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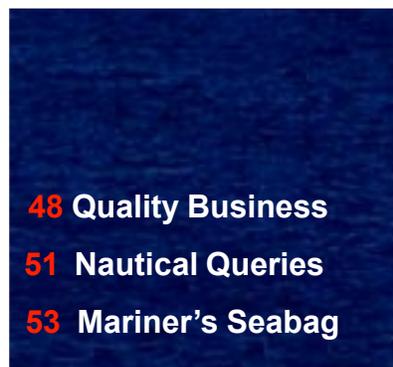
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Front cover photos: Quality is the theme of this issue of *Proceedings*. Several quality awards, along with maritime themes are depicted, showcasing the teamwork needed to ensure the highest quality of safety and environmental standards. See page 3 for awards description.

Back cover photo: BM1 Holly Wiggins, of Coast Guard Station Annapolis, Md., navigates a 41-foot utility boat near a Chesapeake Bay inlet.

USCG photo by PA1 Pete Milnes



Assistant Commandant's Perspective

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

Maintaining and improving quality requires a continuous organization-wide commitment to excellence in safety and environmental protection, performance, training and education, reliability, leadership, morale, and customer service. Does improving quality involve some hard work, discomfort and change? Probably.

However, quality should not be viewed as a tradeoff with productivity or profit. Put simply, good quality means good business. Just ask Crowley Marine Services, Consolidated Edison, Alaska Clean Seas, Portland Pipe Line Corporation, and other organizations that received 2000 Benkert Awards and past Benkert Awards for excellence if their efforts to improve quality were worth it. I think you will find that the answers will be "most definitely."

If things appear to be working just fine, is there still a need for better quality? Assuredly. In every organization – even the best run – there exists room for improvement, whether it be in a better method, process, product, or way of leading people. Opportunities are ripe for those with pride, conviction and vision at the top or bottom of an organization to ask: "Isn't there a better way of doing this?" If the answer is "yes, there is a better way," then a receptive management will evaluate the merits of the solution with eagerness, thoroughness, and an open mind.

A good first step to improving quality is acknowledging that there is always room for improvement; empowering each member of the organization to take action; and maintaining open communications from the top down and bottom up. Then, the solutions can be evaluated, measured, tested, and implemented. Finally, efforts at improving quality should be rewarded.

Awards are an important tool used in recognizing quality. I encourage Coast Guard organizations to apply for the Commandant's Quality Award. For corporations and businesses involved in marine facilities or vessel operations, I encourage you to apply for the Benkert Award. Whether or not you win the awards, the road to improving quality will reward itself. Let us now resolve to unite and strive for improving quality as we enter the new millennium.

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

*Admiral James M. Loy,
USCG Commandant*

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UNITED STATES COAST GUARD

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By the Way . . .

Editor's

Point of View

Our front cover depicts four awards that represent quality:

The Commandant's Quality Award recognizes Coast Guard organizations that have improved their overall performance and demonstrated a sustained trend in providing high quality services, resulting in effective use of taxpayer dollars.

The Benkert Award recognizes corporations and businesses involved in either marine facility or vessel operations that have demonstrated sustained excellence and outstanding achievements in protecting the marine environment.

The Baldrige Award, managed by the National Institute of Standards and Technology, recognizes high quality businesses and other organizations. Criteria focuses on seven key areas: leadership; information analysis; strategic quality planning; human resource development and management; management of process quality; quality and operational results; and customer focus and satisfaction.

The Deming Prize, established in honor of Dr. W. Edwards Deming, recognizes high quality businesses and other organizations. Criteria focuses on 10 key areas: policy and objectives; organization and its operation; education and dissemination; assembly and disseminating information; analysis; standardization; control; quality assurance; results; and future plans.

"Quality" has become the mantra in the world of business and education. Long before W. Edwards Deming and Malcolm Baldrige popularized the concept of "quality," seafarers referred to it simply as "running a tight ship," or getting things "shipshape" and "squared away."

Although it's wonderful to win quality awards, it doesn't take winning an award to see the benefits from implementing a quality program. Improved morale among employees, increased customer satisfaction, higher productivity, a better product, faster turnaround time, fewer deaths and injuries, a decrease in down time, increased sales and cost savings, a reduction in waste and accidents, and compliance with legal and ethical standards are but a few of the benefits quality produces.

Quality is a continuous, incremental process that should involve customers and employees, as well as management. Improved quality in the Coast Guard and the maritime industry results in improved safety and environmental outcomes – without jeopardizing economic benefits. Teamwork and cooperation from both communities is essential to make that happen. No longer is it good enough to ask: "If it ain't broke, why fix it?"

P

Clarification: The article titled "Implementing STCW in the University World: The California Maritime Academy," on pages 47-48 of the January - March 2000 issue of *Proceedings*, was written by George A. Condon, PhD.

QUALS



Recent Trends

The quality of vessels visiting U.S. ports has improved, with substandard vessel detentions down 32 percent from 1997 to 1998, and down an additional 31 percent from 1998 to 1999. A very small percentage of Port State Control exams result in detentions, and the number of targeted Flag States has dropped from 20 in 1999, to just 14 in 2000. Many developments have contributed to the overall improved quality of vessels in the U.S. Recent international initiatives, such as the 1995 amendments to STCW 78 and the International Safety Management Code, have helped to improve standards and the quality of seafarers. Additionally, the growth of regional Port State Control organizations has made it very difficult for vessels to visit ports where a structured Port State Control regime is not in place. Transparency, which is the sharing of data and information about ship quality, has improved dramatically. Last spring, the European Commission launched a web-based, international ship information database, called EQUASIS.¹ The Coast Guard and the Asia/Pacific and the Paris Memorandums of Understanding on Port

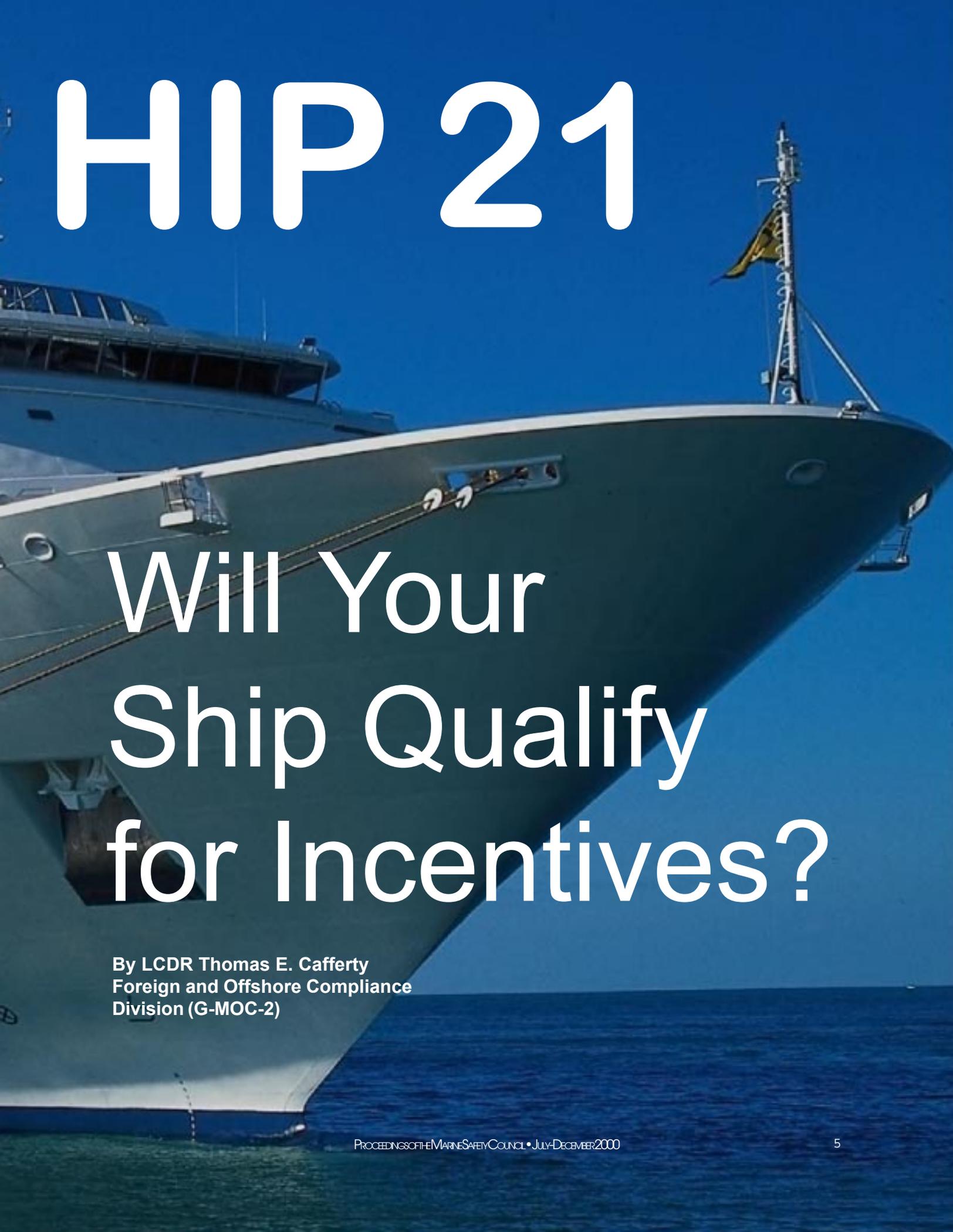
State Control, are contributing both inspection and detention data to EQUASIS, which will give the international community more information to identify quality and substandard ships.

While quality has improved, we are also fine-tuning our ability to target high risk vessels for examination. Some members of the international shipping community believe that charterers are not being held accountable by any of the Port State Control organizations. Therefore, we are exploring the possibility of considering substandard charterers or cargo owners in our foreign vessel targeting matrix. However, we do not currently have enough information about charterers or cargo owners to amend our targeting scheme, primarily because we do not currently collect this information from vessels. Therefore, we requested comments about charterers and cargo owners² in an

¹ EQUASIS can be found on the internet at: <http://www.equasis.org>

² Federal Register Notice, docket number USCG-2000-7796, published Aug. 18, 2000

HIP 21

A large white ship, likely a naval vessel, is shown from a low angle, emphasizing its size and the curvature of its hull. The ship is white with a dark blue stripe along the bottom. A yellow flag is visible on a mast in the background. The sky is a clear, deep blue, and the sea is a darker blue. The overall scene is bright and clear.

Will Your Ship Qualify for Incentives?

By LCDR Thomas E. Cafferty
Foreign and Offshore Compliance
Division (G-MOC-2)

effort to improve our understanding of the influence that charterers and cargo owners have in quality shipping. After analyzing the comments received through this Notice, we may amend our vessel notification of arrival requirements.

Quality Incentives

Regardless of the score that a vessel receives in our targeting matrix, all foreign-flagged vessels are examined no less than once each year. This provides few incentives for the well run, quality ship. Many vessels are maintained and operated far beyond the minimum requirements, and are typically found with few or no deficiencies. Under our current policies, these vessels are boarded at similar intervals as vessels that aren't operated as well. These quality vessels should be recognized and rewarded for their commitment to safety and quality. Therefore, on Jan. 1, 2001, the Coast Guard will implement an initiative to identify high-quality ships, and provide incentives to

encourage quality operations. This initiative is called Qualship 21, quality shipping for the 21st century.

What is a Quality Vessel?

There are many opinions as to what elements constitute a quality vessel. By closely examining Port State Control data from the previous three years, the characteristics of a typical "quality" vessel were identified. From that perspective, a quality vessel is associated with a well-run company, is classed by an organization with a quality track record, is registered with a Flag State with a superior Port State Control record, and has an outstanding Port State Control history in U.S. waters. Using these general criteria, approximately 10 percent of the foreign-flagged vessels that call in the U.S. qualify for this initiative (the specific Qualship 21 eligibility criteria is described in Figure 1). Qualship 21 will initially apply to foreign-flagged vessels. Lessons learned from this initiative will be used to develop an initiative for the U.S. flagged fleet.

Port State Control Background

Port State Control began in earnest in the United States in the early 1970s, with the passage of the Federal Water Pollution Control Act. This comprehensive pollution prevention Act, and its implementing regulations, applied to all vessels that used U.S. waters, and more in-depth examinations of foreign flagged tankships began after the passage of the Port and Tanker Safety Act of 1978. After the grounding of the *Exxon Valdez* in 1989, more extensive regulations were implemented to include double hull requirements, vessel response plans and certification of financial responsibility. From the 1970s to 1994, most examinations of non-U.S. flagged vessels were to verify compliance with U.S. regulations, and only in the most extreme circumstances were vessels examined for compliance with international conventions.

Because of a steady decrease in the number of U.S. flagged vessels engaged in international trade, and an increase in the number of non-U.S. flagged vessels visiting U.S. waters throughout the last 25 years, the U.S. has become a Port State. Non-U.S. flagged vessels carry more than 90 percent of the international commercial freight arriving or departing the U.S., and in 1999, over 51,000 port calls were made by 7,600 unique vessels from 92 Flag States. As a comparison, there are less than 400 U.S. flagged vessels engaged in international trade. Considering the reduced size of the U.S. international merchant fleet, the greatest potential threat to U.S. ports and waterways comes from foreign-flagged vessels.

Therefore, in 1994, the U.S. expanded its Port State

Control efforts with increased personnel, improved training, and more detailed policy guidance, including standardized Port State Control examination checklists, for foreign vessel boardings. Since that program's expansion six years ago, over 60,000 foreign flagged vessels have been examined by 39 Coast Guard field offices. These field offices are commanded by Captain of the Ports (COTPs) with regulatory authority to order vessels to operate or anchor as directed when vessels are not in compliance with U.S. or international regulations, or because of weather, visibility, sea conditions, port congestion, hazardous conditions, or the unsafe condition of a vessel. Each foreign-flagged vessel is assessed for its potential risk when it arrives in U.S. waters,³ and the COTPs ensure that the highest risk vessels are examined for compliance with U.S. safety and pollution prevention regulations, and all applicable international conventions, including the International Conference for the Safety of Life at Sea, the International Convention for the Prevention of Pollution from Ships (MARPOL), International Convention on Load Lines, the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) and the International Labor Organization Merchant Shipping Convention No. 147.

³ For more explanation about the Coast Guard's foreign vessel targeting matrix, please refer to Appendix 2, of the 1999 Port State Control Annual Report (<http://www.uscg.mil/hq/g-m/psc/miscpages/annualrpt99.doc>)



Attractive incentives will be available for ships that qualify under Qualship 21. USCG photo by MST2 Dean Speshock

Initial incentives for quality vessels (dry cargo and tank vessels) will include less frequent examinations. Current Port State Control policy requires that foreign-flagged freight ships be examined at least annually. Qualship 21 freight ships will be rewarded with very limited Port State Control oversight for two years, and will only be boarded by the Coast Guard if overriding factors are triggered, e.g., involvement in a casualty, alleged deficiencies are reported, ballast water exams, etc. Qualship 21 tank vessels will be examined thoroughly every two years, and will be subject to a limited re-inspection between the 10th and 14th month of the period for which their Qualship 21 Certificate is valid.

While passenger vessels have an excellent safety record in the U.S., there is too much at risk to consider any changes to our passenger vessel examination policy. However, passenger vessels will be eligible for Qualship 21 designation, which will award them a Qualship 21 Certificate, and the vessel's name will be posted on the

Coast Guard's Web site as recognition for meeting this stringent criteria. For more specifics on the Qualship 21 incentives, please refer to Figure 2.

Additional Potential Incentives

The European Green Award has been identifying and rewarding quality vessels for many years. Their program audits vessel operations, and Green Award vessels receive reduced port fees, discounts on chandlery services, towing, line handling, etc. The port structure in the U.S. makes this type of program difficult to implement. However, we are working with the American Association of Port Authorities to locate ports that are willing to provide reduced port fees for Qualship 21 vessels. These participating ports may establish an additional quality standard, such as meeting the voluntary emission standards of MARPOL Annex VI, in order to qualify for the reduced port fees. We are also working with the

insurance industry to determine how Qualship 21 designation may be considered.

How Does a Vessel Apply for Qualship 21 Designation?

A vessel owner will not be required to submit an application in order for their vessels to be designated by this initiative. Coast Guard Headquarters project personnel will perform the initial vessel screening and develop a list of ships that appear to meet the Qualship 21 qualification criteria. Letters will be sent to the vessel owners to notify them of the initiative, and their opportunity to participate. To qualify for the original list, owners would be required to answer a series of questions to verify that our initial screening of the vessel was correct.

After receiving feedback from the vessel owners, the list of Qualship 21 vessels will be published on the Internet Web page, and certificates will be mailed to the vessel owners. The Qualship 21 certificates will be valid for a maximum two-year period, and will be aligned with the dates of the latest Coast Guard Port State Control exam. For example, a Qualship 21 tank ship that was examined on Sept. 1, 2000, and received a Certificate of Compliance from the COTP that is valid until Aug. 31, 2002, will receive a Qualship 21 Certificate from the project office that expires on Aug. 31, 2002. While freight ships do not receive Certificates of Compliance from the COTP, they will still receive a Qualship 21 Certificate that corresponds to the latest Port State Control exam.

The Qualship 21 vessel list will be published annually (with the first list published on Mar. 1, 2001) on the Qualship 21 page on the headquarters Port State Control Web site. Amendments will be made in the 2nd quarter of each calendar year, to add the vessels that were missed through the initial screening process. Input for the 2nd quarter amendment will come from vessel owners that believe that they have vessels eligible for designation, but their vessels were not published on the list. Additionally, the annual vessel list will be updated monthly when eligible vessels complete required PSC exams, and when subtractions to the list are made as vessels trigger exit criteria.

