAS and be mandatory for most types of large vessels starting in 1998.

Continued on page 10



The Titanic

Continued from page 9

The ISM code consists of a series of goal-oriented procedural requirements to which companies must comply. It does not tell companies how to run their businesses. How they achieve the goals is up to them. The basic requirement is that a company must detail its policies for safety and environmental protection, and describe the organization which will carry out the policies.

The code builds on this foundation by requiring that adequate resources and personnel be allocated to the safety system, and that management periodically oversee the process to ensure viability.

On board the vessels of the fleet:

- **the master's responsibility and authority must be absolute,**
- **all operations must be carried out under controlled conditions,**
- **the critical components of the ship and its equipment must be identified and maintained, and**
- **the crew must be prepared for all contingencies.**

Finally, there must be a documented controlled management system in place, which must be subject to periodic internal and external audits.

Success or failure?

Will this be a worthwhile endeavor by IMO or just a paper chase? The answer will depend on several factors.

The auditor

One factor will be what organization will do the actual auditing and certification work. If the IMO members (nearly 150 flag states) allow themselves to perform this work, it will most likely fail.

The role of flag states and the requirements of minimum quality standards is now under discussion at IMO. The outcome may be that certain minimum standards must be maintained to issue ISM certificates.

As many flag states do not have the technical expertise to comply with the more stringent requirements, then they will, as they have before, delegate this task to qualified organizations. If the members delegate this work to virtually anyone, the majority of the work will go to the lowest bidder, which equates to the least conscientious and qualified in the maritime industry.

However, if IMO advises that this certification can only be performed by agencies with proven expertise and experience, this will go a long way towards assuring a high quality performance. The Det Norske Veritas classification society, headquartered in Hovik, Norway, is one such agency, and has, since the late 1980s, introduced rules for management of safe ship operation and pollution prevention that fully comply with the ISM Code.

Substandard vessels

Another issue which may determine if this certification will succeed or fail is a unified approach to eliminating substandard vessels. One possibility under discussion is a means to pool certain information between flag states, port states and classification societies to prevent unilateral action against an owner or ship, which serves to push the substandard vessel into someone else's backyard.

A unified approach against the few bad performers will cause them to either raise their standards of quality or seek a new line of work.

The ISM code requires that all mandatory rules, regulations and codes are complied with. This by itself will go a long way towards improving safety at sea, because some vessels do not even meet minimum standards.

Once the ISM code itself becomes mandatory in 1998, port states may use the intervention authority prescribed in SOLAS chapter 1, part A, regulation 19, to ensure that foreign flag vessels visiting their waters are operating in accordance with the terms of the code. This will provide a new enforcement tool against substandard ships.

Society at large will no longer abide substandard vessels which cost mariners and passengers lives or pollute the seas. The ISM code appears to be the best tool the IMO has developed thus far to readily identify substandard operators and put them out of business.

If one wants to see where this ISM code is headed concerning the human element, check the cockpit of a commercial airliner and see what training, clear safety policies, strong regulatory oversight and detailed safe work practices can accomplish.

CAPT John L. Acomb is the lead auditor for safety management systems at Det Norske Veritas, 80 Grand Avenue, Suite 201, River Edge, New Jersey 07661.

Telephone: (201) 488-0112.

HULL SAFETY *MARCHES ON*

By Mr. Thomas J. Tucker

A significant technical advancement in hull safety was introduced to the marine industry by the American Bureau of Shipping (ABS) in September 1993. It is the SafeHull™ System, a new dynamic-based method for designing and evaluating hull structures.

New and existing ships should be more durable, because SafeHull's technology helps minimize failures from fatigue, buckling and yielding. The system was available to new tankers in September 1993, to existing tankers in January 1994, and to new and existing bulk carriers in June 1994. The SafeHull system will be applied to container and gas carriers, and other types of ships in the near future.

The innovation of the system is that the criteria are based on dynamic loading effects, such as wave induced motions, pressures and accelerations. Previous methods relied primarily on static load analysis.

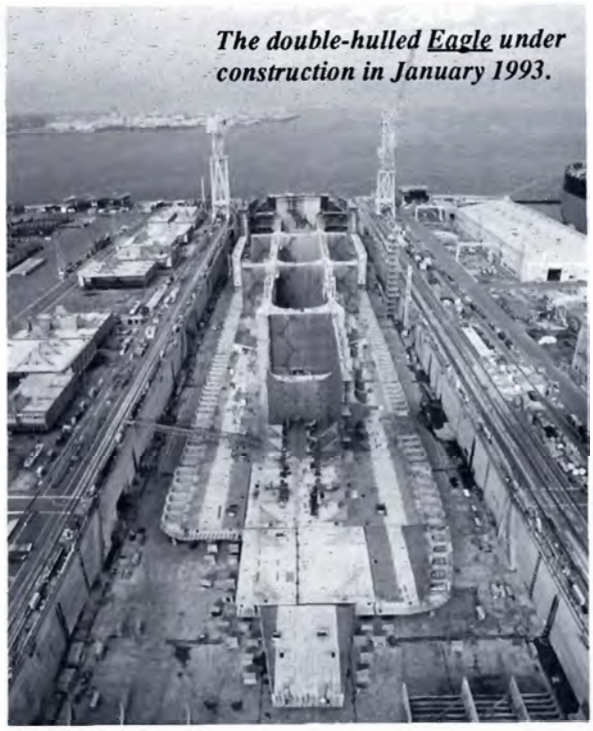
SafeHull helps ship owners, operators, builders and designers to pinpoint critical stresses within the hull. This leads to a more effective distribution of steel, which should reduce the risk of structural failure.

The second part of the system is the computer software, which covers most of the topics addressed in the manuals (strength requirements) and is needed by the designer on a day-to-day basis. The software allows the load and strength criteria to be applied easily on personal computers and engineering workstations.

The system includes detailed instructions on its installation and use, including a set of tutorials.

New ship applications

The SafeHull system for new tankers and bulk carriers contains two main elements. The first includes all new strength requirements and is described in two manuals: *"Guide for Dynamic-Based Design and Structural Evaluation"* and *"Guide for Fatigue Assessment."* The strength criteria in the manuals are the core of the system. They contain all of the structural requirements needed to work through the complete design process for the appropriate ship type. For example, the criteria help to size plates and stiffeners.



The double-hulled Eagle under construction in January 1993.

Criteria

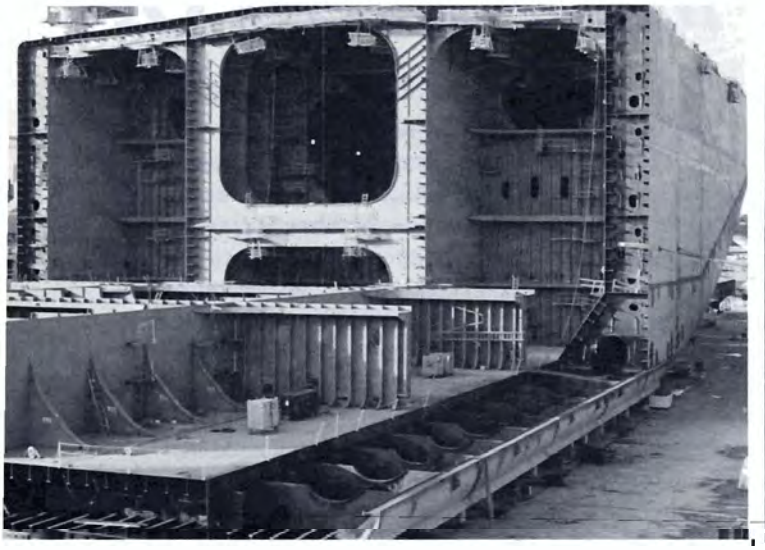
Traditionally, ABS rules have served as evaluation criteria for ship design. The new guides, however, give the designer new criteria for selecting scantlings. Subsequently, this will be checked against the evaluation criteria.

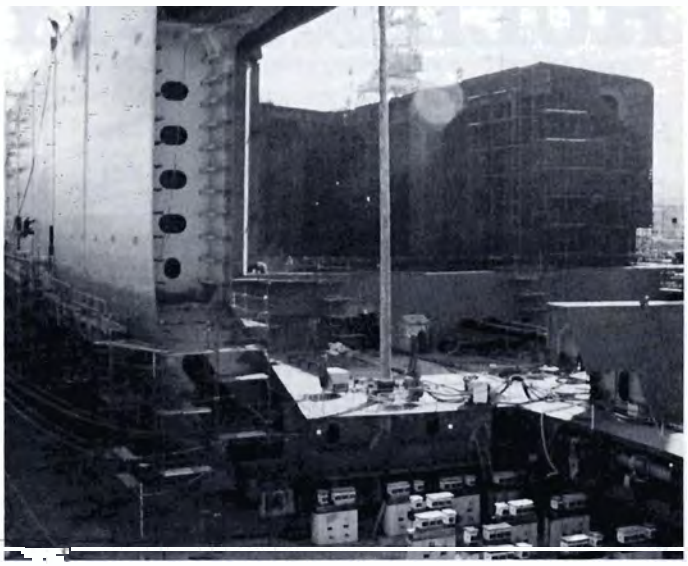
The new criteria streamline the ABS review process and pave the way toward innovative designs, while still maintaining safety and efficiency.

Continued on page 12

Eagle during sea trials in July 1993.

Another double-hull tanker under construction.





Continued from page 11

Existing vessel applications

The system was originally intended for application to new vessels. However, as development progressed, potential benefits to existing vessels emerged. An adaptation of the system, called the ABS SafeHull Condition Assessment Services, provides owners, operators, charterers, underwriters and others with a new risk-management method.

Through these services, ABS can apply advanced, dynamically-based structural evaluation criteria to assess corrosion and fatigue on the strength of a tanker structure. Critical areas can be identified and appropriate recommendations made to improve the structure. The result is improved performance and added safety.

The SafeHull Condition Assessment Services are offered in two packages. The first has three elements: a conditional assessment survey, verification of gauges, and structural evaluation and recommendations. The second package offers the third element only. Both are followed up with a technical report.

Condition assessment survey

ABS engineers assess the condition of a vessel's hull structure, machinery, piping, electrical system, boilers and accommodations. The extent of steel wastage, and the condition of the coating and corrosion systems are noted.

Gauge verification

The accuracy of the thickness measurements used to calculate global and local hull strength is verified. Once completed and accepted by ABS, gauging data will be used in the structural evaluation.

Structural evaluation

This evaluation compares the "as-built" condition of the hull with the up-to-date gaugings using the same criteria as for new vessel design. Buckling strength, ultimate strength and fatigue assessments are included in the evaluation.

Technical report

Upon completion of the survey and its analysis, a technical report is issued, providing a summary of the findings, a detailed list of all components surveyed with corresponding numerical ratings and descriptions, the structural evaluation and a five-year projection of the structural condition. Finally, the report will recommend current and future structure enhancements to be made. Vessels successfully completing the condition assessment will be issued a certificate from ABS.

Benefits

ABS's assessment services generate vital information leading to the following benefits:

- determination of required steel replacements,
- added protection against structural failure,
- lower life-cycle maintenance and repair, and
- potentially higher resale value.

Two additional points should be noted about ABS condition assessment services.

First, unlike the SafeHull system for new ABS-class tankers and bulk carriers, the assessment services are available for any class vessel.

Second, it is independent of the surveys required for classification, which is considered a baseline. The condition assessment survey provides a rating over and above classification.

SafeHull for bulk carriers

A team of 45 engineers worked exclusively on adapting SafeHull for bulk carriers for nearly six months. They determined that five structural areas specific to bulk carriers warranted investigation. These involve transverse corrugated bulkheads in dry cargo holds, vertical hold frames, cross-deck structure, forebody structure and effects of cargo overloads.

The overall effect of SafeHull technology on a bulk carrier structure is increased scantlings in selected critical areas. A two to three percent increase in the total steel weight is about average.

Transverse corrugated bulkheads

Investigations of accidental flooding, the most critical condition for dry cargo hold transverse corrugated bulkheads revealed stresses that could cause collapse based on current bulkhead requirements. Consequently, SafeHull scantling requirements are 20 to 30 percent higher to preclude catastrophic failure in the event of flooding.

Vertical hold frames

Through investigation, ABS engineers determined that vertical hold frames are subject to a greater degree of corrosion and fatigue than previously thought. Using SafeHull techniques developed for corrosion assessment and fatigue strength, ABS has established new increased requirements for these structural members.

Cross-deck structure

ABS studies have revealed that higher loads and stress can occur in the cross-deck structure than previously thought. These stresses can result from torsional effects of twisting and compressive loads imposed by heavy cargoes in adjacent holds. These loads are carefully considered by SafeHull.

Forebody

Dynamic loads resulting from bow slamming, bow flare impact and green water flowing on the bulk carrier foredeck are substantial. Both the local and global effects of such loads on the structure, together with the effects of hydrostatic and hydrodynamic loadings are factored into SafeHull.

Cargo loading

During the loading of ore carriers, the sheer forces on the structure can be larger than permissible values. Consequently, SafeHull includes extra margins in the side-shell structure to account for overloads.

Industry reception

Annually, the Seatrade organization recognizes achievements in safety at sea, innovation and countering pollution. The recipients of this prestigious award are determined by an independent committee of eminent industry individuals. ABS SafeHull was given the 1994 Seatrade Award for technical improvements leading to the reduction of risk to human life at sea.

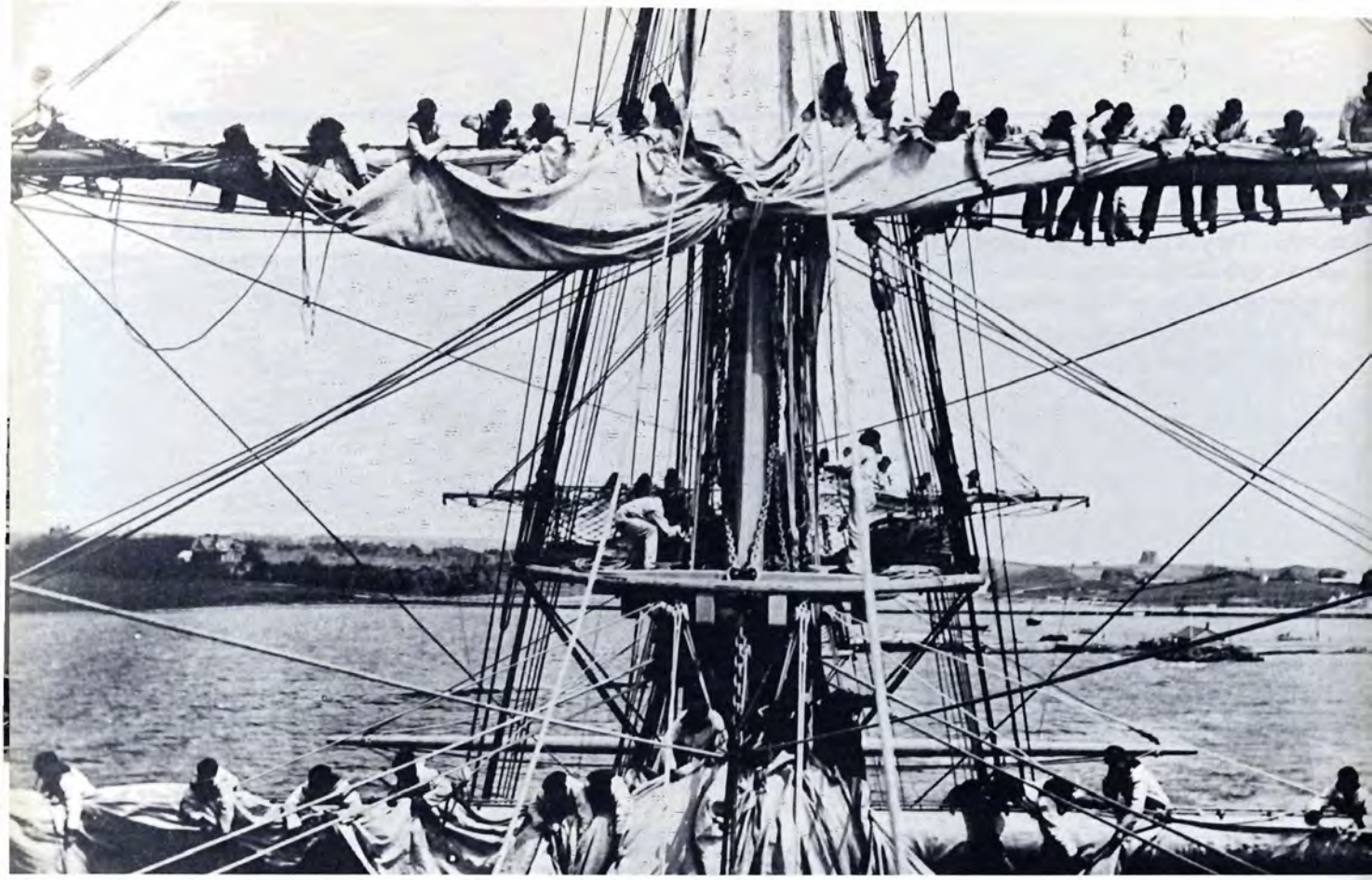
A new-building project in Japan applied for the SafeHull application to bulk carriers before it was formally introduced in June 1994. As of mid-June, six contracts for new bulk carrier applications had been signed, and letters of intent had been completed for another four carriers with discussions under way with a dozen others. Twelve contracts were signed for applications to tankers by mid-June, as well as six additional letters of intent.

The SafeHull system is an illustration of ABS's commitment to improve safety of life and property at sea.

Eagle photographs are courtesy of Mobil Shipping and Transportation Company.

Mr. Thomas J. Tucker is vice president of ABS, Two World Trade Center, 106th floor, New York City, New York 10048. Telephone: (212) 839-5100.

A double-hulled tank vessel on the high seas.



Apprentice seafarers practice furling topsail and mainsail in 1891.
Courtesy of the Naval Historical Center.

Merchant marine . . . going back over 300 years

By Mr. Joseph J. Cox

Of all the memorable years in American history, 1658 probably does not come immediately into mind. In that year, however, a seemingly innocuous occurrence had more than a little influence on our country's future.

A ship hailing from England sailed into the Potomac River off the Chesapeake Bay, and anchored off the shore of what would become the Northern Neck of Virginia. (The Northern Neck is a peninsula bordered by the Potomac to the north, the Rappahannock River to the south and the Chesapeake Bay to the east.)

A young able-bodied seaman came ashore and, like Americans who later settled the West, claimed some land, prospered and raised a family. His sons did the same, then his grandsons. A member of the third generation moved into a plantation house on Pope's Creek after marrying a lass from the Pope family, whose ancestors also arrived in America in the mid-17th century. They prospered, and one day their son was born. They called him George.

Growing up on the peninsula, George experienced the vital link the maritime industry made with the Old World. He probably heard tales about his seafaring ancestor, his great-grandfather Washington, who left his ship to make his home in the colony of Virginia. Young George, watching ships come and go on the Potomac, couldn't have helped but appreciate the contributions of the merchant marine to the New World.

The 1790s

What happened to America's regard for its maritime heritage? In the 1790s, American ships carried 90 percent of United States trade. A primary cause of this high percentage was the Discriminating Duty Act of 1789, which granted a 10 percent discount to importers using American ships. The following year, Congress raised the duty by 10 percent on goods arriving on foreign ships. Thus, importers paid a 20 percent premium to use foreign ships. America's motive behind these taxes was to foster a United States merchant marine.

When international pressure forced a repeal of these measures in the early 1800s, the United States was fast developing into a formidable maritime power. The people had a natural inclination to sail and timber, the raw material of shipbuilding at that time, was plentiful and close to water. The masters of American ships became known as "Yankee" traders, which had both positive and negative connotations. The Yankee trader was a shrewd businessman who sold and bought cargo, as well as provided transportation.

The 1830s

Americans also became expert shipbuilders. The 1830s ushered in the age of the clipper ship, so named because it sailed at a fast "clip." The clipper ships were designed by Americans for speed. The underwater hull had a fine bow, a slender entrance and tapered at the stern with the major cargo-carrying capacity further aft than traditional sailing ships. These fast ships gave way to somewhat slower craft which could carry more cargo — a harbinger of the later container revolution.

Civil War

What has been hailed as the most important defining moment in American history, the Civil War, had a devastating effect on the merchant marine. The nation turned from developing a continent to fighting over it. Maritime figures played a large role in the conflict from blockade runners to Admiral Farragut and his "damn the torpedoes!" Both sides developed iron-clad vessels, the *Monitor* and the *Merrimac*, which led to the use of iron (then steel) for all shipbuilding.

Following the war, American ships virtually disappeared as a major part of the world's fleet, although there were some technological leaps. For example, the United States steamboat, *Savannah*, was the first steam-powered vessel to cross the Atlantic Ocean.

Continued on page 16

Crew members on the ironclad Monitor in 1862.
Courtesy of the Naval Historical Center.

Shipyard workers in 1940 display maritime eagle and give World War II victory "V" salute.
Courtesy of the Maritime Administration.

Continued from page 15

World Wars I and II

The rock bottom status of the American merchant marine remained pretty much static until over 50 years later when World War I convinced the nation of the need for a fleet. This was underscored by goods piling up at ports for lack of ships to transport them. Steps were taken to build up a merchant marine once again. This included the Jones Act, which reserves domestic cargoes for United States-flag vessels and provides government loan guarantees for owners of United States-flag vessels under construction.

The American merchant marine began to flourish. By 1939, 750 of the approximately 11,000 merchant ships worldwide flew the United States flag. This seven percent was considered very respectable until World War II came along, and it skyrocketed. At its end, an impressive 1,900 of a world total of 7,300 merchant ships were American - more than 25 percent.

This quickly fell to 970 out of 9,300 in 1951, which was still a solid 10 percent.

Today

Today, the Coast Guard issues Safety of Life at Sea (SOLAS) certificates to 473 vessels. This is indicative of those which may trade in foreign waters, although many trade mostly in domestic waters, and hold a SOLAS certificate for infrequent foreign voyages. Contrasting this with the more than 22,000 merchant ships in the world, evokes the sad state of affairs of today's American merchant marine.

Hidden in this post-war analysis of the numbers is a development which changed the industry — the container ship, an American invention. Previously, a breakbulk ship spent an average of a day in port for every day at sea. This was due to the time needed to manually load and discharge the ship.

The modern containership averages one day in port for every four days at sea. This quadrupling of port-to-sea ratio means given number of ships can transport four times as much cargo.

This tremendous productivity increase doesn't include the dramatic increase in the size of these merchant vessels. The first containerships were converted from traditional breakbulk ships. The newly designed containership has a boxier look due to its increase in cargo capacity. (The converted break-bulk ships carried about 650 containers, while a modern purposely-built containership carries more than 4,000.

In review

In reviewing the history of the American merchant marine, two revelations come to mind. First is that major forces outside the maritime industry had the most influence on the growth or decline of the merchant marine.

