

PROCEEDINGS

of the Marine Safety Council

April–June 2000

Volume 57, Number 2



Performance
Management
Page 4 ▶



Prevention
Through People
Page 9 ▶



**Business
Plan**

M's New
Business Plan
Page 12 ▶



Real World
Towing
Solutions
Page 20 ▶

Measuring
Response
Readiness
Page 26 ▶



Citizens
Protecting
Our Coasts
Page 30 ▶



Front cover photo:
Coasties inspect the
condition of a ladder
and interior of a barge.

Back cover photo:
Coasties inspect hose
on a barge.

Next issue:
M Office Showcase:
MSO Jacksonville



Assistant Commandant's Perspective

By RADM Robert C. North
Assistant Commandant For Marine Safety & Environmental Protection

Performance measurement to manage outcomes is the way many organizations are finding they must do business now and in the future. The U.S. government and the Coast Guard are no different, as we must show positive results of our efforts to keep people safe from the sea and provide the best possible return on investment of the taxpayer's dollar.

The Marine Safety program began the process of performance measurement with its first business plan in the early 1990s. Goals, such as reduction of maritime worker fatalities, were established, trends analyzed and reduction targets were set to improve the annual rate at which fatalities fell. We have had success in our efforts, however it has not been easy. Measurements must be established that are reproducible, otherwise baselines and trends cannot be accurately established. Data must be consistently collected from year to year so that measures can be compared across the years. And, to make the most of your activities, linkage between activities and outcomes must be established so that you know that what you are doing is actually having an effect of the achievement of your goal.

The Marine Safety program had been collecting performance data for many years prior to writing our first business plan. We have stabilized our collection and reporting functions so that the data can be analyzed and displayed in a meaningful and repeatable manner. The challenge remains to show positive, lasting links between our individual activities and the positive outcomes we see occurring.

A handwritten signature in black ink, appearing to read "R. C. North".

**Admiral James M. Loy,
USCG Commandant**

**THE MARINE SAFETY COUNCIL OF THE
UNITED STATES COAST GUARD**

Rear Admiral James S. Carmichael, USCG
Chief Counsel, Chairman

Rear Admiral Robert C. North, USCG
Assistant Commandant for Marine Safety
and Environmental Protection,
Member

Rear Admiral Ernest R. Riutta, USCG
Assistant Commandant for Operations,
Member

Rear Admiral Ronald F. Silva, USCG
Assistant Commandant for Systems,
Member

CDR Michael L. Emge, USCG
Executive Secretary

Ms. Pamela M. Pelcovits
Legal Counsel

Edward Hardin
Editor

David Vergun
Graphic Designer

Proceedings (ISSN 0364-0981) is published quarterly by the Coast Guard's Marine Safety and Environmental Protection Directorate, in the interest of safety at sea under the auspices of the Marine Safety Council. The Secretary of the Department 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.

CONTACTS

Edward Hardin, Editor
Voice: (202) 493-1052
Fax: (202) 493-1065

e-mail: ehardin@ballston.uscg.mil

<http://www.uscg.mil/hq/g-m/gmhome.htm>

All requests for subscriptions and changes of address must be in writing, addressed to: Editor, Proceedings Magazine, U.S. Coast Guard, National Maritime Center, 4200 Wilson Boulevard, Suite 510, Arlington, Virginia 22203-1804. Please include mailing label when changing an address.

Statement of Ownership

ManagemDIST (SDL No. 135)

A: ac(2); ebfghijklmnopqrsuv(1).

B: nr(50); cefgipw(10); bklqshj(5); xdmou(2);vyz(1).

C: n(4); adek(3); blo(2); cfigjmqrtuvwxyz(1).

D: ds(5); abcefgghijklmnopqrvwxyz(1).

E: kn(2). F: abcdehjkloqst(1).

List TCG-06.ent and Circulation

(Required by 39 USC 3685)

By the Way... Editor's Point of View

"It was six o'clock on a hot summer morning. The *Pennsylvania* was creeping along, north of Ship Island, about 60 miles below Memphis, on a half-head of steam, towing a wood-flat," wrote Mark Twain in his 1883 book, "Life On the Mississippi." "George Ealer was in the pilot-house—alone, I think; the second engineer and a striker had the watch in the engine room; the second mate had the watch on deck; George Black, Mr. Wood, and my brother, clerks, were asleep, as were also Brown and the head engineer, the carpenter, the chief mate, and one striker. There were a good many cabin passengers aboard, and three or four hundred deck passengers—and not very many of them were astir.

"Ealer rang to 'come ahead' full steam, and the next moment four of the eight boilers exploded with a thunderous crash, and the whole forward third of the boat was hoisted toward the sky! The main part of the mast, with the chimneys, dropped upon the boat again, a mountain of riddled and chaotic rubbish—and then, after a little, fire broke out. Many people were flung considerable distances, and fell in the river. Shrieks and groans filled the air. A great many persons had been scalded, a great many crippled; the explosion had driven an iron crowbar through one man's body."

This was a typical tragedy in the 19th century, as was the government's response: tighter regulations and enforcement, followed invariably by complaints from mariners that they were being over-regulated. Echoes of over-regulation from the past are still heard a century later. To some, it seems as though the Coast Guard's *raison d'être* is regulating things.

Regulating and enforcing *are* still important tools, but are now means to an end, not ends in themselves. Studies by outside agencies in the early 1990s found certain Coast Guard business practices that were apparently near-sighted and deficient. On the heels of those findings, the Commandant ordered a drastic course change. The Office of Marine Safety and Environmental Protection took the initiative by developing and pilot-testing a new business plan that is based on real-world performance goals. It was a success and the rest of the Coast Guard subsequently followed suit.

There are many examples of how this new commonsense and pragmatic way of doing business has benefited the maritime community. One example: improving fishing vessel safety in the past was seen as an activity requiring more thorough inspections and enforcement vigilance. Now, other systems factors are taken into consideration as well. In the case of Alaska fishing vessel safety, training and education measures were implemented and the fishing season was extended so fishermen could choose to take their vessels out in calmer conditions — not just during severely restricted fishing hours. Success stories like this have been repeated in ports around the country.

Mariners will always take certain risks when they venture to sea. But the Coast Guard is now working smarter to help minimize that risk. We all salute that effort and look forward to continued prosperity and success.

Performance

Performance Management Produces Results

By Laura Ziff



The Coast Guard Cutter Acushnet (WMEC 167) pounds through waves in the Gulf of Alaska during a November 1999 storm. **USCG photo by PO1 Chris Grieb**

If you are an American, you are a Coast Guard customer.

This bold statement opens the Commandant's letter in the U.S. Coast Guard's latest annual report and gets to the heart of performance management. Americans expect and deserve to see results from their investment in the Coast Guard. Through performance measurement, the Coast Guard is increasingly able to quantify its achievements – and articulate how it uses taxpayer dollars to benefit the nation. However, simply demonstrating results is not enough – the Coast Guard uses this information to manage Coast Guard programs. Through thoughtful, performance-based management, we are increasingly improving the Coast Guard's ability to influence maritime outcomes, and achieving even greater results.

The Coast Guard began exploring performance-based management in 1993. The Office of Marine Safety and Environmental Protection

(G-M) was the first one out of the gate. It identified desired outcomes for its programs such as less maritime worker fatalities and reduction in oil spills and established baseline measures for each of these goals. Using regression analysis, the program identified what the trend for each goal would most likely be if no additional interventions were made. Managers then established targets for additional improvement in each outcome area. They identified strategies and initiatives to reach the new targeted levels of performance, and allocated resources to achieve these goals.

As the benefits to this new approach to management rapidly became apparent, the Coast Guard moved to identify long-term, enduring strategic goals. A team of senior leaders convened to articulate why the Coast Guard existed, what the Coast Guard aimed to achieve, and how the Coast Guard would achieve it.

The team used the Coast Guard's traditional mission areas and roles, as well as rel-

is everything

When a C-130 takes off or when a cutter sets sail, there is always a purpose to be had, an outcome to be achieved.

Severe weather conditions are common at Cold Bay, Alaska, where Coast Guard C-130 aircraft fly missions. **Photo by PA2 Al Bennett**

evant authorizing legislation and executive orders, as the basis for the Coast Guard's strategic goals. They developed five overarching strategic goals that state the outcomes that the Coast Guard works to influence and the overarching results that the organization is trying to achieve. The Coast Guard's five strategic goals are:

- **Maritime Safety:** Eliminate deaths, injuries, and property damage associated with maritime transportation, fishing, and recreational boating.
- **Maritime Security:** Protect our maritime borders by halting the flow of illegal drugs, migrants and contraband into this country through maritime routes; preventing illegal incursions of our Exclusive Economic Zone; and suppress violations of federal law in the maritime region.
- **Protection of Natural Resources:** Eliminate

nate environmental damage and natural resource degradation associated with maritime activities, including transportation, commercial fishing, and recreational boating.

- **Maritime Mobility:** Facilitate maritime commerce and eliminate interruptions and impediments to the economical movement of goods and people, while maximizing recreational access to and enjoyment of the water.
- **National Defense:** Defend the nation as one of the five armed services. Enhance regional stability in support of the National Security Strategy, utilizing our unique and relevant maritime capabilities.

Once the strategic goals were in place, managers throughout the Coast Guard began to articulate how their programs contributed to meeting the Coast Guard's strategic goals. They set performance goals for their programs, and began to think about how they could mea-



The Coast Guard Search and Rescue goal was changed from “Save all mariners reported in distress” to “Save all mariners in distress” to reflect the fact that the Coast Guard’s mission is to save all mariners – not just those able to report their distress. Here, Coast Guardsmen rescue crewmen from a 72-foot fishing vessel which capsized off the coast of Oregon May 22, 2000. **USCG photo**

sure the outcomes they were trying to achieve.

Today, the Coast Guard’s Strategic Plan outlines the five strategic goals and identifies Coast Guard-wide performance goals that directly correlate with each strategic goal. The Strategic Plan provides a framework for Coast Guard planning and decision making. Developed and endorsed by the Coast Guard’s senior leadership, the strategic plan provides the foundation for the integrated system of performance measures that the Coast Guard uses. All Coast Guard programs and activities work toward achieving results related to one or more of the Coast Guard’s strategic goals.