Each Qualship 21 vessel will be identified in the Coast Guard's Port State Control database (Marine Safety Information System). Therefore, when a Qualship 21 vessel reports its arrival in U.S. waters, the COTP will have advance information about the vessel's status, and will not board the vessel unless overriding factors are present.

Exit Criteria

To maintain the integrity of the program and to protect the safety of U.S. ports, a Qualship 21 vessel will

be removed from the program when it triggers the following exit criteria: substandard detention in U.S. waters; marine violation, or more than one ticket; serious marine incident or major marine casualty; discovered in U.S. waters with serious deficiencies, or failed to report a hazardous condition to the COTP; transfers class to a targeted class society; or changes registry to a Flag State that has a detention ratio more than one-third of the overall Port State Control detention ratio, or to a Flag State that has less than 10 distinct vessel arrivals in each of the previous three years.

Vessel owners will not have to submit an application to renew their eligibility in the Qualship 21 initiative. However, renewal of eligibility is established under the same conditions as initial certification, including the requirement to have completed a successful U.S. PSC exam within the previous 12 months. Therefore, vessel owners are encouraged to request a PSC exam from the local COTP during U.S. port visits during the 23rd and 24th month of the term of their Qualship 21 Certificate.

Conclusion

We believe that our Port State Control program must be continuously updated to meet the challenges that face ports in the 21st Century. Vessels will be built larger to accommodate growing foreign trade, and the risks associated with larger vessels will grow. Therefore, our foreign vessel targeting scheme is being studied for possible modification, including the possibility of adding charterers to the targeting matrix. And, we want to encourage quality shipping by providing an incentive to quality operations, such as less frequent Port State Control exams and other potential incentives that may develop. If you have questions about Qualship 21, please call or write the Foreign and Offshore Compliance staff at the address below.

P

For More Information:

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Figure 1: *Qualship 21 eligibility criteria*

- Must be a non-U.S. flagged vessel (a U.S. flag vessel initiative is under development)
 - No substandard vessel detentions in the U.S. within the previous 36 months (Jan. 1, 1998 to Dec. 31, 2000)
 - No marine violations or reportable marine casualties that meet the serious marine incident (46CFR4.03-2) or major marine casualty (46CFR4.40) criteria, and no more than one Notice of Violation (ticket), within the previous 36 months
 - Successful PSC exam with the previous 12 months
 - Owned or operated by a company that has not been associated with any PSC detention in U.S. waters within the previous 24 months
 - Classed by, or have their statutory Convention Certificates issued by, a non-targeted class society (class societies that have zero points assigned in the U.S. PSC Matrix)
 - Registered with a Flag State that has a detention ratio no more than one-third of the overall U.S. detention ratio, and their Flag State must have at least 10 distinct arrivals in each of the previous three years
 - Vessel's Flag State must also have submitted their Self-Assessment of Flag State Performance to the IMO and provided a copy to the Coast Guard
- The Coast Guard may restrict eligibility in Qualship 21 to a vessel because of special circumstances, including but not limited to, significant overseas casualties, detentions, and pending criminal or civil investigations.

USCG photo by MST2 Dean Speshock



Figure 2: *Qualship 21 incentives*

- | | |
|---|---|
| <p>All Ships</p> <ul style="list-style-type: none">• Qualship 21 Certificate• Vessel name posted on U.S. Port State Control Web site | <p>Freight Ships</p> <ul style="list-style-type: none">• Two years of limited Port State Control oversight |
| <p>Tank Ships</p> <ul style="list-style-type: none">• Certificate of Compliance, valid for two years• Less thorough mid-period examination in between Certificate of Compliance exams• Limited port state control oversight• Increased flexibility for tank ship owners | <p>Passenger Vessels</p> <ul style="list-style-type: none">• No reduced Port State Control exams, but will receive Qualship 21 Certificates and recognition on the Qualship 21 Web page <p>Potential Future Incentives</p> <ul style="list-style-type: none">• Qualship 21 vessels that meet pre-determined, additional quality standards acceptable to participating ports may be eligible for reduced port fees• Consideration by insurance underwriters |

Get the “FAQs” On
Implementing a Business Plan
in the Field

Questions Anyone



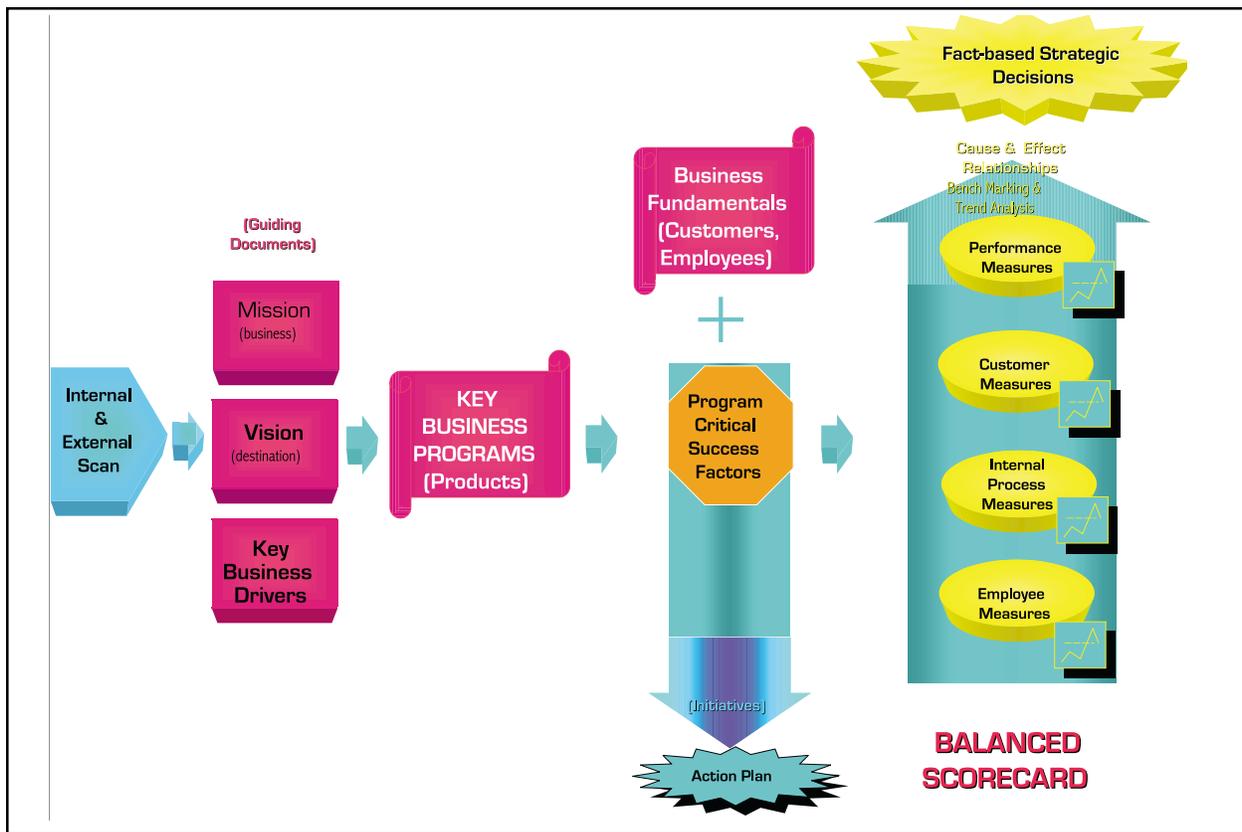


Figure 1: *Strategic Planning Model based on Kaplan & Norton's "Balanced Scorecard"*

By CDR Paul Thomas
Chief, Command Coordination Dept.
MSO Jacksonville

Quality and quality management mean many different things to different people and organizations. At Marine Safety Office Jacksonville, quality means a systematic and continually improving method of carrying out our assigned responsibilities with a long-term focus. Such a system is not built overnight, and its development and implementation can be very frustrating. To stay the course takes discipline, imagination, openness to new ideas, and extreme persistence of purpose. It also takes a willingness to learn from others, avoid their pitfalls, and take advantage of their successes to speed your own progress.

In Jacksonville we've done just that by visiting successful public and private organizations, studying their management systems, serving as quality examiners, and asking a lot of questions. In return, we've made significant improvements in the way we manage and allocate resources, and have seen real results in mission effectiveness. We understand that all types of organizations, big and small, public and private, continuously struggle with the same issues and ask the same questions about how to improve. Here then, are some

Key Terms Used in This Article

- Key Business Driver (KBD) – the critical few, top level objectives of the unit.
- Critical Success Factor (CSF) – program level tactics.
- Measure Of Effectiveness (MOE) – program level measure of each CSF.
- Stakeholder – like “stockholders”, those who invest in our business; i.e. senior commanders, Congress, and the public.
- Customer – as defined by Executive Order 12862, those who we serve directly, face-to-face in the field; i.e. the mariner, shipper, terminal operator, etc.
- Scorecard – highest level organizational measures of mission performance, internal processes, customers, and employees.

frequently asked questions (FAQs) and one perspective on how these issues might be approached:

FAQ: Where do you get the time to work on a management system?

This is the most frequently asked question, and

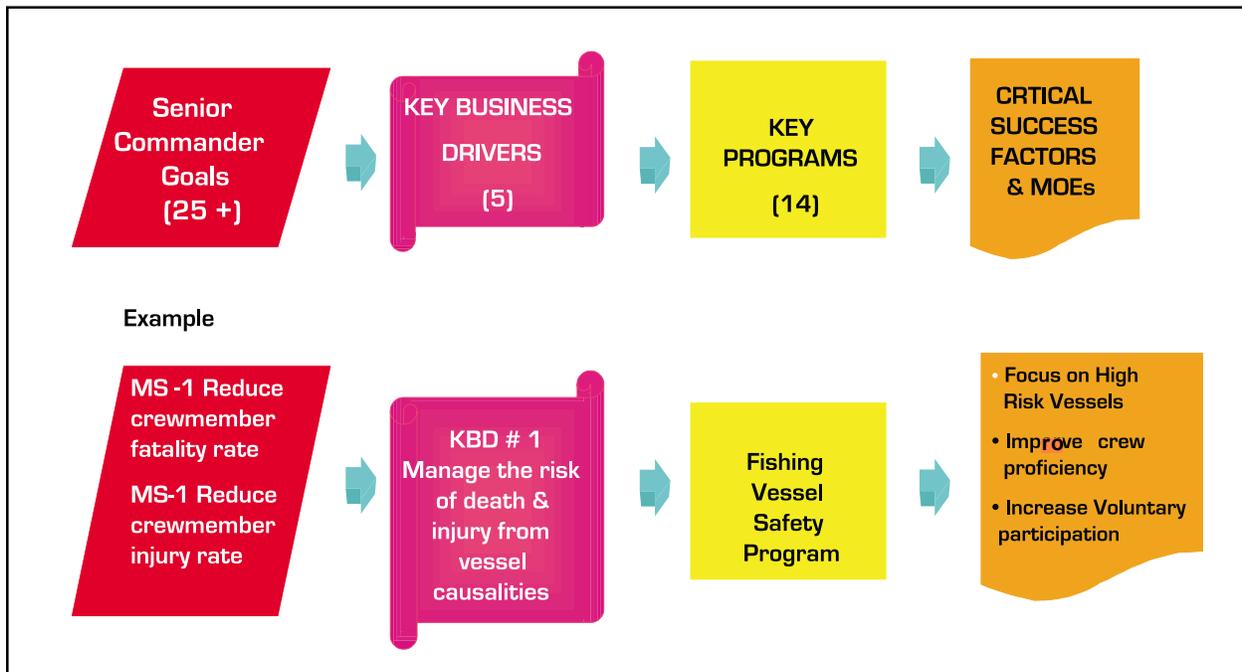


Figure 2: Strategic alignment from “DC” to the deckplate.

Service or Product Attribute	Total	Rank	Service or Product Feature							
			Examiner Training	Exam Check List	Contact Standards	Decal System	Industry Partnership	Follow-up Phone Calls	Exam on Demand	State-Wide Program
Knowledgeable Examiners	30	1	X	X						
Clear List of Requirements	30	1		X						
Consistency Between Ports	25	2		X		X				X
Minimum Interference	25	2				X				X
Input into GC Decisions	25	2					X			
Clear Answers to Questions	23	3	X		X			X		
Requirements Expressed Clearly	22	4	X		X			X		
Flexible Scheduling	20	5			X	X			X	
Phone Calls Returned Promptly	13	6			X				X	
CG Trains Crews on Emergencies	0									

Figure 3: Translating customer requirements into specific service features.

often it is asked in a manner that implies time spent developing, implementing, and maintaining an integrated management system is time taken away from the “real work” of a Coast Guard field unit. But this view misses the point; a fully embedded, integrated management system is not more work to do, but how work gets done. In the Coast Guard we spend considerable time at the field level planning for response; we have plans for oil spills, hurricanes, airplane crashes, shipboard fires, high water, low water, and a number of other disasters. What we don’t always do well in the field is plan for “routine” operations; prevention, training, human resource management, and customer relations. But we spend most of our time doing the “routine,” not response. Implementing an integrated management system, including developing a business plan is one method to plan how the routine work gets done on a daily basis.

Strategic Alignment

FAQ: Are the Coast Guard Strategic and Business Plans really useful in the field?

Absolutely yes! Nearly every strategic planning model begins with an external scan of the business environment that allows an organization to learn about emerging trends in markets and changing customer and stakeholder requirements. The Coast Guard Strategic Plan and the Marine Safety and Environmental Protection (G-M) Business Plan essentially do that for the field unit. In fact it can be argued that the appropriate extent of strategic planning at the field level is to implement the plans of senior commanders. The challenge to the field commander, then, is to develop a system that takes input from stakeholders (senior commanders) and sets direction, allocates resources, and prioritizes activities in a way that ensures local efforts best contribute to the national goals.

Figure 1 is an example of a relatively simple strategic planning model that may be useful at Coast Guard units. This model is based on the work of Robert Kaplan and David Norton, and is often referred to as The Balanced Scorecard. It is worth noting that this strategic planning model has been applied in various forms successfully at Coast Guard field units including major support and operational commands. The product of this model can be a business plan that lays out how we do our jobs and addresses the four cornerstones of a balanced measurement system: mission performance, internal processes, employees, and customers.

Figure 2 shows how operational programs and field work can be aligned with the Coast Guard Strategic Plan and G-M Business Plan. Field level Key Business Drivers must support the senior commander plans, but they also must be appropriate for the local environment. In this model, Key Programs at the field unit support the Key

Business Drivers, and each program has Critical Success Factors which lead to specific tactics. The senior leaders at the unit develop Key Business Drivers and determine which operational programs get the most support. The Natural Working Groups (people who do the work) develop Critical Success Factors and determine specific tactics for their program. This “straight line” alignment helps everyone understand how what they do contributes to organizational goals.

FAQ: How do you implement the G-M “Core Program Strategies” of Risk Management, PTP, and Quality Partnerships?

The G-M Business Plan (FY 2001 – 2005) discusses three core program strategies and suggests that these be applied toward all of the performance goals. At the field level it is possible to embed these core strategies into operational programs by planning for them; i.e. plan to conduct prevention programs using risk management, Prevention Through People (PTP) and partnerships. Figure 2 shows one example of how the Critical Success Factors for a Fishing Vessel Safety Program at a field unit might be designed to ensure that the G-M core strategies are incorporated into daily activity.

Ensuring that all of the operational programs have Critical Success Factors to address each of the G-M core strategies has two primary impacts. First it frames how we do our work so that risk management, for example, is not just something else to do, it is how to do it. Second, it brings the Commandants’ plans to the deck plate because the junior officers and petty officers, who make up the Natural Working Groups and run the programs, figure out how to apply the core strategies within their programs. For example, at MSO Jacksonville the petty officers who do the transfer monitors determined that the best way to focus on PTP within their program was to ensure that persons in charge (PICs) are well trained.

One tactic to ensure that PICs are all well trained is to test emergency procedures in the field, just prior to a transfer.

FAQ: What about the customer?

If the stakeholders have primary input into Key Business Drivers and Key Programs, the customers can have the most to say about how the programs are administered. Customer input is essential in determining the tactics for the key programs. In the transfer monitor example, customers were directly involved in determining what knowledge PICs should have and how they should be tested. Customers also help develop risk ranking tools and alternative inspection programs. Figure 3 shows how customer requirements might be translated into specific features for an uninspected towing vessel safety program.