The second is that Americans have shown a technological ingenuity regardless of the overall condition of the industry.

Mr. Joseph J. Cox is vice president of the American Institute of Merchant Shipping, 1000 16th Street, N.W., Washington, D.C. 20036.
Telephone: (202) 775-4399.

National Cargo Bureau strives for safe stowage

By Mr. Ron Bohn

A not-for-profit membership organization, the National Cargo Bureau, Inc., is dedicated to the safe stowage, securing and unloading of cargo, and to the safety of shipboard cargo handling. It is the only organization of its kind recognized in Department of Transportation (DOT) regulations, namely in 49 CFR section 176.18 - *"Carriage by vessel,"* and in 46 CFR section 148.01-13 - *"Assignment and certification."*

The National Cargo Bureau was established in 1952 after a series of events demonstrated a need for uniform standards and regulations. These events included the capsizing of grain ships due to shifting cargo, shipboard fires related to wet cotton or metal turnings and the nitrate ship explosion at Texas City, Texas, in 1947. There was definitely a need for qualified, objective surveyors to pass judgment on cargo safety and compliance with regulations.

History

The National Cargo Bureau was formed from the inspection divisions of the Board of Underwriters of New York and the Board of Marine Underwriters of San Francisco. It was authorized by the United States government in 1952 to assist in the administration of international regulations applicable to the safe loading of ocean cargoes.

In 1960 and 1961, the bureau was recognized by the Coast Guard and the Department of Labor as a cargo gear certificating agency. In 1967, it applied its loading, stowage and securing expertise to container loading inspection services.

Experience

All surveyors under the National Cargo Bureau have merchant marine experience. They are licensed masters or mates with related shoreside experience, or are former Coast Guard officers.

The relevance of sea service is significant. The seeds of cargo problems planted ashore often bear fruit at sea. The former ship's officer has the distinct advantage of having experience that can be applied in the selection of the best stowage and securing methods.

Services

The bureau performs about two dozen inspection and survey services, and issues the appropriate certificates of loading that are acceptable *"as prima facie evidence that the cargo is stowed in conformity with the requirements of 46 U.S.C. 170 and this subchapter,"* [49 CFR 176.18(b)].

Among the items inspected and surveyed by the National Cargo Bureau are:

- stowage of explosives, bulk and packaged hazardous materials according to federal regulations;
- preloading, temperature checks and loading/stowage of metal borings, shavings, turnings and cuttings;
- preloading of holds and reefers for refrigerated cargoes, and temperature taking and recording;
- loading, stowage and securing of general cargo on or under decks, including large pieces and heavy lift units;
- stowage of bulk grain cargoes, related preparations and determination of vessel stability;
- condition of cargo and packaging at point of origin or before being loaded and stowed aboard ship; and
- cargo containers, including compatibility, regulations compliance (applicable to hazardous materials/dangerous goods) and proper stowage, segregation and securing in containers.

Tank container inspections are also conducted. Detailed reports are prepared on inspections. Follow-up inspections take place when deficiencies are found.

Continued on page 18

Continued from page 17

Technical advice

The National Cargo Bureau updates its regulatory experience by participating at international conferences, including International Maritime Organization (IMO) committees and Safety of Life at Sea (SOLAS) working group meetings. It provides technical advice when new rules or changes are drafted which affect codes, such as the IMO International Maritime Dangerous Goods Code and the Bulk Solids Code.

The bureau participates in the IMO Subcommittee on Containers and Cargoes, and the Subcommittee on the Carriage of Dangerous Goods, and has provided advisors for the United States delegation to their meetings since 1959, when IMO was formed.

A *"Self-study course in ship's stability,"* developed by the bureau, focuses on the special problems of grain ship stability and reflects on its own direct involvement with grain cargoes and their problems. Hands-on experience also prompted a 1980 booklet, "Shippers' guide to proper stowage of intermodal containers with emphasis on ocean transport," which was updated recently to reflect late changes in regulatory references.

National Cargo Bureau surveyors also give technical advice, and are often asked by container packers of ocean shipments for guidance on appropriate techniques and materials to properly secure and segregate cargo container contents. The bureau also is active in shipboard and shoreside hazardous material training, often with Coast Guard participation.

Inspections

It is unrealistic to assume that every shipper and exporter of containerized hazardous materials has skilled personnel to properly pack and secure a variety of packaged, regulated commodities. It has been demonstrated to a number of steamship companies that it is prudent to check containers of hazardous materials before they are stowed aboard. The regulations state the requirements, but not the methods or materials to use.

Some containers delivered to piers and terminals for shipment are found by National Cargo Bureau inspectors to have totally inadequate bracing and blocking. It is not unusual to find some with no internal securing whatsoever.

Inspectors also frequently find individual lots of hazardous materials packaged together without any regard to hazardous material segregation requirements. The bureau's container inspection service addresses these problems.

A container inspection report form is prepared by the bureau surveyor for a container either at the pier or marine terminal to which it was delivered for shipment, or, in some cases, at the shipper's plant or "stuffing" facility. When an inspection is conducted at the pier or terminal, the old and new seal numbers are recorded on the form.

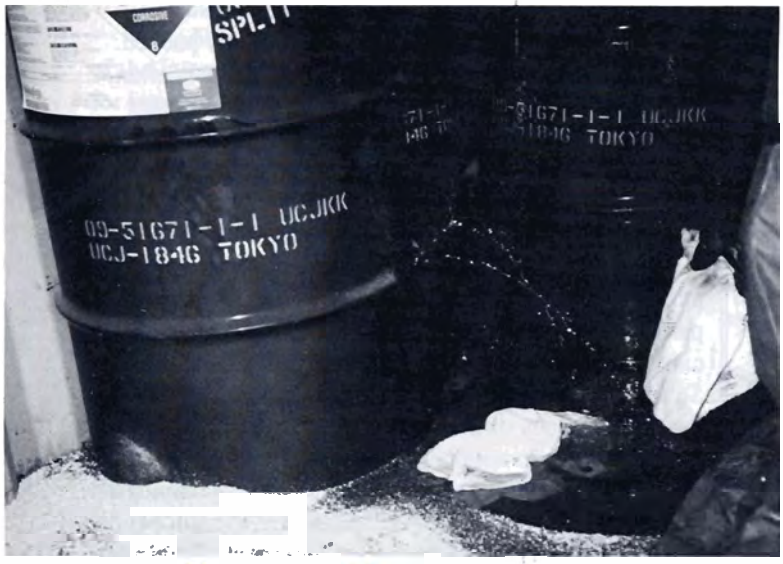
Concerns about tank types, exterior condition and hydrostatic test and visual examination dates necessitate a portable tank container inspection report form. Tanks also must be placarded to show the hazard class and marked with the commodity's identification number on both sides and ends. In some cases, "inhalation hazard," a DOT exemption number or "marine pollutant" markings may be required. The proper shipping name must also be shown on both sides, and must agree with shipping documents. Compliance with such regulatory requirements is checked by the National Cargo Bureau and recorded.

The bureau's many functions focus on the center of its name, the core of its purpose and the heart of its service --

CARGO!

veyor and Mr. Ron Bohan is deputy chief surveyor of the National Cargo Bureau, 30 Vesey Street,

New York City, New York 10007-2914.
Telephone: (212) 571-5000.



Tokyo shipper submitted container of improperly blocked and braced drums carrrying corrosive liquid to an ocean carrier. The drums collided, causing a major leak in one and small leaks in others. The carrier was responsible for cleaning up the leaks.

Transporting dangerous goods safely

By Mr. John V. Currie

The dynamic ocean carrier industry is experiencing a rapid evolution in the way it conducts business. Vessel operators play key roles in developing a revolutionary new system called, "intermodalism."

Don't look it up in the dictionary - it isn't there...yet. Briefly, it covers carriers on land, sea, air and pipelines working together to create greater efficiency for customer service in transporting all goods, including dangerous cargoes.

Computer systems are becoming an integral part of shipboard management, including cargo stowage. Representatives of the ocean carrier industry are now serving on a joint industry/ government work group examining the feasibility of an automated manifest system for compliance with safety regulations.

Leading the ocean carriers in these and other efforts to improve the safety of dangerous goods' transportation is the Vessel Operators Hazardous Materials Association. A United States-based international association of 27 ocean common carriers operating under several flags, the organization promotes safety in the transportation of dangerous goods by water and by connecting "intermodal" feeder systems.

Authorized by the United States Federal Maritime Commission and established in 1990, the Vessel Operators Hazardous Materials Association represents commercial ocean carriers transporting dangerous goods between all United States ports and the ports which they serve.

Continued on page 20

Continued from page 19

Training

The Vessel Operators Hazardous Materials Association supports the efforts of the Coast Guard to improve the safety of hazardous materials transportation while promoting more efficient intermodal commerce by developing regulations which provide international uniformity and eliminate needless complexity.

While recent rulemaking has helped to reduce the complexity inherent in training hazmat employees engaged in international commerce, the proliferation of regulations within the various modal codes makes it difficult for ocean transportation hazmat trainers to comply with all codes and simplify the training process at the same time.

In response to that challenge, the Vessel Operators Hazardous Materials Association has developed training programs designed to promote uniform application and compliance with regulatory codes throughout the ocean carriage industry. These programs are being used by scores of vessel operators, freight forwarders, intermodal feeder systems, shippers and enforcement personnel all over the world. Participants have expressed an overwhelming desire to "use the same sheet of music" to ensure uniformity in applying and enforcing safety regulations.

Freight inspection

Members of the Vessel Operators Hazardous Materials Association welcome recent Coast Guard initiatives to increase enforcement by more diligent inspection of containers with possible cargoes of dangerous goods.

Often the ocean carrier is perceived to be the "policeman" in the system since they are responsible for ensuring total compliance in all jurisdictions during the course of the voyage. The intermodal transportation network, which channels freight to cellular containership operators, is comprised of a series of operations which consolidate shipments of a variety of dangerous goods from many sources.

The vessel operators assume responsibility for the safe stowage and transport of the cargoes to their destinations. However, these operators are often at the mercy of shippers or feeder systems that classify, package, mark, label, placard and pack containers with cargo. Mistakes in classification, description, packaging or other compliance activities may be directly related to a lack of knowledge or training on the part of the shipper or consolidator rather than an intentional disregard of regulations.

The ocean carrier could be at risk of civil or criminal liability for the actions or omissions of a motor carrier, rail system, consolidator or the original shipper.

The Vessel Operators Hazardous Materials Association provides training for customers and associated transportation industry personnel who may significantly affect marine safety.

Compliance responsibility

As of January 1, 1994, each freight container with dangerous goods must have a "container packing certificate," as required by the International Maritime Dangerous Goods Code, for it to be accepted for international carriage by the vessel operator. Based upon the signed certificate, the operator assumes that all appropriate regulations have been followed for the dangerous goods being shipped. Before accepting the cargo, the carrier may also conduct independent inspections of containers identified as carrying hazardous cargoes to ensure that all compliance requirements have been met and that they are in a safe condition for marine transport.

A common reason for failure to accept containers for transport is the failure of the packers to properly block and brace the contents against movement during transport. The goods might arrive at port in satisfactory condition within the container, but the forces of the sea could damage and or breach the packaging if not adequately blocked and braced. The operator should then refuse the shipment until properly packed.

When this occurs, the vessel operator is often placed in an adversarial role with the shipper or other third party. Some shippers have been known to seek a less diligent carrier to transport their hazardous materials, thereby fostering further non-compliance and compromising the safety of a ship and its crew.

Vessel operators often engage in pooling operations and spot charter agreements which allow the partners to accept containers contracted through another carrier. This provides competitive service for United States shippers exporting products with tight delivery deadlines. Many of these containers are offered at ports where carriers do not operate their own terminals. In such cases, the terminal accepting the containers may be responsible for policing compliance of the shipper as well as the rail or highway carriers involved. To promote safety in these operations, the Vessel Operators Hazardous Materials Association encourages port employees, terminal operators, drayage contractors and associated transportation workers to take advantage of its training opportunities.

Coast Guard inspector examines drums to determine if they contain hazardous materials.

Import/export

Although the United States authorizes the use of the International Maritime Dangerous Goods Code for intermodal transportation of import and export shipments of dangerous goods, as well as for domestic transportation by vessel, there are some additional requirements. The responsibility for ensuring compliance within the United States for such import shipments falls on the importer, who must notify the shipper and forwarder at the port of entry of all additional requirements. The Vessel Operators Hazardous Materials Association continues to urge participation by shippers and forwarders in educational opportunities to ensure compliance and promote safety.

Summary

The dynamic ocean carrier industry is experiencing rapid evolution in the way it conducts business. Vessel operators play key roles in developing a system defined within the new term, "intermodalism." Carriers in all modes strive to create greater efficiency and customer services in the transportation of all goods, including hazardous materials.

Shipboard management, including cargo stowage, is becoming more and more computerized. Electronic data storage and retrieval continues to enhance marine safety, and advanced computer technology simplifies reporting and notification procedures.

Representatives of the ocean carrier industry are involved with government officials in a working group looking into the feasibility of storing all pertinent compliance data in an automated manifest system. This system would provide a valuable electronic information resource, easily accessible to all state and federal enforcement and response agencies.

The members of the Vessel Operators Hazardous Materials Association will continue to provide technical expertise from the ocean carrier industry to help develop and implement the automated manifest systems and other programs in the interest of marine safety.

Mr. John V. Currie is the administrator of the Vessel Operators Hazardous Materials Association, RR 1, Box 1601 Bay Road, Lake George, New York 12845.
Telephone: (518) 761-0263.

Safe cargo handling gets a "handup"

By Mr. Robert D. Baron

Background

In 1956, the Longshoremen and Harbor Workers' Compensation Act was amended, requiring safety and health regulations for longshoring. At the same time, the Management Advisory Cargo Handling Safety Committee was formed to provide industry representation to the Department of Labor.

When the Occupational Safety and Health Act was enacted in 1970, this committee was reorganized and, two years later, became the National Maritime Safety Association.

This association represents the marine cargo handling industry in safety and health issues. Its members are trade associations in port areas throughout the United States. Membership, however, is open to any association, port authority or company concerned with marine cargo handling safety.

Objectives

The objectives of the National Maritime Safety Association as defined in its bylaws are:

- to aid, advance, assist, encourage, promote and support safety in maritime cargo handling operations;
- to cooperate with all government agencies with jurisdiction over safety in cargo handling, including the Department of Labor, Department of Health and Human Services, and Department of Transportation;
- to cooperate with the Department of Labor's Bureau of Labor Statistics in developing accident statistics involving cargo handling; and
- to participate in court actions or administrative hearings in relevant matters.

Technical committee

To accomplish its objectives, the National Maritime Safety Association formed a technical committee made up of 14 safety experts from port areas throughout the country. The committee develops policies which are submitted to the association's board of directors for approval.

The technical committee has established an information exchange system concerning serious accidents and injury hazards. Although the major cargo ports in the United States are separated by considerable geographical distances, each performs nearly identical work on similar ships. An incident in one port could easily occur in another, conceivably on the same ship.

To illustrate the effectiveness of this information exchange, several years ago, a serious accident involving a container crane resulted in a loaded container "free-falling" onto a vessel. Fortunately, no one was hurt. A thorough investigation found that a loose set screw in the crane's hoist controller was the likely cause of the accident. Photographs and a detailed explanation of the incident were sent to all technical committee members, who relayed the information to appropriate personnel in their ports. Loose set screws were found in several hoist controllers in cranes at two other ports. Corrective action most certainly averted additional accidents.

The technical committee has also developed safety training material for the industry. A safety manual distributed to all members provides guidelines on establishing an effective safety program for stevedore companies and marine terminal operators.

The committee is now developing a series of safety training aids for specific longshoring functions and marine terminal operations. Safety programs recently completed involve ro-ro container/trailer operations, securing cargo inside intermodal freight containers, stacking containers on a marine terminal and loading and securing cargo on flatracks. By mid 1995, nearly 20 programs will be distributed to member associations.

Standard revisions

For several years, the National Maritime Safety Association has been assisting the Maritime Standards Office at the Occupational Safety and Health Administration to develop revisions to the Longshoring Safety Standard (29 CFR part 1918).

Dating back to the early 1960s, some of the standards do not relate to modern cargo handling operations and/or vessels. For example, regulations addressing boom topping, cargo bulling (shifting) and the placement of strongbacks apply to an era that is almost obsolete.

In June 1994, the Occupational Safety and Health Administration published a proposed rule in the *Federal Register*. The proposed regulations would address relevant timely cargo handling practices, including container handling operations, ro-ro ships and the handling of hazardous cargo. The final rule is expected to be issued in mid-1995.

The National Maritime Safety Association has offered to assist the Occupational Safety and Health Administration's Training Institute in developing a training program on the revised standard. This program could be used by compliance officers as well as industry personnel.

The National Maritime Safety Association is now preparing to work with the Coast Guard on the revision of 33 CFR part 126, which deals with handling hazardous materials (except bulk liquids) at waterfront facilities. Dating back to the 1950s, this regulation needs to be revised to reflect modern transportation methods. It will also address precautions for handling explosives, and set standards for handling and storing break bulk, dry bulk and containerized hazardous materials.

Conclusion

The National Maritime Safety Association has an important role in the marine cargo handling industry. Its efforts and accomplishments benefit not just the membership, but the entire shipping industry.

For information about the National Maritime Safety Association, contact Mr. Francis A. Scanlon, secretary and general counsel, One Penn Square West, Suite 701, 30 South 15th Street, Philadelphia, Pennsylvania 19102.

Mr. Robert D. Baron is the director of safety and security for the Steamship Trade Association of Baltimore, Swann's Wharf, 947 Fell Street, Baltimore, Maryland 21231-3505.
Telephone: (410) 563-7314.

Before the call . . .

Well before the telephone rings, the pager beeps or the alarm sounds off, preparations for responding to a marine casualty or other emergency situation should be planned, in place and practiced. The necessity of an effective emergency response plan cannot be underestimated or overemphasized.

Vessel personnel wear protective clothing to practice handling drums.

Emergency response plans

Emergency response planning is not just for companies which must complete and submit vessel response plans to the Coast Guard as mandated in the Oil Pollution Act of 1990 (OPA 90). It should be an integral part of all shipping companies' operation programs.

The plans should cover a broad range of emergencies, including piracy, salvage response, hurricanes — all the things you don't think will happen — but do! Not long ago, I called a company to find out if they had a plan for piracy or robbery. They laughed it off, but less than two weeks later, one of their vessels was boarded by robbers.

It pays to plan ahead and practice the plan. The benefits include increased safety awareness, decreased risk to workers and the public, and a reduction in property damage.

Think of it this way - without an emergency response plan - how will you respond when the call of disaster comes in?

Involvement

An emergency response is only as effective as the planning and training conducted prior to an actual incident. The process includes listing all potential emergencies, and evaluating those which would need response planning. Once you have determined the need and the level of the response, get broad input from all sources of expertise.

Next exercise the plan. Train all who would be involved in an actual event, including management. It is important for management to show its dedication and commitment to safety programs and emergency response planning. If management is not interested, it will reflect negatively in the employees' commitment to company safety- and loss-control program.

Employers need to involve everybody in the plan development who will be responsible for carrying it out. Employee expertise and advice should be sought to assure their support and to demonstrate management's concern over their safety and well being.

Comprehensiveness

The emergency response plan should be comprehensive enough to cover all possible operational emergencies. This means that portions must be developed to address individual circumstances unique to each area of operations.

The plan should be in writing and communicated to all employees from top management on down. It should be a living document, continually reviewed and updated whenever necessary to address new legislation and requirements, employee input, lessons learned in training and actual response incidents both inside the company and noteworthy outside events.

Communications

The emergency response plan for each crisis situation should involve the appropriate organizational structure, identifying all individual personnel needed to implement it. It should also establish a chain of command, outlining specific responsibilities of each party.

The plan should include individuals outside the company who may be on-site, such as contractors, federal and state government representatives, and visitors.

Accurate, timely information is crucial during any emergency and response situation. A comprehensive internal and external communications plan should be developed to convey vital information quickly to all affected locations and sources of assistance. This plan needs to outline normal and new lines of communication which will keep all who need to know informed.

Procedures and equipment

The emergency response plan must outline in detail all procedures and duties to be performed by employees during a crisis. The procedures must include the circumstances under which the various portions of the plan are to be exercised.

The plans should cover training and conditions for use of fire fighting and other emergency equipment, and its location. It must cover shutdown procedures, evacuation and lifeboat operations, chemical spill procedures, the use of self-contained breathing apparatus and protective clothing, as well as search and rescue procedures.

Training

A practical, realistic training program needs to be developed for the emergency response plan and potential crisis situations. It should be conducted as frequently as possible to practice specific emergency response skills and procedures. The training must cover the organizational structure and chain of command, communications procedures and methods, hazards recognition, standard operating practices, evacuation routes and procedures, emergency equipment and its use, rescue and first-aid procedures.

An actual emergency is not the time to address inadequacies of any response plan. Indeed, the plan is only as good as the training prior to its execution.

Summary

Effective planning, training, evaluation and practice of the emergency response plan are essential parts of any maritime operation. All your planning and training activities will help reduce injuries, save lives and prevent damage to the environment, as well as protect valuable property.

Mr. Richard L. Halferty II is the president of H.M.S. Marine Services, Inc., 9894 Bissonnet, Suite 775, Houston, Texas 77036-8829.

Telephone: (713) 272-6691.

Mariners learn how to set up and use a field decontamination station.

By preparing for the worst, you will give your best when that call comes in.

To the seafarer . . .

Mariners practice oil-spill containment.

Deck department trainees learn to perform daily shipboard duties from experienced seafarers.