The Coast Guard’s performance goals and measurable target level of performance for each are outlined in the annual Performance Plan. For each performance measure, the Coast Guard asks:

- What is the national interest being addressed?
- What are the problems we are attempting to impact?
- What strategies can we use to achieve this goal?
- What factors played a role in past performance results?
- What other organizations work to achieve this outcome?
- What is the measurable, targeted level of performance we should achieve?

An example of an outcome goal is fewer deaths in the maritime environment, or a reduction in collisions, allisions, and groundings.

All Coast Guard organizational efforts and resources – both operational and logistical – are ultimately focused on achieving the outcomes associated with each Coast Guard strategic goal.

Behind each performance goal and each measure there are many stories to tell. The results reported for each goal are the amalgamation of the results achieved around the country – and around the world – by the men and women of the Coast Guard. They represent individual successes – lives saved, drugs interdicted, safe transits and pollution prevented, just to name a few. They also provide illumination on the failures and tragedies that sometimes occur, such as costly or dangerous accidents, damaging oil spills, and lives lost at sea.

Incidents reported at the field level are aggregated and reviewed by a team of analysts and leaders at Coast Guard districts, areas and headquarters. Headquarters analysts use data reported from the field level to determine the Coast Guard’s results nationwide.

Not meeting a performance goal doesn’t always mean that the Coast Guard has failed. The Coast Guard has deliberately set “stretch” goals for itself that will be somewhat difficult to meet. The idea behind stretch goals is that they force the organization to look beyond the immediate to determine how we can and should improve our performance. Stretch goals encourage the Coast Guard to manage itself better.

However, because we have set stretch goals, we often may not meet them for several

years. Therefore, in analyzing performance, one needs to not only look at the measure for the year, but also the overall performance trend. If the Coast Guard misses its goal, understands why, and adjusts strategies or resources accordingly, that is positive.

The challenge with each of the Coast Guard's performance goals is looking at the overall trend and the data behind it to ensure we understand what the results mean. While it is possible to miss a goal and still be successful, it is also possible to meet or exceed a goal purely as a result of external factors. For example, a dramatic rise in gasoline prices can reduce the number of hours recreational boaters spend on the water during the boating season and result in fewer fatalities. A sharp rise in migrant interdictions might indicate that more migrants are attempting to reach our shores. On the other hand, often when a goal is missed or achieved, there are no mitigating circumstances and the result is truly a reflection of performance. The lesson is that to truly be able to interpret our results – and influence future outcomes — we must know what our data are comprised of and understand the environment that the Coast Guard operates in for each performance goal.

At the close of the fiscal year, the Coast Guard issues an annual report detailing its accomplishments for the year. In this report, the Coast Guard assesses its progress in meeting the targets for each of the 18 goals outlined in its performance plan for that fiscal year. For example, the 1999 oil pollution target was to reduce oil spilled to no more than 5.04 gallons per million gallons



Safety
Security
Environment
Commerce
Defense

Elevating the Coast Guard's 5 Strategic Goals

shipped. The preliminary rate for 1999 was 2.38 gallons – indicating that we met our goal. By reporting both its successes and failures for the year, the Coast Guard presents a balanced picture of the results it has achieved and identifies areas where more progress is necessary. This information is reported to Congress, the White House and the American public.

Senior leadership in the Coast Guard has placed a high priority on performance measurement and has begun using performance data in its assessment of overall Coast Guard performance. Conversations between the Commandant and the Department of Transportation (DOT) focus on performance results. DOT has begun using performance data to assess new budget initiatives. Budget submissions to Congress from both the Coast Guard and DOT contain performance data. Members of Congress incorporate performance data in their assessment of federal agency results. Still, the Coast Guard has much work ahead in incorporating performance measurement into its day-to-day routine. The emphasis on performance measurement is still fanning across the service. Organizational buy-in to the strategic plan and the performance goals is translating into a movement toward true performance management at all levels in the organization.

Performance measurement is an ongoing learning experience. Through the Coast Guard's work to articulate goals and identify meaningful measures, we have learned more about who we are and what we exist to do. As the Coast Guard has chosen between goals and measures, we have been forced to scrutinize what the organization really values and what our

Photo by David Vergun

true mission is. In essence, what results matter most and if we are achieving them.

In some cases, we have realized that we need to change a performance goal to better reflect the service that the Coast Guard performs for the American public. We make changes to the goal because our knowledge about the goal has improved – we may have identified better data, or may understand the data better. We may have learned more about the performance goal from its trendline. Or our experience in managing to the goal may tell us that it could better reflect the real-world realities of the work the Coast Guard does.

For example, the Search and Rescue goal was changed from “Save all mariners reported in distress” to “Save all mariners in distress” to reflect the fact that the Coast Guard’s mission is to save all mariners – not just those able to report their distress. The results of the new goal more clearly demonstrate the integral link between a mariner’s ability to communicate his or her distress and the outcome of a search and rescue case. This measure reinforces what the Coast Guard already intuitively knew – that by implementing strategies to improve communications, such as the modernization of the National Distress and Response System, the Coast Guard can save even more lives.

In another example, the target for the performance goal – to reduce the number of vessel collisions, allisions and groundings – was revised to accommodate a better and more effective measurement method. The performance goal – to reduce the number of overfished fish stocks – originally was measured by the rate of compliance among fishermen, but was changed to reflect the desired results of Coast Guard fisheries enforcement work — reduction in the number of overfished species. By allowing our goals and measures to evolve, we keep them current. It is important to maintain flexibility in our performance goals and measures to ensure managers are provided with the most meaningful information available to manage their programs.

The impact that using strategies to influence outcomes can have on the everyday lives of Americans is clear. The Coast Guard’s performance goal to reduce maritime worker fa-

talities provides a perfect example. In 1993, the fatality rate among maritime workers was 59 per 100,000 workers. Through its analysis of commercial maritime accidents, the Coast Guard realized that more than 80 percent of these accidents were caused by human error.

The Coast Guard established partnerships with the maritime industry under the Prevention Through People initiative and developed programs to manage maritime risk. The result was a decline in the number of fatalities among maritime workers – by 1998 the rate had declined to 38 per 100,000 workers, and preliminary 1999 data indicates that the rate is continuing to decline. Through careful analysis of its data, and by employing a new strategy to influence an outcome, the Coast Guard drove down the maritime worker fatality rate — and saved lives.

Given the success we have had in applying performance measurement to operations, we are now moving to use performance measures to improve our internal management processes. The Coast Guard’s logistics processes provide the Coast Guard’s capability to meet its operational performance goals. Having the right people, information and

systems available is critical to achieving Coast Guard missions. Developing logistics performance goals for human resources, systems and information will allow us to gain better efficiency in our logistics processes — and even further increase the effectiveness of our operations.

When a C-130 takes off or when a cutter sets sail, there is always a purpose to be had, an outcome to be achieved. Often, in our multimission climate, there is more than one. By using performance management to think strategically and direct our effort towards outcomes, we are increasing our capacity to meet the many demands upon Coast Guard operations. Performance-based management gives us the ability to have greater influence on maritime outcomes: to save more lives, stop more drugs from reaching our shores, protect more shoreline from pollution, or meet any of our other performance goals. It is one more tool available to the Coast Guard to ensure the safety, environmental health, mobility and security of our nation’s waterways. F

**GOAL:
~~ERRR~~
ERROR
REDUCTION**



Prevention Through People

A Coast Guard officer discusses regulations with the captain of a fishing vessel during a routine inspection.
USCG photo by PA1 Ron Mench

Focusing On the Human Element

By Jennifer Blain

PTP Coordination Staff
Human Element and Ship Design Division, USCG

When the Coast Guard introduced Prevention Through People (PTP) five years ago, we dealt mostly with the *philosophies* behind PTP. We focused on the vision, guiding principles and goals that comprised this PTP initiative. But PTP has grown dramatically in those five years and today we talk more about the *applications* of PTP.

One of the first places where these applications were captured was the PTP Implementation Plan, which was first distributed in 1997. This plan was developed by a group, known as the PTP Project Managers, who represented different Marine Safety and Environmental Protection (G-M) offices. Together, they compiled a document that amassed internal Coast Guard projects with PTP applications. For three years, this plan was used and revised annually to represent current Coast Guard projects

and activities that incorporated PTP philosophies and principles.

Now this information is captured successfully in the G-M Performance Plan. Though PTP is specifically mentioned in a few places, it is the dozens of places where the human element is considered which show just how successfully the PTP philosophies and principles have been incorporated. Of the five capability goals, PTP is included in four (Risk Management, Information Resource Management, Human Resources, and Partnership and Stakeholder Engagement). PTP is in all four of the mission goals (Safety, Security, Human and Natural Environment, and Economic Growth & Trade/Mobility). PTP is also specifically listed in Appendix D (Program R&D Requirements) with Risk Based Technologies and Human Factors sections.

Many of the G-M Performance Plan strategies and activities that focus on PTP philosophies and principles have been incorporated from the former PTP Implementation Plan. Of the 43 listed objectives in the 1999 Imple-

mentation Plan, 33 are included in the M Performance Plan (two others were only related to the PTP Coordination Staff, and the rest were either completed or merged into other objectives).

It is easy to point to places in the G-M Performance Plan where the acronym PTP is used as a means of achieving an objective, strategy, or activity. However, it is the inferred references to PTP philosophies and principles that are more numerous. For example, the Information Resource Management capability goal focuses on providing people with key information for making decisions about marine safety and environmental protection issues. This goal ties in with one of the old PTP Implementation Plan's objectives to "improve capability to electronically capture and categorize data developed by marine safety investigations and to conduct comprehensive analyses of that data" (Objective 3.5).