Employee and Internal Measures	Performance Measures	Customer Related Measures
ESI = Employee Satisfaction Index SHI = Safety and Health Index TRI = Training Readiness Index OPCI = Operational Process Cycle Time Index APCI = Admin Process Cycle Time Index	PARI = Port Activities Risk Index VRI = Vessel Risk Index Targeting Efficiency FRI = Facility Risk Index RRI = Response Readiness Index PAI = Public Affairs/Outreach Index	CSI = Customer Satisfaction Index SQI = Service Quality Index
Key Business Driver	Scorecard Measure	What goes into this measure
Manage the risk of death and injury from vessel casualties	Vessel Risk Index	Discrepancy risk, inherent risk, and crew drill scores for the fishing, towing, and small passenger, large passenger (HCPV), and foreign vessel fleets
	Targeting Efficiency	Percent of our inspection activities are done on high risk vessels in fishing, towing, and foreign vessel fleets
Manage the risk of damage to our ports and waterways	Port Activities Risk Index	Amount and type of port activities and the risks associated with them
	Facility Risk Index	Discrepancy risk at transfer monitors and facility inspections, and PIC test scores
Maintain readiness to respond to major marine incidents	Response Readiness Index	ICS training and experience status, status of plans, "Best Response" performance evaluation of recent exercises or responses
Implement effective human resource management	Employee Satisfaction Index	DOD Climate Assessments, results of the Employee Satisfaction Survey, retention and promotion statistics
	Training Readiness Index	How many people have all the qualifications for their assigned job, and how many we will lose in the next six months
	Safety and Health Index	OMMP status, personnel mishaps, use of required protective equipment, and currency on safety training
Garner public and political support	Public Affairs Index	Sea partners and community events, speaking engagements to "Tell the Coast Guard story," press releases issued and releases used by media
ALL KEY BUSINESS DRIVERS: These indices balance our scorecard	Customer Satisfaction Index	How our customers rate us on the field surveys we give out, how well we compare to other Coast Guard and government offices
	Service Quality Index	Contact Standard Audit Results, Follow-Up Survey Results, number of complaints
	Operations Process Cycle Time Index	How many of our operational processes completed on time; indicator of workload
	Admin Process Cycle Time Index	How many of our key support processes completed on time; indicator of workload

Figure 4: *A Balanced Scorecard for a Marine Safety Office.*

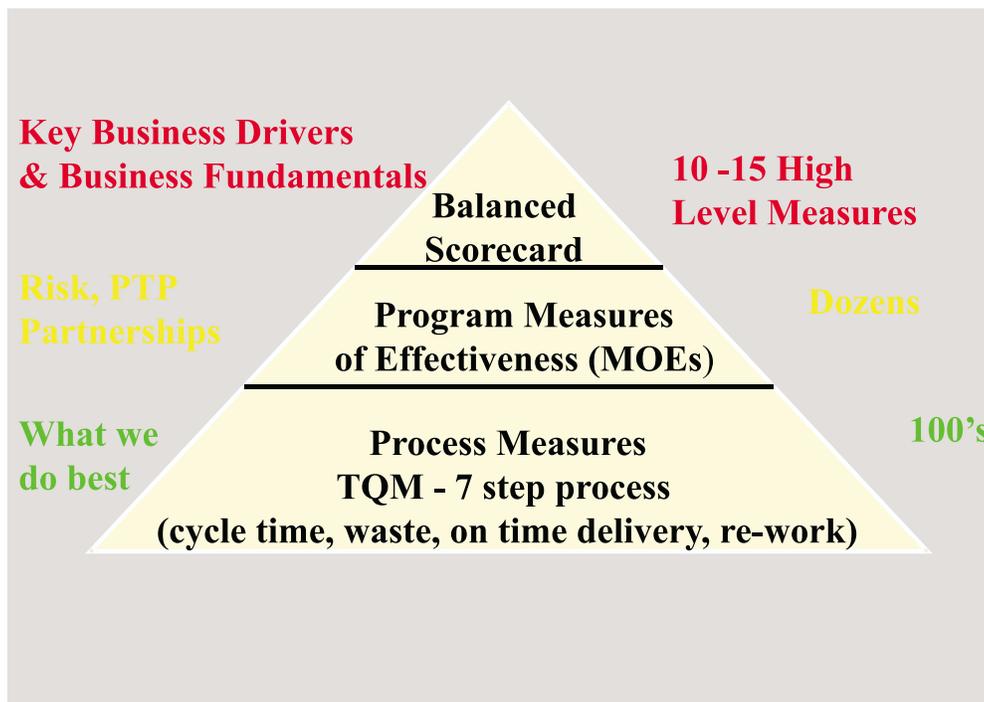


Figure 5: *The Measurement Pyramid.*

Mission Performance Measures

FAQ: Why don't you use the G-M measures for your Unit Business Plan?

The G-M Business Plan has mission performance outcome measures for each goal. In most cases data are available, trends have been analyzed, and targets have been set. These measures are useful and appropriate on the national level, and the G-M plan has been recognized as a best practice in the federal government. Why then should a field unit develop different measures? There are several reasons why the national measures may not be useful on the local level:

1. Local occurrences may be statistically insignificant
2. The national measures can be very difficult to normalize
3. The national measures are primarily "reactive" or lagging indicators

FAQ: So what's the goal for a field unit "scorecard?"

Field commanders need a performance measurement system that is:

1. Focused, so that it measures only the critical few

items that are needed to monitor long term goals (Key Business Drivers)

2. Predictive (leading indicators), so that action can be taken before oil hits the water or death or injury occurs
3. Useful, so that it leads to sound management decisions; i.e., decisions can be made based on measures
4. Strongly linked to everyday work, so that it can help drive how work gets done. Those doing the work understand the measures

Figure 4 is an example of a scorecard that may be appropriate at a marine safety office. Obviously a great deal of time can be spent describing each of the measures and discussing their relative usefulness. These discussions are healthy for any organization. The more important point is that this scorecard, or something similar, can be used to keep people at all levels of the organization focused on long term goals, and can help prevent an organization from chasing every brushfire that turns up. Although these performance measures do not mirror those in the G-M plan, the link is strong because Key Business Drivers are derived from senior commander plans, and G-M core strategies are embedded in operational programs.

FAQ: How do you incorporate performance measures into the daily work routine?

As mentioned above, it is important to ensure that

the scorecard measures are very strongly linked to everyday work so that petty officers understand how what they do contributes to unit goals, and commanding officers understand how specific activities impact overall outcomes.

In fact, probably the greatest challenge regarding the G-M performance measures (as pointed out several times in the April-June 2000 issue of *Proceedings*) is that while the link between field activity and performance trends seems intuitive, there is no means to show, for example, that crewmember fatalities have declined as a direct result of Coast Guard activity.

Figure 5 shows how a cascading measurement system links the “vital few” measures used to issue helm commands by the commanding officer, to the program Measures of Effectiveness used by junior officers and petty officers to make tactical changes in operational programs.

Figure 6 is a specific example of how an index can be used to aggregate data from several programs into one measure on the scorecard, and maintain the “peel back” ability necessary to determine cause-effect relationships.

Just as the G-M measures aggregate causality and other data from around the nation, a unit scorecard can aggregate data from various programs to give an overall picture of performance relative to the Key Business Drivers. In this case the Vessel Risk Index draws data from three Key Programs, each of which have at least three Critical Success Factors (G-M core strategies) with Measures of Effectiveness (MOEs). The MOEs rely on data gathered in the field by the junior officers or petty officers. Program MOEs are leading indicators of the Scorecard measures, which are leading indicators of the G-M measures.

FAQ: How does risk management fit in with quality management?

As already mentioned, risk management is a core strategy; it is one tool applicable to all of our mission goals. Systematic use of risk management has two very distinct advantages; it can help provide useful leading indicators in many mission areas, and it is an outstanding customer focus tool. The July-September, 1999 issue of *Proceedings* contains several articles on how quantitative risk measures might be used as mission performance indicators, and to allocate resources. That same issue contains an article with details on the risk indices listed in Figure 4. Perhaps less has been written about the role of risk management as a customer focus tool. Both quantitative and qualitative risk management tools can be used to engage customers and systematically gather their input and expertise. Engaging terminal operators in the development of a risk ranking tool for facility inspections and transfer monitors is an excellent way to learn the true risks associated with their operations, gain “buy-in” for prevention efforts and communicate expectations.

Adding Balance to the Measurement System

FAQ: Where do customer and employee measures fit in?

While the Coast Guard Strategic and G-M Business Plans are very useful for setting mission goals and building mission performance measures, they are less useful in adding balance to the measurement system. Appropriately, the capability goals discussed in the G-M Business Plan

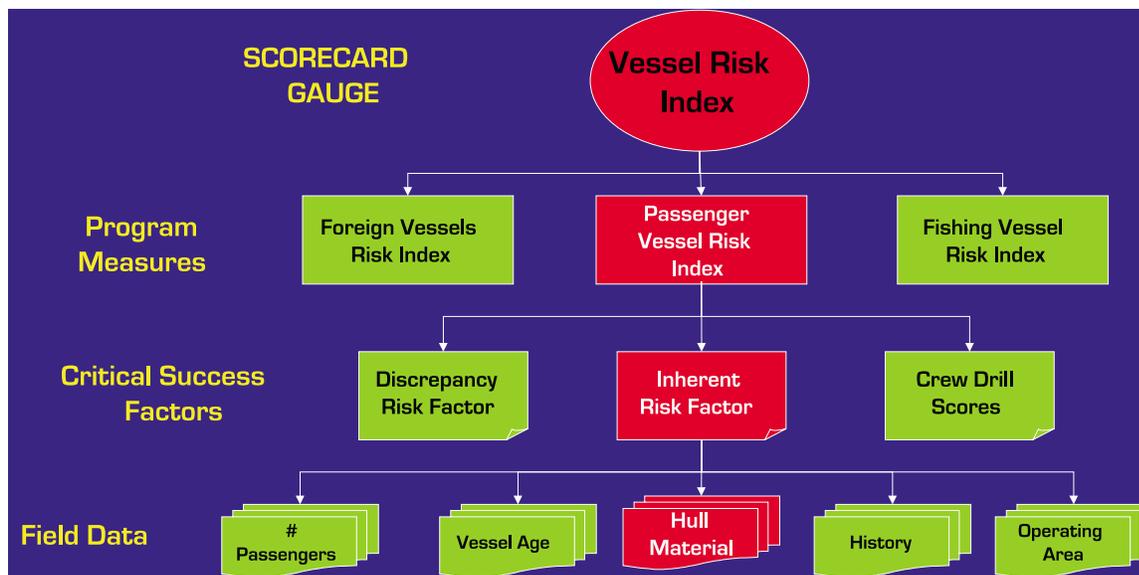


Figure 6: “Peel Back” of the Vessel Risk Index.

are not as directly applicable to the field commander as are the mission goals. The field commander needs to monitor performance across all areas of the organization, including not only mission performance, but also internal processes, customers and employees. These are the Business Fundamentals in the Strategic Planning model of Figure 1. The scorecard in Figure 4 contains specific measures for key customer and employee initiatives. These measures are cascaded in the same way as the mission performance measures described above. Although each field commander has his or her own priorities, it is safe to say that all Coast Guard units need some measure of the readiness, health and safety, and satisfaction of the workforce.

FAQ: What about process measures?

Traditionally in the Coast Guard, quality management efforts have focused on the base of the pyramid in Figure 5; on internal processes. Process management is in fact the foundation of an effective organization, and often process measures are needed to keep things on track. But the measurement system cannot stop with processes, and it may be important to limit the number of process measures so as not to overwhelm the management system. Many “service” organizations limit process measures to a very few, which can be used to give an overall picture of how things are working internally. Additional short-term process measures may be put into place to gauge the impact of specific improvement initiatives. The scorecard in Figure 4 focuses on cycle time of key operational and support processes. If cycle time becomes a problem, it may be prudent to institute measures of waste or rework to pin-point the breakdown.

FAQ: What does a field unit business plan look like ?

Of course it is the content, not the format of a business plan that matters. We’ve reviewed business plans from public and private organizations that run the gamut in terms of length, complexity and detail. Following the model in Figure 1, when a Coast Guard unit (or any other organization):

1. aligns its Guiding Documents (Mission, Vision, Key Business Drivers) with senior commander plans,
2. determines what products it provides (Key Programs) to support the Guiding Documents,
3. develops strategies, tactics, and measures for the key programs,
4. accounts for business fundamentals such as customers, processes, and employees, and
5. integrates data from all areas of the unit to form a balanced scorecard, then it has a business plan. The MSO Jacksonville Business Plan is relatively short, simple to

read, and does a fairly good job aligning what we do to the Commandant’s desired outcomes. It can be viewed at; <http://www.uscg.mil/d7/units/mso-jax/>.

FAQ: OK, but what are the maintenance costs?

An effective management system is not static, it is not put into place and left to run itself. The planning process must be ongoing with adjustments made to reflect changes in stakeholder and customer requirements, port activity and internal capability. For example, as a result of a recent review of the 2001 – 2005 G-M Performance Plan, MSO Jacksonville made adjustments to our Mission and Vision, and added a Key Business Driver to address the emerging Coast Guard Mobility and Security (Marine Transportation System) goals. A Natural Working Group has been assigned to develop the Critical Success Factors, Measures of Effectiveness, and specific tactics for the program(s) that will support this new Key Business Driver. Similarly, many of our other program Measures Of Effectiveness have been adjusted to better reflect performance. Activity in some areas will be reduced to free up resources for new initiatives. These reviews and changes take time, and therefore are not free. However, the investment must be compared to the cost of expending resources on activities that do not contribute to the desired outcomes, are not focused on the highest risk, are not current with stakeholder and customer requirements, or do not contribute to long term goals.

FAQ: Yeah, but where do you get the time for all of this?

We’ll finish where we started ... how can we not have the time for this? P

DATA QUALITY

One of the findings of the 1998 Marine Safety "M Officers" Conference was that our primary marine safety data source, the Marine Safety Information System (MSIS) and Marine Safety Management Systems (MSMS) were not providing the quality of data needed to efficiently manage the Marine Safety program. This decrease in data quality issue impacted Marine Safety program management at all levels.

To counter this trend, RADM Robert North,

Assistant Commandant for Marine Safety and Environmental Protection (G-M), declared improving quality as one of our highest administrative priorities and initiated the Data Quality Campaign in September 1998.

The Compliance Analysis Division (G-MOA-2) formed a Data Quality Action Team chartered to administer this campaign, improve data quality, and coordinate with G-M offices. District (M) officers would coordinate and administer the data quality initiative at the District level.

By CDR Lyle A. Rice
Chief, Compliance Analysis Division (G-MOA-2)



JUST GOT BETTER

Campaign Goal

The goal of the Data Quality Campaign is to improve our program activity documentation and analysis. To meet our need for high quality data, it was critical that all levels of the Marine Safety organization improved data quality, and improved the quality of activities from which the data were derived. The Data Quality Campaign was implemented in four phases: the Awareness Phase, the Improvement

Phase, the Measurement Phase, and the Continuous Improvement Phase.

Awareness Phase

During the Awareness Phase (September 1997 through December 1998), we made all units with MSIS data entry and verification responsibilities aware of the Data Quality Campaign by sending a series of Data Quality Campaign e-mails.

From: U.S. Coast Guard Marine Board of Investigation
To: Commandant (G-MOA)

Subj: M/V BRIGHT FIELD, LLOYD'S NO. L8715302; LOSS OF PROPULSION AND COLLISION WITH THE RIVERWALK SHOPPING COMPLEX, MISSISSIPPI RIVER MILE 95.2 ABOVE HEAD OF PASSES, NEW ORLEANS, LOUISIANA ON 14 DECEMBER 1996 WITH NO LOSS OF LIFE AND MULTIPLE INJURIES.

INITIAL FINDINGS OF FACT
SUMMARY

At about 1407 (local time) on 14 December 1996, while downbound in the Mississippi River, the M/V BRIGHT FIELD experienced an automatic trip of the main engine due to loss of main engine lubricating oil pressure. The vessel's crew could not restore power and regain steerageway in time to prevent the vessel from colliding with the Poydras Street wharf near the Riverwalk shopping mall complex, located on the left descending bank at river mile 95.2 in the port of New Orleans, at about 1410.

The collision caused major damage to the vessel's port bow and number one cargo hold. The pier and its footing absorbed the energy of the impact, collapsing approximately 350 feet of the open pier and damaging part of the adjacent condominium and garage. Several riverside rooms in the Hilton Hotel, as well as several shops in the mall, were also damaged. Damage to the BRIGHT FIELD was calculated at \$1,827,952. Structural damage to the pier, hotel, and condominium is estimated at \$10 million, while non-structural damage to shops in the mall is estimated at \$5 million.

Capacity passenger vessels were moored along the wharf at the time of the collision. Two sea-ridges and NIEUW AMSTERDAM, were damaged but upriver



Improvement Phase

Commanding officers of Marine Safety Offices, Marine Safety Units, and Activities reexamined their program activity documentation processes, audited those processes, and developed and implemented action plans to improve program activity documentation and MSIS case data quality. They gave particular attention to unit-level review of cases involving deaths, injuries, and medium or major spills because of the impact of these statistics on our measurement program.

Marine Safety personnel at all levels were encouraged to submit ideas, comments, or lessons learned on any Marine Safety documentation activity that related to the improvement of MSIS case data entry. Ideas for improvement were disseminated throughout the Marine Safety community.

During the Improvement Phase (January 1999 through April 1999), Marine Safety units with MSIS case documentation responsibilities:

- Reviewed and improved data entry procedures.
- Received needed MSIS refresher training.
- Reviewed and improved case review processes.
- Examined and self-audited their MSIS documentation processes.
- Developed and implemented action plans as needed and improved the quality of data entry during MSIS case documentation.
- Held local training sessions on MSIS data entry policies.
- Ensured the Marine Safety activities being documented were conducted properly and according to current marine safety policies and guidelines.

- Developed and shared the best ideas for data quality improvement.

Measurement Phase

During the Measurement Phase (May 1999), G-MOA-2 analyzed MSIS/MSMS data to determine if the quality of data had improved since December 1998. To accomplish this, we measured the quality of marine safety data prior to the start of the Data Quality Campaign, then measured the quality of marine safety data fields after the conclusion of the Improvement Phase.

Continuous Improvement Phase

The goal of the Continuous Improvement Phase of the Data Quality Campaign (June 1999 to present) is to maintain consistent high-quality data input, regularly measure data quality, facilitate the use of marine safety data for decision making at all levels, develop user friendly data input methods, and develop data output and analysis products directly accessible by all marine safety personnel.