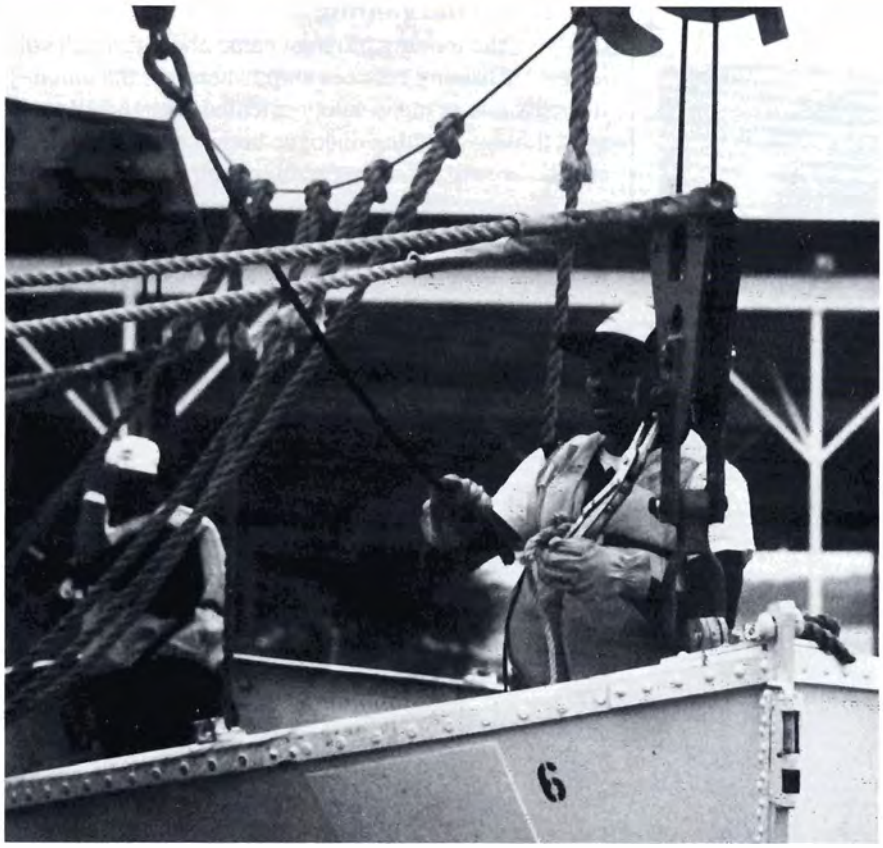
safety is a way of life

By Mr. Michael Sacco

Representing the interests of American seamen is more than just negotiating for wages to the Seafarers International Union. With seamen, boatmen, fishermen and dredgemen as members, this union fights to maintain a safe, efficient and effective American merchant marine.

The primary concern today of the Seafarers International Union is to ensure that there will be an American-flag fleet on the high seas as the 21st century approaches. To this end, the union has worked with legislators in Congress to develop a broad base of support for a strong United States shipping capability. Most recently, the union was a leader in an effort to secure a new maritime program, which, if enacted by Congress and signed into law by the president, will ensure a strong United States presence in the liner trades. Calling for a maritime security fleet, the legislation would fund modern United States containerships in exchange for a commitment that they would be available to the government in the event of a war or national emergency. The ten-year program would be funded by raising tonnage fees on all ships calling on United States ports.

The Seafarers International Union concentrates on providing a safe place to work for American seafarers. To promote safety at sea, the union has implemented an extensive training program. It also supports legislative initiatives, regulations and international conventions leading to a safe working environment for mariners.



Lifeboat handling is one of the first lessons for each trainee in the program.

Training

The Seafarers International Union provides young men and women seeking sea-going careers with basic education on shipboard life and work at the Paul Hall Center for Maritime Training and Education, located on the banks of a Potomac River tributary in Southern Maryland. Directed by the union and American shipping companies, the training school emphasizes safety practices for each shipboard position.

Safety skills that make a seaman a good shipmate are taught to entry-level seafarers. First aid, CPR, lifeboat handling and fire-fighting procedures are practiced by each trainee before he or she assumes a sailing position. Perspective seamen also experience the discipline, teamwork and individual initiative necessary for safe work and isolated living aboard ship.

For seasoned seafarers, the Paul Hall Center offers courses to upgrade skills and prepare for advanced Coast Guard ratings or licenses. Safety practices are an integral component of each course from radar use and welding to galley work and handling refrigerants.

Among the skills taught to deck department seafarers are the use of navigational aids and equipment, proper line handling procedures and how to work with hazardous materials. They learn how to prevent line snap-backs, as well as accidents from slippery decks and loose heavy objects.

Engine department seafarers learn how to monitor and operate engineroom equipment safely. Learning how to handle tools properly helps seafarers avoid flashburns, eye damage and lung irritation from vapors.

Among the topics covered in the steward department curriculum are hygiene and sanitation, food storage and spoilage, handling knives and treating burns.

These training courses assure the American shipowner of a pool of qualified seamen skilled in their crafts and well versed in safety practices of diverse shipowners. For example, upgrading seafarers participate in oil-spill prevention and recovery classes. Seafarers on private sector vessels operating on behalf of the United States armed forces, are trained in procedures such as vertical and underway replenishment, Hagglund crane operations, forklift maneuvers and chemical shield preparations. Seafarers working on United States-flag liquid natural gas carriers are taught specific safety issues pertaining to their operations.

Continued on page 28

Continued from page 27

Collective bargaining

The training program came about through collective bargaining between shipowners and the union. It is only one of many safety-oriented initiatives developed through ongoing dialogue between shipowners and the organization representing their crew members.

Through collective bargaining, the Seafarers International Union and American shipping companies have tackled a myriad of issues relating to shipboard safety, including the balance between safe manning levels and efficient operations, proper tank-cleaning procedures, watchstanding and other practices. This bargaining process allows issues to be tackled quickly, creating a fluid, dynamic dialogue of consultation and cooperation.

The collective bargaining process allows shipowners to benefit from the experience of their crew members, and provides the men and women who work on vessels an opportunity to learn the shipowners' concerns. The whole process enhances safety at sea by developing sensible and workable safety measures.

Steward trainees learn proper food handling methods.

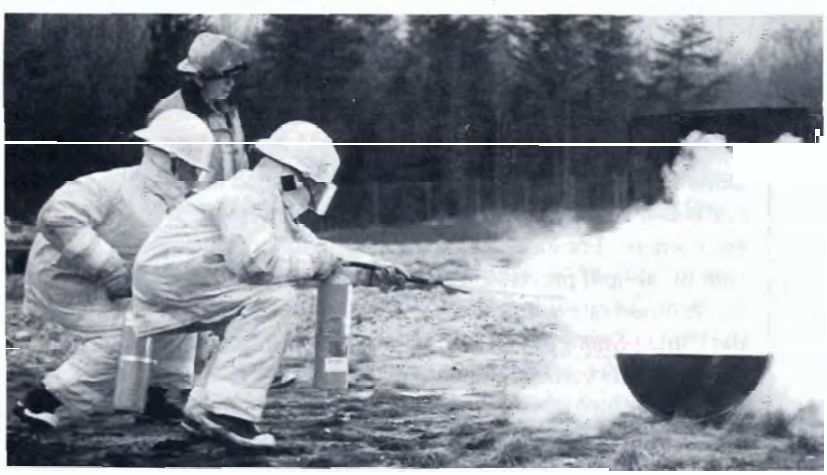
All trainees must complete first aid and CPR courses.

Legislative work

The Seafarers International Union scrutinizes legislative proposals affecting the job security and work quality of American seamen. It vigorously backs Congressional initiatives which strengthen shipboard safety.

Currently, proposed legislation recommending increased safety practices in the towing industry is strongly supported by the union, along with congressional plans to increase safety requirements governing crew qualifications for operating marine equipment on United States inland waters.

Additionally, the union is disturbed by the fact that foreign-flag ships can go in and out of United States waters without meeting the same safety standards and precautions governing American shipping. Thus, the union seeks to raise world shipping safety standards through working with such international forums as the International Maritime Organization (IMO) of the United Nations and the Joint Maritime Commission of the International Labour Organization.



Seafarers are taught how to combat shipboard fires.

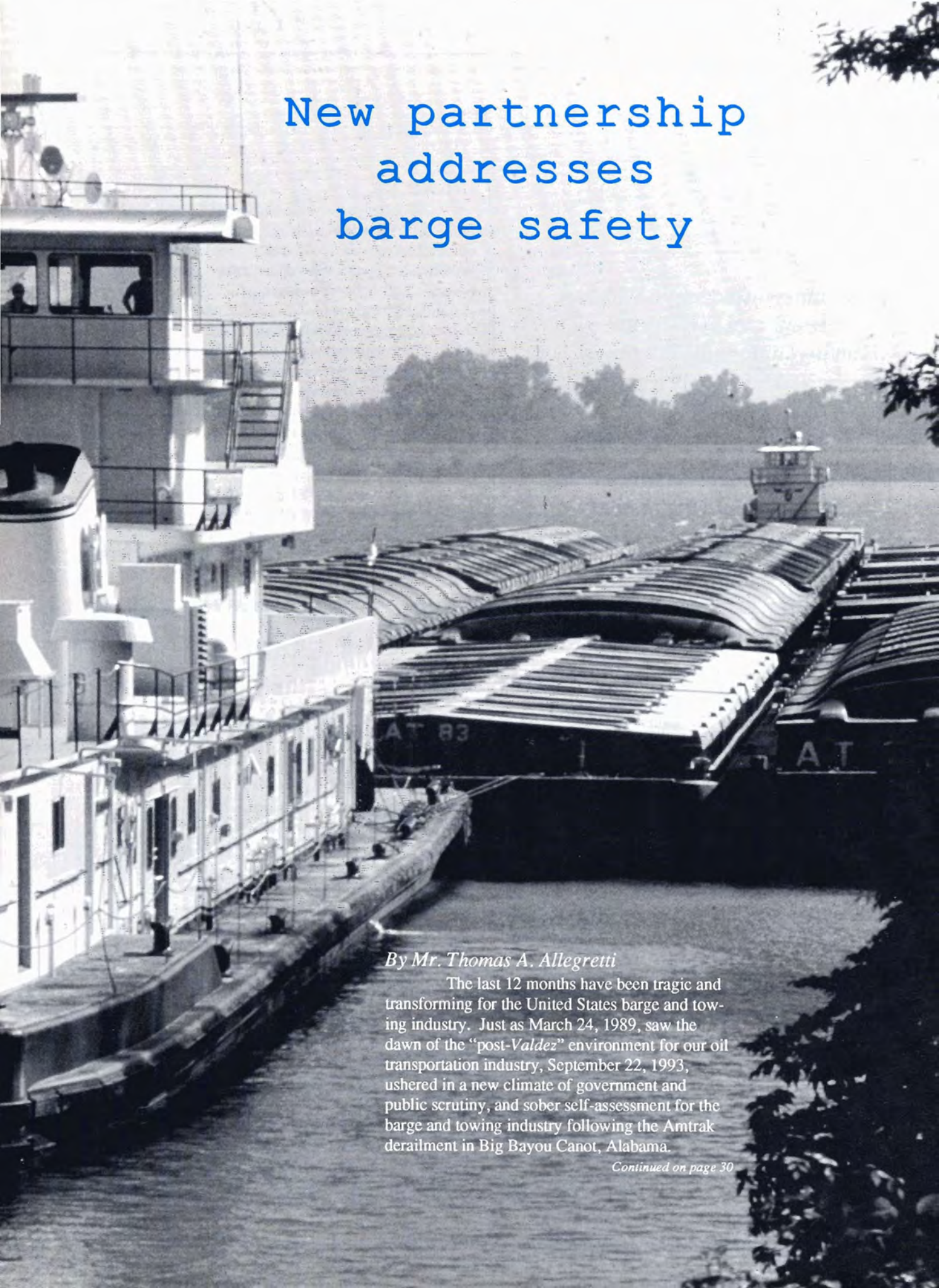
Conclusion

For the men and women who earn their living on board ships, safety is not an abstract concept, it is a way of life. Therefore, safety concerns dominate the Seafarers International Union's agenda.

Mr. Michael Sacco is president of the Seafarers International Union, 5201 Auth Way, Camp Springs, Maryland 20746.

Telephone: (301) 899-0675.

New partnership addresses barge safety



By Mr. Thomas A. Allegretti

The last 12 months have been tragic and transforming for the United States barge and towing industry. Just as March 24, 1989, saw the dawn of the "post-*Valdez*" environment for our oil transportation industry, September 22, 1993, ushered in a new climate of government and public scrutiny, and sober self-assessment for the barge and towing industry following the Amtrak derailment in Big Bayou Canot, Alabama.

Continued on page 30

Debate

An industry debate began right after the derailment. This was initially demonstrated by nine recommendations for improved safety which the American Waterways Operators shared with the National Transportation Safety Board at hearings conducted in December 1993.

These recommendations were closely aligned with 19 proposals for improved waterways safety issued by Secretary of Transportation Federico Pena at the end of 1993. The industry continued to work closely with the Coast Guard and the Towing Safety Advisory Committee to help implement the secretary's recommendations.

The industry also conferred with Congress. On two occasions, the American Waterways Operators testified before the House Subcommittee on Coast Guard and Navigation in efforts to develop an effective barge safety bill. The result of those hearings was the first of two barge safety bills.

"If this partnership works, the barge and towing industry will become safer, and remain efficient and productive. . .

Continued from page 29

The tragic Amtrak accident, which claimed the lives of 47 people, raises fundamental questions about whether the barge and towing industry is as safe as it needs to be, and if its regulations are adequate. While safety has always been a deep concern and a high priority for this industry, the Amtrak derailment raises the issue to even greater heights, and will propel fundamental change forward in the industry.

Partnership

The scrutiny propelling this change is taking place both internally in the industry itself and externally, primarily in the government. Fortunately, both industry and government have come together in a unique partnership to develop and implement solutions to help ensure continued and even greater safety in the nation's barge and towing industry.

While this partnership reached a new level in the post-Amtrak environment, the groundwork was laid by Congress, the Department of Transportation, the Coast Guard, the Towing Safety Advisory Committee and the American Waterways Operators. The latter is a national trade association which represents the inland and coastal barge and towing industry, and the small- and medium-sized shipyards which build and repair tugs, barges and other vessels.

Barge safety bills

Introduced in October 1993, the Towing Vessel Navigational Safety Act of 1993 (H.R. 3282) focuses on equipment improvements and mariner competency in the use of the equipment. The industry fully supports this measure and urges its enactment.

The second bill (H.R. 4058) was introduced in March 1994. It also addresses mariner competency, but includes requirements for vessel inspection, Coast Guard-prescribed manning scales and the carriage of merchant mariners' documents by boatmen on inland towing vessels. Such measures seem to miss what government statistics indicate is the real key to preventing accidents and increasing the safety of the marine environment — human performance.

The Coast Guard reports that some 80 percent of vessel casualties are caused, either primarily or secondarily, by human error. The most critical link in the marine safety equation remains human beings.

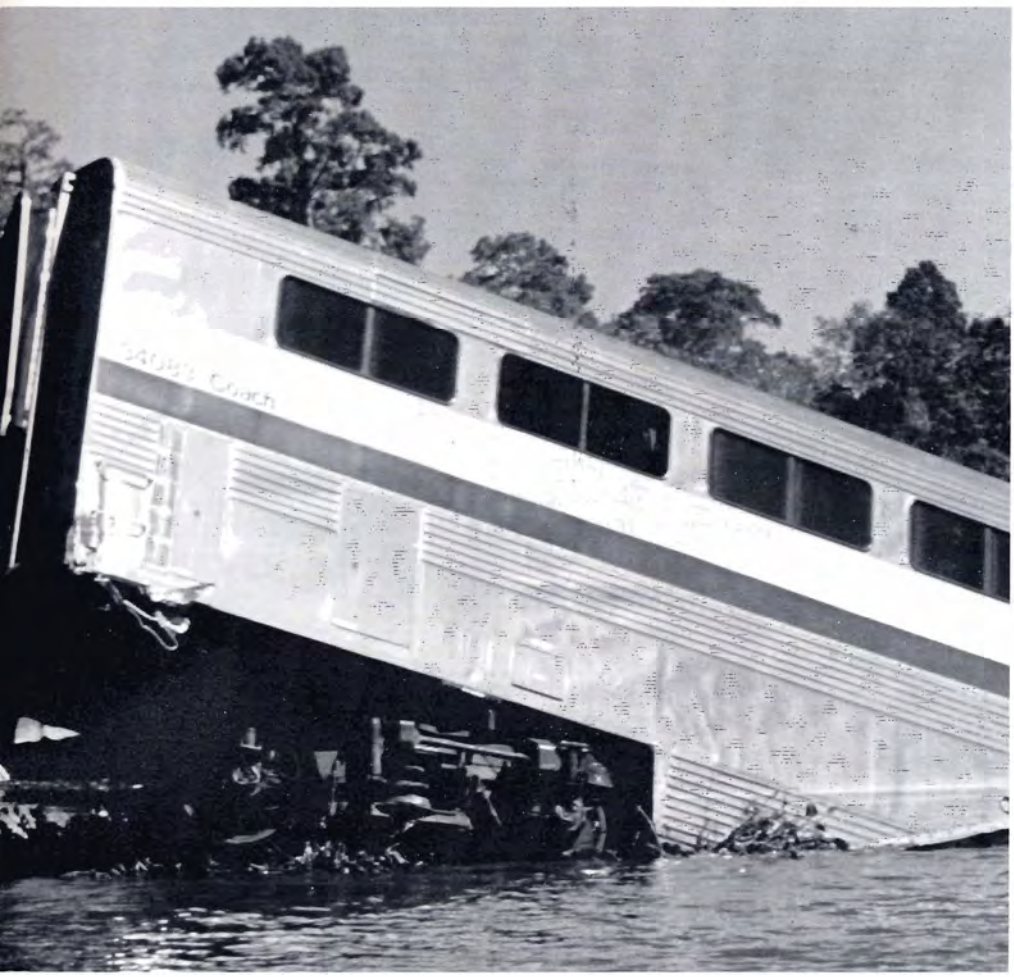
. . . If it (the partnership) fails, and we are diverted by a quest for easy solutions rather than real ones, the industry will become less productive and the real safety problems will remain unsolved."

In addition, H.R. 4058 focuses on areas such as the material condition of vessels or manning issues which Coast Guard data demonstrate to be minor reasons for accidents.

Moreover, the Coast Guard has testified more than once that merchant mariner documents would not improve safety on the waterways.

And very significantly, H.R. 4058 seeks to impose a deep-sea crewing regime on the barge and towing industry.

Continued on page 32



Blueprint for change

In designing a plan for change in the industry with regard to safety, both government and industry should:

- define the problem, ensuring that the solutions coincide, as Secretary Pena did in his recommendations;
- learn by industry's experience, because it is the first line of defense against unsafe or environmentally damaging operations; (Safety, efficiency and productivity are advanced by regulations which build upon and complement that which has proven successful in the private sector.)
- target government resources at demonstrated problems, not at entire industries, and aim the resources at aspects which industry is unable to resolve;
- recognize operational diversity, keeping in mind that a "one-size-fits-all" approach will never be fully effective; and
- develop and implement solutions cooperatively.

Given the unique responsibilities, experience and expertise of each party, the most effective solutions emerge from a process that brings government and industry together in a true partnership aimed at improving safety.

Continued from page 31

Time - the critical factor

Time is of the essence, but quick fixes are not the solution. One of the most critical elements for the success of the government-industry partnership in the post-Amtrak environment is time to devise real solutions to demonstrated safety problems. The substance must not be driven by a schedule.

If properly managed, the crafting process driven by industry and implemented cooperatively through a genuine government-industry partnership, offers a rare opportunity to ensure a safer and, at the same time, an efficient barge and towing industry as the next century unfolds. But the process must be one of real partnership.

While there is a legitimate role for government in creating a better, safer barge and towing industry, government alone is not the answer. Indeed, no governmental action can substitute for the fundamental responsibility which a company itself bears for ensuring safe and environmentally responsible operations, or the corollary responsibility of a carrier's shipper customers to insist on high standards.

Conclusion

If this partnership works, the barge and towing industry will become safer, and remain efficient and productive. If it fails, and we are diverted by a quest for easy solutions rather than real ones, the industry will become less productive and the real safety problems will remain unsolved.

The photographs of the Amtrak derailment accompanying this article are by PA2 Adam M. Wine, Public Affairs, Eighth Coast Guard District.

Mr. Thomas A. Allegretti is the president of the American Waterways Operators, 1600 Wilson Boulevard, Suite 1000, Arlington, Virginia 22209.
Telephone: (703) 841-9300.

A recipe for *DISASTER*

By Mr. Eric Larsson

At dusk in a haze that limits visibility to one mile, the officer of the watch assesses a collision situation with another vessel. The automatic radar plotting aid indicates the other vessel is being overtaken. The officer alters course to port to pass under the stern of the vessel. When the vessel being overtaken emerges from the fog, instead of its stern light showing, the range light and both side lights are visible. The officer quickly alters course to avoid a head on collision.

A number of questions were raised about the automatic radar plotting aid in this situation. Was it functioning properly? Why did it give out a false reading? Can the information presented by such an aid be trusted? The information it presented in this situation was inaccurate and misleading. In the wrong hands, it could have become a recipe for disaster.

Training not required

An automatic radar plotting aid is a useful tool that can assist a watchstander in navigation and collision assessment and avoidance if operated by a well trained officer. With such dire consequences possible from the improper use of the equipment, some sort of training requirement would be in order.

Even though the automatic radar plotting aid is required by international law to be fitted on board all tankers over 10,000 gross tons, and all other vessels over 15,000 tons, the United States has no specific training requirements for its use. The United Kingdom has required training on this radar equipment since 1984, but the United States has yet to do so, even though it mandates the plotting aid on all vessels over 10,000 gross tons carrying hazardous cargo in bulk.

A survey of United States federal and state maritime academies found that a Coast Guard-approved course in the use of the plotting aid is offered as an elective in most deck officer programs. Some officers voluntarily take the course, but many do not because of heavy required-course loads, for one reason.

It seems that every time the necessary training requirement nears the top of the regulatory agenda, other more important projects like the Oil Pollution Act of 1990 requirements brush it aside.

In October 1985, a request for comments on training in the use of the equipment was published in the *Federal Register*. It also appeared as a notice of proposed rulemaking in March 1990.

In a notice of proposed rulemaking found in the *Federal Register* of February 21, 1980, the equipment was called an electronic relative motion analyzer. The notice, which is now law, states that, "each self-propelled vessel, except a public vessel, of more than 10,000 gross tons carrying oil or hazardous material in bulk as cargo or in residue that is a United States vessel or operates on or enters the navigable waters of the United States . . . must, not later than July 1, 1982, be fitted with an automatic radar plotting aid . . ."

Many individuals and groups have called for training requirements. A National Transportation Safety Board marine accident report of December 8, 1993, regarding the collision of the towboat *Freemont* and the containership *Jurai Dalmantic*, recommended that the Coast Guard, "require that all licensed deck officers who serve on board vessels equipped with automatic plotting aids be certified in their use." The report also states that, "the safety board finds it incredible that regulations require that vessels be equipped with a proven, effective piece of collision avoidance equipment, yet do not require that anyone know how to use it."

Judge C. Newcomer in the United States District Court for the Eastern District of Pennsylvania filed an opinion on July 26, 1988, stating the following concerning proper training in the use of the automatic radar plotting aids, "(the company does) have the ability and responsibility to assure that its ship's master is sufficiently trained in the ship's equipment, particularly those devices that are required by law. It undermines the law that requires the equipment if shipowners fail to train their masters in its operation and use."

Continued on page 34

Continued from page 33

Some argue that the use of the equipment is covered in 46 CFR 15.405. This states that "each licensed, registered or certified individual must become familiar with the relevant characteristics of the vessel on which engaged prior to assuming his or her duties. As appropriate, these include but are not limited to general arrangement of the vessel; maneuvering characteristics; proper operation of installed navigation equipment . . ." An automatic radar plotting aid is installed navigation equipment required in many vessels.