Another example where PTP is inferred is the Partnership and Stakeholder Engagement capability goal. Partnerships with industry are vital to the Coast Guard – we are members of the same team in pursuit of the safest and most environmentally sound maritime community. However, to date there have been no formal guidelines on how to establish, run, or disband these partnerships once they have completed their goals. Over the past few months, the PTP Coordination Staff has been developing a Commandant's Instruction on this very issue. This instruction (tentatively due in fall 2000) will provide information on how to conduct and manage formal partnerships. It will include information on the work involved with creating, maintaining, and disbanding these groups. Though these guidelines are being written specifically for formal partnerships, they will be applicable for all Coast Guard industry partnerships and will be recommended as a smart tool for informal partnerships.

The G-M Performance Plan's Safety goal embodies the guiding principles of Prevention Through People – honor the mariner, take a quality approach, seek non-regulatory solutions, share commitment, and manage risk. These principles are displayed throughout the G-M Performance Plan, but are very dominant in this Safety goal. Of the goal's six strategies, five focus on reducing deaths and injuries to people in a maritime environment. These strategies provide a solid focus on safer operations that keep people at the forefront of the safety equation. This is definitely PTP in action.

Perhaps a goal that would seem unlikely to include the values of PTP is the Economic Growth and Trade/Mobility Mission goal. At a broad glance, this goal is about improving waterways for economic and trade reasons. But success of this goal relies in part upon risk management and industry partnerships – aspects of the PTP approach to focus more on the human element. Also included as a strategy under this goal is a review of the licensing process. This incorporates the PTP principles to honor the mariner and take a quality approach.

PTP Principles:

-Honor the Mariner

-Quality Approach

-Non-Regulatory Solutions

-Share Commitment

-Manage Risk

Though this article could easily dissect the entire G-M Performance Plan for places where the human element is included, it is not necessary. The few examples mentioned are characteristics of numerous PTP insertions, and they show how PTP is incorporated into everyday business. People are consciously and unconsciously focusing on the human element in their operations. The numerous inferences throughout the G-M Performance Plan speak to this success. PTP has shifted from a developing program to a bold approach; its success is its applications. As the G-M Performance Plan is updated, the values that embody PTP will be there to maintain the focus on people and their safety.

As children, we were taught to stop and look both ways before crossing a street. The reasons for this rule may not have made sense at the time; we were more concerned with getting to the playground across the street than worrying about what stood between us. However, as adults we understand the importance of looking both ways before we cross. What's more – we look automatically. It has become ingrained in our minds that the safe approach to crossing a street involves looking both ways beforehand. So it is with PTP. It is remarkable and encouraging how many people are taking the human element into consideration as second nature - perhaps without even realizing the significance of their actions - as has been demonstrated with the G-M Performance Plan. F

**G-M Performance Plan's
Safety Goal**

Moored
In Prevention Through People



Mooring line in figure eight around a bit. USCG photo by PA3 Bridget Hieronymus

SCRAPING THE BARNACLES

M Makes Sailing Smoother With New Business Plan

Story & photos by David Vergun

*“Like a large vessel at sea, change in direction
has taken time. However, there is evidence
the organization is on a steady course of
managing for results.”*

--Douglas R. McCrimmon, Jr.

Unfortunately, it often takes tragedy to bring about positive change. This is particularly true concerning safety improvements in the maritime industry.

Cases in point: After 100 lives were lost when the steamboat *Pulaski* exploded in 1837, Congress passed the first commercial vessel inspection act, requiring the installation of firefighting and lifesaving apparatus. In 1852, after seven steamboat disasters within a six-month period killed 700, Congress passed the Steamboat Inspection Act which tightened inspection and licensing procedures.

In 1865, about 1,800, mostly returning Union prisoners of war, perished aboard the stern-wheeler *Sultana* when her boiler exploded. About 1,000 lives were lost on the *General Slocum* in 1904; 1,500 perished when the *Titanic* sank in 1912; over 100 lives were lost when the *Morrow Castle* sank in 1934 and another 45 perished aboard the *Mohawk* in 1935. After each of these disasters new legislation was passed, improving safety regulations and inspection procedures.

In the second half of the 20th century greater environmental awareness and improved pollution prevention regulations were added to safety priorities after a series of major oil spills.

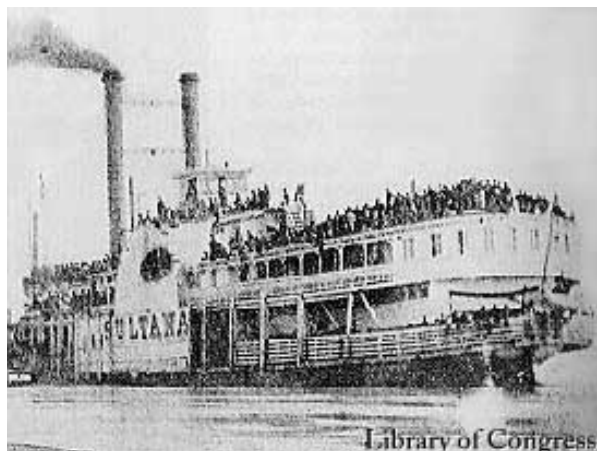
Towards a Paradigm Shift

The 1990s were a milestone decade in maritime safety and environmental improvements, but this time, not as the result of any one particular disaster. In fact, safety, as measured in number of lives lost at sea had actually been improving for a number of years. Coast Guard statistics show a consistent, steady decline of maritime worker fatalities per 100,000 from 74 in 1985 to 55 in 1990, to 47 in 1996.

Instead, three wake-up calls in the early 1990s provided the impetus for change: (1) a Gallup survey of maritime customers and stakeholders in 1992; (2) a Coopers & Lybrand study of the Coast Guard and its stakeholders in 1992; and (3) the Government Performance and Results Act (GPRA), passed by Congress in 1993.

GPRA recommendations included:

- Improving the confidence of the American people by systematically holding federal agencies accountable for achieving and publishing program results
- Improving program effectiveness and public accountability by promoting a new focus on results, service quality, and customer satisfaction
- Helping managers improve service delivery by requiring that they plan for meeting program objectives and by providing them with information about program results and service quality
- Improving congressional decision making by pro-



The last known photo of the overcrowded *Sultana*, docked at Helena, Ark. the day before the tragedy.

The Sultana Disaster

The worst maritime disaster in U.S. history was the explosion of the steamship *Sultana*; not the sinking of the *Titanic*. It is estimated that nearly 1,800 of 2,400 aboard *Sultana* were killed when the ship's boilers exploded. By comparison, about 1,500 went down on the *Titanic*.

At 2 a.m., Apr. 27, 1865, the 260-foot *Sultana* blew up on the Mississippi River just above Memphis. Most of the passengers were Union soldiers returning home from the war. Nearly all had been prisoners at infamous Cahaba, Ala. and Andersonville, Ga.

"Never will I forget the scene that I then witnessed," said Pvt. James R. Collins, Co. F, 3rd Tennessee Cavalry, who was aboard the *Sultana* and whose father, Pvt. Joseph H. Collins, Co. G, 3rd Tennessee Cavalry, was killed in the explosion. "Quickly following the explosion, the *Sultana* caught on fire and soon she was a blazing furnace of angry, devouring flames.

"When the tremendous shock came, most of the men sleeping on the upper and hurricane decks were blown into the river and nearly all of them were drowned on the spot."

He continued: "Hundreds of poor fellows sleeping on the lower deck where I was were securely pinned down by the great heap of wrecked timbers that fell upon them, and all efforts to rescue them were futile, on account of the fire, and many of them who had not been killed at first were burned alive before the eyes of the helpless but more fortunate comrades, who could do nothing to save them from their horrible fate."

The tragedy did not even make the front page of the Eastern established newspapers, so weary was the nation from the war and the assassination of President Lincoln just two weeks earlier.



The Coast Guard has set rudder for a new course, giving its managers greater flexibility to take action and integrating systems, operations, and logistics between itself and its maritime customers.

viding more objective information on achieving statutory objectives, and on the effectiveness and efficiency of federal programs and spending

- Improving internal management

Recommendations from the Coopers & Lybrand and Gallup included:

- Better coordination of program direction between Coast Guard Headquarters and the field
- Developing a quality measurement system of process performance and customer satisfaction
- Developing processes and relationships for oversight of, and shared responsibility with the maritime industry
- Improving coordination and communication regarding marine licensing and working more with industry
- Upgrading training regarding marine inspections and increasing the number of qualified inspectors, providing more consistency in application of regulations, and avoiding high turnover in personnel
- Maximizing use of reserve personnel in safety (including port safety) and being more receptive to outside views
- Focusing more on foreign vessels
- Paying more attention to violators and less on companies with good records
- Placing more emphasis on quality of personnel
- Increasing third-party inspections from the industry
- Involving the industry more in reduction of pollution and inspection
- Revamping computer databases and increasing the efficiency of information technology systems

G-M has addressed each of these recommendations. It should be pointed out that accompanying the above recommendations were commendations as well. For instance, major findings were that there is “a sense of pride in the work being done and the importance of the work,” and that “the perceptions within Headquarters and the Field about the M program are more similar than they are different.”

Commandant Issues Marching Orders

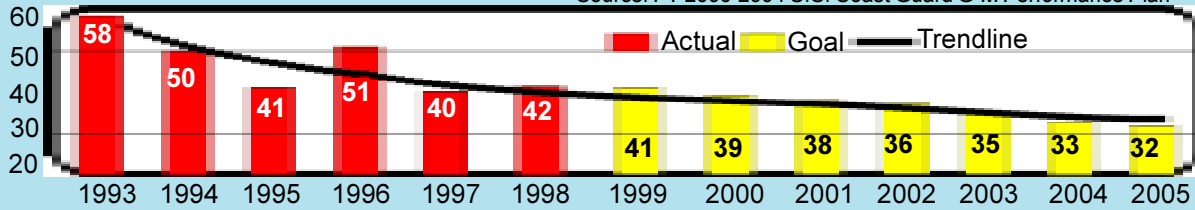
The import of the Coopers & Lybrand and Gallup findings, together with GPRA recommendations, were enough to prompt the Commandant of the Coast Guard to direct a sea change.