During this phase, Assistant Commandant (G-M) undertook a series of initiatives to make data from current processes highly relevant to program management, and to ensure that Marine Information for Safety and Law Enforcement (MISLE, the MSIS replacement) is user friendly and will be an important management tool that can provide data analysis products directly to all levels of the organization.

Campaign Results

Thanks to the efforts of all marine safety personnel, the quality of marine safety data was improved substantially. As a result of the Data Quality Campaign:

DATA



- We increased the number of Marine Casualty Investigation Reports (MCIR) that included the monetary damage amount. We can now more accurately determine the extent and severity of marine casualties when developing reports for Congress and other federal agencies.
- We increased the number of cases where the Marine Casualty Personnel Casualty (MCPC) supplements were completed. This improvement in the data enables us to conduct more detailed analyses and study of personnel casualties.
- We eliminated the use of 00-00.0 for the latitude/longitude. This improved our ability to focus attention to areas where personnel casualties, vessel casualties, and hazardous substance discharges are occurring.
- We increased the number of Marine Casualty Pollutant Detail (MCPD) supplements completed for cases where a pollution incident was indicated on the MCIR. This increased our spill prevention and response capabilities because we improved our ability to analyze what substances were spilled, the quantities spilled, and the quantities recovered.
- We eliminated the entry of NOT ELSEWHERE CLASSIFIED as a product code on the MCPD by ensuring that a more accurate determination was made of what products were spilled. This improved our response capabilities by enabling marine safety units to better tailor their spill response training.
- We increased the number of cases where the spill amount entered on the case description section of the MCIR matched the spill amount entered on the Marine Casualty Narrative Supplement (MCNS) and the MCPD. This improved the overall credibility of marine safety spill data.
- We reduced the number of “tickets” issued to CG999999

or UNKLAND by accurately documenting the vessel or facility involved in spill incidents. This reduction in the use of CG999999 or UNKLAND improved our ability to analyze what types of vessels or facilities received tickets.

- We increased the number of cases validated where the vessel service was changed from COMMERCIAL to a more accurate description of the vessel service. We can now more effectively analyze what types of vessels are involved in spills, casualties, and inspection activities.
- We reduced the over-reporting of container inspection hours and more accurately documented the actual hours expended to perform the activity. This enabled us to accurately measure the container inspection program’s effectiveness and allocate inspection personnel to meet true workload demands.
- We limited the ability of MSIS data entry personnel to validate their own cases and improved MSIS case review processes. This provided additional opportunities for data entry errors to be identified and corrected prior to case validation.
- We opened and corrected those MSIS cases containing significant data entry errors improving the overall quality of marine safety data.
- We made 15 Data Quality presentations at Marine Safety courses.

Because of these improvements in the quality of marine safety data, we are now able to do a better job providing data and analyses in support of Marine Safety business planning efforts. This will help us better use our scarce resources and ensure that we are focusing our efforts in the proper direction.

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Applying Risk-Based Decision Making Concepts to the Plan Review Process

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By CAPT Alan L. Peek and
LCDR Charles E. Rawson,
USCG Marine Safety Center

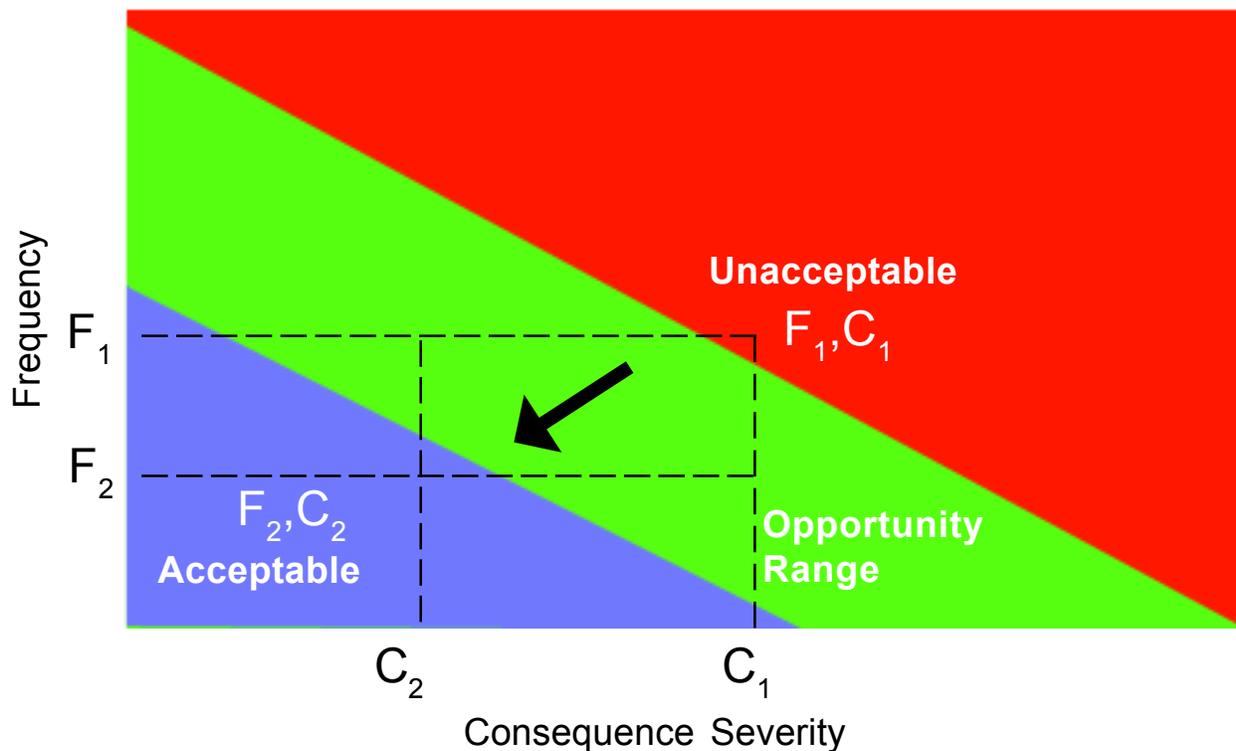


Figure 1: Simple Risk Model using a Frequency – Consequence Diagram

The U.S. Coast Guard has made great strides in the quality arena, earning accolades as a quality-focused organization. The Marine Safety Center (MSC), winner of two silver Commandant’s Quality Awards, is one of the many units helping to make the Coast Guard such an organization. This article discusses a significant quality initiative undertaken by the MSC following its senior leadership’s decision that resources needed to be freed up from the traditional leading mission, plan review, to meet its strategic vision. The initiative involved applying risk-based decision-making concepts to the plan review process. This process improvement generated notable benefits for both external and internal customers, including increased plan review consistency and efficiency and faster turnaround times for plan submittals.

Risk and Risk-Based Decision Making

The fields of risk analysis and risk management have emerged recently and are still developing. Universal agreement on a definition for risk does not exist. A relatively common measure of risk is the product of the probability or frequency of an event occurring times the consequence of that event. Expressing this mathematically:

$$\text{Event Risk} = (\text{Event Probability}) \times (\text{Event Consequence})$$

Although risk cannot be eliminated, it can be reduced to a level that is acceptable to an organization. By addressing the probability of an event and/or by taking actions to prevent or reduce its consequences, this acceptable level of risk can be effectively achieved. In Figure 1, a reduction in frequency from F_1 to F_2 and/or a reduction in consequence severity from C_1 to C_2 can effect a reduction in risk from an unacceptable to acceptable level.

There are five steps to the risk-based decision making process; a continuous and iterative process. They are: goal setting, risk assessment, risk management, impact assessment and risk communication. The first four steps proceed in order, while the last, risk communication, must occur throughout the process.

Goal setting, the first step in the process, requires everyone potentially impacted by an event to decide on a desired outcome.

Risk assessment involves asking the questions: “What could happen?” “What is the likelihood of it happening?” and “If it happens what are the consequences?” From the answers to these questions, a relative ranking based on the above risk measure can be developed.

Risk management takes the rankings and asks the questions: “What can be done?” and “Are there alternatives?”

Impact assessment is the feedback step of the process. Qualitative and quantitative measurements of the actions taken to prevent or mitigate an event are performed and the results incorporated in future iterations of the risk-based decision making process.

Risk communication is the critical, two-way dialogue between all those parties impacted by the event. Effective risk communication is absolutely essential for the other four steps to occur.

Plan Review Function

The review and approval of commercial vessel design and associated systems plans to an extensive collection of national and international rules and regulations is a function that has been executed by the Coast Guard for decades. The plan review function is a critical element of the Assistant Commandant for Marine Safety and Environmental Protection’s maritime safety and protection of natural resources performance goals. Ensuring that commercial vessels are designed to the appropriate safety standards is the first step to reducing maritime injuries and fatalities and reducing oil spills and hazardous materials releases.

Prior to 1986, subject matter experts assigned to Merchant Marine Technical Divisions at the Coast Guard District Offices performed the plan review function. In 1986, the four remaining technical divisions located in the Coast Guard Third, Eighth, Ninth and Eleventh Districts were consolidated and formed the nucleus of the MSC. Today, the MSC is a Washington D.C.-based headquarters

support unit. The MSC staff of 52 military and civilian members is divided into three divisions, Hull, Tank Vessel & Offshore and Engineering. Each division is further subdivided into branches that are populated with engineers from a variety of disciplines, including marine, mechanical, electrical, chemical and naval architecture. The MSC’s staff engineers review approximately 12,000 plans per year. Over the past two years the MSC staff has interacted with over 600 submitters, including naval architects, marine engineers, builders, vessel owners and operators, classification societies and manufacturers. The plan review function has been and continues to be the key factor by which MSC performance is perceived and measured.

Applying Risk-Based Decision Making Concepts to Plan Review

Outside the MSC, the Coast Guard had recently begun to apply risk-based decision making concepts in a number of mission areas. The primary driver of these efforts was the efficient use of dwindling resources. In 1998, the senior MSC staff familiarized themselves with the concepts and decided to implement a risk-based decision making approach to increase plan review efficiency and to make the plan review process more objective. They noted that the old way of executing the plan review function was ripe for change. Each staff engineer was responsible for individually assessing the criticality of the elements of the system or activity being reviewed. This made every review subjective and generally inefficient. Additionally,

		Probability of Noncompliance		
		Unlikely	May Occur	Common Error
Consequence of Noncompliance	System Failure	High	High	High
	Diminished Performance	Low	Medium	High
	No Negative Impact	Low	Low	Medium

Figure 2: Checklist Item Risk Matrix.

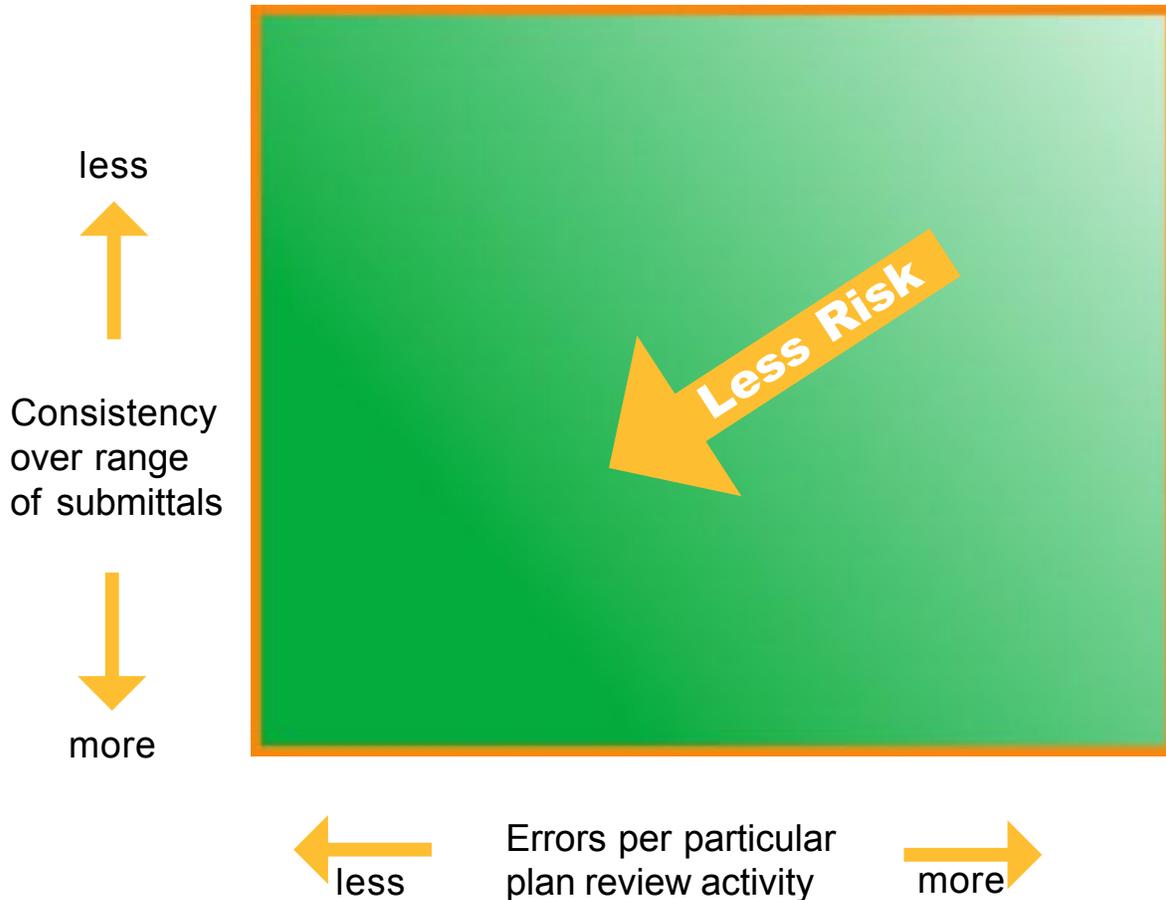


Figure 3: Consistency vs. Accuracy Diagram.

the thoroughness of the review was dependent on the training and experience of the staff engineer. Under the new risk-based approach, staff engineers would concentrate on elements of those systems or activities that posed the greatest risk and those submitters that warranted the most attention. The time savings realized by this approach would enable the MSC to address other critical missions such as oversight of delegated parties, or provide technical advice and recommendations to marine safety offices during responses to maritime casualties or pollution incidents.

Plan Review Activities

Risk-based plan review was a “bottoms up” initiative. The subject matter experts, the staff engineers, examined the spectrum of designs and systems submitted for review. From this examination, the staff engineers identified 122 plan review activities. They then developed plan review checklists by extracting requirements from the applicable national and international rules, regulations and policies.

After developing the checklists for the 122 activities, the staff engineers began to apply the risk-based decision making concepts by placing each checklist item into a matrix based on the risk definition described earlier. Through consensus the engineers arrived at three degrees of consequence severity for nonconformance with the rules and regulations. The three degrees are “no negative impact,” “diminished performance,” and “system failure.” Through a similar consensus they arrived at three degrees of probability of noncompliance. They are “unlikely,” “may occur,” and “common error.” Finally, and again by consensus, the engineers developed a risk matrix by assigning low, medium and high risk values to the various combinations of consequences and probabilities. Figure 2 depicts this risk matrix.

Submitter Performance

The probability of nonconformance is a function of the complexity of the plan review activity. As one would expect, the greater the complexity, the greater the chance

for error. Another factor influencing the probability of nonconformance is the submitter's performance. To stop after addressing the plan review activity's complexity and to not address submitter's performance would diminish the benefits of the risk-based decision making approach.

A submitter's performance is addressed in terms of accuracy and consistency. Error rate, a measure of a submitter's accuracy, is calculated for each and every submitter. The number of errors in a particular plan review activity (one of the 122) divided by the total number of submittals from the submitter equals that submitter's error rate. The standard deviation of the error rate, a measure of consistency, is also calculated for each submitter. Together the error rate and error rate standard deviation provide the MSC indications on the trends of the submitter's performance.

The "risk" relationship of these two measures is shown in Figure 3. This is simply a recharacterization of Figure 1, the Frequency vs. Consequence Diagram, shown earlier. Qualitatively, the less error prone and the more consistent a submitter's performance is in a particular activity, the less likely is the risk of negative consequences. Conversely, the more error prone and the less consistent a submitter's performance is in a particular activity, the greater is the risk of negative consequences. A submitter whose performance is described by the latter would warrant a higher degree of plan review activity scrutiny.

Levels of Plan Review

By combining the risk matrix and the data on submitters' accuracy and consistency, the MSC staff was able to develop a three-tiered plan review approach. A level 1 plan review effort focuses only on the high risk elements of a plan review activity and is afforded to those submitters with the greatest degree of accuracy and consistency. A level 2 plan review effort combines medium and high risk elements of a plan review activity and is required of submitters that have demonstrated a moderate

degree of accuracy and consistency. A level 3 plan review effort covers all elements, low, medium and high risk, of a plan review activity and is required of submitters that have demonstrated an insufficient degree of accuracy and consistency. A level 3 review is also required of newer submitters that have not made enough submittals to allow us to properly calculate an error rate.

The plan review approach using risk-based decision making concepts is summarized in a flow chart, Figure 4.

Work Instructions

The final step of the risk-based plan review initiative is to capture and expand upon the prioritized plan review checklists in MSC work instructions. Each of the 122 plan review activities will be covered by a work instruction. We are nearly completed with the first iteration of these instructions. Those instructions that are completed and available for use by the MSC's customers are posted on the MSC's Web site, www.uscg.mil/hq/msc/PRGuidance.htm (see sample of this Website in Figure 5). These work instructions will be subjected to continuous refinement as regulations and policies change.