Reasons for training

The equipment has been required on many vessels for 12 years. During this time, many officers have become proficient in its use, and in assessing and avoiding collisions with it. Many of these officers have run into problems using the equipment, despite the operating skills they obtained on the job.

Situations are reported that cannot be explained, other than to say that the equipment was not functioning properly. The following examples illustrate some problems which could be encountered when using automatic radar plotting aids.

Example 1

While approaching "Charlie" anchorage in the Solent on the south coast of England, the officer of the watch placed a "true mark" on the automatic radar plotting aid screen. This mark indicated the position where the master wished to anchor. The vessel had accurate gyro heading and log speed inputs to the radar plotting equipment. When the vessel arrived at the desired anchorage position, the master was ready to anchor. The navigator indicated that the desired anchorage position was still one mile away. A heated discussion ensued. The captain decided to anchor the vessel at that time. Did he anchor in the correct place?

Answer to example 1

The navigator was correct. There was a current that slowed the vessel's speed considerably. The true mark moved on the reciprocal of the gyro input at a speed equivalent to the log speed. The difference between the course and speed through the water, and the course and speed made good was the difference between the navigator's position and the true mark position. It is not uncommon for officers to trust the automatic radar plotting aid, because it employs advanced computer technology.

Example 2

A vessel is proceeding east offshore New York near Ambrose Light at a speed of 10 knots in reduced visibility. According to the automatic radar plotting aid display, it is overtaking a vessel west of the light which is headed east southeast. The radar equipment indicates that a close quarters situation exists with this other vessel.

Due to the traffic density to the south and east, the master decides to come to port to pass under the vessel's stern with a closest point of approach of 0.75 miles. Initially, the closest point of approach determined with the use of the trail maneuver function appears to be working well. After a number of sweeps, the closest point of approach reduces to less than 0.5 miles. The automatic radar plotting aid still indicates an overtaking situation, but the true vector appears to have changed.

The target is now closing to less than three miles, and a second trial maneuver is attempted. During this attempt, the target's vector reverts to a collision situation. The target emerges from the mist at 1.1 miles off steaming directly forward in a head to head situation. The radar plotting equipment still shows an overtaking situation. What is causing this error?

Answer to example 2

The automatic radar plotting equipment is getting the correct course from the gyro compass, but, instead of using the log speed input, an incorrect manual speed has been set into it. Instead of 10 knots, a 20-knot entry has been made. This huge error should have been adjusted. The 10-knot error caused the vessel being tracked to show as a vessel being overtaken instead of the actual head to head collision situation.

The relative vector (created by the combination of the motions of each vessel) correctly indicated collision course. The true vector, which depends on the course and speed inputs, was so inaccurate that it changed the officer's interpretation of the rules of the road. When the course change was made, it was based on incorrect information. The relative vector, after a number of sweeps, was accurate again.

The final change of the target's relative vector to a collision situation once again was caused by that vessel taking acting to avoid collision by altering course to starboard. A series of plots would indicate the difference between the real situation and that displayed on the automatic radar plotting aid.

It was fortunate that both of these situations took place in a simulator, and there were no collisions or groundings. The type of information both watch officers struggled to understand is explained in well-defined training courses.

Simulation creates a realistic environment for training with automatic radar plotting aids.

Conclusion

It is a leap of faith that an officer can walk aboard a vessel with an automatic radar plotting aid and, after a brief familiarization period, be ready to use that equipment for collision avoidance. The Coast Guard has approved several approximately four-day courses that concentrate on automatic radar plotting aid operations, usage and limitations.

Requirements for automatic radar plotting aid training are once again close to the top of the regulatory priority list. It is a requirement that is long overdue.

Mr. Eric Larsson is the director of the Center for Maritime Education, 241 Water Street, New York City, New York 10038.

Telephone: (212) 233-2242.

Safety equipment

By Ms. Leslie J. Hughes

You can carry all the state-of-the-art safety equipment in the world, but it is of no value unless you know how to operate it.

Safety requirements

A marked reduction in fishing vessel casualties has occurred in the Pacific Northwest since the Coast Guard implemented the fishing vessel safety regulations in September 1991. For example, in 1993 in Alaska, where most of the country's fishing activities occur, there was a 53 percent reduction in lives lost and a 55 percent decrease in vessels sinking, compared with 1992. However, there is still work to be done to improve the commercial fishing industry's safety record.

Coast Guard requirements mandate the carriage of certain lifesaving equipment and, just as important, *the knowledge of how to operate the equipment.* Additionally, crews are required to conduct specific monthly drills to practice skills needed to deal effectively with sudden, life-threatening emergencies. This marks the first time that fishermen have had to receive safety training.

Vessel safety program

In 1985, the North Pacific Fishing Vessel Owners' Association, a non-profit education organization, established a vessel safety training program in cooperation with the Coast Guard. Since August 1990, the association has certified more than 3,400 individuals in numerous ports in Washington, Oregon, California, Alaska and Hawaii to conduct the drills specified by the Coast Guard.

Recognizing the fishermen's experience in seamanship, the program offers hands-on training with a variety of life-saving equipment. Given the proper motivation and this introductory education, fishermen can perfect their safety skills with the required monthly drill practice, and develop additional skills to apply to their specific vessels, crews and operations.

You can't conduct too many fire drills.

is not "automatic"

You must accomplish certain tasks, usually in a very short time.

The Coast Guard conducts demonstrations of dewatering pumps, flares and helicopter rescues for the students of this vessel safety program, as well as other training groups throughout the country. This collaborative effort reinforces a cooperative spirit between industry and government, while contributing to a safer work environment for commercial fishermen.

The future

Familiarity with the proper use of safety equipment is a vital step toward improving the safety record of the fishing industry. Additional training, however, in the prevention of accidents is needed to minimize the loss of lives.

The Coast Guard has proposed a training-based licensing plan for operators of fishing vessels of less than 200 gross tons. The plan focuses on accident prevention by requiring operators to be trained in navigation, stability, collision prevention rules, seamanship and personal survival. Although enactment may be several years ahead, some training groups have already developed courses on these subjects and are conducting them for fishing crews throughout the Northwest.

Training requirements for captains and crews should be commensurate with their respective responsibilities, and ensure that individuals who are responsible for others' lives know how to operate vessels safely.

Photographs accompanying this article are courtesy of the North Pacific Fishing Vessel Owners' Association.

Ms. Leslie J. Hughes is the executive director of the vessel safety program of the North Pacific Fishing Vessel Owners' Association, 1900 W. Emerson, Suite 101, Fishermen's Terminal, Seattle, Washington 98119.

Telephone: (206) 285-3383.

Commercial fishermen and Coast Guard

look at some things differently

By Mr. Jim Herbert

The days of the buffalo hunters are over. Likewise the romantic image of the independent fisherman casting his nets and lines for the ocean's bounty has greatly changed, particularly over the past 20 years. Seasons have grown shorter and competition more aggressive. In addition to fighting the weather, mechanical difficulties and other fishermen, today's vessel owners and operators must be able to cope with the sticky flypaper of bureaucracy and red tape.

Fishermen must now keep up with a plethora of regulations and paperwork that did not exist until recently. They must obtain federal and state licenses and permits before leaving the dock. Fishery observers must be contracted and financed. Required placards and instructions are displayed on bulkheads throughout their vessels. These costly burdens are hitting the fishing industry when it is on shaky financial legs.

Safety act

Commercial fishing was the largest unregulated segment of America's maritime industry before the Fishing Vessel Safety Act was passed by Congress in 1988. This enactment and the subsequent Coast Guard regulations were primarily in response to public reaction to a high loss of life and property from vessel casualties.

Previously, voluntary compliance with safety standards was not forthcoming from a portion of the fleet, so it was necessary to ensure that every vessel from 12-foot skiffs to 300-foot factory trawlers followed appropriate standards. Now the Coast Guard can fault an operator for lack of required equipment or safety training, and lawyers have standards against which vessel owners and operators are held in cases of loss of life and injuries.

The fear of legal consequences is for most fishermen the big stick in compliance. The carrots are the benefits accrued by safer vessels, better prepared crews and more professional operations.

Enforcers

Those who choose to earn their living from the sea are generally a crusty, independent lot. They are particularly resentful of being told what to do by the government. Some feel that the Coast Guard has been heavy-handed in regard to the zero tolerance drug program. When a Coast Guard boarding team orders a fishing vessel to heave to for an inspection, most skippers and crews are intimidated to a certain degree.

Angels of mercy

On the other hand, most fishermen are very appreciative and highly supportive of the search and rescue functions performed by the Coast Guard. Their helicopters and C-130s save many lives in American waters each year, particularly on medium-sized vessels.

When a Jayhawk helicopter puts itself on the line in the middle of the night in a winter gale in the Gulf of Alaska to rescue the crew of a foundering fishing boat, you know the Coast Guard has the respect and admiration of the fleet. They are truly angels of mercy.

Communication

As one Coast Guard officer said recently, "Unfortunately, you don't get the search and rescue side of the Coast Guard without the regulations and their enforcement. There needs to be more education and listening -- better communications between the Coast Guard and the industry for the enforcement and rescue sides to be clearly understood and balanced."

Some fishermen feel that the rule makers in Washington D.C. do not listen to the people who spend their time at sea. The Coast Guard depends on the Fishing Industry Safety Advisory Committee, which meets once or twice a year, to discuss topics of interest with constituents before and after each meeting. This committee carries a lot of weight with the Coast Guard and the Department of Transportation.

Editor's note: Since its establishment, the advisory committee has proposed numerous recommendations, of which the Coast Guard has implemented more than three-fourths. Committee meetings, which are held throughout the country, are open to the public and members of the commercial fishing community are encouraged to attend.

During public hearings related to the Commercial Fishing Industry Safety Act of 1988, the Coast Guard held 22 town meetings in fishing communities from Florida to Alaska.

On the local and regional level, however, Coast Guard personnel are usually moved every three years. No sooner does an individual understand some of the local fishing aspects, and know the key people and organizations, when he or she is transferred. And the problems and regulations affecting a Texas shrimper are quite different from those faced by a Maine lobsterman or a Bering Sea longliner. The regulations, however, attempt to consider the regional nature of most fisheries and their socio-economic situations.

Compliance

Most fishing vessels in Alaska are now in compliance with the major lifesaving equipment requirements. They have the necessary immersion suits, life rafts, emergency position indicator radio beacons (EPIRBs) and radios appropriate to their crew sizes and areas of operation.

In 1993, 18 people died in fishing vessel losses and accidents in Alaska, a sharp drop from the average of 35 deaths reported annually during the past 10 to 15 years. There may be other factors contributing to this reduction, but it is apparent from talking to survivors and rescuers that the use of the required lifesaving equipment has made it possible for many people to be rescued who previously would have perished. In that sense, the regulations have been effective.

Some problems faced in complying with the regulations stem from how Congress enacted the law. For example, it would have been more realistic to level the playing field by using the mileage from operations to shore to determine the equipment fishing vessels must have, than using the boundary lines as references.

The distinction between documented (a commercial vessel of at least five net tons) and state-numbered vessels will ultimately create loopholes just as size restrictions did in many European fisheries. Right now, for example, a state-numbered vessel fishing outside the boundary line does not have to have a first aid kit, compass, communications equipment, alarms, anchors or drills. These items are required, however, on all documented fishing vessels outside the boundary line, which in many parts of the country begins at the beach. The overall length of the vessel is a logical parameter, but the Coast Guard uses the length on the document or registration, which may be the overall or keel length.

The fisherman pleads, "Don't beat me to death with rules and regulations." It is one thing to not have sufficient appropriate immersion suits on board, but when a boarding officer demands that a skipper prove

Gillnetting salmon in Cook Inlet, Alaska.

that the functional navigation lights comply with International Regulations for Preventing Collisions at Sea (COLREGS), it is excessive.

It is costly and frustrating to initially get a vessel in compliance with federal requirements. The Coast Guard regional fishing vessel safety coordinators and examiners throughout the country help people get what they need, but using Coast Guard informational literature can be confusing.

Continued on page 40

Hand pursing for pink salmon in King Cove, Alaska.

Commercial fishing vessels berth in Homer, Alaska.

Continued from page 39

Once a vessel is in substantial compliance, it is not hard to keep on top of things, although problems do occur. For example, the lithium batteries in 406 MHz EPIRBs are considered hazardous cargo by the Federal Aviation Administration (FAA). Getting replacements into remote Alaskan fishing ports is very costly. A local liferaft repacker was finally able to obtain exemptions to the FAA rule through Alaska's congressmen.

Flexibility

Flexibility was built into the Fishing Vessel Safety Act to allow for regional differences. For example, fishermen belonging to Alaska's Cook Inlet salmon fishery who use skiffs to set gill nets near shore are exempt from the federal survival suit rule.

When it can be demonstrated to a district Coast Guard commander that a particular regulation does not apply to a fishery or an area, an exemption may be granted. The purpose is not to undermine safety through political pressure, but to fine tune the system realistically.

Now, the Coast Guard is working with the Fishing Industry Vessel Advisory Committee to study regulations which have applied to the fleet for four years for possible areas of streamlining and simplifying.

For example, it seems ludicrous for an individual with a 100-ton license to conduct safety drills on fishing boats when he or she did not have to be trained or skilled in the subject to gain the license.

Requiring someone to have a tide current table in regions where tides are of no consequence is illogical. Also, a person who exclusively fishes a local area may not need a coast pilot or light list. These and other references should be required "where appropriate for safe navigation," and not across the board.

The current fire extinguisher requirements are quite lax to anyone who has experienced a fire at sea. They could be strengthened, while not mirroring the passenger vessel regulations.

Stability

There is much debate over the issue of stability of fishing vessels. Many vessels lost each year have had stability problems. Overloading, flooding and material failures bring ships to the bottom. Unfortunately, the science of stability is not easily grasped. It is replete with numbers, equations and symbols that make little sense to most fishermen. However, they would respond to specifics like how many crab pots should be allowed on deck, how much fuel in which tanks and keeping scuppers clear and weight low.

The Coast Guard has proposed stability rules that would apply primarily to new vessels under 79 feet and to existing vessels if substantially modified. The average fisherman does not understand the rules, but has found allies in naval architects, who maintain the proposed rules would be difficult to meet. Fishermen fear that vessels deemed safe by Coast Guard standards will be incapable of carrying a full load of fish, and be extremely expensive to construct or retrofit.

Licensing

The Coast Guard is also urging change in the licensing of commercial fishing boat operators based on training to help raise the professional skill and knowledge level of the industry. The National Transportation Safety Board has recommended this for years. Congress must authorize the Coast Guard to enact such as program, although it has not yet been sponsored by a member of Congress.

Again, the fishermen fear intrusion into their lives and pocketbooks by the government. State numbered vessels would probably be exempt, while the 30,000 documented fishing vessels from five net tons to 200 gross tons would be affected. The emphasis of the licensing plan is on training, but there will be other eligibility requirements involving drug testing, physical examinations and criminal reference checks.

Training

Fishermen are more receptive to third parties conducting practical training in navigation, stability, rules of the road, fire fighting, first aid, CPR and safety at sea than the formal testing in the current licensing system. For example, individuals who have undergone drill and safety training sponsored by the Alaska Marine Safety Education Association or Seattle's Fremont Maritime Services usually recommend it as relevant to their operations.

Any program issuing licenses will cost money. The Coast Guard has established fees for licenses. Public and private schools provide two-week training courses at varying rates. Estimates run from $400 to $1,000 for the full training and licensing process.

The accountability and integrity of third party trainers would have to be assured. There also has to be consideration of how the Coast Guard and training organizations will deal with operators of 30,000 documented fishing vessels. The licensing plan calls for selected eligibility requirements, such as physicals, recency of sea service and character checks to be waived for fishing vessel operators who demonstrate a certain amount of fishing vessel experience prior to the enactment of the legislation.

The training requirement for individuals conducting shipboard drills went into effect on September 1, 1994, and courses have started in most regions of the country.

Inspection plan

The Coast Guard has proposed a plan to Congress, which would require fishing vessel inspections. Vessels less than 50 feet would have to examine themselves and attest compliance with the safety regulations. These vessels would be subject to reality checks if boarded at sea or investigated after an accident.

Vessels from 50 to 79 feet would have to be inspected by a third party, such as a certified marine surveyor or a member of the American Bureau of Shipping. The Coast Guard would inspect all vessels over 79 feet, and assign load lines.

Conclusion

The voice of reason must prevail in all these matters. The goal of the Fishing Vessel Safety Act and of all conscientious skippers is to prevent the loss of life and injury at sea, and to minimize property loss.

As long as men and women go to sea, they will confront a severe and unforgiving environment. It is unrealistic to assume that an individual or the government can eliminate all loss of life and vessels.

The question is how to arrive at a set of realistic guidelines and regulations that put competent people on sound vessels. Can this be done without decimating the American fishing fleet? When an industry cannot take care of itself, even if only a fraction of the fleet is irresponsible, government will step in and regulate.

The first steps have been taken to minimize the loss of life and property. Statistics demonstrate the effectiveness of the current regulations and training. Prevention is always a vital area for attention. The right equipment used by training people with positive attitudes will move the fleet in that direction.

The regulators must remember the diversified and regional nature of United States commercial fishing, and keep the lines of communication open. With non-adversarial dialogue, we can realistically look at problems and achieve solutions. The end result will be a significant reduction in the loss of life and property in the commercial fishing industry.

The Coast Guard oversees safety training for fishermen in Seward, Alaska.

Mr. Jim Herbert has been a commercial fisherman in Alaska for 20 years. He can be reached at P.O. Box 1587, Homer, Alaska 99603. Telephone: (907) 235-6382.

A guide to safe offshore operations

By Mr. Peter K. Velez
and Mr. Charles O. Liles

On May 15, 1993, the American Petroleum Institute published an extensive guide to a safety and environmental management program for oil and gas facilities and operations on the outer continental shelf. It is called, *"Recommended Practices for Development of a Safety and Environmental Management Program for Outer Continental Shelf Operations and Facilities (API RP75)."*

The Minerals Management Service and the Coast Guard participated in the development of this guide. It covers the identification and management of safety and environmental hazards in the design, construction, startup, operation, inspection and maintenance of new, existing or modified drilling, servicing, pipeline and production facilities.

Each company should develop a program which covers all its regional facilities (i.e., Gulf of Mexico and Pacific Coast). However, certain elements of a program applying to nearly identical facilities (such as well jackets and single well caissons) need to be addressed only once, after verifying that site-specific deviations have been considered.

Program elements

A mobile drilling rig attached to a fixed offshore platform would require a safety and environmental management program. (Mobile drilling rigs which are not attached to a fixed platform will be covered by the International Safety Management Code.)

There are 11 program elements:

- **safety and environmental data,**
- **hazards analysis,**
- **management of change,**
- **operating procedures,**
- **safe work practices,**
- **training,**
- **assurance of quality and mechanical integrity of critical equipment,**
- **pre-startup review,**
- **emergency response and control,**
- **investigation of incidents, and**
- **audit of elements.**

Management (owner, operator and contractor) must work together to ensure that these elements are properly addressed, documented and available to all individuals involved in the oil and gas exploration and production operations.

Opposite page: A fixed platform is ready for drilling and production operations in 1,350 feet of water in the Gulf of Mexico.

A viable safety and environmental management program should be based on the following principles:

A) management is responsible for the overall success of the program;

B) management should develop and endorse the company's safety and environmental policies;

C) knowledgeable personnel should be used to identify hazards, optimize operations, develop safe work practices and investigate incidents;

D) each owner, operator and contractor is responsible to protect the environment and promote safety in the work force;

E) facilities should be designed, constructed, maintained and operated to conform to applicable industry codes, standards, regulations and accepted practices;

F) the management of hazards should be an integral part of a facility's design, construction, maintenance and operation;

G) the program should be carried out by properly trained and qualified personnel; and

H) the program should be maintained and kept up-to-date through periodic audits.

Hazards analysis

It is essential that the improved mechanical and facilities design data is maintained for the life of the facility. A hazards analysis should be performed to identify, evaluate and reduce the likelihood and minimize the consequences of uncontrolled releases of hazardous gases or liquids, or other incidents.

A guide to process and mechanical design analysis was published by the American Petroleum Institute in August 1993. It is called, *"Recommended Practices for Design and Hazards Analysis for Offshore Production Facilities (API RP14J)."* A companion publication issued in March 1994 is *"Recommended Practice for Analysis, Design, Installation and Testing of Basic Surface Safety Systems in Offshore Production Facilities (API RP14C)."*

Persons knowledgeable in engineering, operations, design, process, and safety and environmental management should perform these analyses, which should be presented in written reports containing recommendations to correct hazardous conditions. These analyses should be periodically updated.

continued on page 44

Continued from page 43

Management of change

Temporary and permanent facility changes can introduce new hazards and can compromise safeguards built into the original design. A viable management program should document all facility and installation changes and assess their impact, addressing the:

- process and mechanical design basis for proposed changes;
- analysis of safety, health and environmental considerations involved;
- effects on separate, but connected up-stream or down-stream facilities or operations;
- necessary revisions of operating procedures, safe work practices and training programs;
- notification of appropriate personnel of proposed changes and their consequences;
- duration of changes (if temporary); and
- required authorization to effect specific changes.

Operating procedures

Operating procedures should cover startup; normal, temporary and simultaneous activities; emergency shutdown and isolation; and normal shutdown. The procedures should be reviewed when changes are made and periodically to ensure that they reflect current practices.

Safe work practices

To minimize safety and environmental risks associated with operating, maintenance and modification activities and materials handling, safe work practices should be developed for all personnel, including contractors. Certain operations, such as welding or cutting gas pipelines, should be subject to a work authorization system that mandates adequate communication of work activities (including unfinished work) to shift change and replacement personnel. Contractor selection should include evaluation of safety and environmental management programs and their performance.

Training

All personnel must be familiar with potential hazards, safe and unsafe methods of operations, and applicable laws and regulations, as well as the safety and environmental management program. Training programs can be in-house or with outside consultants, or a combination of both.

Inadequately trained personnel can be a serious liability, putting other workers and the facility at risk. The degree of training should be commensurate with employee job functions. This includes supervisory personnel and contractors. Operators must determine the adequacy of contractor personnel training programs.

Investigations

Procedures for investigating all incidents with serious safety or environmental consequences, or the potential for risk should be established and promptly initiated. Such investigations can reveal significant data regarding corrective actions or training to prevent recurrences. The findings should be retained for use in hazards analysis updates and company audits.

Audits

Management should require all program elements to be periodically self-audited. The audit interval should not exceed four years, with the first audit performed within two years of the start of a safety and environmental management program. Audit findings should be given to management personnel responsible for the program. These managers should determine and document appropriate responses to the findings and assure satisfactory resolutions. The report should be retained at least until the completion of the next audit.