From this milieu a G-M business plan emerged; fostered and spearheaded by Ed Ziff, currently the director of Resources Management, Marine Safety and Envi-

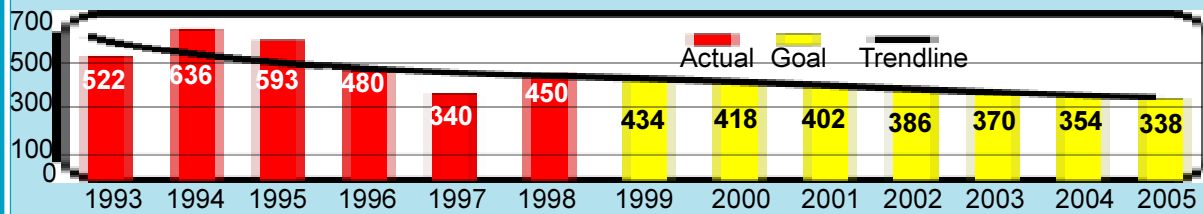
Performance Indicators*

* Many more performance indicators can be found at: <http://cgweb.comdt.uscg.mil/g-mo/bp/pp.html>

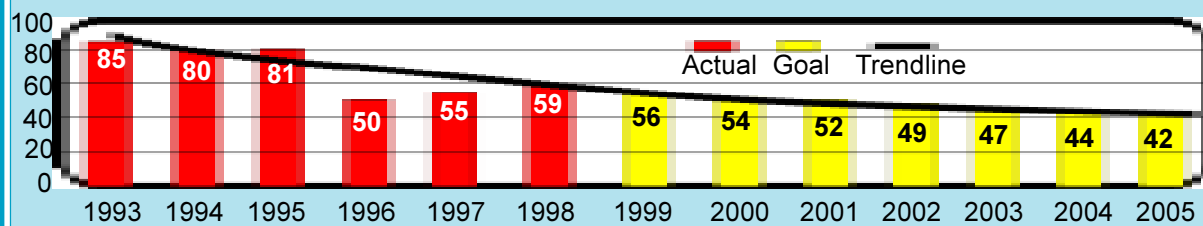
Source: FY 2000-2004 U.S. Coast Guard G-M Performance Plan



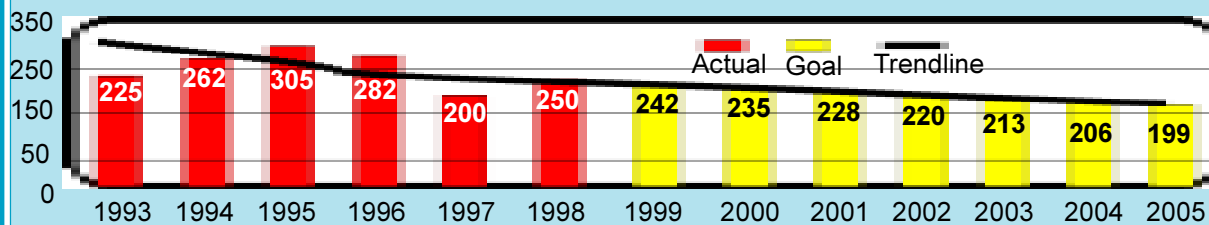
Crewmember fatalities per 100,000 workers



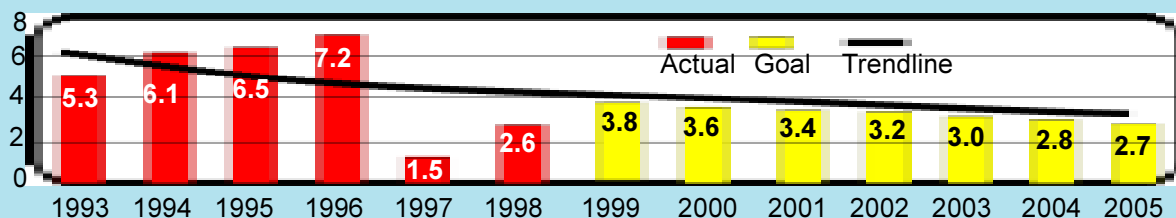
Crewmember injuries per 100,000 workers



Total passenger fatalities



Total passenger injuries



Volume of oil spilled per millions of gallons shipped

ronmental Protection Directorate (G-M), U.S. Coast Guard.

“While inspections, licensing requirements and other traditional regulatory activity-based performance standards will always be an important Coast Guard function, the new business plan focuses on real-world performance,” Ziff said. This paradigm shift has been accomplished through the following:

- Integrating the Marine Safety and Environmental Protection performance plan with the rest of the Coast Guard’s planning architecture
- Integrating systems, operations, and logistics between the Coast Guard and its maritime customers
- Keeping legislators better apprised of Coast Guard plans and objectives to effect improved coordination and facilitate the budgeting process
- Giving managers greater flexibility to take action
- Engaging the maritime industry as partners through greater cooperation and solicitation of input
- Emphasizing non-regulatory approaches to risk management such as training, education, and other preventative measures
- Measuring real-world effects of what the Coast Guard does to improve safety and the environment instead of just measuring internal Coast Guard inputs, activities, and outputs (examples of such measures are on page 15).

Under Ziff’s direction, G-M successfully concluded a three-year GPRA pilot project. Similar business plans have now been implemented Coast Guard-wide with annual reviews and revisions.

Nuts and Bolts of G-M Business Plan

Following the pilot study, real-world performance goals, key factors, strategies, and activities were formulated in four areas: safety, human and natural environment, economic growth and mobility, and security.

For instance, the strategic goal for safety would be eliminating deaths, injuries and property damage associated with commercial maritime operations. Two key factors are that over 90 percent of all injuries and 66 percent of all deaths are attributable to personnel casualties not resulting from a vessel casualty and, vessel casualties result in a significant number of passenger and crew deaths and injuries on uninspected vessels, especially fishing vessels.

Strategies and activities include working with formal and informal partnerships and advisory committees at all levels to determine causes of personnel casualties within industry segments and identify corrective actions. Other strategies include partnering with other federal and state regulatory agencies and other non-maritime indus-

try groups to heighten awareness of personnel casualties that fall under their purview and identify corrective actions.

Another example: The strategic goal for human and natural environment is to eliminate environmental damage associated with maritime transportation and operations on and around the nation’s waterways.

Some key factors are that oil spill volume is driven by a relatively small number of large oil spills; most large oil spills are a result of collisions, allisions and groundings; and human error is often a significant casual factor. To consistently achieve success, we must focus on reducing this risk. Oil transfer operations are another source of a relatively large volume of oil spill events. Although transfers rarely result in major spills, it is not uncommon that spills in excess of 1,000 gallons are associated with transfer operations. The relatively large volumes, combined with a high-rate of incidence, warrant attention.

Strategies and activities include working with formal and informal partnerships and advisory committees to determine causes and solutions. Studies and assessments are also planned to examine the costs/benefits of various risk reduction alternatives as they apply to freight vessels on a national/international basis.

Many more key factors, strategies, and activities are presented in the recently updated FY 2001-2005 G-M Business Plan, which can be viewed on the Internet at www.uscg.mil/hq/g-m/nmc/gendoc/gendocs.htm#business.

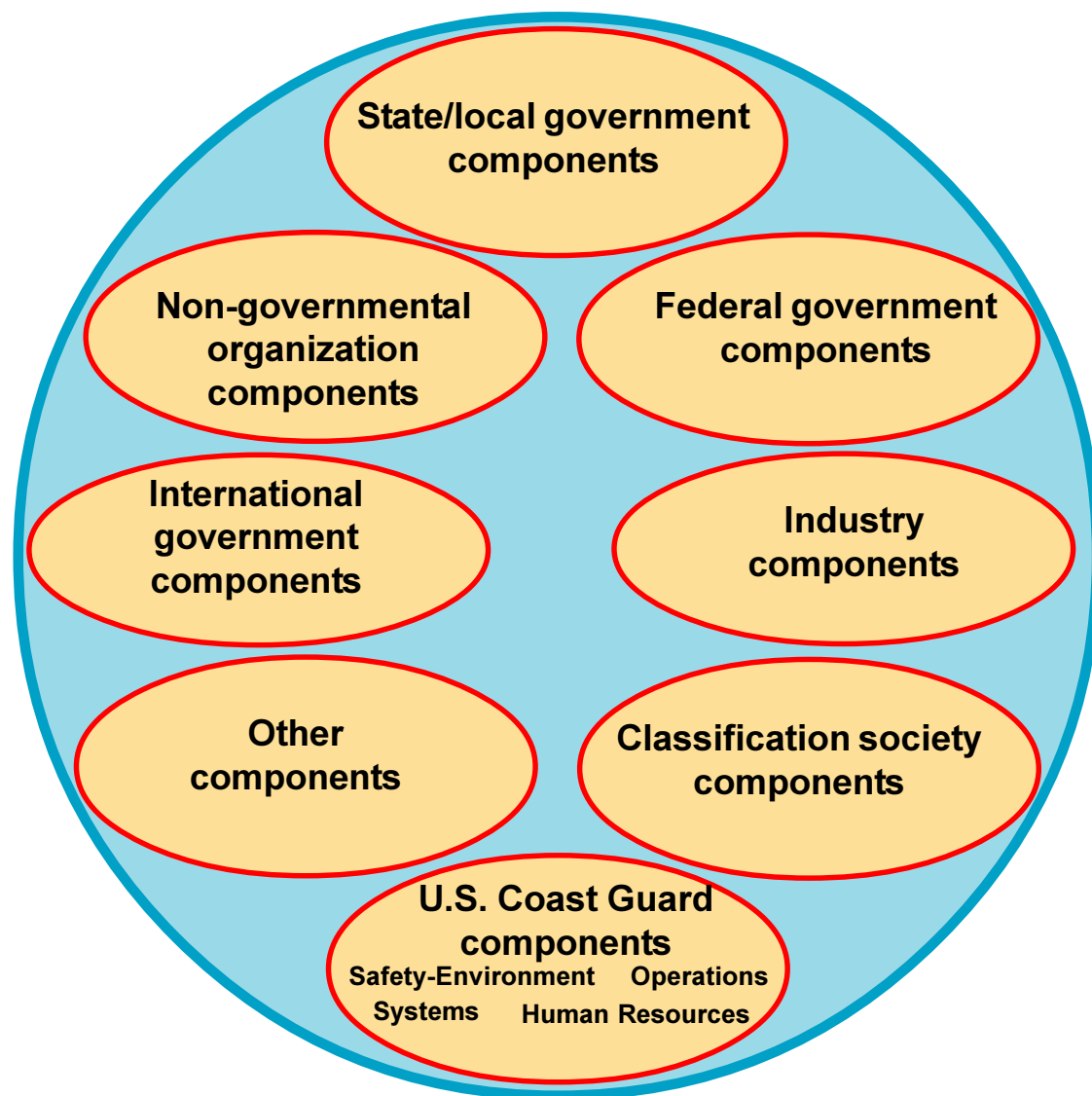
Obtaining real-world performance goals was the most discomfoting aspect of the new business plan, according to CDR Rick Kowalewski, G-M’s pilot project planner and then chief of Strategic Planning and Analysis for G-M. “The U.S. Coast Guard naturally felt more confident measuring organizational inputs, activities, and outputs such as cost analysis, personnel structure, vessel inspection data, license issuance, and investigation findings,” he said. “These were the areas they had control over. Challenges for the future include better understanding the relationships between the organizational activities and the ultimate outcomes we aim to achieve.”