Quality Initiative Benefits

As was previously mentioned, the MSC has already derived benefits from this initiative. Overall, this initiative ensures that the most critical elements of each of the plan review activity are reviewed. Additional benefits include greater plan reviewer empowerment, increased plan reviewer consistency and efficiency, and improved submitter proficiency. Carrying out the initiative in a "bottom-up" manner fostered a tremendous sense of empowerment within the MSC's staff. The command's full support of the staff's direction and their recommendations is evident throughout the initiative. This support was absolutely critical to breaking out of the old way of doing plan review.

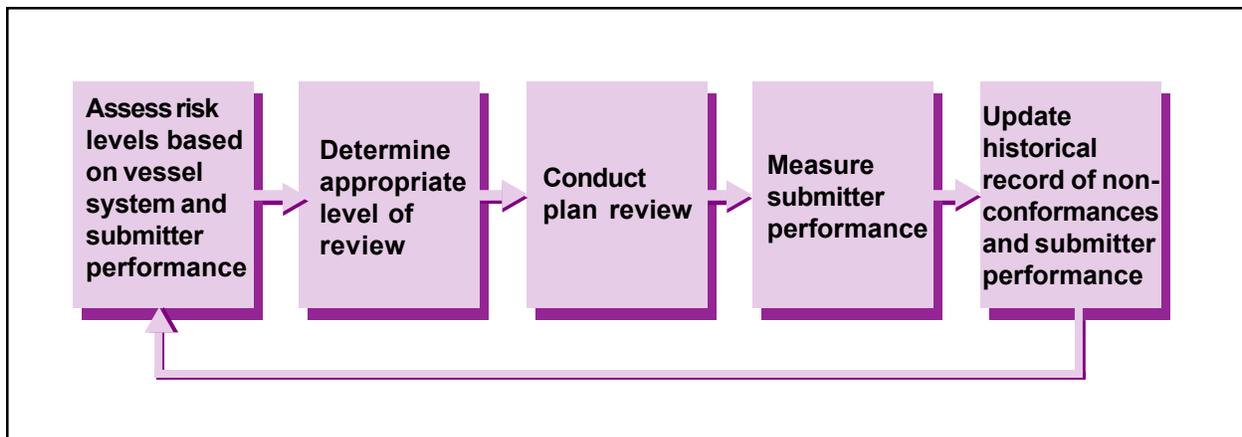


Figure 4: Plan Review Approach Using RBDM Concepts.

A shortcoming of the MSC in the past had been the degree of plan review inconsistency between reviewers. Since all plan reviewers are now trained to and working from the work instructions there is a higher degree of consistency. Training also takes place at an accelerated pace, leading to an earlier application of consistency. Along with increased plan review consistency, submitters are benefiting from more efficient plan reviews. The better trained MSC staff members and reviews that are more focused directly lead to faster turn around (reduced cycle time) for the submittals. We have been able to achieve and maintain our cycle time performance standard of one month.

Finally, by making the work instructions available to the submitters, the MSC is improving their proficiency. Submitters benefit from guidance that is specific to plan review activities and that identifies the critical requirements of the activities. This helps submitters reduce or eliminate errors in their submittals.

The risk-based decision making approach to plan review has been successful. The MSC staff has been monitoring the successes of and any difficulties encountered with this process improvement initiative since its deployment in March 2000. The staff will continue to refine the initiative, incorporating feedback from this year's measurements. P

MSC Guidelines for Review of Crane Lifting Calculations

Procedure Number: TI-3

Revision Date: 01/19/00

- Counterballasted Vessels (46 CFR 173.020 and 46 CFR 173.025):
 - Ensure that the provided calculations demonstrate that the subject vessel can withstand the sudden loss of the hook load, in each condition of loading and operation and at each combination of hook load and crane radius. See 173.025(a) and 173.025(b).

- Non-counterballasted Vessels (46 CFR 173.020):
 - Ensure that the provided calculations demonstrate compliance with the intact stability requirements of 46 CFR 173.020(b).
 - If the subject vessel's hull proportions fall within all three limits specified by 46 CFR 173.020(c), the vessel owner may, in the presence of the OCMI, demonstrate compliance with 46 CFR 173.020(d) in lieu of 46 CFR 173.020(b).
 - * Note: When reviewing the intact stability requirements for crane lifting, it is important to verify that the hook load is considered to be located at the head of the crane in accordance with 46 CFR 173.007.

- Ensure that the downflooding points (on both the crane and counterballasted side of the vessel) are correctly accounted for in the stability calculations.

- If the vessel has multiple cranes ensure that calculations have been performed independently and combined and that all operating restrictions are noted.

- For Counterballasted Vessels:
 - Ensure calculations are provided demonstrating compliance with the graph requirements of 46 CFR 173.025(b).

 - The MSC may construct a computer model from the lines, offsets, or provided disk, and independently verify the intact stability of the vessel.

Figure 5: Sample work instructions for Crane Lifting Calculations from www.uscg.mil/hq/msc/PRGuidance.htm

Maritime Environmental Quality



The 2000 Benkert Award Competition



The William M. Benkert Award Program is the U.S. Coast Guard's environmental quality award. The award was named in honor of Rear Admiral William M. Benkert (1923-1989), a distinguished Coast Guard officer widely known for his leadership and vision in marine environmental protection. The award is the premier maritime environmental quality award that recognizes environmental protection efforts that far exceed mere compliance. The evaluation process is competitive and standards are rigorous and demanding.

The 2000 Benkert Award competition comprised various categories, which can be viewed on the next two pages, along with award recipients and runners-up. The awards were presented by U.S. Coast Guard Assistant Commandant for Marine Safety and Environmental Protection, RADM Robert North, at the API Tanker Conference on June 19, 2000 in La Jolla, Calif.

Four Preliminary Review Boards, each chaired by a U.S. Coast Guard captain, evaluated reports submitted in each of the four categories and recommended recipients. An Executive Evaluation Committee comprised of six members from trade organizations, non-government organizations, and other government agencies made the final selection, based on input from the four Preliminary Review Boards.

The highly competitive award is on a biennial cycle. The next cycle is scheduled to begin in late spring of 2001. Applications will be submitted until the end of October and then the real work begins. Recipients are to be announced in the spring of 2002. The process includes a two-stage board evaluation process that includes a broad spectrum of participants from government, industry and the environmental community.

Scoring for the award is based on a Behaviorally Anchored Rating System (BARS) similar to an officer performance evaluation form. The scoring system allows a total of 1,000 points. The BARS helps to remove much of the guesswork for the participants. Scoring is tough and we rarely see anyone break 800 points.

With this system a possible score of 100 points could be earned for environmental outreach. To achieve a score of 20 points, applicants must have "a general program, audience unfocused, education based, no benefits discussed." To achieve a score of 100 points, applicants must have "a world-class, distinct, original, unique, well-integrated program, linked to policies in all operations...program clearly measured with cost-benefit analysis, evaluation and improvement cycles with substantial refinement described."

Issues such as environmental trend analysis, environmental performance measurement and outreach are strongly stressed. Other areas such as management commitment, environmental objectives and environmental management systems are also examined. Board members are looking for solid examples of performance in all categories.

To be placed on the application booklets mailing list, contact LT William Pittman at: wpittman@comdt.uscg.mil or call him at 202-267-0426.

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Large Vessel Category Recipient

The recipient of the award in the large vessel category is Crowley Marine Services, of Seattle. Crowley operates the largest ISO/ISM certified fleet of tugs and barges in the Americas. Crowley provides services such as tanker escort and ship assist, petroleum transportation and sales, contract barge transportation and ocean towing, logistics and support services, marine salvage and emergency response services and all-terrain transportation. Crowley followed a risk assessment approach that specifically targeted critical areas by clearly defining its goals and management practices to achieve a “zero pollution goal.” Crowley developed a root cause incident investigation and analysis program to identify correctable problems. Crowley also established clear environmental performance measures as a part of their business plan. These measures are directly tied to their environmental management goals.



Large Facility Category Recipient

The recipient of the award in the large facility category is Consolidated Edison, Inc. of New York. ConEd received the highest score possible in the area of performance measurement. ConEd’s commitment to the environment is demonstrated through newsletters and annual reports, which are mailed to each employee’s home. Additionally, commitment is demonstrated with environmental excellence awards that are given to 80 employees annually. ConEd has instituted a “Pinnacle Program” which allows employees or contractors to stop any work they feel is unsafe or constitutes an environmental risk and a “close call” program that allows the company to analyze and learn from close calls and accidents. This is attributed to Consolidated Edison’s excellent tools and measures to track environmental performance.

ConEd offers youth internships and supports Green Horizon, which acquaints students with careers in environmental services.



Small Vessel Category Recipients

The recipients in the small vessel category are Alaska Clean Seas, of Prudhoe Bay, Alaska and Southern Towing Company, of Memphis.

Alaska Clean Seas is a non-profit, incorporated oil spill response cooperative that provides personnel, materials, equipment, and training in preparation and response to oil spills for the Alaska North Slope Crude Oil Producers in accordance with Oil Spill Response Agreements and Plans. Alaska Clean Seas has demonstrated significant progress toward the goals of pollution prevention and environmental excellence during the 1997 – 1999 calendar years.

The significant progress is best emulated by their multifaceted approach to environmental protection, strong depiction of partnerships with commercial and government entities, and nationally recognized program development in a uniquely harsh



working environment.

Southern Towing was founded as a privately owned petroleum distribution company. Today, Southern Towing owns and operates 14 vessels and 46 barges, specializing in the transportation of refrigerated anhydrous ammonia, operating between Texas and Illinois. Southern Towing demonstrates especially strong environmental commitment, shows a diverse approach to environmental management with risks clearly identified and specific goals set in line with objectives.

Southern Towing has demonstrated management practices, drills and safety manuals that exceed industry standards. Southern Towing’s qualitative and quantitative analysis of environmental performance trends were noteworthy.



Small Facility Category Recipient

The recipient of the award in the small facility category is Portland Pipe Line Corporation, South Portland, Maine. Portland Pipe has demonstrated a continuing commitment to marine environmental protection during the 1997- 1999 calendar years. Portland Pipe's commitment is best demonstrated by environmental management and performance measurement systems, where Portland Pipe attained near perfect scores. Portland Pipe also demonstrated excellence in the areas of environmental safety and quality management. Portland Pipe has an exceptional commitment to protecting the environment and conducting business in a safe manner.



Large Facility Category Runner Up

Runner up in the large facility category is Puget Sound Naval Shipyard, Bremerton, Wa. The Shipyard conducted environmental risk management that resulted in risk mitigation procedures to conduct pre-arrival ship-rides with inspections of all tanks and voids. Also noteworthy was the extensive interaction with ship personnel. Notable innovations include the use of airless spray equipment for the application of paint, which helped reduce paint emission by 93 percent. The Shipyard has also developed an ENVIROPAK that covers all aspects of environmental requirements for vessels coming into the shipyard.



Large Vessel Category Runner Up

Runner up in the large vessel category is Skaugen PetroTrans, Inc., Houston. Skaugen applies environmental risk management to its operations and has demonstrated its commitment by establishing clear environmental/safety policies. Skaugen has initiated ISO/ISM certification. Skaugen demonstrated increased promotion of environmental protection by creating a reporting system that tracks unplanned events very similar to the U.S. Coast Guard. Skaugen's "Lightering 101" presentation is a good example of their outreach to industry, government and local Maritime colleges. Skaugen's partnership with the National Weather Service in the Marine Spotter Program is unique. Skaugen also has an extensive measuring and monitoring program, measuring trends since 1993.



Small Vessel Category Runner Up

Runner up in the small vessel category is Special Expeditions Marine, of Seattle (now Lindblad Expeditions). Special Expeditions is an international travel company dedicated to promoting environmental and cultural appreciation. Specifically, Special Expeditions provides passenger cruises to sensitive marine areas. Special Expeditions' environmental philosophy is strongly linked to a business plan, including highly creative and diverse policies. Risk management controls are in place with targets that far exceed required standards. Special Expeditions safety and quality management show positive results with a strong emphasis on training. Special Expeditions has an exceptionally creative environmental outreach programs and multiple external partnerships.

The Coast Guard's Marine Safety Council serves as the Commandant of the Coast Guard's internal policy advisor on regulatory matters. The Council is the focal point of the Coast Guard regulatory system and it provides oversight and guidance for 11 Coast Guard regulatory activities. The Council also evaluates whether a regulatory project involves policy or other considerations that require the Commandant's attention and signature and ensures that Headquarters rulemaking projects stay on schedule. Each member of the Council may submit regulatory proposals for consideration and—with the Council's advice and oversight, may develop regulations necessary to implement laws and carry out assigned programs.

The Chief Counsel of the Coast Guard, Rear Admiral James Carmichael, is a permanent voting member of the Council and serves as the Marine Safety Council Chairman. The three other permanent voting members of the Council are the Assistant Commandant for Marine Safety and Environmental Protection, Rear Admiral Robert North; the Assistant Commandant for Operations, Rear Admiral Terry Cross; and the Assistant Commandant for Systems, Rear Admiral Ronald Silva. Other assistant commandants or directors of Coast Guard Headquarters units may be invited to serve as ad hoc voting members for specific regulatory projects. A minimum of three permanent voting members must be present for the Council to conduct business.

As the Commandant's internal policy advisor on regulatory matters, the Council reviews each Headquarters regulatory project to ensure that the proposed regulations are necessary, and that the chosen approach is the least burdensome to the public and the Coast Guard and that it achieves the Coast Guard's goals. The Council also ensures proper application of and compliance with applicable

statutes, executive orders, Department of Transportation and Office of Management and Budget directives, and Coast Guard regulations or policy.

Within the Coast Guard, program managers identify the need for regulations either through statutory requirements or due to changes in existing law, through internal reviews of program functions such as a casualty investigation, through recommendations from advisory committees, or through petitions for rulemaking from the public. Having identified a need, the program manager then forms a project team to review the need and develop alternatives to address the need, involving the public as necessary through public meetings, advisory committees, or public notices and requests for comments in the Federal Register. When the need for regulations is verified, the

project team submits a recommendation that the sponsoring assistant commandant seek approval from the Council.

In reviewing a proposed project, the Marine Safety Council may: provide policy direction; require public meetings or other steps to obtain necessary information and provide adequate opportunity for public participation; concur with all or part of a proposal; require a program manager to report back on aspects of a regulatory project; suggest revisions; reject proposed projects; and approve schedules for project completion. To fully serve as the Commandant's internal regulatory policy advisor, the Council will also hold meetings to consider events that

may require future regulatory control, even before a need for regulations is fully identified. A recent example of such an event is the Year 2000 problem and its possible effects on shipping and facility safety, and possible interference to vessel navigation by the use of mobile satellite system telephones. The Chairman of the Marine Safety Council grants approval for non-significant regulatory projects after the voting members concur with the scope and direction of the project. For projects that are classified as significant, either under Executive Order 12866 (Regulatory



Planning and Review, 1993) or Department of Transportation Order 2100.5 (Policies and Procedures for Simplification, Analysis, and Review of Regulations, 1979)¹, the Commandant grants approval after the Marine Safety Council concurs with the project. After approval, the Council generally has no further contact with that project, provided the project remains on its approved schedule and does not change its scope or direction.

The Coast Guard considers public participation essential to effective rulemaking. During its reviews of proposed projects, the Marine Safety Council will require public meetings, advance notices of proposed rulemakings, advisory committee input, and other means to ensure adequate widespread public participation.

Petitions for rulemaking received by the Executive Secretary of the Marine Safety Council may also provide the Coast Guard with sound bases for rulemaking. Program managers must carefully consider these petitions that may be reviewed by the Marine Safety Council at the manager's recommendation or by request of a Council member. The public is also given full opportunity to comment on proposed regulations during the rulemaking process. P

¹Under Executive Order 12,866, a "significant regulatory action" includes those that may have an annual effect on the economy of \$100 million or more, or may adversely affect "the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local or tribal governments or communities." The DOT Order 2100.5 (44 Fed. Reg. 11034, Feb. 26, 1979) contains similar criteria for determining a rule is "significant," and includes regulations that concern a matter of significant public interest.

Marine Safety Council Legal Counsel

While not a voting member on the Marine Safety Council, CDR Michael L. Emge, who worked in the U.S. Coast Guard Office of the Chief Counsel, was, nonetheless, important to the Marine Safety Council team, providing valuable legal counsel (he also provided legal counsel for *Proceedings* magazine). On Oct. 31, 2000, Emge retired.

Taking his place is LCDR Charles D. Dahill, who is the Executive Secretary. Steve Venckus, Chief, Office of Regulations and Administrative Law, also recently came aboard as Legal Counsel to the Marine Safety Council. Venckus and Dahill bring a wealth of knowledge and experience and they will maintain the high standards of quality and excellence that is the tradition of the office.



Steve Venckus

On Oct. 31, 2000, Steve Venckus assumed the duties of Chief of the Office of Regulations and Administrative Law (G-LRA). He comes to G-LRA from California. His last duty station in the Coast Guard was Training Center Petaluma, Calif., where he was commanding officer. He retired as a captain in 1998. He also served as the Training Center's executive officer from 1993 to 1996. From 1991 to 1993, Venckus was assigned as the staff judge advocate and assistant chief of staff at the Defense Department's counter-narcotics task force in Key West, Fla., known, at that time, as Joint Task Force Four. Venckus was assigned as the staff attorney in the Office of Chief Counsel, Maritime and International Law Division from 1987 to 1991.

From 1981 to 1984, Venckus attended law school at Case Western Reserve University in Cleveland, graduating with honors at the top of his class. He was also awarded the law school's prestigious Society of Bencher's Award and the Order of the Coif. He is a member of the California and Ohio bars.