Orientation

The American Petroleum Institute and the Offshore Operators Committee have co-sponsored and staged three orientation workshops in 1993 on the safety and environmental management program. (This committee is an association representing offshore oil and gas operators.) About 600 industry and government representatives have attended thus far. Operating company representatives at these sessions were encouraged to voluntarily prepare appropriate programs for their facilities and operations. (Contact the authors of this article for details on a possible fourth orientation workshop.)

Implementation assessment

A program is under development to benchmark the status of the voluntary implementation of safety and environmental management programs. Periodic surveys will be conducted to gather information assessing progress. Survey findings will be shared with the Minerals Management Service and the Coast Guard.

The Minerals Management Service issued a notice on June 30, 1994, in the *Federal Register*, of its intent to continue evaluating the safety and environmental management program concept. The notice recognized the API RP75 publication as *"providing a good foundation for promoting safety and environmental protection in the outer continental shelf oil and gas industry."* The service encourages operators to voluntarily implement programs and intends to monitor industry's progress in this regard. After two years of monitoring, the service will determine if voluntary implementation accomplishes program goals.

Options for future Mineral Management Service activities include:

- continuing to encourage voluntary implementation,
- establishing a structured regulatory program for all outer continental shelf oil and gas operations,
- requiring safety and environmental management programs for specific areas, or
- requiring safety and environmental management programs when inspections or safety records reveal unacceptable performances.

Conclusion

The publications described in this article are part of an ongoing accelerated program of the American Petroleum Institute called, "Strategies for Today's Environmental Partnership" (STEP). The program was initiated to help member companies achieve safe and environmentally responsible operations.

The American Petroleum Institute and its member companies are dedicated to continuous long-term efforts to improve the compatibility of oil and gas operations with the environment, while protecting the health and safety of the employees and the public.

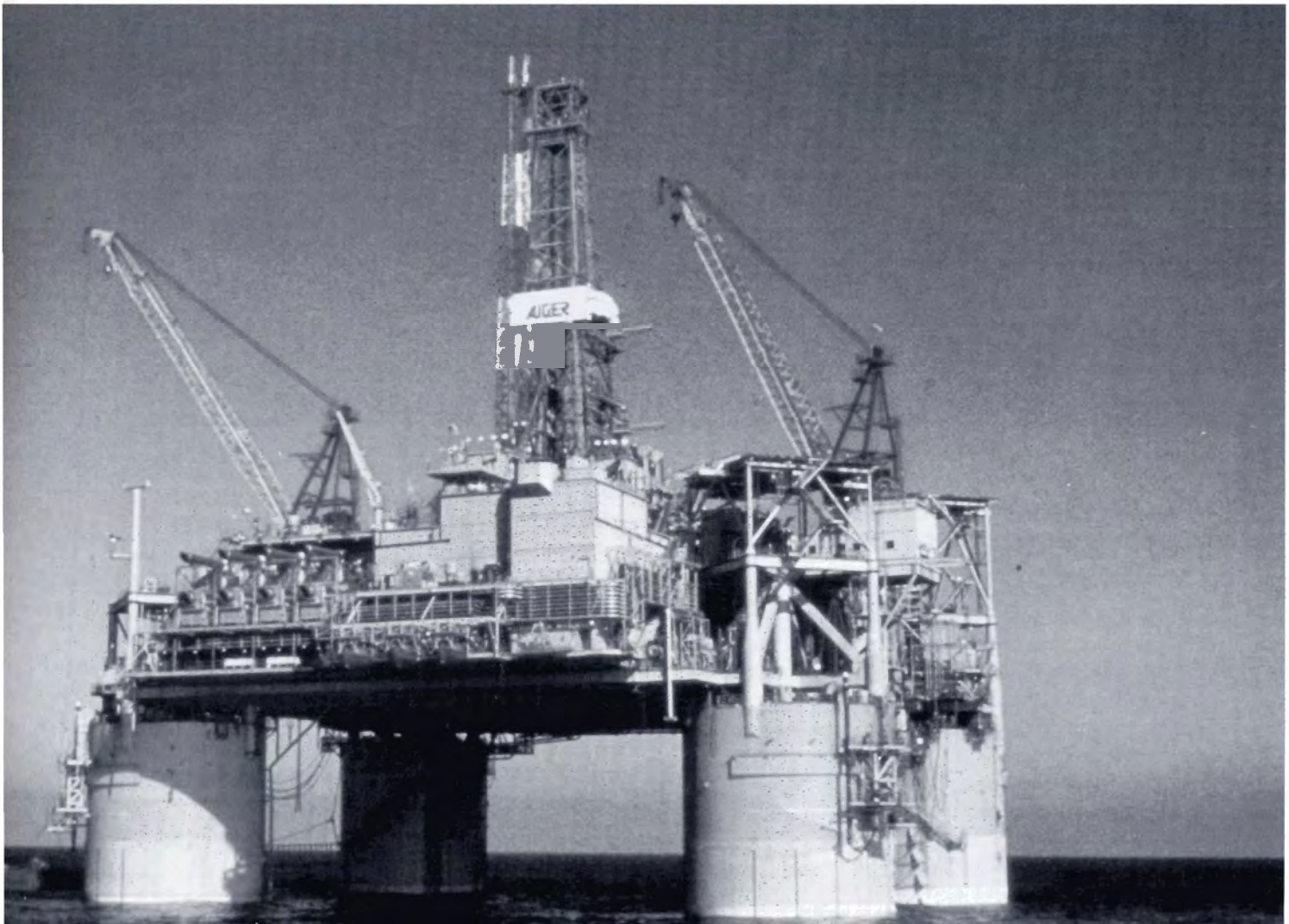
Mr. Peter K. Velez is the manager of Regulatory Affairs, Shell Offshore Inc., P.O. Box 61933, New Orleans, Louisiana 70160.

Telephone: (504) 588-6982.

Mr. Charles O. Liles is a senior associate for the Exploration and Production Department, American Petroleum Institute, 700 North Pearl Street, Suite 1840, Dallas, Texas 75201-2845.

Telephone: (214) 720-5712.

Tension leg platform operates in 2,860 feet of water in the Gulf of Mexico.



Offshore industry benefits economy and environment

By Mr. Robert Moran

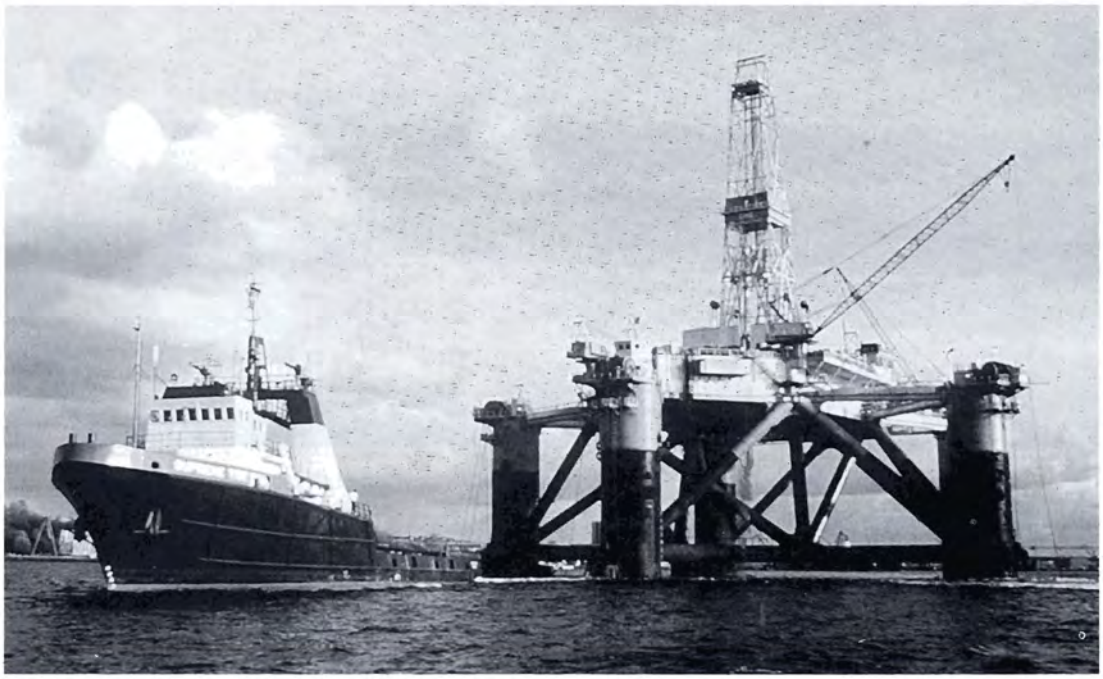
Since the first offshore well was drilled in state waters off Santa Barbara, California, in 1894, America's outer continental shelf oil and natural gas industry has provided significant benefits to the nation. It has helped fill energy needs and has contributed to the economy by providing substantial revenues to the United States Treasury.

The offshore industry also contributes to a safe, clean workplace and marine environment.

Economic benefits

More than nine billion barrels of oil and 98.9 trillion cubic feet of natural gas have been produced from leases on the outer continental shelf since the federal leasing program began in 1953. In 1992, offshore oil production amounted to nearly 13 percent of the total oil produced in the United States. That same year, natural gas production accounted for 26.3 percent of the total United States yield.

In addition to the value of the resources produced, the revenues from outer continental shelf leasing and production have contributed more than $100 billion to the federal treasury.



Offshore revenues have also provided more than 80 percent of the funds spent by the Land and Water Conservation Fund, the nation's primary source of revenue for acquiring land for natural parks and other outdoor recreational areas. Since the fund's establishment in 1965, about $13.2 billion has been credited from offshore receipts.

Safety record

The safety and environmental record of United States offshore operations has been equally impressive. Between 1971 and 1990, the industry drilled 20,550 exploratory wells, which produced 6.8 billion barrels of oil. Of this, only 908 barrels were spilled due to blowouts.

A National Research Council study of outer continental shelf operations from 1972 until 1986, found that no blowouts resulted in significant amounts of oil reaching shore, affecting sensitive environments or causing loss of resources. Another study conducted in 1985 by the National Academy of Sciences determined that offshore activities accounted for less than two percent of the oil spilled in the ocean.

Offshore facilities incorporate numerous safety systems and design features, such as blowout preventors, subsurface safety valves and automated "shut in" systems that virtually eliminate the potential for a catastrophic spill.

All offshore facilities have emergency contingency plans, and conduct training programs and response exercises with skilled personnel and special equipment.

One current training and education effort is the Safety and Environmental Management Program. Through a series of training sessions, the program addresses the identification and management of safety and environmental hazards; training protocols; and the design, construction, start-up, operation, inspection, maintenance, monitoring and modification of offshore facilities. Through efforts such as these, job-related injuries and illnesses among full-time exploration and production workers dropped 48 percent from 1977 to 1991.

The offshore industry has developed a number of new technologies to maintain a clean environment. They include non-petroleum-based, biodegradable, low toxicity drilling fluid systems. This technology benefits the environment by emitting lower discharge volumes and reducing the need for transport of drill cuttings to shore for landfill disposal.

Conclusion

The outer continental shelf industry is proud of its environmental and personnel safety records. Every day, offshore operations demonstrate that our country's vital energy resources can be produced safely in an environmentally sensible manner.

Mr. Robert Moran is director of Government Affairs of the National Ocean Industries Association, 1120 G Street, N.W. Washington, D.C. 20005.

Telephone: (202) 347-6900.

Offshore industry crewboat.

Offshore marine industry tackles 1990s challenges

By Mr. Robert J. Alario

Over the next few years and into the next century, business will be more intense, more complicated and more sophisticated than ever before. This presents a special set of challenges for the offshore oil and gas industry and its operators.

Over the past 15 years, the attrition rate in the offshore marine vessel sector has been significant. The reduction in the number of United States offshore fleet and its operators over this period is noteworthy. Mergers, acquisitions, overbuilding, volatile markets, international competition, insupportable day rates, difficult contracts, major legislative and regulatory changes, excessive litigation, the complexity of transition from domestic to International Maritime Organization (IMO) standards and rising insurance costs are just some of the reasons for the decline . . . and they will continue to challenge us.

If the United States offshore marine fleet and companies are to regain and maintain a competitive position, we must follow a sensible plan of attack which will move us aggressively into the next century. At the same time, we must fully meet our obligations.

1990s

Previous decades have had catchy monikers to capture the essence of their time, such as the "roaring 20s" and the "nifty 50s." We don't know yet how the 1990s will be coined, although in the business world, the decade has been identified as the "information decade," the "decade of the environment" and the "decade of quality management."

In the world of business, at least, we think the concept of total quality management (TQM) will ultimately be the focus of the 90s.

Therein lies a dilemma.

The offshore marine industry in the United States consists of a few, very large companies and many small and medium-sized firms. The Offshore Marine Service Association represents 90 percent of all active companies and 95 percent of the offshore fleet.

Association plan

The Offshore Marine Service Association has multiple responsibilities to:

- **promote responsible corporate citizenship on the part of its members;**
- **sponsor reasonable legislation and regulation;**
- **resist negative forces of special interests from within and without;**
- **honor its obligation to promote industrial safety for personnel and property; and**
- **comply with and promote environmental laws and regulations.**

In filling these obligations, we cannot ignore the fact that our operators are in business and must make a reasonable profit. And finally, the Offshore Marine Service Association must be an equitable and trustworthy ombudsman for large and small companies alike.

The association determined that it was imperative to devise and carry out a basic, realistic, well orchestrated plan of action based on the TQM concept for the entire industry. Thus, a modular program was developed to form the basis of a sound business plan.

The Offshore Marine Service Association plan consists of five safety-related business programs which would be productive either by themselves or in concert. Program objectives include personnel and equipment/vessel safety, risk reduction and management, and insurance cost reduction.

Five programs

The five programs deal with:

- **safety orientation** - to increase employee awareness of proper safety, health and environmental practices;
- **safety training** - to provide employees with more in-depth training on specific safety topics; (Recent analyses of seafarer injuries indicate that 80 percent of serious accidents are caused by human error, many during the performance of routine tasks. Carelessness and complacency are at the root of most personal injuries.)
- **operational risk management** - to improve employee awareness of high risk operating situations identified by operators, insurers and attorneys;
- **Jones Act mediation** - to promote and expand the use of alternative dispute resolutions to expedite the legal process of employee injury claims, thereby reducing costs; and
- **streamlined vessel inspection** - to increase the material safety of offshore vessels, while reducing the cost of vessel inspections.

Modern 140-foot offshore industry tugboat.

Continued on page 50

Continued from page 49

To date, three of the five programs have been implemented. They are the Safety Orientation Program, the Safety Training Program and the Streamlined Vessel Inspection Program. The two remaining are expected to be in place by the end of 1994.

Starting on January 1, 1995, the Offshore Marine Service Association will monitor the progress of all five programs, evaluate the results and measure the success of the efforts. One that exemplifies the concept of total quality management aptly is the Streamlined Vessel Inspection Program. A comprehensive description follows.

Streamlined vessel inspection

Jointly sponsored by the Eighth Coast Guard District headquartered in New Orleans, Louisiana, and the Offshore Marine Service Association, the Streamlined Vessel Inspection Program was the first industry-wide project to be approved and implemented.

In May 1993, a quality action team met to begin the initiative. Four areas in which the inspection process could be improved were identified as:

(1) time management,
(2) consistency,
(3) education, and
(4) partnership.

A streamlined inspection program was devised addressing all four areas. This was accomplished by "keeping it simple" from inspection criteria to vessel personnel training to program documentation. It was recognized that the program must be user friendly as well as functional.

Vessel inspection evolved from an annual "snapshot" of conditions to an ongoing process that vessel personnel or, in some cases, vendors perform. Discrepancies are recorded and submitted to a designated company representative. Corrective actions taken by the vessel crew or vendors are also recorded, becoming part of vessel documentation reviewed by the Coast Guard. Verification of a vessel's condition is confirmed by a Coast Guard audit. This may include a review of documentation, personnel training and the demonstration of inspection procedures on vessel systems.

The program could not succeed without tangible benefits for the industry and the Coast Guard.

Benefits of the four areas include:

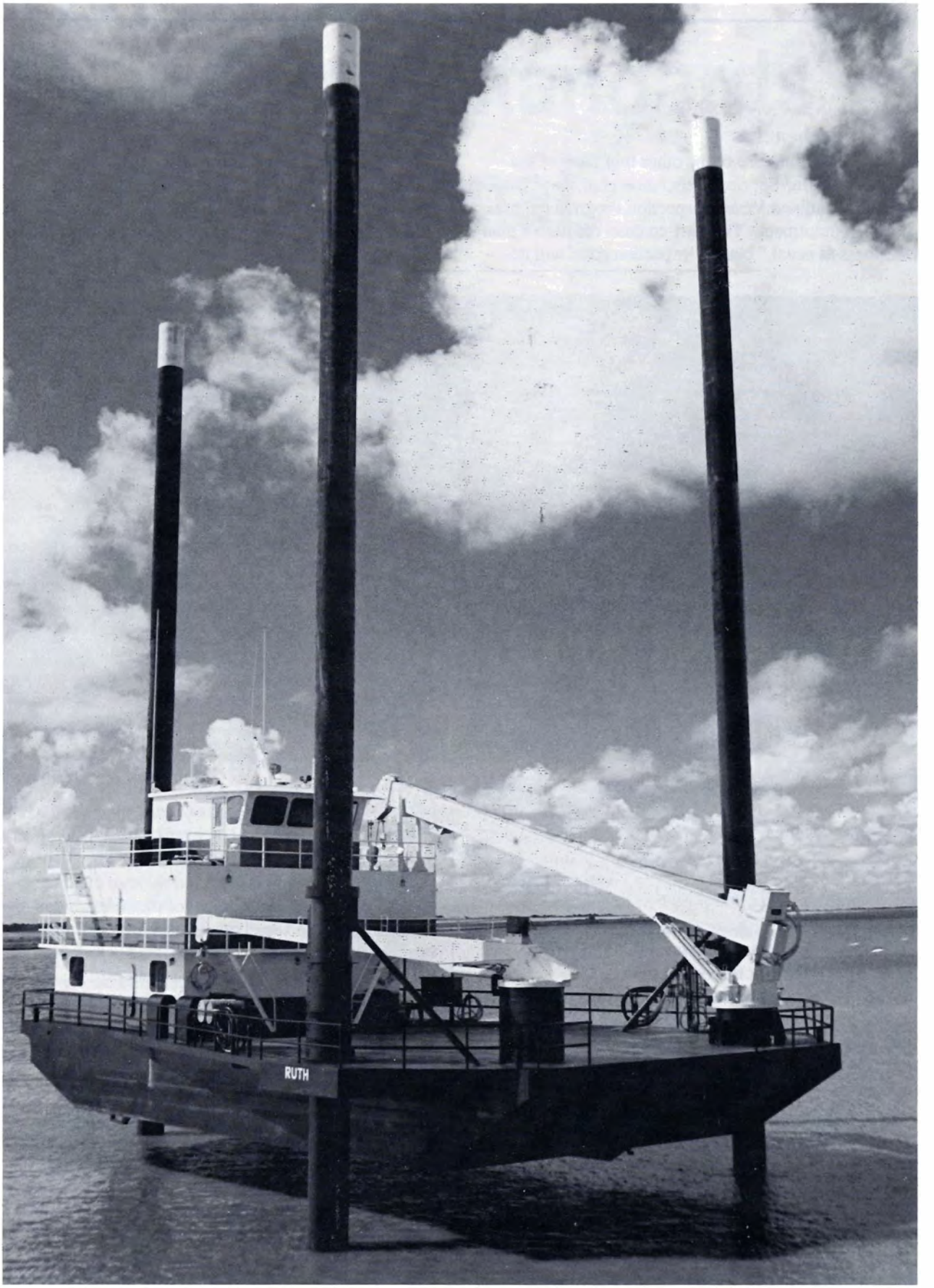
- **Time management.** The quality action team collected data from the Coast Guard and industry representatives concerning the total time spent on vessel inspection. For example, one company reported that the time spent on a vessel inspection, including preparation, totaled 161 hours of crew member, shore personnel and vendor work over a two-day period. After implementing the Streamlined Vessel Inspection Program, the company reported a 23 percent reduction in total hours spent over an entire year. The inspection procedures also provide vessel operators with a first-class preventive maintenance as a supplementary program.

- **Consistency.** Generic inspection criteria was developed for every system and its components on board offshore marine service vessels. Written clearly in a step-by-step format, the criteria were mutually agreed upon by representatives of industry and the Coast Guard and were researched for compliance with regulations. This ensures that each system and its components are inspected the same way every time. The immediate goal is to apply the criteria consistently throughout the eighth district. Next, the concept would be applied nationwide, and, ultimately, worldwide.

- **Education.** Guidelines for vessel personnel training concerning the Streamlined Vessel Inspection Program were developed. It has been demonstrated that this helps crew members to learn their jobs better and take pride in their efforts to maintain the safety of the vessel. It has also been noted that learning about the program and its inspection criteria helps new employees learn their job faster than through typical on-the-job training and gives them valuable tools in their professional development.

- **Partnership.** In the process of developing the program, the Coast Guard and industry representatives gained insight into each other's approach to vessel safety, recognizing that vessel safety was a common interest, and not just compliance with regulations. A true partnership based on mutual respect and common concerns was formed between the offshore marine industry and the Coast Guard. Secondly, the Offshore Marine Service Association has challenged industry underwriters to develop a trial insurance and risk management program designed to: 1) enhance safety, 2) protect and increase profits for insurance agents and underwriters, and 3) reduce insurance costs for offshore marine vessel operators who successfully implement the vessel and personnel safety programs.

Continued on page 52



Liftboat.
By Mr. Jim Herbert.

Continued from page 50

Costs and benefits

As is the case of the other four parts of the Offshore Marine Service Association plan, participation in the Streamlined Vessel Inspection Program requires a solid commitment. The start-up costs are higher than "business as usual," but the inspection costs will decrease as personnel become familiar with the program and equipment discrepancies are caught before it is too late and they are more expensive to correct.

Improvement of vessel safety and equipment condition will also increase, but, unlike costs, will flatten out and remain at a high level throughout the year, instead of peaking at inspection time.