Learning to Think in Terms of Systems

One way to help in this understanding is to think in terms of systems. The term “systems” here refers to interactions between various components that exert some level of influence on marine safety, security, and the environment. A Venn diagram on page 17 depicts such a system.

“While we don’t directly control all factors leading to safety and the environment, we can influence other organizations that do,” said CDR David Stalfort, one of the organizers of the G-M business plan and now chief

The System of Safety and Environmental Protection



of Strategic Planning and Analysis.

Stalfort gave an example of systematic thinking involving safety improvements in Alaska's fishing industry—an especially high-risk occupation. He illustrated how various system components depicted in the Venn diagram were involved. In the industry component, specific fishing groups were targeted for voluntary dockside examinations and safety education, along with at-sea boarding by Coast Guard cutters. To help influence the state government component, testimony was given to the state fishery management board showing that the four-

hour-a-day opening encouraged fishermen to go out to sea in poor weather conditions that put them and their vessels in harm's way.

By expanding the hours and days, fishermen could avoid inclement weather and go out when conditions were more favorable. The results of the strategy influenced fishermen to improve the conditions of their vessels and influenced state fishery managers to expand the fish openings. In the next season, casualties in the fishery were reduced by 70 percent.

He also gave another example of systematic think-

Wary of “submerged objects,” Coasties were initially hesitant obtaining real-world performance goals not under their direct control. But they did and as a result, the maritime industry has benefited.



ing involving port control. A data base of vessels and shipping companies with a history of poor safety and environmental compliance was compiled. This data was shared with international governments and shipping companies so they could direct their inspection efforts where they were most needed and target vessels with poor safety histories.

In another area, the Coast Guard strategy also used the data to target particular vessel inspections. After completing a conditional analysis (see page 18), it was found that the majority of oil spills in the port of Corpus Christi, Texas occurred at around 2 a.m. during tank barge transfer operations. Inspectors were then directed to inspect those vessels at that time, where previously they had limited their inspections between the hours of 9 a.m. and 5 p.m. The results were a huge reduction in the volume of oil spilled.

So, how has the G-M business plan been coming along since its adoption in 1994? “Like a large vessel at sea, that change in direction has taken time. However, there is evidence the organization is on a steady course

of managing for results,” stated Douglas R. McCrimmon, Jr., in a Apr. 30, 1998 dissertation titled: “The Results are Good: A Follow-up Report on the Coast Guard’s Pilot Project Under the Government Performance and Results Act.”

“The Coast Guard has a professional, task-oriented workforce, and as the adage goes, ‘What gets measured gets done,’” McCrimmon continued. “The organization exceeded most of its annual performance targets, and even met several of its five-year targets within the first few years. It is notable that these goals were thought to be a stretch when they were established. The most notable achievement during the pilot project was a dramatic reduction of worker fatalities in the towing industry.”

McCrimmon noted another success in the G-M business plans’ managing for results approach—budget support from the Coast Guard and ultimately, Congress, for the program. The 1999 M operating expenses (OE) budget was about 15 percent more than the fiscal 1994 OE budget. “While 15 percent may not seem like much over five years, these five years were marked by significant budget cuts for many agencies, and most other Coast Guard operating programs.”

Each year, the G-M business plan is reviewed, revised, and re-published. The plan is used to inform the budget process and to provide guidance to field units. “Field commanders are given increased discretion over the use of their resources and are expected to adjust their unit’s activities toward the achievement of the goals,” states McCrimmon. “It requires field units to choose those activities that effect a trend line over and above routine activities. The business plan helps mitigate a ‘firefighting mentality’ by giving managers and workers a focus on outcomes in the face of increasing workloads without increased resources. It reminds them that the activity is not important: the results are.”

Since the G-M pilot project, other marine safety offices have developed plans of their own, many basing their plans on G-M’s, but tailoring them to their own needs and issues. Personnel at Marine Safety Office, Jacksonville, Fla., report that they now enjoy coming to work because they know their efforts are producing results and those results are supporting the organization’s goals, according to McCrimmon.

The new business plan is a big change for the Coast Guard and the seafaring community. But one thing won’t change. Cooperation between the Coast Guard, mariners, and other stakeholders is still essential for success of the new business plan.

“The maritime industry is now more enlightened than in the days when steamboats plied the Mississippi. Most corporations are good citizens and they are as concerned with the well-being of their employees and in pollution prevention as we. No company wants to lose one of their seamen or cause a toxic spill,” Ziff said in an optimistic tone. F



ROLLIN'

Down the River

Real World Solutions To Western River Towing Industry Concerns

By CDR M. L. Blair, MSO, Paducah, Ky.
LT J. D. McTaggart, MSO Paducah, Ky.
Paul Werner, American Waterways Operators

The inland waterways towing industry and the U.S. Coast Guard have made great strides to improve safety and manage risk in a constructive and collaborative manner through the Coast Guard/American Waterways Operators (AWO) Memorandum of Understanding, Responsible Carrier Program, Prevention Through People (PTP) initiative, and open communications in numerous committees

which comprise a vast array of stakeholders.

The towing industry and the Coast Guard share common concerns and goals regarding safety of mariners and all users of the waterways, stewardship for the environment, and the need to effectively and efficiently transport cargo on the inland waterways for the purposes of national and international commerce. The spirit of cooperation and partnering requires that all avenues of mutual problem solving be explored with a commonality of purpose and a genuine respect of the role of each other. *(See graphic on next page)*

Simulation of a barge being towed. The Seamen's Church Institute incorporates a state-of-the-art Western River simulator which focuses on the human element and has made a major positive impact on waterways safety. Photo courtesy of Seamans Church Institute's Center for Maritime Education in Paducah, KY

A meeting of Western Rivers towing industry leaders and the Coast Guard Eighth District Commander and staff was held in July 1999 as a means of better achieving the PTP vision. The Marine Casualties Natural Work Group (NWG) was established, consisting of a cross-section of towing industry and Coast Guard, to address the issues of marine casualty reporting, investigations, and enforcement. The NWG developed recommendations to improve uniformity and consistency in the application and interpretation of pertinent regulations and policies by both the Marine Safety Offices and towing companies as well as propose programmatic changes for District and/or Headquarters action.

The NWG met through the summer and fall of 1999 and leveraged the PTP Principles and Goals in preparing the Marine Casualties Natural Work Group Report

dated Dec. 9, 1999. The NWG presented their findings at the follow-up meeting on Jan. 13, 2000.

Marine Casualty Reporting

Title 46 of the Code of Federal Regulations (46 CFR) 4.05-1 contains the regulatory guidance for reporting marine casualties, while 46 CFR 4.05-10 requires that all marine casualties reportable under 4.05-1 be followed up with written notification to the nearest Marine Safety Office (MSO) or Marine Inspection Office (MIO). However, much confusion and diverse opinions exist as to the extent of information needed to meet the regulatory requirements. The NWG addressed each sub-paragraph to identify areas of confusion, examine their currency, and provide clarification for Western Rivers application. Issues considered included:



PRINCIPLES	VISION	GOALS
<ul style="list-style-type: none"> • Public Safety • Marine Environment • Economic Stability • Regulatory Compliance • Efficient Operations 	<p>To ensure the marine industry is safe, secure, and sustainable by providing the best of service to customers and the community.</p>	<ul style="list-style-type: none"> • Safety • Environment • Economic • Regulatory • Operational

PTP Wheel and Principles/Vision/Goals Box as it appears on pg 4 of the MC NWG Report.