A few of his many career highlights include negotiating several international military counter-narcotics agreements with Britain, France, the Netherlands, Colombia, Mexico, Panama, and Caribbean nations. As chief negotiator, he successfully concluded an international agreement with the former Soviet Union to improve navigation on and over the Bering Sea. He drafted numerous agreements to turn over Coast Guard LORAN-C stations in foreign countries to host nation operations and was a member of the U.S. negotiating teams dealing with high seas fisheries issues leading to international agreements with Japan, South Korea, Taiwan, and the former Soviet Union.

Venckus, a native of Sweden, immigrated to the United States in 1954, settling down in Naperville, Ill. He graduated from the U.S. Coast Guard Academy in 1974.

Mr. Venckus and his wife, the former Frances Maureen McGuire, reside in Manassas, Va. with their son, Anthony, 14. They also have twins, Bridget, 19, a student at The Catholic University of America, and Sean, a U.S. Army combat engineer stationed in Germany.



LCDR Charles D. Dahill

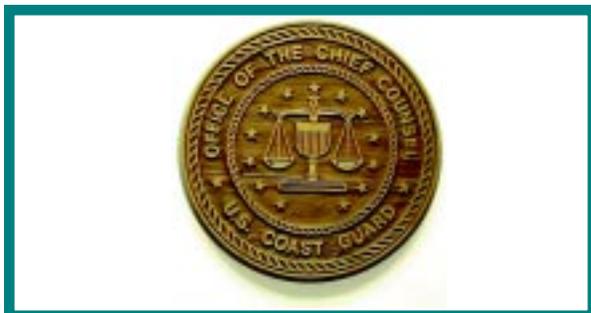
On Oct. 31, 2000, LCDR Charles D. Dahill assumed the duties of assistant office chief and senior military staff attorney at the Office of Regulations and Administrative Law, and executive secretary of the Marine Safety Council.

He graduated with a Bachelor of Arts degree from the State University of New York at Albany in 1980, a Juris Doctorate degree from the University of Akron School of Law in Akron, Ohio, in 1983, and a Master of Laws degree in Law and Marine Affairs from the University of Washington School of Law in Seattle in 1988.

Dahill was admitted to practice before the Supreme Court of Ohio in 1983, the U.S. District Court, Northern District of Ohio, in 1989, and U.S. Court of Appeals of the Armed Forces in 1991.

He was in the U.S. Air Force Judge Advocate Corps, Lackland Air Force Base, Texas., from 1983 to 1987; a solo practitioner in Westlake, Ohio, from 1988 to 1990; served as a reserve in the U.S. Air Force Judge Advocate General Corps, Wright-Patterson AFB, Ohio, from 1988 to 1990; He has served as a U.S. Coast Guard law specialist from 1990 to 2000, which included service in the Defense Advocacy, Military Justice and Operational Law, and General Law branches at Governors Island, New York from 1990 to 1994; principle assistant in the Ninth District legal office in Cleveland, Ohio, from 1994 to 1997; and an out-of-specialty assignment as assistant senior investigating officer at Coast Guard Activities New York from 1997 to 2000.

Dahill and his wife, Anne Nolan Dahill, reside in Vienna, Va. with their daughter Audrey Elizabeth, age 4.



CDR Michael L. Emge

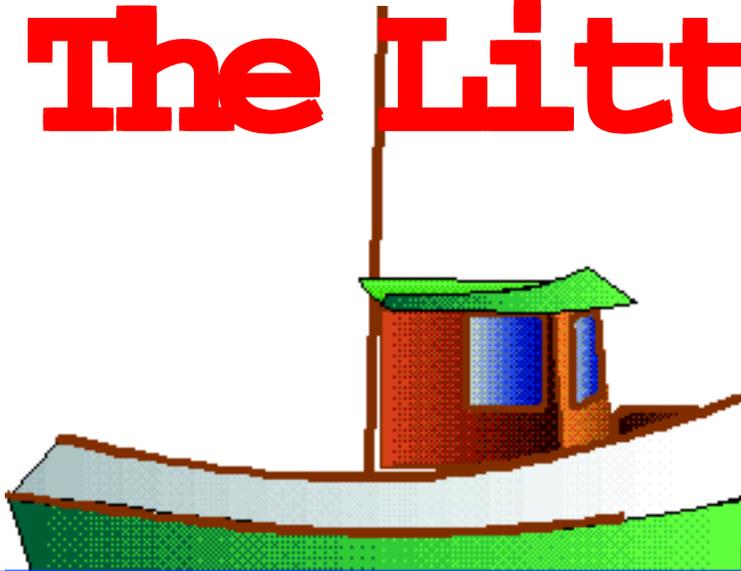
CDR Michael L. Emge is a native of Florida. He graduated with a Bachelor of Science degree from the University of Florida in Gainesville in 1977 and a Juris Doctorate degree from The Columbus School of Law of The Catholic University of America in Washington, D.C., in 1994.

Emge served as the Marine Environmental Protection and Port Safety and Security officer at Station New London, Conn., from 1978 to 1981. This was followed by an assignment as a marine inspector and assistant senior investigating officer at Marine Safety Office Port Arthur, Tex., from 1981 to 1984. He served as the supervisor of Marine Safety Detachment Coos Bay, Oreg., from 1984 until its closure in 1985 and then as a marine inspector and the senior investigating officer at Marine Safety Office Portland, Oreg., from 1985 to 1989.

Assigned to Coast Guard Headquarters in 1989 shortly after the Exxon Valdez oil spill, Emge served as assistant chief of the Pollution Response Branch from 1989 to 1993 and was charged with overseeing the implementation of many Oil Pollution Act of 1990 initiatives. Transferring to the legal program in 1993, he was assigned to the Office of Maritime and International Law from 1993 to 1997. In the Office of Maritime and International Law, Emge was a Marine Safety program counsel, the Commandant's civil penalty appeal authority and counsel to Coast Guard Mutual Assistance. Since 1997, he has served as deputy chief of the Office of Regulations and Administrative Law and as executive secretary of the Marine Safety Council.

Emge retired to the Tampa/St. Petersburg, Fla. area on Oct. 31, 2000, to practice law. He has two sons: Travis, a second class cadet at the U.S. Coast Guard Academy in New London, Conn., and Justin, a student at Full Sail University in Winter Park, Fla.

The Little Tug



In 1994, the American Waterways Operators (AWO) conceived the idea of an industry-developed safety management program that would set new and higher standards of safety. The towboat, tugboat and barge industry has accomplished a great deal since.

Today, due in no small part to its development of and strong commitment to AWO's Responsible Carrier Program, the towboat, tugboat and barge industry is a far safer, more responsible, and better one than it was just a few years ago.

A Bold Idea for Safety

Our industry is proud of these changes – changes that have resulted in increased worker and operational safety and an enormously improved level of environmental protection. Much of this change has been the result of our industry's leadership in developing the Responsible Carrier Program as well as its participation in other safety management systems like the International Safety Management (ISM) Code. The Responsible Carrier Program in particular has been a leading force in changing the way tugboat, towboat and barge companies, regulators and Congress view safety.

As evidence of this change, Senate Majority Leader Trent Lott (R-Miss.), speaking about the RCP in April, conveyed his enthusiasm about the Responsible Carrier Program: "I think this is fantastic. I hope we can emulate this particular program in other sectors of our economy, particularly in transportation... We need more of this type of program. This shows that we don't need the extensive government regulation we often have."

AWO Background

To provide some sense of how the industry got to this point of accomplishment, it is necessary to first understand that the AWO is the national trade association representing the domestic towboat, tugboat and barge industry. Headquartered in Arlington, Virginia, the association is made up of 375 member companies operating most of the towing equipment in the United States.

AWO has long had a strong working relationship with the U.S. Coast Guard, which grew even closer after the enactment of the Oil Pollution Act of 1990, and the joint industry/government effort to implement its provisions. Success of that effort led to the establishment of the Coast Guard-AWO Safety Partnership.

boat That Could

American Waterways Operators Take the Initiative With Their Own Safety Management Program

By **CAPT Robert L. Clinton**
vice president - Safety
American Waterways Operators

Just recently, former VADM James C. Card (USCG, Ret.) described that Partnership as:

“The pioneer [of other Coast Guard-industry partnerships]. It was the first one, it is the best one, and the one that has accomplished the most.” In fact, the Responsible Carrier Program grew up as a complementary program to the Coast Guard-AWO Partnership and the Prevention Through People initiative.

With that background in mind, we can begin to answer the questions of what exactly the Responsible Carrier Program is, how it got started, where it stands now and what new developments are planned for the future.

RCP Background

First, it is essential to understand that the Responsible Carrier Program is an award-winning, Coast Guard-recognized safety and environmental protection program developed by AWO for barge and towing companies that establishes operating principles, practices, and guidelines that meet and often exceed those currently required by federal law or U.S. Coast Guard regulation. Further, the Responsible Carrier Program is a safety code

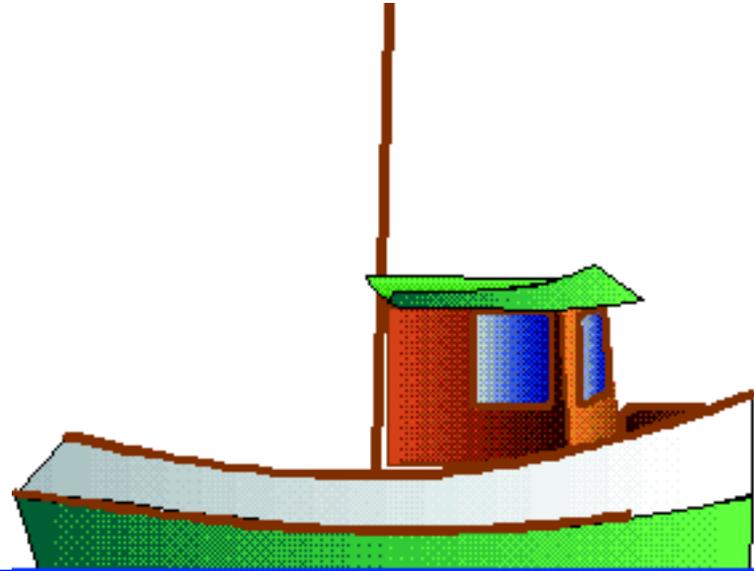
of practice that encompasses every aspect of fleet operations.

The program began in 1994, when AWO members recognized the need to upgrade the safety performance of their industry. Although the majority of individual companies were performing with outstanding results in safety and environmental protection, AWO members recognized that the bar of safety should be raised within the entire industry. It was from that realization that the Responsible Carrier Program was born. In what was widely viewed as a unique and bold move, AWO members concluded that they, as the people who knew their industry best, could develop a world-class safety program designed specifically for the tugboat, towboat and barge industry. That conviction and far-sighted vision turned out to be well founded.

Today, the Responsible Carrier Program is widely recognized as the premier safety management program for the tugboat, towboat and barge industry. It has gained the support of government regulators, the U.S. Coast Guard, insurance companies and our customers. In the words of Mortimer L. Downey, Deputy Secretary of Transportation, “The Responsible Carrier Program is a



Photo by Alan Haig-Brown



testament to the effectiveness of a voluntary quality program. Your members' willingness to establish safety standards beyond those minimum requirements found in the regulations demonstrates a clear interest in improving industry and environmental safety."

This sentiment was further echoed by Coast Guard Commandant ADM James Loy, when he wrote to AWO President Tom Allegretti that, "The Responsible Carrier Program is an outstanding example of an industry initiative that serves to protect both the safety of your workforce as well as the environment in which you must operate."

Award-Winning Program

In addition to this high praise and support, the Responsible Carrier Program is the recipient of several awards, including the Texas General Land Office Oil Spill Pollution and Response Division's award for excellence in oil spill preparedness, prevention and response, and an American Society of Association Executives 1999 Summit Award. The Summit Award is the highest honor in the Association's Advance America Awards program, awarded to associations who develop particularly innovative

projects to positively impact American society. The Responsible Carrier Program helps to improve safety by requiring all AWO carrier member companies to "say what they do," by establishing operating principles, practices, and guidelines in the three major areas of the program: management and administration, vessel equipment and inspection, and human factors. Next, they must "do what they say," by following their own company-developed procedures and guidelines in each of those areas. And finally, they must "prove it," by undergoing a third-party audit by an AWO-certified RCP auditor.

History of RCP Development

Stepping back for a moment to the beginning of the program, it is clear that leading to its development were two important factors – one internal to AWO and one external. Internally, this work stemmed from AWO's then strategic plan, *AWO 2000*. One of the 23 strategic objectives laid out in that plan called on the association to "improve industry safety and environmental protection by establishing preferred industry operating principles and practices."

Photo by Brian Gauvin



Externally, the program was a logical next step in the whole process of industry self-examination that began in the wake of a tragic accident in September 1993, when a barge accidentally hit a train bridge, causing an Amtrak derailment and loss of life. The guiding philosophy behind the program, then as it is now, is that while government clearly does have a role to play in ensuring safety and protecting the marine environment – and that is to set a baseline below which no one in the industry should be operating – the responsibility for ensuring safety lies not solely with the Coast Guard, but to a large degree with industry itself.

Secretary of Transportation Rodney Slater has described AWO members' development of the program as “standing behind your word and more importantly, it's standing up for your commitment to safety and environmental protection and your respect for the power of the good of commerce.” We're the ones who know our business best, and we're the ones who have the most ability and the most responsibility for ensuring that we operate safely and with respect for the marine environment.

Everyone in the industry is heartened to see that there has been a dramatic decline in spills, for example, in

the past decade. This is an example of the results that can be achieved when industry makes a commitment like the Responsible Carrier Program. AWO President Tom Allegretti has said, “AWO members are committed to building on this record of improvement and continually striving toward the goal of zero spills.”

Program Elements

As previously mentioned, the Responsible Carrier Program itself is organized in three parts. Those parts are management and administration, equipment and inspection, and human factors, acknowledging the role which each of these components plays in ensuring safe and efficient towing vessel operations. Incidentally, these areas mirror the parts included in the ISO/ISM programs.

Management and Administration

The management and administration section, the first section of the program, asks companies to look at nine principal aspects of their operations and to develop written company policies and procedures for each. These nine aspects are vessel operating policies/procedures;



Photo by Brian Gauvin

safety policy/procedures; environmental policy/procedures; incident reporting procedures; emergency response procedures; internal audit/review procedures; vendor safety; organization/levels of authority; and personnel policies.

Of course, simply having documented policies and procedures will not improve safety if the people in the organization aren't aware of those policies and abiding by them in their daily work. So, that's another objective of this section: making sure not only that appropriate policies and procedures are in place, but that they're actually being put into practice as the organization goes about its business. The idea behind this policy-and-procedure-based approach is not to create mountains of unnecessary paperwork for companies. What it's meant to do is give companies the flexibility to tailor the program to meet their own specific operational needs, whether they're running towboats or barges, whether they're moving inspected tank barges or uninspected dry cargo barges, whether they're operating on the Mississippi River, in New York Harbor, or transiting Canadian waters en route to Alaska.

In fact, one of the great successes of this program has proved, time and time again, to be its ability to deliver

a workable safety framework for large and small companies alike. Companies working in every conceivable segment of the industry, from ship assist and harbor operations to construction and inland river operations to coastal and open water towing are able to implement the program and realize its benefits.

Equipment and Inspection

That flexible approach doesn't mean, however, that the program contains no objective standards; in fact, that's where the other two sections of the program come in. The second section of the program contains guidelines for vessel equipment and inspection, and it's divided into two parts: one for inland towing vessels and one for coastal towing vessels. In most respects, the two sets of guidelines are identical, but there are some differences that reflect the significant differences in the inland and coastal operating environments. This section of the program addresses six major areas: hull, machinery, firefighting and lifesaving equipment, navigation and communication equipment, rigging or towing gear, and environmental controls.

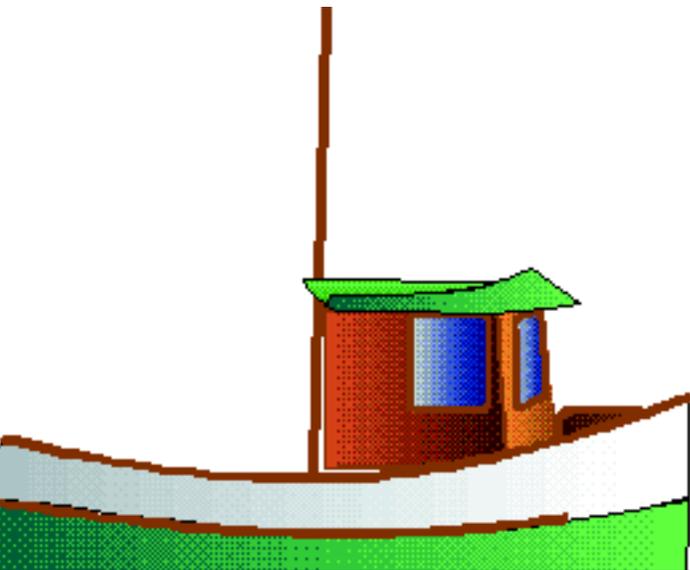


Photo by Alan Haig-Brown



Human Factors

The last section of the program deals with human factors: manning, watchstanding and work hours, and training. The program outlines a set of comprehensive criteria to be taken into account by companies in establishing safe manning levels for their vessels. It establishes maximum work hour limits for all towing vessel personnel. And, it focuses heavily on training, requiring that all vessel crewmembers receive initial and periodic refresher training in a specified list of subjects.