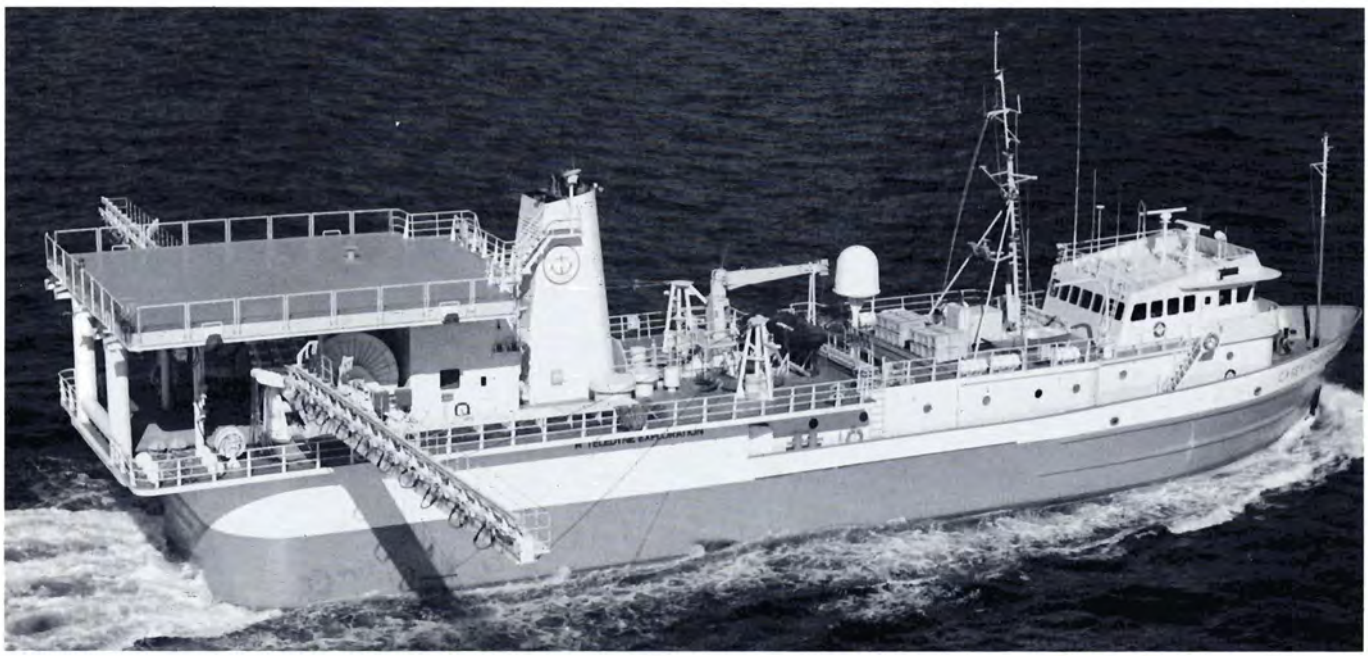
Enormous benefits in safety and cost control can be realized through the Streamlined Vessel Inspection Program by vessel operators who are committed to the TQM philosophy in its most practical form. Their operations will be more efficient and effective, and, ultimately, they will be prepared to meet the more demanding quality standards of the International Safety Management Code.

Summary

With the increased dominance of IMO standards and the advent of mandatory tonnage measurement which is greatly simplified under the new International Tonnage Convention, the small vessel operator is entering a new dimension.

To survive in the more competitive business battleground of the 21st century, all companies, large and small, must be prepared to face new challenges.

The Offshore Marine Service Association and the industry conclude that safety and quality management reap healthy dividends. Those dividends can only be achieved through the triangle of quality management, partnership and balance.



Geophysical research vessel.

Balance is achieved by developing reasonable standards to ensure the safety of the vessel, its crew, the environment and the general public.

Partnership is achieved through the interaction and dedicated commitment of the stakeholders in the industry -- the vessel operators, crews, customers, insurers, attorneys and the Coast Guard -- to foster reasonable quality management initiatives.

Quality management is achieved through committed vessel operators, but it must be supported by partnership and balance.

The Offshore Marine Service Association believes that its objectives of safety, environmental protection and realistic business expectations can be attained and maintained through a firm commitment to total quality management practices. This will result in vessel operations that are safer, environmentally responsible and economically viable.

Mr. Robert J. Alario is president of the Offshore Marine Service Association, 900 North Corporate Drive, Suite 210, Harahan, Louisiana 70123.

Telephone: (504) 734-7622.

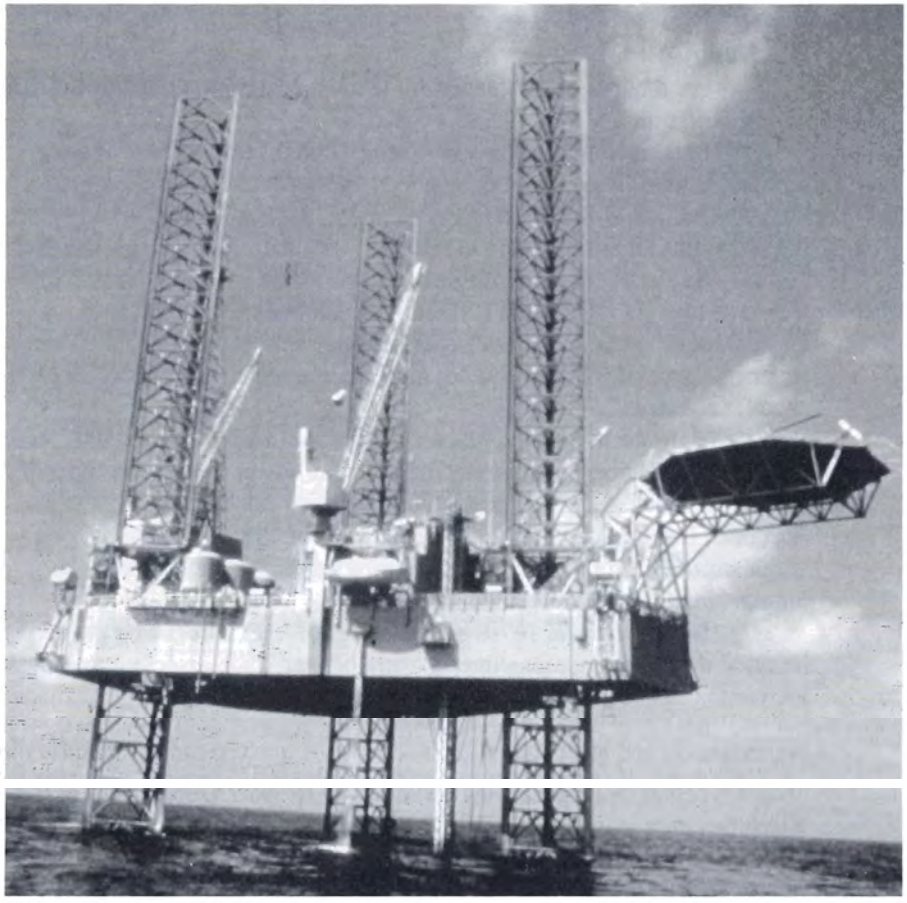
Oil industry standards go international

By Mr. J. Mike Spanhel

For many years, American Petroleum Institute (API) standards have been accepted as de facto internationally. As the petroleum industry grew worldwide, foreign governments, operators and suppliers became increasingly active in standards development, seeking new standards or modifications of existing ones.

In 1989, the International Organization for Standardization (ISO) reactivated a long dormant Technical Committee 67 — "Materials and Equipment for the Petroleum and Natural Gas Industries." (Technical Committee 67 had been inactive since 1988, when its secretariat, Romania, withdrew from ISO.)

This committee was reorganized with the American National Standards Institute (ANSI) as secretariat to address the adoption and subsequent internationalization of petroleum industry standards. The objective is to develop universal standards with worldwide applications that do not impede free trade.



Jack-up drilling unit.

Organizations

- **American Petroleum Institute** (API) was founded in 1919 as a United States trade association to advance the petroleum industry. Now an international association, API develops and publishes technical standards known as "recommended practices," written by personnel from the oil industry, manufacturers and regulatory authorities.

- **American National Standards Institute** (ANSI) was founded in 1918 by a group of professional and technical societies, and three government agencies, to coordinate the development of voluntary standards in the United States and to approve domestic requirements as consensus standards. About one-fourth of its annual budget goes for international standardization, mostly through ISO.

- **International Organization for Standardization** (ISO) was founded in 1946 by national standards associations, including ANSI, from 25 countries. Today, ISO develops and coordinates international standards for trade, safety and environmental consistency. ANSI plays a prominent role in ISO.

- **The European Committee for Standardization** plays a similar role in the European community to that of ANSI in the United States. However, in the oil and natural gas areas, this committee appears to defer to ISO, providing that the latter produces standards in a timely fashion.

Continued on page 54

Do it once . . . Do it right

Continued from page 53

Background

For a better understanding of today's API efforts a brief historical review is in order.

Immediately after World War II, United States standards were acceptable worldwide. American goods and expertise could be sold anywhere with little effort. Therefore, there was little incentive for our standards organizations to participate in the harmonization of international standards.

By the 1960s, the European economy had strengthened and its technical manufacturing and marketing capabilities rivaled those in the United States. American goods and expertise was no longer viewed as superior, especially if they did not meet international standards or those of specific countries.

With the increasing globalization of industries and markets, more national governments are demanding a greater say in the development of standards. The latest thrust toward international standardization was the European Economic Community Declaration of 1985, which aims for a single unified European market. Differing national standards must be harmonized to eliminate trade barriers.

During the late 1970s and early 1980s, API recognized the need to increase the role of manufacturers, operators and trade associations outside the United States in the standard development process. This was perhaps best exemplified by technical disagreements among national groups active in North Sea oil and gas exploration and production. The disagreements concerned whether technical issues pertaining to the severe conditions in the North Sea area would be specifically or generically addressed in the standards.

Drilling and production facilities.

API response

In March 1984, the API Exploration and Production Operating Committee established a subcommittee to respond to the need for international participation in standards. Over the next three years, the committee approved several subcommittee initiatives, including:

- encouragement of broader participation by non-United States oil companies, regulatory bodies and manufacturers in the formulation of API standards;
- harmonization of API standards with other national standards, and revision of existing standards to cover gaps and weaknesses; and
- establishment of a quality assurance program.

None of these actions, however, completely succeeded in satisfying the growing need for internationally-adopted standards for oil field equipment and materials.

In early 1987, two ISO members suggested reactivating its Technical Committee 67. The API subcommittee felt this would take place with or without the participation of the United States. There was also a concern that API standards could be replaced by European or international standards, which could affect government regulations setting up trade barriers.

In March 1988, the subcommittee recommended that the United States and API should actively participate in the Technical Committee, and that ANSI should be encouraged to accept the secretariat on behalf of the United States. API would become an ANSI-accredited organization and serve as the United States technical advisor for Technical Committee 67 affairs.

Do it globally!

At a May 1990 meeting, the Technical Committee 67 accepted its ad hoc work classification of the 79 standards in three groups consisting of 44 which could be circulated for vote with little or no revision, 29 requiring further study and minimum revisions and four needing major revisions before adoption. Two standards were rejected.

Seven subcommittees were authorized to review and modify the API standards which required further study and revision. The subcommittees and secretariats are:

- Line pipe (Germany);
- Pipeline transportation systems (Netherlands);
- Drilling and completion fluids, and well cements (Norway);
- Drilling and production equipment (United States);
- Casing, tubing and drill pipe (Japan);
- Processing equipment and systems (France); and
- Offshore structures (United Kingdom).

The subcommittee recommendations were accepted and API assumed an active role in international standardization.

Accomplishments

The first meeting of ISO's Technical Committee 67 in February 1989 accomplished the following:

- ANSI became secretariat;
- Seventy-nine API standards and recommended practices were submitted for adoption by the ISO "fast track" procedure, which permits acceptance of national standards by a 75 percent majority membership vote; and
- An ad hoc work group was established to review and classify the 79 API standards.

By December 1993, 12 API standards were approved for publication by ISO.

Conclusion

API is convinced that active participation in international standards development is the most effective way to avoid a proliferation of parallel documents and costly expenditures of scarce manpower reserves. API is committed to cooperate with ISO and other standard bodies to that end with the directive: Do it once . . . Do it right . . . Do it globally!

Mr. J. Mike Spanhel is a senior associate in the Exploration and Production Department, American Petroleum Institute, 700 North Pearl Street, Suite 1840, Dallas, Texas 75201-2845.

Telephone: (214) 953-1101.

Like a sip from a fire hose . . .

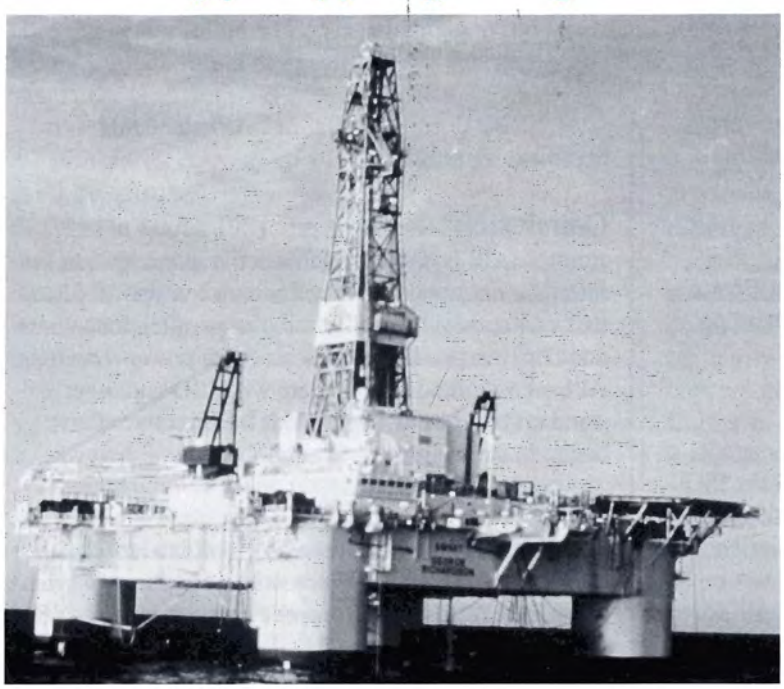
too many offshore safety systems *too fast*

By Mr. Alan Spackman

Six years ago, much offshore industry attention was focused on the North Sea, where the Piper Alpha, a fixed production platform was destroyed by a series of fires and explosions that caused 167 fatalities on July 6, 1988.

In 1993, the United Kingdom was completing its "Safety case" regulations. In the United States, the Minerals Management Service had announced its Safety and Environmental Management Program concept. The American Petroleum Institute was finishing its "Recommended Practices for Development of a Safety and Environmental Management Program for Outer Continental Shelf Operations and Facilities." At the International Maritime Organization (IMO) in London, the Maritime Safety Committee was preparing to ask its assembly to adopt a resolution advocating a non-mandatory International Safety Management (ISM) Code.

The Sonat George Richardson is a semi-submersible drilling rig built for the 90s.
Photograph courtesy of Sonat Offshore Drilling Inc.



Too much . . . too fast?

It is like taking a sip from a fire hose for someone in the offshore service industries looking at the safety and environmental management systems for the first time. A multitude of standards from government and industry appear to apply to the offshore service industries. And to compound the problem, consultants contracting to develop the systems sometimes exaggerate difficulties to market their services.

STATUS UPDATE

The United Kingdom

The United Kingdom's regulations require the submittal and acceptance of a "safety case" or demonstration. This includes: a management system that ensures compliance with statutory health and safety requirements, sufficient arrangements for audit reports, identification of all potential major hazards, risk evaluation and a reduction of risks to persons to a level that is as low as reasonably practical. In addition, a detailed analysis of evacuation, escape and rescue plans must be included in the safety demonstration.

The acceptance process for mobile offshore drilling unit (MODU) and platform safety demonstrations is well on its way. The major types of fixed and mobile offshore installations for most companies operating in the United Kingdom have been approved. Substantial sums have been spent on studies, design and equipment improvements and installation, and the maintenance of administrative systems.

Attention is now being directed toward areas requiring improvement, not only on board the rigs and platforms, but in existing detailed prescriptive legislation and regulation. With the major objective reached, and with a declining oil industry, much of the sense of urgency has disappeared.

Oil industry forum

The Oil Industry International Exploration and Production Forum introduced a notable initiative in safety management for offshore industries. (The forum is a global association of oil companies and petroleum industry organizations concerned with all aspects of exploration and production, emphasizing personnel safety and environmental protection.)

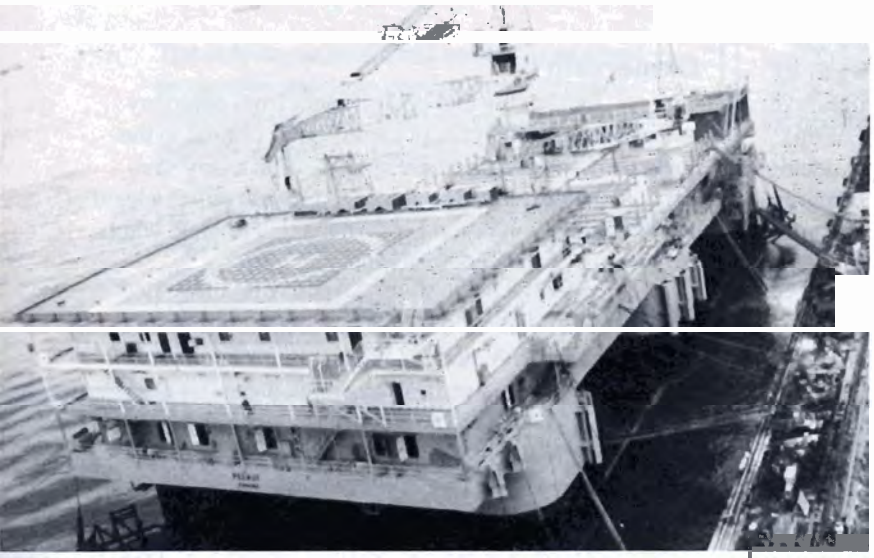
The forum's recently published "*Guidelines for health, safety and environmental management systems*" is designed to provide an objective-setting management system to be used by any operating or contracting company to assure compliance with health, safety and environmental management policies, practices and requirements.

One of the largest international oil companies has already started revising its internal instruction to conform to the structure of this management system. The company also indicated that health, safety and environmental systems of prospective contractors will be reviewed during the selection process.

The forum is also developing guidelines for service vessels, which, in draft form, call for review of contractor safety management systems during the vessel selection process.

Continued on page 58

Semi-submersible, self-erecting drilling tender with helicopter deck offers high safety and performance.
Photograph courtesy of the Petroleum Forum



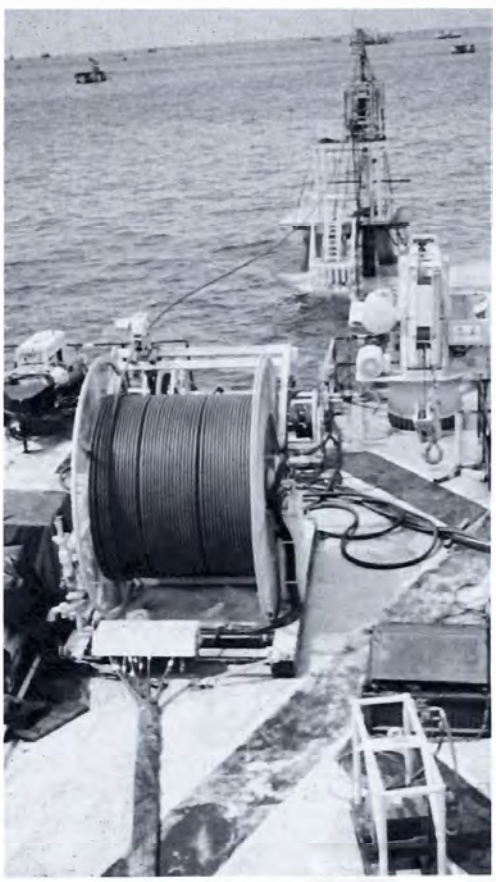
IMO

The IMO has adopted amendments to the SOLAS Convention that will make conformance with the ISM code mandatory for certain ships beginning in July 1998.

The International Chamber of Shipping and the International Shipping Federation jointly issued guidelines to assist "traditional" maritime industries in developing safety and environmental management systems conforming to the ISM code. Similar, more detailed guidance is provided in the revised *"Code of Ship Management Standards"* of the International Ship Managers Association.

IMO's action should not directly affect the United States domestic offshore industry. The amendments do not apply to non-self-propelled ships or to ships of less than 500 gross tons, although IMO member governments are encouraged to apply the ISM code to all ships.

Within the working group drafting the SOLAS amendments, there was a clear sense that MODUs should be included and they were specifically named in the draft. However, they failed to include language that explicitly extended the provisions of the amendments to non-self-propelled vessels. Hardly any MODUs are self-propelled. Consequently, the ISM code will only be mandatory for less than five percent worldwide and less than one percent of United States-flagged MODUs.



Coiled tubing unit drills shallow wells far from wellheads to guard against shallow gas.
Photograph courtesy of Dowell Schlumberger Inc.

Continued from page 57

United States

The Minerals Management Service urges all offshore oil companies to voluntarily implement safety and environmental management programs using the American Petroleum Institute's standard known as RP 75. The service has announced a two-year program of monitoring their voluntary efforts. At the end of this period, the Minerals Management Service will decide whether or not a regulatory mandate for these programs is necessary. This decision will have significant, and possibly international impact.

The American Petroleum Institute and the Offshore Operators Committee have sponsored a series of workshops to explain RP 75 and provide guidance on its implementation, particularly among small- and medium-sized companies.

The Coast Guard, which helped develop the ISM code, strongly supported making it mandatory through the recently adopted SOLAS amendments. The Coast Guard recently issued a Navigation and Vessel Inspection Circular (No. 2-92), "Guidance regarding voluntary compliance with the International Management Code for the Safe Operation of Ships and for Pollution Prevention." This circular provides guidance for applying the ISM code to United States flag vessels, and encourages all United States commercial vessel owners and operators to seek ISM code certification.

The Coast Guard asked the National Offshore Safety Advisory Committee to form a working group to develop industry-specific guidelines for implementation of the ISM code, maintaining that this could reduce the frequency and scope of the Coast Guard overseeing required periodic inspections and tests. The working group has reviewed the various management system models, but has not yet developed recommendations on the necessary modifications to the ISM code for offshore industry use.

ISO

An International Organization for Standardization (ISO) subcommittee, responsible for standards for the oil and gas production and exploration industry, recently initiated efforts to develop guidance for establishing overall management systems. Based on the American Petroleum Institute's RP 75, the guidelines are intended to include hazard management and risk assessment, prevention, control and mitigation of fires and explosions, and analysis, design and testing of basic surface safety systems.

Common threads

A review of the various systems reveals considerable consistency regarding basic program elements. These elements are the same as those in business management systems of most successful companies: leadership, clear statements of policy and objectives, organization, resource control, risk evaluation and management, planning, performance monitoring and an auditing provision.

Ownership

Leadership and commitment from company management is universally identified as critical to the success of any management system. Too many standards being developed or imposed provide either a legal or contractual obligation for systems that operate wholly or partly outside company management.