STANDARD INITIAL RADIO REPORT

Date: _____ Time: _____

PART I - GENERAL INFORMATION

Name of Vessel(s): _____

Nature of Incident (all applicable):

- | | | | | |
|--|-----------------------------------|--|---|--|
| <input type="checkbox"/> Hard Ground | <input type="checkbox"/> Ash | <input type="checkbox"/> Collision/Obstruction | <input type="checkbox"/> Fire | <input type="checkbox"/> Pollution |
| <input type="checkbox"/> "Beams & Gird" Contacting | <input type="checkbox"/> Flooding | <input type="checkbox"/> Hull Breach/Leak | <input type="checkbox"/> Personnel Injury | <input type="checkbox"/> Rigging Failure |

Location (grid coord, NAD 83/UTM): _____ Date/Time Occurred: _____

Is any Crew/Deck Machinery Damaged? Yes No Type(s) reported:

Pressure	Wind	Visibility	Temperature (Air)	Current Speed
----------	------	------------	-------------------	---------------

Reported by: _____ Telephone: _____

Company Name: _____ Telephone: _____

PART II - INCIDENT SPECIFIC

PERSONNEL INCIDENT (NATURE OF AND CIRCUMSTANCES)

Name of Person: _____ Type of Injury (if applicable): _____

Location of Overboard: _____ PFD/Water? Yes No

Distance (floating with sea): _____ Swimmer? Yes No

VESSEL DAMAGE/INCIDENTS TO HULL

Crews/Blocked? Yes No Navigation Impaired? (Yes/No, Nature of Impairment)

Number of Ropes: _____ Number of Trawl Ropes: _____ Single Line/Double Line

Number ANCHORS	Count of Damaged Ropes(s)	Number CLIPPED(s)	Number LIFTING(s)
----------------	---------------------------	-------------------	-------------------

(R, A, M, L, J, A, R, B) Outcomes: _____

Visible Aftersight: _____

POLLUTION INCIDENT

Name of Spilled Product: _____ How much spilled? _____

National Response Center (NRC) Notified (1-800-424-6802) <input type="checkbox"/> Yes <input type="checkbox"/> No	Company "Qualified Individual" Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No
--	---

What action was taken? _____

PART III - FOLLOW-UP ACTIONS

What is the immediate Plan of Action? _____

TYPE OF AID COMED:	CONTACT NUMBER: Radio channel: _____ Telephone: # () _____
--------------------	--

- Confusion among some towboat captains and pilots exists as to the reporting requirements in the current regulations
- Concerns were raised by the industry that initial reporting of marine casualties to the Group watchstander was occasionally hampered by “irrelevant” questioning and insistence that a Written Report of Marine Casualty (CG-2692) be submitted
- The industry felt that the reporting requirements in 46 CFR 4.05-1 were not fully pertinent to Western Rivers operations
- Many towboat companies do not report “bump and go” groundings due to the administrative burden of filing a CG-2692 as currently required by regulations

The NWG recommended a number of changes to the marine casualty reporting regulations found in 46 CFR 4.05. These recommendations ranged from increasing the reportable property damage limit from \$25,000 to \$100,000, adding the requirement that all collisions should also be reported regardless of damage, and removing “minor” injuries from the reporting criteria. This would better align reporting requirements with Coast Guard guidance on some of these issues as found in G-MOA Policy letters 3-97 and 2-98.

The NWG also discussed the Standard Initial Radio (SIR) Report that had been developed as a result of an industry/Coast Guard Quality Action Team (QAT) several years ago. The SIR Report outlines information needed to be relayed to the Coast Guard following a marine casualty. It appears that both the industry and the Coast Guard Groups do not consistently use the SIR Report form, which all agreed was a valuable tool. Using the SIR Report enables both the pilot and the watchstander to immediately be on the same page and reduces confusion and frustration when initial reporting is conducted. The NWG recommended that the SIR Report be provided to and used by all towboats and the three Western Rivers Coast Guard Groups. *See SIR Report Form on previous page.*

“Bump and Go” Groundings

The NWG shared a concern that many minor groundings were not being reported due to the administrative burden of filing a written report of the incident, using the CG-2692 form, as required by the regulations. While completing a CG-2692 is not entirely burdensome in itself, having to complete a written report of a minor grounding tends to dissuade some mariners from reporting short-lived incidents upon the Western Rivers. When these seemingly minor groundings go unreported, the waterways management function of the Coast Guard suffers unnecessarily. The NWG agreed that “minor”

groundings would not necessarily require a written CG-2692 to be submitted following the incident. The waterways management responsibilities are just as easily met when radio reports are made to the Coast Guard immediately following the incident, with no written follow-up necessary.

In defining these “minor” groundings, the NWG found a resource in G-MOA Policy Letter 2-98. The Policy Letter’s definition of bump and go groundings was adopted by this NWG with only one minor recommended change. The NWG proposed the following definition:

“Bump and go” grounding – the touching of the bottom on the Western Rivers by uninspected towing vessels and uninspected barges in the navigational channel with no damage, no pollution, no personnel injuries, and no unintentional breaking apart of the tow.

The Policy Letter definition added that the vessel must receive “no assistance to resume voyage.” The NWG disagreed with that stipulation because receiving assistance from an additional towboat serves to maintain the integrity of the river bottom in the channel during low water periods.

The NWG further recommended that the requirement for a written report in 46 CFR 4.05-10(a) contain an exemption for bump and go groundings on the Western Rivers.

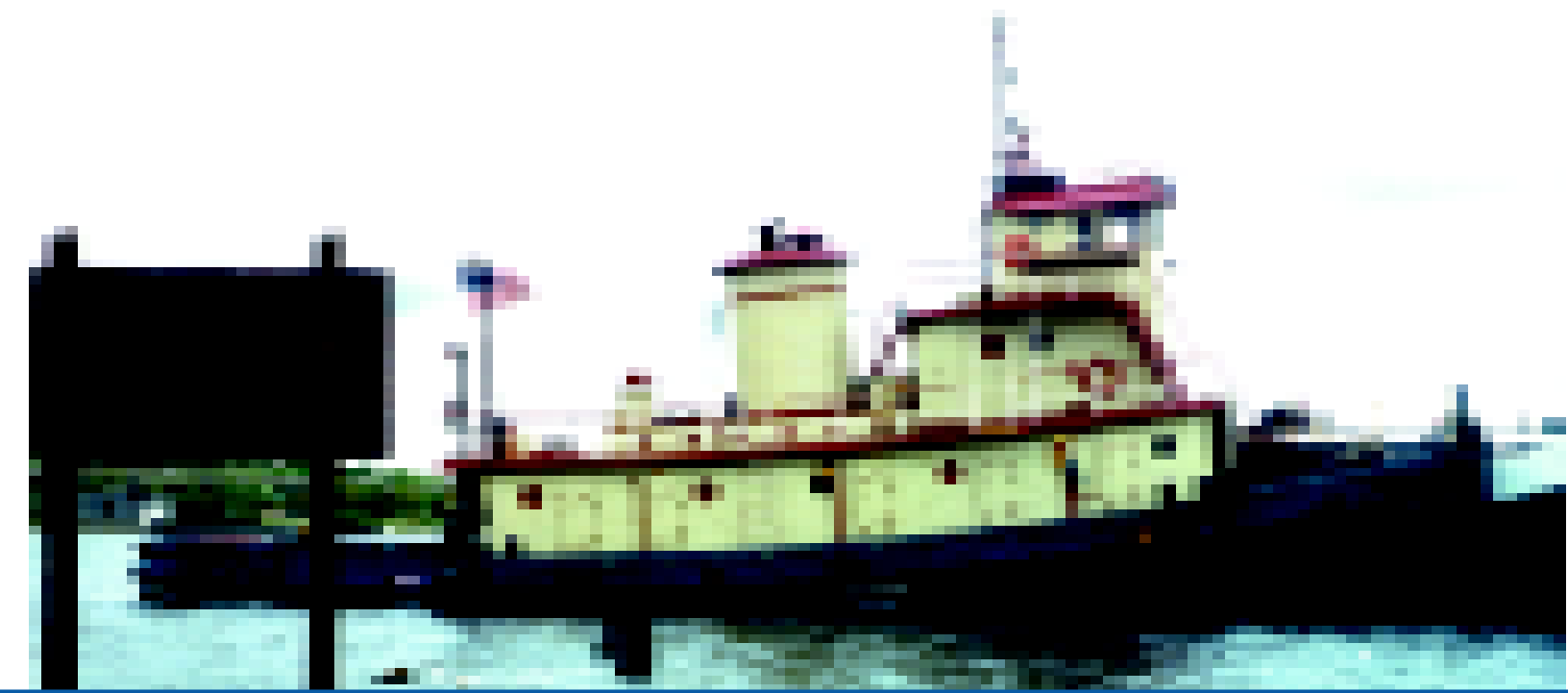
Barge Seaworthiness

The term “seaworthiness” is used in 46 CFR 4.05-1(a)(4) to determine when a casualty would be considered reportable. On the inland waterways, compartment or void leaking conditions on *uninspected* barges are fairly common, ranging from leaking barges in service to damage resulting from close quarters conditions, including lock operations and fleeting evolutions. From a risk management perspective, uninspected barges with non-regulated cargo operating in locations close to shore generally do not pose a major risk to the waterways or the environment. Leakage of uninspected barges is rarely reported because minor leaking does not affect a barge’s seaworthiness or fitness for service.

The NWG developed case specific guidance to help more specifically define when flooding on unregulated barges would require reporting due to “seaworthiness” concerns in 46 CFR 4.05-1(a)(4). The NWG recommended that Western Rivers MSOs adopt this policy guidance as it appears as Appendix 5 of the Marine Casualties Natural Work Group Report.

Coast Guard Response Practices

Industry expressed a desire for consistent response



Towboat captains and pilots have reported confusion as to reporting requirements in

A towboat operator in Norfolk, Va prepares to get underway. **Photo by David Vergun**

practices among Western Rivers MSOs for similar marine casualty and pollution cases. In general, the Coast Guard seeks to immediately board a towing vessel any time a casualty involves a death, serious injury, sinking, significant pollution, damage that affects the seaworthiness of a commercial vessel, damage that affects an inspected vessel's fitness for service, or an allision or collision resulting in property damage in excess of \$100,000. While relatively minor injuries, most groundings, small spills and equipment failures would seldom cause a towing vessel to be delayed, MSO Commanding Officers should be directly involved in any decisions that would delay a vessel's voyage.

The NWG developed standard guidance for situations that should generate a common response by all Western Rivers MSOs. This guidance is not intended to limit the discretion of the commanding officer, be a substitute for good judgment, or be applicable to every situation, but is intended to remove unnecessary variation from Coast Guard responses while improving quality. This standard guidance is included as Appendix 7 of the Marine Casualties Work Group Report.

Investigations and Personnel Action Processes

The NWG studied Western Rivers casualty cases that resulted in license actions and Letters of Warning

(LOWs) from 1998-1999. There appeared to be a perception in the towing industry that license action was taken with great frequency and often unjustified. The NWG came to a general consensus that in each case studied the action taken was fair and appropriate for the incident. Data collected indicated that approximately 5 percent of all reported marine casualties within the towing industry on the Western Rivers resulted in Letters of Warning being issued to the mariner, while only 2 percent of marine casualties resulted in license action (probation, suspension, or revocation) either through joint motions or hearings before an administrative law judge.