Training requirements are based on the position an individual holds aboard a towing vessel, not the Coast Guard license he or she happens to hold, and these requirements cover everyone, from the captain and mate to the engineer, tankermen, and deckhands – both experienced and entry-level.

AWO Compliance Standards

That summarizes what the program looks like, and what it's all about. AWO's ongoing task is providing safety

leadership to our members and the industry in general, and ensuring that the Responsible Carrier Program continues to reflect the best safety management practices available and includes state-of-the-art equipment and training standards.

At AWO we are dedicated to continuing to help our existing and newer members meet and maintain the requirement contained in AWO's *Constitution and Bylaws* that all carrier members must be operating in compliance with the program within two years of joining the association. AWO is proud to report that today, 100 percent of companies that have been members of AWO for two or more years, have undergone an independent third-party audit of their programs to certify their compliance with the Responsible Carrier Program.

Gaining 100 percent compliance with the Responsible Carrier Program did not come without some pain. This year, 13 companies had their memberships in AWO terminated when they failed to undergo the required audit or failed to correct nonconformities that would allow them to complete their audits. AWO members decided to forfeit revenue rather than to compromise on safety. For members



The American Waterways Operators

RESPONSIBLE CARRIER PROGRAM

Photo by Brian Gauvin



committed to the program, AWO is dedicated to continuing to provide all assistance necessary to ensure that they have the tools, assistance and advice they need to successfully implement and maintain the program.

RCP Challenges and Results

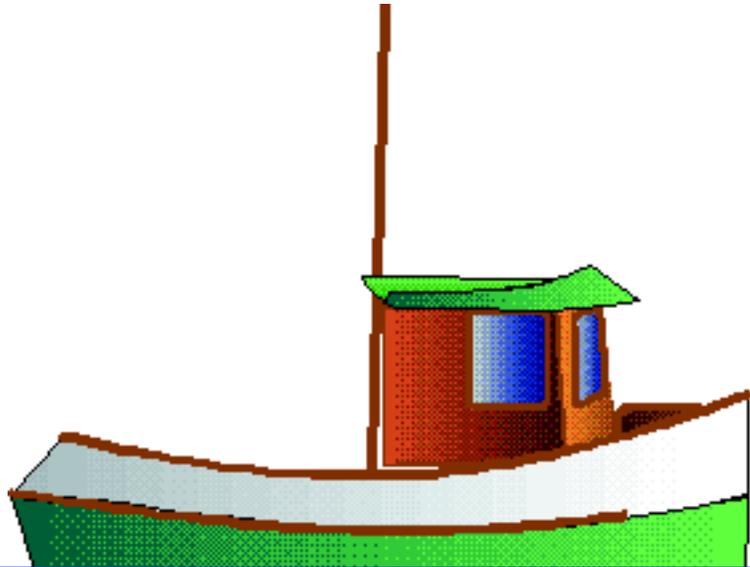
The Responsible Carrier Program is a comprehensive safety program, and like most things worth doing, it has not always been easy for our members to develop and to manage. The challenges most often mentioned by companies in maintaining this far-reaching program are stretched staff resources. For many, the most difficult part of the program was just getting started. Because, with management commitment, staff focus and slow, steady pressure, AWO members have learned that these hurdles can be overcome.

In fact, several small companies that initially resisted implementing the program have reported that adherence to the Responsible Carrier Program has not only improved safety at their companies, but increased efficiency and improved profitability as well. In the words of the owner of one small company, after implementing the Responsible

Carrier Program and undergoing the required third-party audit, "I walked away from the audit feeling good about our program [and initiating it!]. Our employees have the same sense of accomplishment – which is and has been a motivator to continually improve the operation and maintenance of our fleet." Another said that while he came into the program with some degree of skepticism, it has helped immeasurably in the way he does business, and actually brought him more business and increased profitability.

Third-Party Audit Program

The Board of Directors, in October 1996, approved a third-party audit program for the Responsible Carrier Program. It had concluded that an independent audit would significantly increase the external credibility of the Responsible Carrier Program and facilitate the attainment of important benefits for members complying with the Responsible Carrier Program, such as charterer acceptance, recognition from federal and state regulators, and lower insurance premiums. Like the Responsible Carrier Program itself, the AWO-certified Responsible Carrier Program third-



party audit was designed by AWO members themselves.

The audit program they designed requires that all carrier members undergo an AWO-certified audit of their Responsible Carrier Program every three years. The audit includes two parts: an audit of a company's management policies, procedures and training records, and an onboard audit of a minimum of 10 percent of its vessels to verify that those vessels meet the equipment requirements contained in the program.

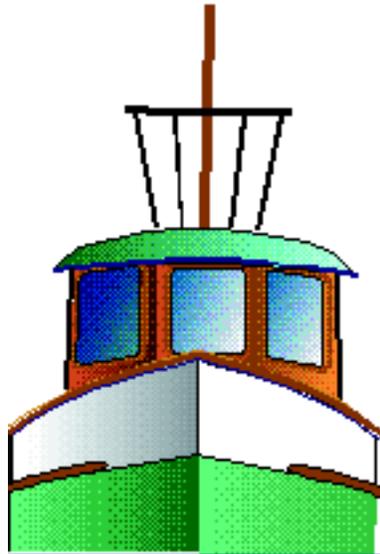
Responsible Carrier Program audits are carried out by a network of AWO-certified third-party auditors. To become certified, auditors must meet a stringent set of professional requirements, including experience in the tugboat, towboat and barge industry, and management and auditing experience. Prospective auditors must also provide letters of recommendation from at least two AWO members with a personal knowledge of their professional ability and suitability to perform audits. Additionally, prospective auditors must attend a 12-hour orientation and training session conducted by AWO.

The auditor training session, also designed and taught, in part, by AWO members, is designed to ensure that all prospective auditors possess a thorough

knowledge of the Responsible Carrier Program itself, the audit tool (checklist) and the guiding philosophy behind the audit. That philosophy is that the audit process is not intended to function as a "policeman," but to ensure consistent application of the required elements of the RCP and to verify that it is in place and being adhered to at each company. After initial certification, each auditor must renew their certification every three years by attending a professional seminar designed to ensure that their knowledge of the program remains current.

AWO oversees the audit and the RCP itself to ensure that it continues to meet the needs of its members and maintains the highest standards of professionalism and credibility. The Responsible Carrier Program is reviewed twice a year for content to ensure that it continues to reflect industry best practices. Oversight also includes the monitoring of individual auditor performance and periodic surveys of member and auditor satisfaction with the program.

This oversight role is the responsibility of the AWO Responsible Carrier Program Accreditation Board. The Accreditation Board is comprised of six AWO members representing each of the operating sectors of AWO: coastal,



harbor services, inland dry and inland liquid as well as representatives of liquid, chemical and dry cargo shippers. It is this Accreditation Board that trains auditors, reviews applications for certification as AWO auditors, continually reviews and updates the program and acts as the initial arbitrator between auditors and AWO members on questions of program content and interpretation.

Industry Commitment

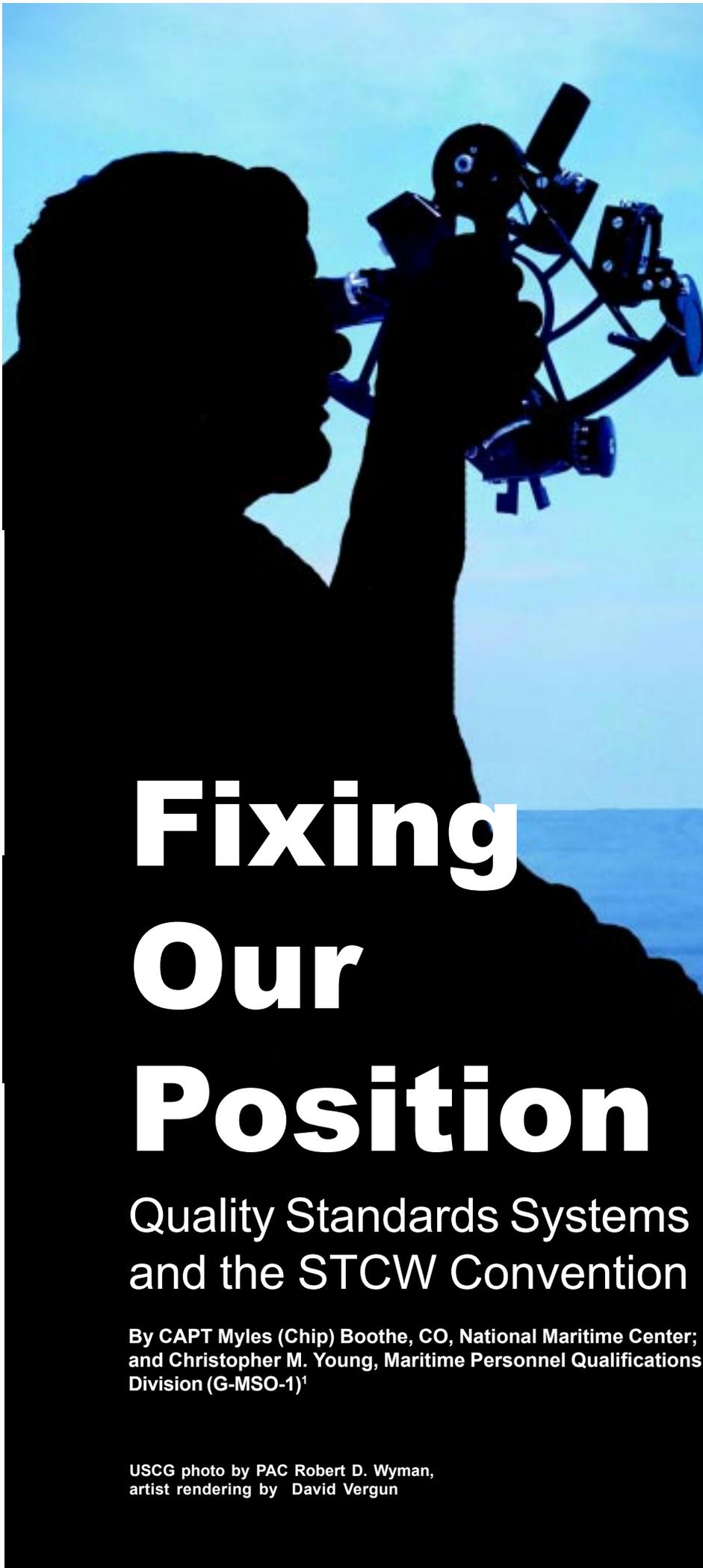
Over the long haul, the real test of the Responsible Carrier Program will be whether it lives up to its promise of improving industry safety and environmental protection – that it's not a PR initiative, or a tool for advocacy in the Congress or the Coast Guard. Instead, it must prove to be a day-in, day-out operational standard that the tugboat, towboat and barge industry maintains and lives by.

The members of AWO are committed to meeting this challenge, but we also need your help. Continued recognition of our industry's efforts by the insurance industry, our customers, and federal and state regulators, will encourage continued improvement. This improvement

will continue to yield results in lower vessel casualties, fewer pollution incidents and decreased personal injuries throughout the industry. Improving safety must be a team effort.

The tugboat, towboat and barge industry is trying to do its part by implementing the Responsible Carrier Program industry-wide. It is taking responsibility for doing things the way they should be done, and reducing the risk factors that lead to accidents, injuries and spills. It's a concerted effort from management and all of the port captains, port engineers, captains, mates, tankermen and deckhands – the people who are actually called upon to do what the program requires.

It's a big job, but it's a critically important one – one to which the members of AWO are committed. Together with the Coast Guard, federal regulators, our customers and employees, we can make it happen. P



Fixing Our Position

Quality Standards Systems and the STCW Convention

By CAPT Myles (Chip) Boothe, CO, National Maritime Center;
and Christopher M. Young, Maritime Personnel Qualifications
Division (G-MSO-1)¹

USCG photo by PAC Robert D. Wyman,
artist rendering by David Vergun

The 1995 amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW) introduced significant new requirements for any training, assessment and certification activities which are conducted to meet a convention requirement. These activities must be continuously monitored to ensure that the stated objectives are being achieved. This process of monitoring is collectively referred to as the Quality Standards System (QSS) requirements under STCW.

Essentially, the QSS requirements are intended to ensure that –

(a) clear education, training and certification objectives have been expressed for any particular STCW-related activity;

(b) a process is in place –

(i) for documenting how well all of the stated objectives are being achieved;

(ii) for ensuring that only fully qualified individuals are implementing the process (as instructors, assessors, etc.), and

(iii) for ensuring that only fully qualified candidates are issued certificates at the end of a process of training or assessment; and

(c) the process is also periodically examined by someone who is not involved in the above activities (i.e., is *independent* of the process) to verify that what the process owners say will be done *is actually being done and documented*.

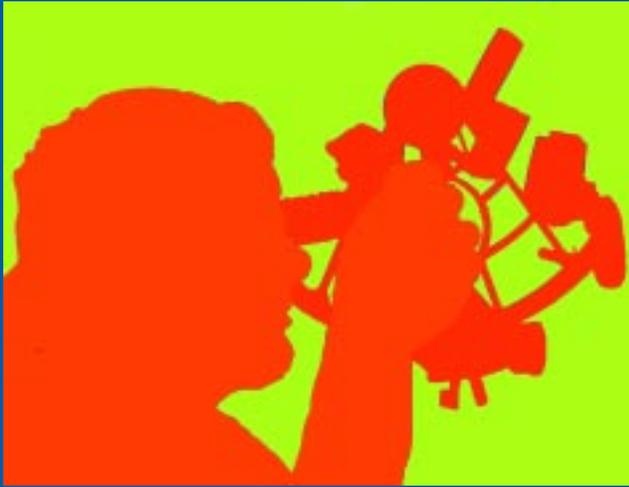
This article explores some of the essential elements of the QSS requirements of the STCW Convention and optional methods and challenges within the United States for meeting those requirements. Some consideration is also given to issues which remain open and will require further consideration at the International Maritime Organization (IMO).

Principal Elements of QSS Under STCW

The STCW Convention contains the following provisions on QSS:

1. Regulation I/8 is entitled “Quality

¹The opinions expressed in this article are the authors’ and do not necessarily represent the official position of the U.S. Coast Guard

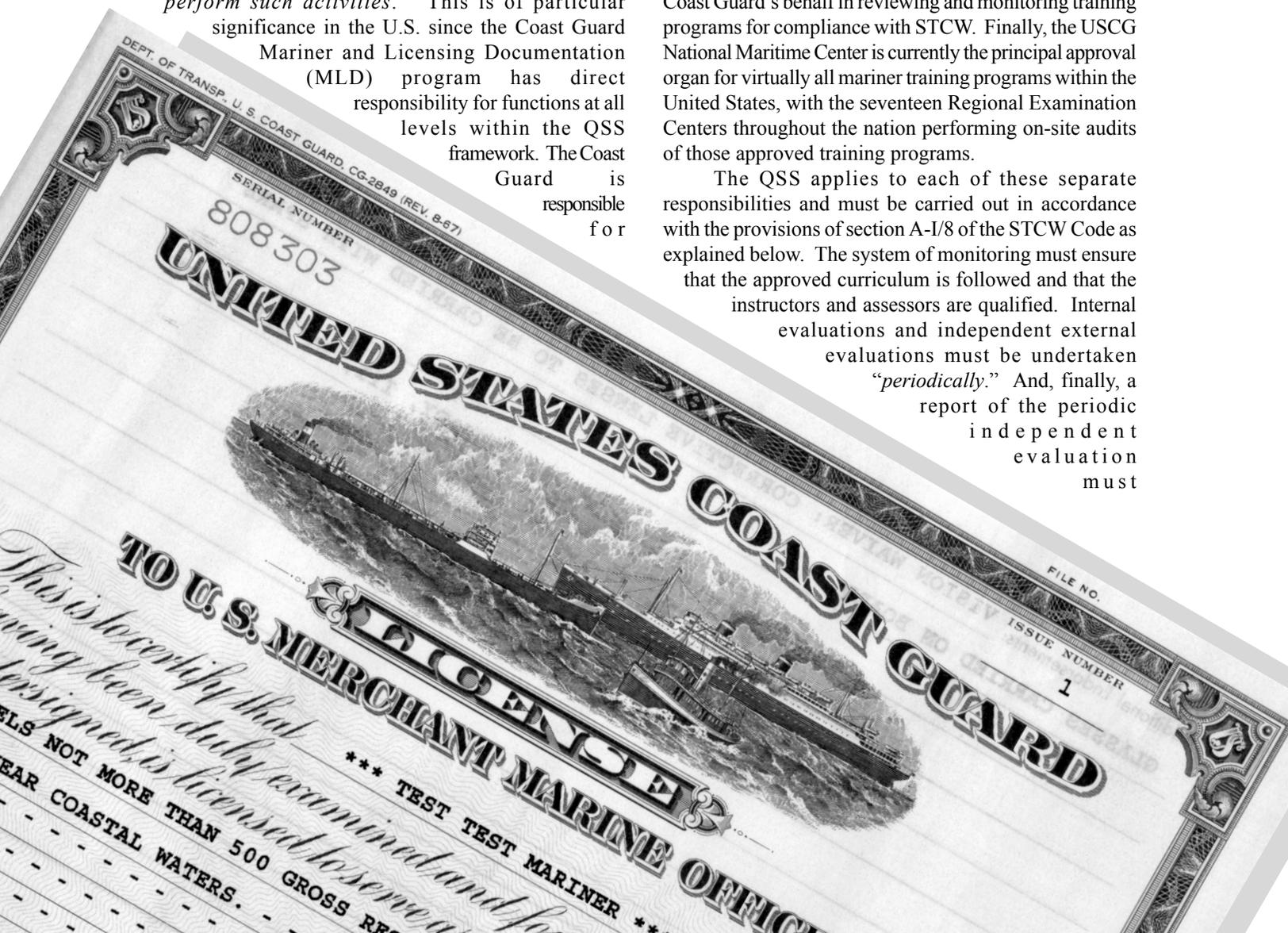


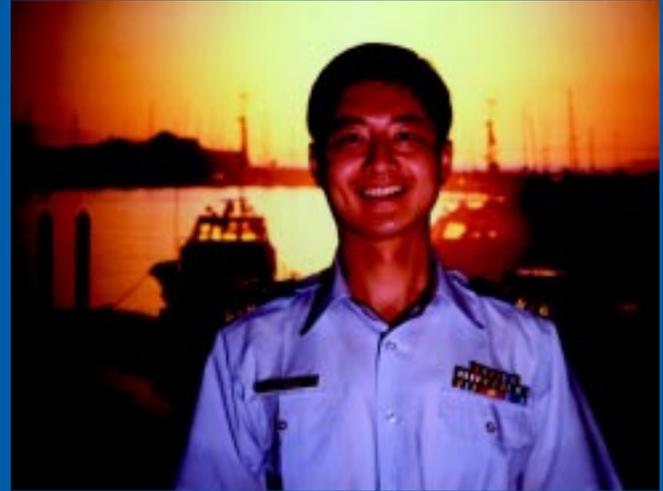
Standards” and requires each Party (i.e., signatory country) to ensure that “*all training, assessment of competence, certification, endorsement and revalidation activities carried out by non-governmental agencies or entities under its authority are continuously monitored through a quality standards system to ensure achievement of defined objectives...*” A quality standards system is also required “*where governmental agencies or entities perform such activities.*” This is of particular

significance in the U.S. since the Coast Guard Mariner and Licensing Documentation (MLD) program has direct responsibility for functions at all levels within the QSS framework. The Coast Guard is responsible for

the administration of the mariner licensing and documentation certification process and is the only entity within the United States which is currently authorized to approve a candidate for certification, administer government-held professional examinations, and issue original and renewal certificates of competency (U.S. and STCW). The MLD program approves and oversees the activities of third party QSS organizations acting on the Coast Guard’s behalf in reviewing and monitoring training programs for compliance with STCW. Finally, the USCG National Maritime Center is currently the principal approval organ for virtually all mariner training programs within the United States, with the seventeen Regional Examination Centers throughout the nation performing on-site audits of those approved training programs.