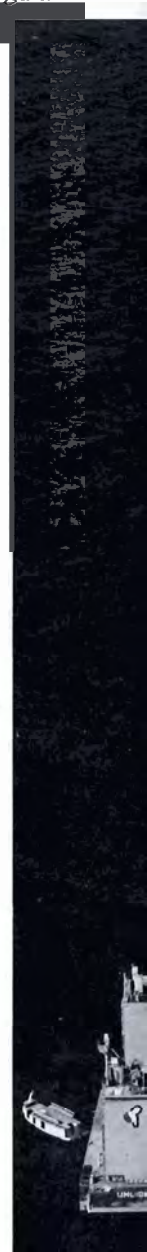
Potential difficulties can easily be illustrated. Soon, a MODU owner may be required to be certified in compliance with the ISM code by maritime regulatory bodies of a flag-state government and a coastal-state government. A separate regulatory body of the coastal state may demand a demonstration of compliance with its own safety and environmental management system. At the same time, a client may impose by contract a requirement to conform to the client company's own system, while also requiring conformance with pertinent industry guidelines. As an additional complication, the MODU owner typically will have units operating in different countries and be working for various clients. Imagine the delays and potential for adverse consequences when multiple approvals or acceptances must be obtained before an improvement in the management system can be made.

Furthermore, as the systems typically require some form of outside audit, substantial costs and administrative upheavals can occur, unless a mutually recognized and accepted system of safety management and audits evolves along with the requirements.

The future

Hopefully, as more and more companies establish formal safety management systems, there will evolve one approval process acceptable to all.

Clearly, in the scenario above, the overseer of the company's program could become overwhelmed very quickly by demands not related to improvement of safety or environmental performance. Some things must be done:



- Clients and regulatory bodies should look at management system elements which may already exist before demanding additional requirements.

- Regulatory bodies must not become overly prescriptive in their demands for management systems, particularly in the early stages of development. Flexibility must be demonstrated for companies to modify their systems to meet concurrent demands of others.

- The industry must control and/or avoid counterproductive and often costly development of redundant guidelines and standards, which in themselves diminish credibility.

- For the sake of efficiency, auditors and assessors must begin accepting one another's systems and audits. This is absolutely necessary to avoid costly compliance to multiple authorities of similar management systems.

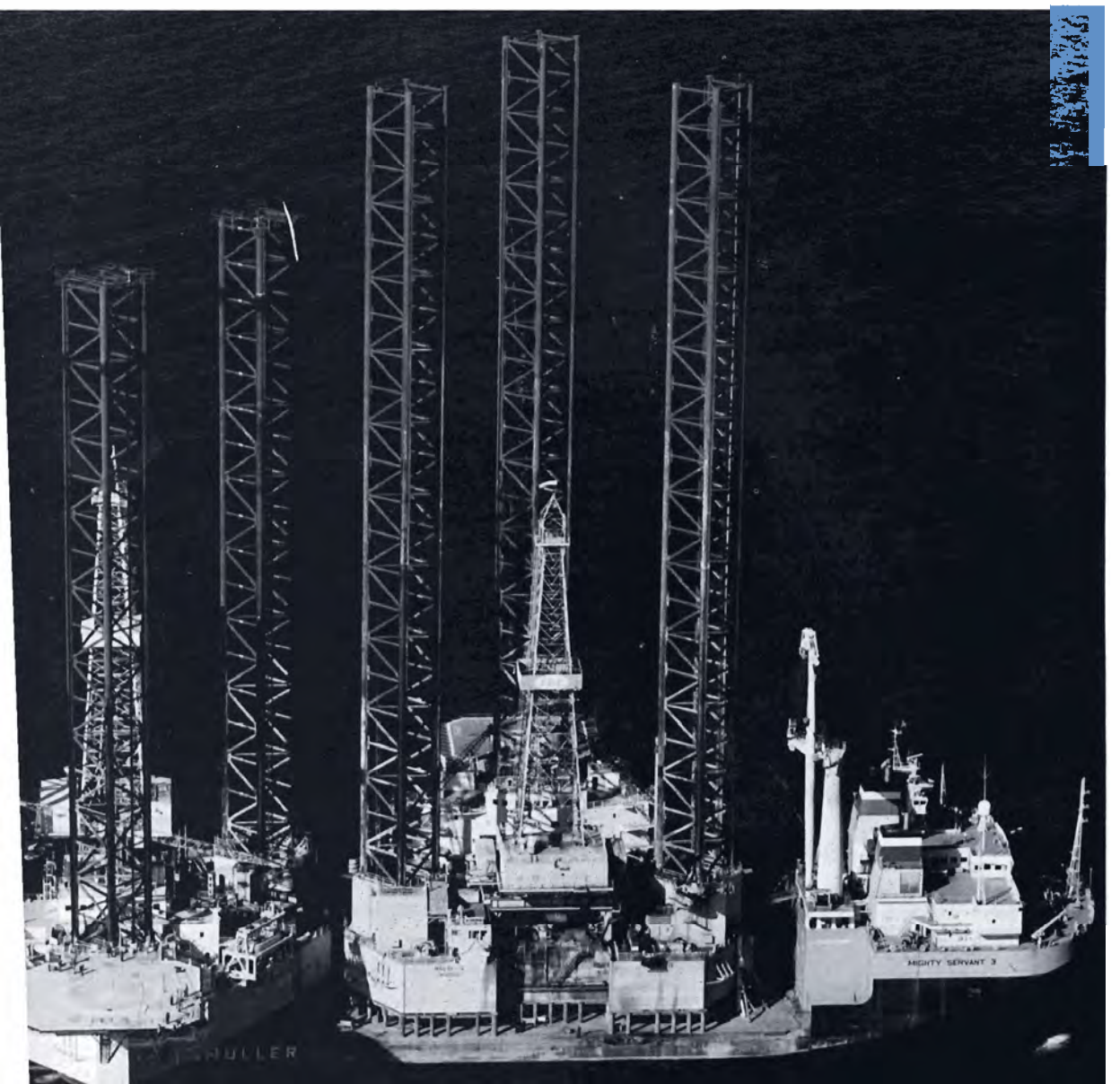
Conclusion

Regulatory and client demands for safety and environmental management systems stem from legitimate concerns related to performance and liability. They may not be the only or best solution to any one problem. However, such systems are being increasingly embraced voluntarily by industry as well as being imposed by government.

The challenge for all concerned will be to assure that adopting these systems becomes more than a paper chase, and truly improves safety and environmental performance.

Mr. Alan Spackman is the director of Offshore Technical and Regulatory Affairs, International Association of Drilling Contractors, P.O. Box 4287, Houston, Texas 77210.

Telephone: (713) 578-7171.



Jack-up rigs ride "piggy back" securely in calm seas on Mighty Servant 3.

The following deck questions should be answered using chart number 12354TR, Long Island Sound - eastern part - and the supporting publications.

Deck

The draft of your vessel is 3.3 meters (11 feet). Use 14° W variation where required. The gyro error is 3° E. The deviation table is:

HDG. MAG	DEV	HDG. MAG	DEV
000°	2.0°E	180°	2.0° W
030°	1.0° E	210°	1.0° W
060°	0°	240°	0.5° W
090°	0.5° W	270°	0.5° E
120°	1.0° W	300°	1.5° E
150°	2.0° W	330°	2.5°E

1. At 0700, Stratford Shoal Middle Ground Light bears 137° pgc. From your radar, you get a bearing of 007° pgc to the south tip of Stratford Point with a range of 4.5 miles. What is your 0700 position?

A. LAT 41°04.6' N, LONG 73°07.0' W.
B. LAT 41°04.6' N, LONG 73°07.4' W.
C. LAT 41°04.7' N, LONG 73°07.2' W.
D. LAT 41°04.8' N, LONG 73°07.0' W.

2. At 0725, you are heading 054° T, and Stratford Point Light is abeam to port at 3.1 miles. The current is 135° T at 1.8 knots. If you make turns for an engine speed of 8 knots, what course must you steer to make good 048° T?

A. 035° T.
B. 042° T.
C. 047° T.
D. 055° T.

3. Which of the following structures should you look for while trying to locate Southwest Ledge Light?

A. White conical tower with a brown band midway of height.
B. White octagonal house on a cylindrical pier.
C. Conical tower, upper half white, lower half brown.
D. Black skeleton tower on granite dwelling.

4. At 0830, you obtained the following Loran-C readings:

9960 -- X -- 26562.5
9960 -- Y -- 44028.1

What is your vessel's position?

A. LAT 41°12.4' N, LONG 73°56.0' W.
B. LAT 40°17.4' N, LONG 73°54.0' W.
C. LAT 41°12.0' N, LONG 72°53.8' W.
D. LAT 41°12.4' N, LONG 72°53.8' W.

5. From your 0830 position, you wish to make good 097° T. There is no current, but a southerly wind is producing 3° leeway. What course should you steer per standard magnetic compass to make good your true course?

A. 118° psc.
B. 115° psc.
C. 112° psc.
D. 109° psc.

6. What do the dotted lines around Goose Island and Kimberly Reef represent?

A. Limiting danger.
B. Breakers.
C. Depth contours.
D. Tide rips.

7. At 0845, you are on a course of 097° T. Townshend Lodge Buoy "10A" is close abeam to port. With a westerly current of 1.2 knots, what speed will you have to turn for from your 0845 position to arrive abeam of Six Mile Reef buoy "8C" at 1030?

A. 8.5 knots.
B. 9.7 knots.
C. 10.9 knots.
D. 12.1 knots.

8. At 0910, your DR position is LAT 41°11.9' N, LONG 72° 47.8' W. Your vessel is on course 097° T at 9.5 knots, and the weather is foggy. At 0915, Branford Reef Light is sighted through a break in the fog bearing 318° T. At 0945, Falkner Island Light is sighted bearing 042° T. What is your 0945 running fix position?

A. LAT 41°11.1' N, LONG 72°41.2' W.
B. LAT 41°11.3' N, LONG 72°41.3' W.
C. LAT 41°11.4' N, LONG 72°41.0' W.
D. LAT 41°11.5' N, LONG 72°40.7' W.

9. At 1100, your position is LAT 41°11.3' N, LONG 72°28.0' W. You are steering a course of 069° T to leave Black Point one mile off your port beam. It has been reported that the Long Sand Shoal Buoys and Hatchett Reef Buoys are off station. Which of the following will serve as a line marking the hazards and keep your vessel in safe water?

A. Danger bearing to Black Point of not more than 065° T.
B. A Loran reading of more than 9960 - Y - 43985.0.
C. A bearing to Little Gull Island Light of not less than 090°.
D. A distance to Saybrook Breakwater Light of not less than 1.3 miles.

10. Little Gull Island Light is _____

A. lighted only during daytime when the sound signal is in operation
B. maintained only from May 1 to October 1
C. lighted throughout 24 hours
D. obscured by trees from 253° to 352°

11. At 1210, you are in position LAT 41°14.3' N, LONG 72°16.5' W. What is the depth of water below your keel?

A. 97 feet (29.4 meters).
B. 108 feet (32.7 meters).
C. 119 feet (36.1 meters).
D. 125 feet (37.9 meters).

12. From your 1210 position, you are steering a course of 083° T. Your engines are turning RPMs for 10 knots. The set and drift of the current are 310° at 1.7 knots. At what time should you expect the red sector of New London Harbor Light?

A. 1241.
B. 1249.
C. 1256.
D. 1309.

13. Your vessel is entering New London Harbor Channel. If there is no current, what should you steer per gyro compass to stay on the range?

A. 351°.
B. 354°.
C. 357°.
D. 006°.

14. On chart 12354, the datum from which heights of objects are taken is _____.

A. mean high water
B. mean low water
C. lowest low water
D. mean lower low water

15. The red sector of New London Harbor Light covers from _____.

A. 040° -- 310°
B. 000° -- 041°
C. 208° -- 220°
D. 204° -- 239°

ANSWERS

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

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

Metolachlor

Metolachlor is a tan to brown, oily, liquid herbicide with a slightly sweet odor. Unlike many other herbicides, it does not directly kill weeds or act as a defoliant. Instead, it is a pre-emergence herbicide, which is applied to crops after planting to kill weeds that appear before the crops emerge above ground.

Patented in 1972, the herbicide has been used on corn, soybeans, cereals and wheats.

Mixing metolachlor with other herbicides increases its effectiveness. For example, a study revealed that when combined with the herbicide dicamba, metolachlor demonstrated a 98 percent control over the velvet leaf weed, compared to only 23 percent control with dicamba alone. And no damage was done to the corn crop on which it was tested. Other trade name mixtures include Codal, Cotoran multi, Ontrack 8E, Primagram and Primextra.

When combined with herbicides like prometryn, metolachlor must have stabilizers, such as magnesium oxide or sulfites.

Properties

A large organic nonpolar molecule, metolachlor is soluble in most organic solvents, but is only slightly soluble in water, which it does not react with at all.

A study conducted in the Sydenham River in Ontario showed that by adding powdered charcoal in a concentration of 50mg/1 to river water, the amount of metolachlor in the water was greatly reduced.

Another study demonstrated that metolachlor travels through soil relatively slowly.

Health hazards

Metolachlor is a mildly toxic chemical. The Environmental Protection Agency has set concentration limits for the herbicide in foods, including pork, beef, soybeans and eggs. Concentration limits in livestock feed are also regulated.

As a prudent measure, humans should avoid contact with metolachlor. Full protective clothing, a respirator and safety goggles should be worn when working at a spill site.

If the herbicide comes in contact with skin or eyes, it may cause irritation and should be immediately rinsed off. Prolonged exposure to vapors may cause headache or nausea. Tumors have been reported after overexposure.

Combustibility

As a technical mixture with various petroleum solvents, metolachlor is a liquid. Dry chemicals, alcohol foam or carbon dioxide should be used to extinguish a metolachlor-fueled fire.

Metolachlor's high flash point and ignition temperature allows it to be stored and transported at normal room temperatures. Its nonreactivity with water and other common materials (fuel, wood, metals, glass, plastics, etc.), along with its high stability, make transportation and storage relatively safe.

Correction

The physical properties for the pesticide carbofuran featured in the September-October 1994 issue of *Proceedings* should have read as follows:

Boiling point:	**N/A [degrades at temperatures above 130°C (266°F)]**
Melting point:	**302-307°F (150-153°C)**
Vapor pressure:	**2 x 10^{-5} mm Hg @ 33°C**

Metolachlor

Chemical name: 2-Chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl) acetamide

Formula: $C_{15}H_{22}ClNO_2$

Synonyms: Dual and CGA24705

Description: Tan to brown, oily liquid with a slightly sweet odor

Many physical and combustible properties are dependent upon the type and amount of petroleum solvents mixed with the metolachlor.

Physical properties:	**Mixed with 9% solvent**	**Mixed with 4% solvent**
Boiling point:	284-320°F (140-160°C)	540°F (282°C)
Freezing point:	Not available	-40°F (-40°C)
Vapor pressure:	2.5 X 10^{-5} mm Hg @ 25°C	1.3 X 10^{-5} mm Hg @ 20°C
Combustion properties:		
Flash point:	>200°F, TCC (>93°C)	302°F, PMCC (150°C)
Ignition temperature:	707°F (375°C)	950°F (510°C)
Densities:		
Specific gravity at 20°C:	1.11	1.1

Threshold limit values: Unassigned

Identifiers:

CHRIS code:	MCO
CAS registry number:	51218-45-2
IMDG Code:	Not included
UN number:	Unassigned

John B. Mickett 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 chemicals.

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

Notice of final agency procedures and policy for categorical exclusions

CGD 93-090, National Environmental Policy Act: agency procedures for categorical exclusions (July 29).

The Coast Guard is revising its procedures and policies concerning agency actions which do not individually or cumulatively have a significant effect on the human environment. Under the National Environmental Policy Act, these actions are categorically excluded from the requirement that the proposed action undergo the additional analysis that accompanies preparation of an environmental assessment or an environmental impact statement. This revision eliminates overly expansive and inconsistent interpretations of existing policies and procedures, aligns them with categorical exclusions of other agencies, reduces paperwork and delays, and produces better decision processes.

For further information, contact: Ms. Bonnie Gallahan, Environmental Compliance and Restoration Branch (G-ECV-1B). Telephone: (202) 267-6034.

Interim rule with request for comments

CGD 94-030, Immediate reporting of casualties (46 CFR part 4) RIN 2115-AE89 (August 3).

The Coast Guard is amending the rule that requires notice of marine casualties. The amended rule will clarify which marine casualties require immediate notice, the means of giving other notice, who shall give it, and to whom it shall be given so that prompt corrective or investigative efforts can be initiated. The intent of this change is to provide a mechanism that will help prevent another disaster such as the derailment of a passenger train near Mobile, Alabama, in September 1993.

DATES: This rule was effective August 3, 1994. Comments must have been received by November 1, 1994.

Addresses: The executive secretary maintains the public docket for this rulemaking. Comments are part of this docket and may be inspected or copied at room 3406, Coast Guard headquarters, 2100 Second Street, S.W., Washington, D.C. 20593-0001, between 8 a.m. and 3 p.m., Monday through Friday, except holidays.

For further information, contact: LCDR P. A. Jensen or LTJG S. M. Atkinson, Marine Investigation Division (G-MMI-1). Telephone: (202) 267-1430.

Interim rule with request for comments

CGD 94-027, Notice of hazardous conditions (33 CFR part 160) RIN 2115-AE82 (August 3).

The Coast Guard is amending the rule that requires notice of hazardous conditions. This amended rule will clarify the conditions requiring notice and the parties responsible for providing notice; it will eliminate any confusion that might exist in determining whether a particular incident is reportable and, if so, by whom. It should forestall another disaster such as the derailment of a passenger train near Mobile, Alabama, in September 1993.

DATES: This rule was effective on August 3, 1994. Comments must be received by December 1, 1994.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 94-027), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

For further information, contact: LT John P. Stifling, project officer, Marine Environmental Protection Division. Telephone: (202) 267-0491.

Final rule

CGD 93-072, Vessel bridge-to-bridge radiotelephone regulations; inland waterways navigation regulations (33 CFR parts 26 and 162) RIN 2115-AE66 (August 5).

The Coast Guard is amending the vessel bridge-to-bridge radiotelephone regulations to correct an inconsistency between the statutory and regulatory language; and amending the inland waterways navigation regulations to remove regulatory language that contradicts the inland navigation rules.

DATE: This rule was effective on October 4, 1994.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters on workdays. Telephone: (202) 267-1477.

For further information, contact: Mr. Jonathan Epstein, Navigation Rules and Information Branch, Office of Navigation Safety and waterway Services. Telephone: (202) 267-0352 or (202) 267-0357.

Final rule

CGD 92-050, Classifying and handling Class 1 (explosive) materials (33 CFR parts 110, 126 and 160; 46 CFR parts 38, 78, 97 and 194) RIN 2115-AE27 (August 5).

The Coast Guard is amending its regulations concerning the carriage and handling of explosives. These amendments are necessary because the United States has adopted a new system for classifying and labeling explosives. This amendment will align terminology in existing Coast Guard regulations with that used in the new system and update references to address the new system.

DATE: This rule was effective on September 6, 1994.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters on workdays. Telephone: (202) 267-1477.

For further information, contact: LCDR Mark O'Malley, project manager, Port Safety and Security Division. Telephone: (202) 267-0493.

Final rule

CGD 91-045, Emergency lightering equipment and advanced notice of arrival requirements for exiting tank vessels without double hulls (33 CFR parts 157 and 160) RIN 2115-AE01 (August 5).

The Coast Guard establishes regulations that require the owners or operators of existing tank vessels of 5,000 gross tons or more that do or do not have double hulls to carry certain emergency lightering equipment on board and foreign flag vessel owners or operators to provide the vessels' IMO international numbers in the advance notice of arrival report. The purpose of the regulation is to reduce damage to the environment by facilitating response and salvage efforts for a vessel in the case of collision or grounding. The regulations represent the Coast Guard's first step in designating structural and operational measures for existing tank vessels without double hulls as required by the Oil Pollution Act of 1990 (OPA 90).

DATES: This rule is effective on November 3, 1994. Comments must be received by November 3, 1994.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters on workdays. Telephone: (202) 267-1477.

For further information, contact: Mr. Randall N. Crenwelge, project manager, OPA 90 staff. Telephone: (202) 267-6220.

Notice of proposed rulemaking;

CGD 94-010, Standards for damage stability of new domestic passenger vessels (46 CFR part 171) RIN 2115-AE75 (August 10).

The Coast Guard proposes to amend the rules on standards for damage stability that it adopted on December 10, 1992. Amended rules are necessary to relieve certain vessels of an unforeseen regulatory burden. The amended rules proposed would relieve those vessels of that burden and yet minimize the potential for capsizing and other casualties caused by inadequate damage stability.

DATE: Comments must have been received by October 11, 1994.

For further information, contact: Ms. Patricia Carrigan, Marine Technical and Hazardous Materials Division. Telephone: (202) 267-2988.

Final rule

CGD 91-202, Escort vessels for certain tankers (33 CFR part 168) RIN 2115-AE10 (August 19).

The Coast Guard is requiring escort vessels for certain oil tankers transiting Prince William Sound, Alaska, and Puget Sound, Washington. This rulemaking is mandated by OPA 90. The regulations will reduce the chances of a tanker running aground or colliding as a result of loss of propulsion or steering control, thereby potentially reducing the risk of an oil spill.

EFFECTIVE DATE: November 17, 1994.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters on workdays. Telephone: (202) 267-1477.

For further information, contact: Mr. Thomas Jordan, project manager, OPA 90 staff. Telephone: (202) 267-6751.

Continued on page 66

Continued from page 65

Notice of availability

CGD 94-061 and CGD 94-062, Differential global positioning system, Lake Michigan and Lake Superior corridor regions; environmental assessments (August 24).

The Coast Guard has prepared programmatic environmental assessments and findings of no significant impact for implementing differential global positioning system services in the Lake Michigan and Lake Superior corridor regions of the United States. The assessments concluded that there will be no significant impacts on the environment and that environmental impact statements would not be necessary. The notice announced the availability of the assessments and findings, and solicited comments on both.

DATES: Comments must have been received by September 23, 1994.

For further information, contact: LCDR George Privon, Radionavigation Division.
Telephone: (202) 267-0297.

Notice of termination

CGD 87-031, Posting requirements on inspected vessels (46 CFR parts 31, 71, 91, 167, 176 and 189) RIN 2115-AC68 (August 29).

This rulemaking project was initiated to reduce requirements for posting of nonessential operational data imposed by Coast Guard regulations under various laws and international agreements. As a result of comments received on an advance notice of proposed rulemaking, the Coast Guard submitted a separate rulemaking under docket CGD 87-031a. Additionally, posting requirements have been addressed in a number of other Coast Guard rulemaking projects. Therefore, the Coast Guard is terminating further rulemaking under docket number CGD 87-031.

For further information, contact: Mr. Allen W. Penn, Merchant Vessel Inspection and Documentation Division. Telephone: (202) 267-1181.

Notice

CGD 94-063, Annual certification of Prince William Sound regional citizens' advisory council (August 29).