The NWG recommended that personnel action case statistics be published periodically, particularly on MSO Web sites. The statistics would be annotated with case summaries to show the general circumstances involved in the issuance of the LOWs or associated license action. This measure should help alleviate the common perception that the number of these license actions is high.

Also considered by the NWG was the use by some officers-in-charge, marine inspection (OCMI) of local (or desk) letters known as a Letters of Concern. The NWG discussed the use of these letters and discovered that they were commonly used by some MSOs under various names, including Letters/Records of Admonishment and Loca/Letters of Warning. Under any name, they were used

by the OCMI to emphasize the severity of an incident while not making it part of the mariner's permanent record. Yet problems arise when mariners confuse these local letters with an actual LOW. It is important to note that an actual LOW does not restrict the mariner from the full use of his license, but it *is* included in the mariner's permanent file.

The NWG recommended that guidance be developed to ensure consistency throughout OCMI zones and alleviate any confusion with an actual Letter of Warning. To accomplish both tasks, the group recommended that the terms "Local LOW" and "Letters/Records of Admonishment" be terminated. Also, the NWG's consensus was that Letters of Concern should be used when: (1) a mariner's action (or inaction) is borderline (that is, bordering between an error in judgment and either negligence or misconduct); (2) the resultant casualty has

not in agreement with a formalized method of peer review. Several points of contention were raised, including the opinion that it would be nearly impossible to remove the politics from the mariner who participated in a peer review group. Industry consensus was that Coast Guard Investigators have the potential to offer the most unbiased opinions, provided they are familiar with industry practices.

Conclusion

There are numerous positive measures being taken by Western Rivers MSOs, Groups, and towing industry to achieve the PTP Vision. In addition to this NWG, another joint industry/Coast Guard NWG recently presented recommendations to facilitate Coast Guard orientation to Western Rivers issues. These recommendations include incorporating inland rivers issues into Yorktown Marine

current regulation. As a result, NWG recommended changes in reporting regulations.

minor negative implications for life, environment, and/or property, and (3) the issuance of a Letter of Concern would have the necessary remedial effect to deter the mariner from acting (or failing to act) in a similar manner in the future.

There was much discussion on the investigative process as it relates to administrative action against the mariner. As a review, in every marine casualty investigation, the purpose is the same and is defined in law and regulations to determine:


- Cause of the casualty including the cause of any associated death
- Whether an act of misconduct, incompetence, negligence, unskillfulness, or willful violation of law by any person contributed to the casualty or to any associated death
- Whether there is any evidence to call for the assessment for civil penalty under the laws of the U.S.
- Whether there is evidence of a criminal act
- Whether there is a need for changes in the applicable laws/regulations to prevent recurrence

During the investigation process, MSO commanding officers regularly consult with experienced members of industry in cases where license actions could be taken or where their knowledge and experience could help determine if a marine casualty occurred as a result of negligence or an error in judgment. The NWG recommended that this informal process be formalized for the purpose of informing mariners that this cooperation and exchange of information exists to the overall benefit to mariners. There was a great deal of discussion among the NWG members on how to best accomplish this. Industry was

Safety Courses, implementation of a week-long seminar at a Western Rivers port for incoming personnel, and improvements to MSO and Group orientation programs. In addition, the Seamen's Church Institute Center for Maritime Education Advanced Pilothouse Management Course, which incorporates a state-of-the-art Western Rivers simulator, focuses on the human element and has made a major positive impact on waterways safety. *See simulator photo on first page of this article.*

On March 20, 2000, Coast Guard District Eight issued D8(m) Policy Letter 02-2000 endorsing many of the NWG recommendations. To help alleviate problems with industry misperceptions, District suggested that each MSO publish personnel action statistics on their unit Web sites and completely eliminate the use of all local letters other than the Letter of Concern. In the same policy letter, Coast Guard Groups were directed to use the SIR Report during initial marine casualty reporting. In addition, a letter was also forwarded to Headquarters recommending many of the regulation changes mentioned above.

In all, 17 recommendations were made by the NWG in the Marine Casualties Work Group Report dated Dec. 9, 1999. This entire document is available for viewing and downloading in Adobe Acrobat format at <http://www.uscg.mil/d8/mso/paducah>.

If you need further information, please contact LT Joshua McTaggart at MSO Paducah, Ky. at 270-442-1621. 

measuring response readiness



SWIFT SOLUTION
to a
COAST problem

By LCDR Kristin Williams, senior investigating officer,
Marine Safety Office San Francisco Bay

A Coast Guard environmental response team places an oil absorbent boom after an oil spill in San Francisco Bay in Nov. 1999. USCG photo by PA1 Adam Wine.

How do you measure response readiness? How can a unit use information about the training, experience, and qualifications of its crew to develop a measure of unit readiness and determine how prepared it is to conduct its missions?

At Marine Safety Office (MSO) San Francisco Bay, we decided to begin addressing those questions by asking ourselves how ready we were to respond to oil spills. In answer to this, we have developed an oil spill response readiness index, with corresponding “dashboard” gauge. The response readiness index is comprised of five variables, each of which is weighted and entered into a formula to derive an index number. This index number is used for a visual indicator—the “dashboard” gauge. Just as the gauges in your car give a snapshot of your vehicle’s operating condition, our unit dashboard gauge gives us a snapshot of our readiness to respond to oil spills. The dashboard gauge gives the user a quick visual reference and, over time, can indicate unit readiness trends.

Following is the index formula we developed:

$$\text{Index} = (\text{MTL} * .25) + (\text{FTP} * .15) + (\text{ICS} * .20) + (\text{SPILL EX} * .15) + (\text{SPILL RESP} * .25)$$

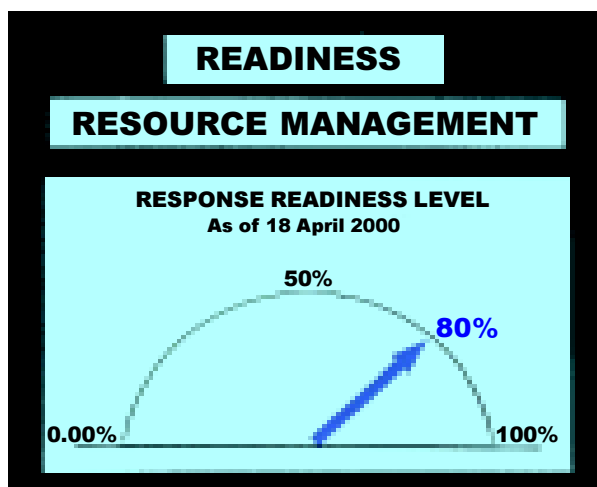
Now, let’s examine the formula. The five variables are defined as follows:

1. **MTL:** The unit Master Training List
2. **FTP:** Number of personnel on their first marine safety field tour
3. **ICS:** Incident Command System Training Levels
4. **SPILL EX:** Number of oil spill exercises conducted
5. **SPILL RESP:** Number of oil spill responses conducted

The Master Training List — MTL

The Master Training List, or MTL, is a unit-generated document that lists required training for each billet on the Personnel Allowance List. As displayed in the excerpt at the bottom of this page, the MTL outlines the required, and completed, training by billet number (BCN, a unique job identifier), name of member and the billet title. Note also, that the MTL lists whether a member is on their first assignment to a marine safety office (FTP)

BCN	NAME	BILLET TITLE	FTP	REQUIRED TRAINING	FREQ	QUALS
1198331	(Member name)	Environmental Protection Section-Duty	N	Port Ops Department Course (PODC) Oil Spill Control Course Incident Command System I100-I1300 ICS Refresher 40-Hour HAZWOPER or HMIR NOAA Shoreline Assessment HAZWOPER Refresher (8 hr.)	Once Once Once Annually Once Once Annually	PI FOSCR



and any qualifications held.

The MTL variable in the formula is calculated as follows:


$$\text{MTL} = \# \text{ courses completed} / \# \text{ courses required} (.40) + \# \text{ qualifications held} / \# \text{ qualifications required} (.60)$$

NOTE: Formula does not include ICS courses

Qualifications are primarily earned through on-the-job training and thereby indicate a certain advanced level of skill. So, within the MTL variable formula, we weighted the qualifications ratio higher than the course completed ratio to reflect this fact. The resultant MTL variable was assigned a weight of 25 percent in the index formula because we concluded that the combination of job training and qualifications were critical elements in determining response readiness.

Number of personnel on their First Marine Safety field tour — FTP

The FTP variable is an indicator of overall professional experience in the Marine Safety program. (In the Coast Guard, there are two broad categories of jobs: field and staff. Field tours are conducted at units such as a marine safety office or marine safety detachment. A staff



tour is an assignment to Coast Guard Headquarters, Atlantic or Pacific Area staffs, and District offices.) For purposes of our formula, we defined the FTP variable as those personnel who are on their first field assignment at a marine safety office and who have less than two years at that office. The FTP variable, assigned a weight of 15 percent in our formula, is determined by the following ratio:

$$\text{FTP} = \frac{\# \text{ of first field M-tour personnel with } < 2 \text{ years}}{\text{Total number of personnel assigned}}$$

Incident Command System Training Levels — ICS

The third element of the readiness index is the level of Incident Command System (ICS) training completed. An understanding of the Incident Command System is critical to an effective oil spill response. The ICS variable carries a weight of 20 percent and is derived from the following ratio:

$$\text{ICS} = \frac{\# \text{ courses completed by billet}}{\# \text{ courses required by billet}}$$

Number of Oil Spill Exercises Conducted – SPILL EX

The SPILL EX variable is the fourth element of the index formula and it is derived from the combination of two ratios as noted below. Oil spill exercises are important because they provide an opportunity to test training and skills in a controlled environment. At MSO San Francisco Bay, we also conduct “process” exercises. A process exercise is a formal exercise in which only a portion of an oil spill response is tested. For example, a communications process exercise tests just the communication process of the response and not any other aspect. Process exercises help us to focus training and skill development. Each of these ratios is based on annual goals and each is weighted at 50 percent.

$$\text{SPILL EX} = \frac{\# \text{ oil spill exercises conducted}}{\# \text{ oil spill exercises}}$$

Coast Guard cutters and small boats work together to place an oil absorbent boom in the water during an oil spill in San Francisco Bay. USCG photo by CWO Jerry Snyder

required (.50) + oil spill process exercises conducted / unit goal (.50)

Number of Oil Spill Responses Conducted – SPILL RESP

SPILL RESP is the final variable of the index formula. The variety of maritime operations in and around the San Francisco Bay, Delta and the Northern California coast, coupled with the environmental sensitivity of the entire region provide the potential for a wide array of oil spill responses. These range from the all-hands deployment of unit personnel to a large oil spill to the two-person team deployed to manage the clean-up of a small mystery spill. This variable is simply the number of responses conducted during the preceding 12 months.

SPILL RESP = *The number of spill responses conducted within the past 12 months*

In summary, the oil spill response readiness index formula is as follows:

$$\text{Index} = (\text{MTL} * .25) + (\text{FTP} * .15) + (\text{ICS} * .20) + (\text{SPILL EX} * .15) + (\text{SPILL RESP} * .25)$$

In April 2000, MSO San Francisco Bay ran the formula calculation and came up with a readiness level of 80 percent. This seemed intuitively right. We then calculated our projected readiness level following the summer transfer season, when we would have many more new people on board. The formula projected a new readiness level of just over 70 percent. Again, this seemed to make sense. This index is by no means a perfect measure, but it has provided us with a relative means of gauging our readiness for oil spill response. It has also helped us to focus on those elements of training and unit preparedness that are most critical to readiness.





Mariner's Seabag

CITIZENS CAN PROTECT OUR COASTS TOO

By PA1 Scott Carr,
Seventh Coast Guard District

Protecting the marine environment is everyone's responsibility. Ultimately, the task of enforcing the law is left up to a few government agencies such as the U.S. Coast Guard.

The Coast Guard has cutters and aircraft on patrol every day throughout the 200-mile U.S. Exclusive Economic Zone to enforce those laws. Assisting the Coast Guard are everyday citizens who use the ocean for business or recreation.

One such man is Robert Harnish, 53, a native of St. Petersburg, Fla. Harnish, who spent the majority of his life working on board ships. Harnish was piloting the 100-foot tug *Dolphin* on May 5, 1995, on southwest course 6.5 miles off Tennessee Reef in the Florida Keys. He noticed a large freighter, about five miles away, transiting through a marine sanctuary.

The sky was clear and the early afternoon sun shone brightly on the deck of the *Dolphin*. Checking his radar, Harnish verified that the 800-foot freighter *Global Jane*, was four miles off his starboard beam, well within the Florida Keys National Marine Sanctuary. "I knew the freighter was in a prohibited zone so I tried to hail them on channel 16," he said.

The sanctuary is clearly marked on all U.S. navigational charts as an area to be avoided by tank vessels and vessels greater than 50 meters, or 164 feet. The 800-foot *Global Jane*, registered in Malta, far surpassed the 50-meters limit.

Not wanting to see any damage done to the reef, Harnish attempted to hail her three times. Because the *Global Jane* failed to answer his calls, the only recourse was to notify the Coast Guard Station at Marathon Key.

The 41-foot cutter from Station Marathon was dispatched to investigate Harnish's report. Once on scene with the *Global Jane*, the crew of the Coast Guard witnessed a crewmember from the *Global Jane* throwing trash off the port quarter. The coxswain maneuvered the 41-foot cutter into a position to pick up the jettisoned garbage. In all, three pieces of trash were recovered: a cardboard box, plastic bag, and green plastic wrapping

paper. Other pieces sank before they could be recovered.

The Coast Guard crew informed the master of the vessel he was in a prohibited zone and ordered him to alter course to the south and clear the sanctuary.

The Marine Safety Office in Tampa boarded the *Global Jane* once the vessel arrived in the port of Tampa. The MSO boarding officers discovered that the vessel had a waste management plan and placards posted for proper disposal of garbage. The chief cook and two assistant cooks confirmed in written and verbal statements that plastics from the vessel were discharged into U.S. waters.

The dumping of plastic is a violation of Marine Pollution Agreements and U.S. law concerning the prevention of pollution from ships.

The International Convention for the Prevention of Oil Pollution from Ships first took place in 1950. Several conventions since then have helped bring about stronger regulations against the pollution of the marine environment. In all, there are five annexes to the MARPOL Convention.

The United States, which is a party to Annexes I, II, III, and V, can enforce these laws on any ship operating within the U.S. Exclusive Economic Zone, which generally extends up to 200 miles offshore. The implementation of the MARPOL Convention into U.S. law allows the Coast Guard to impose a civil penalty of up to \$25,000 and criminal charges of fines up to \$500,000 or a minimum of six years in prison.

Capt. William Thomas, the legal officer then for the Seventh District, forwarded a recommendation that Harnish be awarded \$5,000 for information he supplied to the Coast Guard which led to the assessment and collection of the \$25,000 civil penalty.

"I felt we needed to reward Robert's [Harnish] responsible act and in the process, we encourage others in the marine community to act responsibly," Thomas said.

Harnish never asked for a reward. "I make my living on the water and I don't want to see the ocean destroyed," Harnish said. "If the ocean is destroyed, I would be out of a job and the marine environment would be lost for all future generations."



Nautical Queries

Deck Questions

1. In United States waters, a buoy having red and white vertical stripes has a light characteristic of:
 - A. Group occulting
 - B. Morse (A)
 - C. Interrupted quick flashing
 - D. Quick flashing
2. Leeway is the:
 - A. Difference between the true course and the compass course
 - B. Momentum of a vessel after her engines have been stopped
 - C. Lateral movement of a vessel downwind of her intended course
 - D. Displacement of a vessel multiplied by her speed
3. What is the purpose of limber holes?
 - A. To allow for air circulation
 - B. To allow for stress and strain in rough waters
 - C. To allow water in the boat to drain overboard
 - D. To allow water in the bilge to get to the boat drain
4. Which is NOT an advantage of the flush method of welded shell plating?
 - A. Reduces weight
 - B. Reduces frictional resistance
 - C. Keeps practically 100% of tensile strength at the joints
 - D. Reduces plate stress
5. A survival craft being used to pick up a person who has fallen overboard from a MODU should approach the person:
 - A. At a high rate of speed
 - B. Under oars
 - C. Against the wind
 - D. With the wind
6. A deep keel on a sailing vessel increases the:
 - A. Resistance to lateral movement
 - B. Length-depth ratio resulting in a faster hull design
 - C. Height of the center of gravity above the hull resulting in a more stable vessel
 - D. Mast height to compensate for increased lateral resistance
7. BOTH INTERNATIONAL AND INLAND: Which vessel must exhibit a conical shape, apex downwards?
 - A. A 10-meter vessel engaged in fishing
 - B. A 15-meter vessel proceeding under sail when also being propelled by machinery
 - C. A 20-meter vessel restricted in her ability to maneuver
 - D. All of the above
8. The period at high or low tide during which there is no change in the height of the water is called the :
 - A. Range of the tide
 - B. Plane of the tide
 - C. Stand of the tide
 - D. Reversing of the tide
9. INLAND ONLY: A special flashing light is used on a vessel(s):
 - A. Being pushed ahead
 - B. At anchor in a fairway
 - C. Towed astern
 - D. All of the above
10. The straight stream capability of an all-purpose nozzle is used in fighting a class A fire to:
 - A. Shield fire fighters from radiant heat
 - B. Break up burning material
 - C. Get the most water possible on the fire
 - D. Drive heat and smoke ahead of the fire fighters

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



Nautical Queries

Engineering Questions

- Under otherwise normal steaming conditions, an abnormally high temperature at the superheater outlet of a single furnace boiler would indicate:
 - Poor heat transfer in feedwater heaters
 - High steam demand
 - Insufficient combustion air
 - Excessive steam supply to fuel oil heaters
- Which of the following statements is true concerning simple parallel resistance circuits?
 - The total current flow equals the sum of the individual currents
 - The total current flow equals the reciprocal of the sum of the individual currents
 - The total resistance equals the sum of the individual resistance
 - The total voltage equals the sum of the individual voltages across each resistance
- The boiler uptake periscope appears completely black; this could indicate:
 - Too much air
 - Too little air
 - A burned out light bulb
 - All of the above are correct.
- Fusible plugs are installed in fire-tube boilers to:
 - Provide a means of draining the boiler
 - Warn the engineer of low water level
 - Cool the crown sheet at high firing rates
 - Open the burners' electrical firing circuits
- In a logic circuit, the NOT gate function:
 - Does not alter a logical input
 - Serves to amplify a given signal level
 - Must be accomplished with a common collector transistor
 - Reverses an input logic condition
- Flexible hose under pressure in a hydraulic system will:
 - Tend to twist about its long axis
 - Expand in length and in diameter
 - Contract in length and expand in diameter
 - Flex at right angles to the applied pressure
- Line losses in a distribution circuit are kept to a minimum by:
 - Adding rubber insulation conductors to the circuit
 - Using higher current and lower voltage
 - Increasing the number of thermal relays in the circuit
 - Using higher voltage and lower current
- If the ship service air compressor failed to unload, the:
 - Compressor would dangerously overspeed
 - Air receiver pressure would be excessively low
 - Circuit breaker may open on starting
 - Compressor would pump on starting
- The instrument always used in conjunction with a salinometer is a:
 - Pyrometer
 - Thermometer
 - Hygrometer
 - Hydrometer
- Accumulation tests are conducted in order to determine the:
 - Steam generating capacity of an individual boiler
 - Steam relieving capacity of safety valves
 - Maximum combined oil consumption of all burners installed on a single boiler
 - Maximum combined steam generating capacity for all propulsion boilers of a single plant

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