Under the Oil Terminal and Oil Tanker Environmental Oversight and Monitoring Act of 1990, the Coast Guard may certify, on an annual basis, a voluntary advisory group in lieu of a regional citizens' advisory council for Prince William Sound, Alaska. This certification allows the advisory group to monitor the activities of oil tankers and facilities under the Prince William Sound Program established by the act. The purpose of this notice is to inform the public that the Coast Guard has recertified the alternative voluntary advisory group for Prince William Sound, Alaska.

EFFECTIVE DATES: July 1, 1994, through July 30, 1995.

For further information, contact: Mrs. Janice Jackson, project manager, Marine Environmental Protection Division (G-MEP-3). Telephone: (202) 267-0500.

Notice of availability

CGD 94-065, Centralization of vessel documentation activities implementation plan (August 30).

This notice announces the availability of the Coast Guard implementation plan to ensure an orderly transition in closing vessel documentation offices in 14 cities and to centralize all activities at a single location. It also announces the first two public meetings in September 1994 to discuss the plan. Copies of the plan are available from G-MVI-5, Coast Guard, room 1312.

For further information, contact: Ms. Laura Burley, Merchant Vessel Inspection and Documentation Division. Telephone: (202) 267-1492.

Final rule

CGD 94-900, Upgrades to bulk hazardous materials tables (46 CFR parts 30, 150, 151 and 153) RIN 2115-AE73 (August 31).

The Coast Guard is amending its regulations on carriage of bulk hazardous materials. These amendments assign additional carriage requirements, a higher pollution category, or both to certain commodities already listed in the tables. These amendments are necessary to align the minimum requirements in the table with those approved by the IMO for inclusion in its chemical codes applicable to tankships. Also, the Coast Guard is making various revisions to correct past errors.

EFFECTIVE DATE: September 30, 1994.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters on workdays. Telephone: (202) 267-1477.

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

Final rule

CGD 94-901, Upgrades to noxious liquid substances lists (33 CFR part 151) RIN 2115-AE74 (August 31).

The Coast Guard is amending its noxious liquid substances regulations to include substances recently authorized for carriage by the Coast Guard or added to the IMO chemical codes, and is making minor technical and editorial changes and corrections. This action updates the current lists of oil-like and non-oil-like noxious liquid substances allowed for carriage.

EFFECTIVE DATE: September 30, 1994.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters on workdays. Telephone: (202) 267-1477.

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

Advance notice of proposed rule

CGD 94-902, Obsolete bulk hazardous materials (46 CFR parts 30, 150, 151 and 153) (August 31).

The Coast Guard is considering amending its regulations on carriage of bulk hazardous materials by deleting commodities from its regulations that are no longer viable as bulk liquid cargoes, and cancelling the classifications of obsolete commodities not included in those regulations. The Coast Guard is seeking public assistance in identifying such obsolete cargos and classifications to determine whether such a rulemaking would be appropriate. This action would help ensure that Coast Guard requirements are current and that the hazardous materials tables and lists are free of entries that unnecessarily complicate Coast Guard regulations.

DATE: Comments must be received by November 29, 1994.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 94-902), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

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

Reopening of comment period

CGD 91-012, Security for passenger vessels and passenger terminals (33 CFR parts 120 and 128) RIN 2115-AD75 (September 7).

The Coast Guard is reopening this rulemaking for comment in response to requests for further time to file comments on the proposed rule.

DATE: Comments must be received by November 30, 1994. Three public hearings were held in September.

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 91-012), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477. Comments on the collection-of-information requirements must be mailed to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th St., N.W., Washington, D.C. 20503, attn.: Desk Officer, Coast Guard.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

A copy of the material listed under " Incorporation by Reference" in the preamble to the proposed rule is available for inspection in Room 1108, Coast Guard.

For further information, contact: LCDR Mark O'Malley, Port Safety and Security Division. Telephone: (202) 267-0491.

Supplemental notice of proposed rule

CGD 94-025, Commercial fishing industry vessel regulations for Aleutian Trade Act vessels (46 CFR part 28) RIN 2115-AE77 (September 13).

The Coast Guard proposes to revise regulations for United States commercial fishing industry vessels subject to the Aleutian Trade act of 1990. This proposed rule would promulgate a new subpart regulating certain equipment requirements and operating procedures for fish tender vessels operating in the Aleutian trade. These regulations would allow for the continued cargo service by water to remote communities in Alaska while ensuring increased safety standards for the vessels engaged in this trade.

DATE: Comments must be received by November 14, 1994.

Continued on page 68

Continued from page 67

Addresses: Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 94-025), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

For further information, contact: LCDR Mark D. Bobal, Merchant Vessel Inspection and Documentation Division. Telephone: (202) 267-2307.

Notice of public meeting

CGD 94-067, Metrication (33 CFR chapter I, 46 CFR chapter I and 49 CFR chapter IV) (September 16).

The Coast Guard will hold a public meeting to discuss strategies for converting Coast Guard regulations in titles 33, 46 and 49 of the Code of Federal Regulations to the metric system. The Coast Guard is converting to this system because it has been designated as the preferred system of measurement for the United States under Executive Order 12770 and the Omnibus Trade and Competitive Act of 1988.

DATE: The meeting will be held on November 2, 1994, between 9 a.m. and 3 p.m. Comments on this meeting must be received by November 15, 1994.

Addresses: The meeting will be held at Coast Guard headquarters, room 2415.

Comments may be mailed to the executive secretary, Marine Safety Council (G-LRA/3406) (CGD 94-067), Coast Guard headquarters or may be delivered to room 3406 between 8 a.m. and 3 p.m., workdays. Telephone: (202) 267-1477.

The executive secretary maintains the public docket for this rulemaking. Comments will be part of this docket (CGD 94-067) and will be available for inspection or copying at room 3406 between 8 a.m. and 3 p.m., workdays.

For further information, contact: Mr. Randall N. Crenwelge, project manager, OPA 90 staff (G-MS-A). Telephone: (202) 267-6740. This number is equipped to record messages on a 24-hour basis. The fax number is (202) 267-4624. Anyone wishing to make a presentation is asked to call or fax a request with the following information: docket number (CGD 94-067), name, company affiliation and the estimated amount of time needed for the presentation.

Notice of meetings

CGD 94-071, Towing Safety Advisory Committee (TSAC) (September 27).

TSAC and its work groups will meet to discuss various issues, including possible changes to Coast Guard licensing regulations. The meetings are open to the public.

DATES: Meetings of TSAC work groups will be held from 8 a.m. to 4 p.m., Tuesday, November 8, 1994. The TSAC meeting will be from 8 a.m. to 12 noon, Wednesday, November 9, 1994.

Addresses: The work groups will meet collectively at Coast Guard headquarters in room 2415, then proceed to rooms 1103, 3317, 5303 and 6303 for individual group sessions. The TSAC meeting will be held in room 4440 in the Nassif Building, 400 Seventh Street, S.W., Washington, D.C.

For further information, contact: LTJG Pat DeShon (G-MTH-4). Telephone: (202) 267-2997.

Final rule

CGD 91-211, Five-year term of validity for certificates of registry and merchant mariner's documents (46 CFR parts 10 and 12) RIN 2115-AD92 (September 27).

This rulemaking establishes Coast Guard regulations which implement the provisions of OPA 90 that require certificates of registry and merchant mariner's documents to be renewed every five years. This renewal period allows the Coast Guard to ensure that vessel personnel continue to be qualified to safely serve on a vessel. The rulemaking includes requirements and a schedule for renewing the certificates and documents, and the associated user fees.

EFFECTIVE DATE: This rule was effective October 27, 1994, except for 46 CFR 10.811 and 12.02-29, which are effective January 1, 1995.

Addresses: Unless otherwise indicated, documents referred to in this preamble are available for inspection or copying at the office of the executive secretary, Marine Safety Council (G-LRA), Room 3406, Coast Guard headquarters on workdays. Telephone: (202) 267-1477.

For further information, contact: Mrs. Justine Bunnell, Merchant Vessel Personnel Division (G-MVP-1). Telephone: (202) 267-0238.

Mariner's Seabag

Limited engineer's licenses

Examination modules for certain limited engineers are changing. The limited chief engineer's examination is expanding from three to four modules of 70 questions each. The modules are: general subjects, electricity, motor plants and engineering safety.

Examinations for limited assistant engineers and designated duty engineers - unlimited are still composed of three modules, but the number of questions per module has increased from 50 to 70 questions. The modules remain: general subjects, motor plants and engineering safety.

Instituted in 1992, the examination for fishing vessel chiefs and assistant engineers, and MODU chiefs and assistant engineers retains its 50/70 format. The higher ratings must complete all 70 questions, while the assistant engineers and designated duty engineers - limited have to complete the first 50 questions per module.

Refrigeration technician certification

During the last year, many questions were asked of the Coast Guard regarding requirements for and enforcement of refrigeration certification. Under Environmental Protection Agency (EPA) regulations, anyone who is to maintain, service or repair refrigeration equipment within the territorial United States must be certificated as of November 14, 1994.

This certification will only be provided by EPA-approved programs. However, relevant questions reflecting the operation, repair and maintenance of refrigeration systems will be developed by the Coast Guard for licensed and unlicensed rating examinations.

Failure to comply with the EPA can result in fines of up to $25,000 per violation per day. It is the mariners' obligation and responsibility to obtain the certification for compliance with EPA requirements.

Publications

Oceanography and Seamanship, 2nd ed. - VanDorn.
The Complete Book of Anchoring and Mooring, 2nd ed. - Hinz.
Primer of Towing, 2nd ed. - Reid.
The Cornell Manual for Lifeboatmen, Able Seamen, and Qualified Members of the Engine Department, - Hayler, Keever & Seiler.

The above are published by:
Cornell Maritime Press
P. O. Box 456
Centerville, MD 21617

Boat Handling Under Power - Mellor.
How to Avoid Collisions - Cargal.
Competent Crew, 2nd ed. - Price and Ouvry.
The Sailing Cruiser Manual - Mellor.
The Art of Pilotage - Mellor.
Anchoring and Mooring - Green.

The above are published by:
Sheridan House
145 Palisade St.
Dobbs Ferry, NY 10522

A Guide to Small Boat Emergencies - Waters.
Farwell's Rules of the Nautical Road, 7th ed. - Smith.
Heavy Weather Guide, 2nd ed. - Kotsch & Henderson.
Naval Shiphandling, 4th ed. - Crenshaw.

The above are published by:
U. S. Naval Institute
2062 Generals Highway
Annapolis, MD 21401

Introduction to Nautical Science - Chase - W. Norton & Co., 500 Fifth Ave., New York, NY 10110.
The Art of Ship and Boat Handling - Moss - Onboard Marine Co., P.O. Box 29, Brashear, TX 75420.
Basic Sailing - George - The Hearst Marine Books, 105 Madison Ave., New York, NY 10006.
The Principles and Practices of Ship Stability - Taylor - Brown, Son & Ferguson, Ltd., 410 Darnley St., Glasgow, G41 2SD.
Lawyer's Guide to the Navigational Rules - Bollinger - Marine Education Textbooks, 124 North Van Ave., Houma LA 70363.
Code of Safe Practice for Cargo Stowage and Securing Secretary of the IMO, Publications Section, 4 Albert Embankment, London SE1 7SR.

From the casino gaming River Queen on the Snohomish River in Washington state . . .

Unique passenger vessel growth spurs safety concerns

. . . to the dinner cruising Spirit of Washington (D.C.) on the Potomac River . . .

. . . to the sightseeing Spirit of Glacier Bay in Alaska, the small passenger vessel industry is growing fast.

By Mr. Eric G. Scharf

The dynamic growth of unique passenger vessels spawns special safety concerns. As the industry branches out into new territories in tourism, dining and entertainment, new issues of passenger, crew and vessel safety arise.

From the early 1960s to the mid-1980s, the domestic passenger vessel industry consisted mainly of boats that were relatively simple in design, construction and outfitting. The average vessel carried between 150 to 400 passengers on short cruises with little entertainment or special services. The safety concerns then were far more straightforward than they are today.

Today's passenger vessels

At the present time, there are some 5,500 vessels carrying passengers for hire in the United States. Starting about ten years ago, novel vessels began to emerge offering high-quality dinner cruises, overnight trips and riverboat casino gaming.

As the vessels diversified, so did their owners. Historically, small passenger ship companies were mainly modest, locally-based, private businesses, many of them family-owned. Now, particularly due to the advent of casino gaming vessels, large, publicly-owned firms have entered the industry.

The industry currently is divided into seven market areas:

- dinner cruises,
- tour and excursion operations,
- car and passenger ferries,
- ecotourism (i.e., whale watching),
- overnight cruises,
- private charters, and
- casino gaming vessels.

The Belle of Hot Springs conducts dinner cruises on Lake Hamilton in Arkansas.

Today's passenger vessel safety concerns involve:

- construction,
- structural fire protection,
- stability,
- manning,
- drug testing, and
- emergency response.

Friendship Bay sails around Bar Harbor, Maine.

Current trends

Today, there are a number of emerging trends affecting the passenger vessel industry. A brief summary of major influences on and changes within the industry follows.

Regulations

Increasing government regulations at the federal, state and local levels continue to impose new-cost burdens, such as user fees, on operators. They include marine-related as well as business requirements, such as the Americans with Disabilities Act prohibiting discrimination against individuals with disabilities. (Regulations have not been issued to implement the Americans with Disabilities Act, chiefly because of the inherent conflict between its goal to enhance public space accessibility and the safety concerns of the Coast Guard. An example is the requirement for coamings on lower decks to prevent flooding. This would impede access for the disabled.)

Size

Larger, more elaborate vessels are being constructed which will increase the visibility and exposure of the industry to new regulatory burdens.

Diversity

Small passenger vessels are rapidly expanding into entertainment, tourist and travel industries, such as casino gaming, high-speed car and passenger ferries in urban areas, dinner and excursion boats in rural areas, passenger submarine operations and domestic overnight cruises. These varied operations will generate new safety requirements. This is further exacerbated by the attraction to the industry of major capital investors and corporations who are not familiar with the maritime environment and have little or no experience with passenger vessel operations.

Continued on page 72

Miss New York ferries sightseers to the Statue of Liberty and Ellis Island.

Right) Obsession conducts dinner and entertainment cruises out of Seattle, Washington.

Below) Vista King takes two-hour excursions on Lake Superior.

Continued from page 71

Environment

Increasing environmental concerns are generating new regulations and requirements which will force vessel operators and crews to adopt new methods of operation. However, this environmental focus can also provide new marketing opportunities for special services and products.

Manning

Employers will have to devote additional resources for specialized training and social support systems to attract and retain qualified employees. Maritime and service employee unions, at the same time, will increase their organizing efforts among the new labor pool generated by the large investors.

Passenger market

The demographics of the passenger vessel market will continue to change. The market for foreign tourists will expand, while more Americans stay closer to home and plan less costly domestic vacations.

Outside ownership

The continued pressure for a free market economy could result in increased foreign competition, and foreign ownership and management of passenger vessels operating in United States waters.

Industry concerns

In recent years, the passenger vessel industry has faced a number of crucial issues of major concern, including:

1) **Revision of subchapter T regulations —** The updating and revision of title 46 CFR subchapter T dealing with the basic operation of small passenger boats is supported by most of the industry. However, we are concerned that many of the proposals under consideration by the rulemakers are costly and without a quantifiable increase in safety.

Goodtime III carries up to 1,000 passengers on dinner/excursion trips on Lake Erie.

The Casino Belle is licensed to carry up to 2,000 passengers on gaming cruises.

2) Maritime regulatory reform —
The industry is working with the Coast Guard on voluntary compliance with regulations and self-inspection programs. There are concerns, however, about attempts to involve costly third parties and user fees to relieve the financial burdens on the government.

3) Personnel training —
The growing complexity of vessel operations, financial pressures in an increasingly competitive marketplace and safety considerations all contribute to the necessity of a high quality workforce for the passenger vessel owner. The industry welcomes a regulatory program of appropriate training, testing and certification, which provides adequate flexibility for a changing work environment.

4) Safety enforcement —
The government will help combat unfair competition from illegal operators and also better ensure public safety by implementing the Passenger Vessel Safety Act, effective on June 26, 1994. This legislation regulates when vessels need to be inspected and controls the use of bareboat charters to skirt inspection laws. Improved recreational boating safety enforcement will assist passenger vessel operators who are harassed by small boats that are unaware of the dangers they pose near large vessels, i.e., jet skiers playing "chicken" on the bow of a cruise ship.

Conclusion

The future of the domestic passenger vessel market is optimistic. While the economic health of the industry depends largely on external factors, such as weather and the availability of tourist dollars, the wise operator is continually seeking new markets.

People enjoy spending leisure time on the water. The challenge to the passenger vessel industry is to ensure that they do so safely, as well as enjoyably.

Photographs accompanying this article are courtesy of the Passenger Vessel Association.

Mr. Eric G. Scharf is the executive director of the Passenger Vessel Association, formerly the National Association of Passenger Vessel Owners, 808 17th Street, N.W., Washington, D.C. 20006.
Telephone: (202) 785-0510.

The John James Audubon conducts nature and sightseeing tours on the Mississippi River out of New Orleans.

Norwegian Cruise Line's modern Windward.

Cruise line industry reacts to regulations

By Mr. Dan Cohen

Government involvement in private industry is often necessary and desirable -- sometimes it is not. As the ocean-going passenger ship industry's trade association, the International Council of Cruise Lines responds to the present day regulatory challenges.

North American market

North America provides the largest cruise market in the world. With only two cruise vessels in international commerce, the United States is not a flag state of any consequence. The overwhelming influence of the United States in the cruise line industry results from its dominant position as a port state.

Every year, millions of dollars enter the United States economy from the foreign-flag cruise line industry. More than 450,000 American citizens are employed in the cruise line and allied industries, generating more than $5 billion in federal tax dollars, and $1.5 billion in state and local taxes. The industry also pours $10 million in federal port taxes and fees, and more than $85 million in state and local port taxes and fees.

Cruise lines are projected to employ 135,000 additional Americans and raise another $2 billion in tax revenues by 1996, according to a Price Waterhouse study conducted in 1992.

Representation

The International Council of Cruise Lines is composed of American and foreign-owned companies engaged in the overnight passenger cruise business. These companies operate foreign-flag passenger vessels, most of which call frequently and routinely at United States ports, as well as international ports.

Norwegian Cruise Line's classic Norway.

The association represents about 90 percent of the worldwide, deep-sea, overnight, ocean-going cruise capacity, which consists of more than 100,000 berths and 36 million cruise days a year.

The International Council of Cruise Lines is concerned with legislative and regulatory policies throughout the world. Due to the size of the North American cruise market, the association focuses extensively on legislative and regulatory maritime issues in the United States.

Royal Cruise Line's Crown Odyssey passes by the French port of Villefranche.

Legislation

The rapid growth of the cruise industry has caused some federal legislators to consider altering existing laws and adopting new provisions that would change, somewhat adversely, the way it operates from United States ports. Because many of these lawmakers are unaware of the complexities of this international industry, some of the proposals would unintentionally harm cruise operations and impede growth.

Safety news

A significant change in the approach to passenger ship safety will have taken place beginning on October 1, 1994. International Maritime Organization (IMO) fire safety amendments to the Safety of Life at Sea (SOLAS) convention of 1974 were adopted in 1992. Some of the new regulations took effect on October 1, 1994.

The International Council of Cruise Lines, as a non-government consulting body to IMO, helped develop these regulations and support their application. Improved safety designs and operations are good for any industry, especially the passenger ship trade.

The new regulations apply to cruise ships built before SOLAS 74 and those vessels in basic compliance with the convention.

The first regulatory wave, effective October 1, 1994, increases and improves fire-fighting equipment aboard ship, especially for fire-fighting teams. For example, members of roving fire patrols must carry two-way portable radio-telephones which are easily procured and stowed on board. Other improvements include updated fire-control panels and new fire-hose nozzles. Many cruise ships were in full compliance with these regulations before the October deadline.

More comprehensive regulations will take effect in 1997. They will require smoke detection and alarm systems to be fitted in all accommodation and service spaces, low-location lighting or photoluminescent indicators along passenger escape routes, a central control station, the removal of many combustible materials from storage, special exhaust ducts from galley ranges, stair tower improvements and other safety innovations. Ships built before SOLAS 74 will have to be fitted with automatic sprinkler systems in accommodation and service spaces. This will entail major design modifications in some ships, although other vessels voluntarily adopted the modifications long ago.

The goal of these amendments is to ensure a high level of safety in the world's passenger ship fleet. This goal will be enhanced with additional improvements being developed by IMO. The collective efforts of the various government representatives at IMO are encouraged by International Council of Cruise Lines members who fly the flags of many maritime nations.

Continued on page 76

Premier Cruise Lines' SS Oceanic is escorted through Nassau Harbor.

Continued from page 75

Over-regulating

As we note the progress toward improved safety in design, operations and environmental protection, we encourage individual governments to step back and take a close look at their own proposed regulations.

The most effective regulatory processes are systems oriented and drive toward unified goals. Over-responding to over-stated safety issues usually results in over-regulating — requiring both "belts and suspenders," when only one is necessary.

Too often, maritime regulators in the United States and other countries respond to political pressures rather than to engineering evaluations. Two questions to always ask are: "Is this regulation really necessary?" and "How will this regulation relate to other requirements?" From time to time, in considering more regulations, it might be wise to "just say no."

Earlier this year, for example, a "consumer advisory" was proposed for cruise ships calling at United States ports to either state "conspicuously" on dining room menus or place a placard on each table, warning that: "consuming raw or undercooked meats, poultry, seafood, shellfish or eggs may increase your risk of food-borne illness." Clearly, this is a well-intentioned proposal and, just as clearly, it exemplifies over-regulation.

The future

The future promises tremendous, exciting growth in the cruise industry, with new vessels and more passengers going to different, exotic destinations throughout the world. This increased visibility requires the industry to make legislators and regulators aware of the enormous economic contributions of the industry.

We realize that the growth and economic contributions would not continue without clean seas and safe ships. The industry also recognizes the Coast Guard as a world leader in effectively promoting a cleaner marine environment and improving passenger ship safety. The millions of cruise ship passengers who depart from United States ports annually are most grateful for these efforts.

Passengers sun themselves aboard Carnival Cruise Lines' Ecstasy.

Mr. Dan Cohen is the director of Communications and External Affairs of the International Council of Cruise Lines, 1211 Connecticut Avenue, N.W., Suite 800, Washington, D.C. 20036.

Telephone: (202) 296-8463.

Princess Cruises' Island Princess tours Alaskan waters.

FRONT COVER: *Carnival Cruise Lines' Sensation embarks on its first voyage from Miami, Florida.*
Courtesy of the International Council of Cruise Lines.

REAR OUTSIDE COVER: *Offshore drilling and production supply boat is the industry workhorse.*
Courtesy of the Offshore Marine Service Association.

U.S. Department
of Transportation

**United States
Coast Guard**

2100 Second St., S.W.
Washington, D.C. 20593-0001