The QSS applies to each of these separate responsibilities and must be carried out in accordance with the provisions of section A-I/8 of the STCW Code as explained below. The system of monitoring must ensure that the approved curriculum is followed and that the instructors and assessors are qualified. Internal evaluations and independent external evaluations must be undertaken “*periodically.*” And, finally, a report of the periodic independent evaluation must





be submitted to IMO. (As discussed later in this article, the action to be taken at IMO with respect to this report, and the implications for a Party which fails to submit its report, remain to be clarified.)

2. Section A-I/8 of the STCW Code² describes the mandatory elements of a QSS, including:

(a) verification that all internal management control and monitoring measures and follow-up actions comply with planned arrangements and documented procedures and are effective in ensuring achievement of defined objectives;

(b) the results of each independent evaluation are documented and brought to the attention of those responsible for the area evaluated; and

(c) timely action is taken to correct deficiencies.

Additionally, section A-I/8 states that the independent evaluation is to be conducted at intervals of not more than five years, and the report of results is to be sent to IMO within six months of its completion and must include the terms of reference for the evaluation as well as the qualifications and experience of the evaluators. As noted above, it is also required that the systematic monitoring arrangements include internal quality assurance evaluations to ensure all defined objectives are being achieved.

3. Section B-I/8 (the non-mandatory guidance section of the STCW Code) provides a more detailed model for a quality standards system, for the conduct of the independent evaluation, and for the contents of the report to be prepared by the evaluation team.

Options for U.S. Implementation of STCW QSS Requirements

In implementing the 1995 STCW amendments, the Coast Guard had to address the QSS requirements on three different levels:

(1) at the level of the many non-governmental organizations and entities which conduct STCW-related

training and/or assessment activities;

(2) at the level of non-governmental organizations which provide monitoring services at a cost; and

(3) at the level of governmental (i.e., Coast Guard) activities which are themselves subject to QSS oversight under the STCW Convention. Each of these levels raised slightly different policy issues and concerns.

Historically, the Coast Guard has provided a limited form of QSS under its course approval process. This process has been retained as one means of meeting the minimum QSS requirements under STCW. On the other hand, many of those who are involved in this process have questioned whether it is the most efficient use of government resources, particularly when QSS services are available from non-governmental sources.

In order to provide an option for those companies and training institutions who either already are academically accredited or would prefer to operate under a comprehensive quality system, the concept of a “Coast Guard-accepted QSS” has been put in place. Navigation and Vessel Inspection Circular 7-97 provides detailed guidance for how an entity can be recognized as being a CG-accepted QSS. Currently, four organizations have received this recognition, namely: American Bureau of Shipping, Det Norske Veritas, Lloyds Register, and the American Council on Education. These organizations must have their own “external and internal auditing procedures” and are subject to oversight by the Coast Guard.

Currently, very few training institutions have used these QSS organizations to review and monitor their STCW courses as “Coast Guard-accepted” training. In part, this is likely due to the long-standing role of the Coast Guard as the principal approval authority for many courses

² The STCW Code is the supporting manual which sets out technical details associated with each of the regulations in the STCW Convention. The Code is divided into two parts – Part A for mandatory provisions, and Part B for helpful guidance in interpreting Part A.



required to meet separate U.S. regulatory requirements, or where courses are to be offered in lieu of the USCG professional examination for a particular qualification, or where the course may be used as a substitution for some of the required sea service experience. Many of the training institutions offering such courses now also offer STCW compliant courses and do not desire to operate under two different quality management regimes. Thus many have continued to request direct Coast Guard approval of courses offered solely to meet STCW qualification requirements. It is worthwhile to note that the Federal Communications Commission issues the U.S. certificates for persons meeting proficiency requirements associated with marine radio communications under the Global Maritime Distress and Safety System (GMDSS), but only the Coast Guard and CG-Accepted QSS organizations currently approve/accept U.S. GMDSS training courses. The Coast Guard issues STCW certificates for GMDSS on the basis of FCC certification coupled with an individual's compliance with STCW training.

As experience is gained with the use of Coast Guard-accepted QSS's, the Coast Guard will be evaluating how the use of non-governmental services of this type could be expanded while reducing the role of the Coast Guard in directly approving maritime training programs.

QSS implementation at the six state maritime academies and the federal merchant marine academy presented a special situation since two agencies, the Coast Guard and the Maritime Administration, both play a role in overseeing maritime training at these institutions. While each of the Maritime Academies is an accredited college, it was determined the most practical solution for independent evaluation of their specialized maritime curriculum was a "joint" Coast Guard/MARAD Review Committee and Audit Team, with representation from both agencies, to:

(a) issue "conditional approval letters" on the basis of documentation which each academy submitted to

demonstrate it had accounted for all of the STCW-required areas of knowledge, understanding and proficiency; and

(b) issue final approval letters on the basis of on-site audits to verify the documents accurately reflected the actual conditions at the academies.

[At present, three of the audits have been successfully concluded, and the remaining four are scheduled to take place before the summer of 2001.]

The most difficult level of QSS implementation has been the identification of an independent means of monitoring the Coast Guard's own multiple tiers of STCW-related activities. A great deal of thought has been given to the alternative means of meeting this requirement, taking into account such factors as the cost in dollars and other resources; and the need for independence *from*, as well as expertise *in*, governmental activities associated with maritime training, assessment and certification. The difficulty has not been in getting a genuine commitment to the objective of quality administration by the Coast Guard in how it delivers its services, but rather has been in finding the right mechanism to meet all of the special requirements of the STCW Convention (including preparation of a report to IMO which will potentially include an acknowledgement of U.S. government administration "deficiencies" which need to be "corrected").

To some extent, Coast Guard marine safety activities are already monitored by its own internal processes (e.g., locally through individual unit quality management practices, & nationally by the Quality Assurance Staff within the Marine Safety Field Activities Directorate), and by external bodies including the DOT Inspector General, and the Government Accounting Office (GAO). The Coast Guard's Performance Plan which implements the provisions of the Government Performance and Results Act also has elements which are quite compatible with the STCW QSS requirements. The Coast Guard will be continuing to study the available alternatives, as well as more innovative



approaches, over the next few months, with the aim of establishing a comprehensive QSS by mid - 2001.

Issues which remain open for further consideration at IMO

At the 31st session of the IMO Sub-committee on Standards of Training and Watchkeeping (STW)³ engaged in a prolonged discussion of the need for new guidance on how Parties are to meet their obligation to report to IMO on the results of QSS evaluations. At least provisionally, the Sub-committee has noted that the convention is not explicitly clear about a number of important matters relating to QSS and the reports to be submitted to IMO, including the exact contents of the report, the criteria to be used by panels of competent persons when evaluating the report, the action to be taken by the Secretary-General; or the action to be taken by the Maritime Safety Committee. One major issue expected to be addressed again at the upcoming session is whether a Party which is on the so-called IMO White List⁴ should have its positive recognition placed in jeopardy if it either fails to submit the results of its periodic evaluation of its QSS, or the report is deficient in some fundamental way. Some of those countries that spoke on the issue at STW suggested, however, that, “a report of deficiencies or shortcomings...does not automatically lead to the conclusion that a Party is not giving the Convention full and complete effect.”

The Sub-committee tentatively came to the view that it may be necessary for the Convention itself to be amended to clarify the above matters. The issues are certainly fundamental to the long term integrity of the Convention – at least to the extent the international oversight by IMO is considered to be valid and effective – and such important matters can probably not be left to guidance which could be ignored by some parties while others follow it very precisely. The STW discussions on

QSS will continue at its next session in January 2001; and whatever comes out of that session will also be subject to further debate in the Maritime Safety Committee before it can be formally adopted as an international guideline or standard.

The United States Coast Guard is absolutely committed to giving full and complete effect to the 1995 Amendments to STCW Convention and will remain fully engaged in the international dialogue to assure consistent and meaningful global application of its quality management regime. The Coast Guard’s execution of its QSS responsibilities is not taken lightly. They are a critical element of the agency’s successful implementation of this human factors focused, performance-based approach to mariner qualification. It is our considered opinion that true worldwide adoption will greatly enhance overall mariner competency and their health/well being for safer vessel operations in the 21st century. P

³ Note: STW is a subsidiary body of the Maritime Safety Committee which provides a forum for parties to the STCW Convention to look collectively at how the implementation of the STCW Convention is proceeding and to allow them to agree – through negotiation and compromise — on any needed guidance which might be useful in promoting a uniform and harmonized interpretation and enforcement around the world.

⁴ Note: The so-called IMO “White List” is the short name for a complex process by which a panel of “competent persons” selected from a list of experts nominated by members of the Maritime Safety Committee (MSC) evaluate information communicated by Parties to STCW to determine whether that information demonstrates that the Party concerned is giving the convention “full and complete effect”. If so, the IMO Secretary-General submits a positive report to MSC on Parties which pass this test (but never a negative report on Parties), and the MSC confirms this report. The Parties identified through this process are considered to be on the so-called IMO White List. (As of the time this article was in preparation, the possibility exists that MSC might agree to such a list at its next session toward the end of 2000.)

Taking a Quality Approach

Many companies promote themselves as quality organizations, but what does this statement about quality mean? Most people have various views of what constitutes quality. It can be defined in many ways, but essentially it refers to a degree of excellence. A quality approach, therefore, involves people taking time and initiative beforehand to review their situation, then taking a methodical, well-planned course with all the right players involved, as opposed to an individual or group that haphazardly stumbles into situations. It's a matter of being proactive versus reactive, and a team player versus a soloist.

Recognizing the Role of Safety in a Quality Organization

So what makes these organizations "quality" ones? A key component of a quality organization is a committed focus on safety — quality organizations recognize the importance of safety with its products, its employees, and its customers. But how do these organizations create such a high level of safety and have it echoed by every employee and within every project? Increasing and then maintaining a high level of safety can be a difficult process to implement. To improve safety, a company must first determine a set of core values that revolve around stellar safety initiatives. These values — such as customer focus, employee satisfaction, or results-oriented operations — become the foundation for the desired result of all work. These core values can also be expressed generally in the company's vision statement. With Prevention Through People (PTP), we created a vision statement "to achieve the world's safest, most environmentally sound and cost-effective marine operations, by emphasizing the role of people

in preventing casualties and pollution." This vision is obviously idealistic and open-ended; it was created that way intentionally. A focus on quality demands a constant attempt to achieve the idealistic scenario, and thus this far-reaching vision pushes PTP tasks to the highest level possible.

Implementing Safety Through Cultural Change

Including a strong focus on safety in the company's vision and core values also helps to begin the process of cultural change needed for success. Any type of change in a company or individual's way of doing work can be difficult. People learn to perform tasks a certain way, and they become comfortable with it. To ask people to alter their behavior can be difficult — they must understand and agree with the reasons for change. Referring to the vision and core values creates a company-wide recognition and approval that this change is a smart one. It is a classic example of the trickle-down effect: begin with the overarching vision and core values, which in turn targets senior management focus, which is followed by middle management who introduces the change to the workers, which allows them to incorporate these

How A Quality Organization Improves Safety Through Cultural Change
By Jennifer Blain, Human Element and Ship Design Division, CGHQ

positive changes with the entire company's support.

For improvements to be made, recognizing that a cultural change is necessary is essential. People's thoughts, moods, and beliefs affect performance; changing the company's culture to reflect a higher quality, safer output will positively impact people and thus their performance as well. In fact, "in work organizations, various work-related skills, routines, and habits are

culturally acquired and persist because they fit into valued strategies of action. By performing their work routines, organization members often get positive reinforcement and begin to internalize the routines as *the* way to do their work” (NRC 77).

Implementing a cultural change requires that employees recognize the current operating system isn't perfect, that a change is necessary for improvement, and that



total commitment to a new operating system is required for success. Essentially, everyone in the organization must get involved and support the change. People must see the benefits of this change through improved safety.

Showing Value From Senior Management

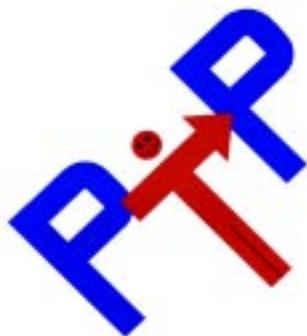
First and foremost, management must take the responsibility to introduce company employees to the reasons for the change, and to facilitate the process as the change occurs. Comments from industry have indicated that senior management must connect personally with mariners, that top management needs to show that the company's safety success is a joint effort. Indeed, safety is part of a business's success — personally and financially. Personally, it directly affects the lives of the employees who must rely on high safety standards to keep them protected from harm. Financially, the company's bottom line also rests directly on safety, since accidents cost a great amount of money and could discourage potential customers. It is therefore vital that everyone in the company understands the high value being placed on safe operations. Some suggestions to show this value include the following:

Increase ship-to-shore relationships. Have shoreside personnel get out to the ships. Management benefits by riding on their vessels, and this helps develop a closeness between management and the mariners. Also, increase the number of times that mariners are invited into the shoreside offices. This allows those typically on the ships to see the offices and meet with the people they usually only communicate with via phone, paper documents, and email. This allows the office people to know the mariners, which can help facilitate administrative processes in the future. Inviting the mariners into the offices shows them that they are important and appreciated.

Increase communication between ships. Companies need to join together to discuss their approaches. Providing a monthly update on new safety initiatives between ships, with informational emails or articles from various magazines may help.

Offer safety awards and incentives. Implement a competitive safety program, with an award for the safest ships. This instills competition among ships for the highest level of safety.

Use training to raise awareness. Internal company training is one of those definite win-win situations. It creates a forum for management and employees to talk with each other on various company issues, and it is the perfect place to discuss company safety initiatives and measures. In this training, management can enforce certain skills and knowledge that the company deems essential for safe operations, as well as share with mariners the company's vision on certain issues. Mariners benefit through the training, and should take advantage of the



time to ask questions to management. Internal company training is a good reinforcement to a company's focus on safety and shows mariners that they — and their safety — are valued. Voluntary training above the mandatory training requirements reflects positively on both the company and its mariners and provides evidence of a cultural shift toward increased safety.

Raising the Level of Excellence

A “quality organization” is, therefore, one that strives to attain the highest level of excellence possible by recognizing the importance of safety with its products, its employees, and its customers. This commitment toward quality is also a highly sought-after criterion for many awards, illustrating the value that a focus on quality can bring to an organization. One example is the Coast Guard's William M. Benkert Award for Excellence in Marine Environmental Protection, which focuses on an organization's commitment to the highest standards of environmental excellence through continuous improvement, innovation, and outreach.

There are also many quality and safety-based standards in the maritime community. The International Safety Management (ISM) Code is a good example, demanding a high level of quality through its focus on

safety from all levels of an organization. Requirements such as safety and environmental protection policies, development of plans for shipboard operations, preparedness, documentation, and continuous improvement create a foundation for safe operations. Compliance with the ISM Code will not automatically create a cultural change within a company, though. The company must completely embrace the changes being made, understand the value of making these changes toward improved safety, and express that value to all its employees.

Improving and maintaining the highest level of safety possible should be a priority for everyone. For some, a cultural change may be necessary. However, cultural change is *not* completely in the hands of senior management. The best place to start is with your peers and your immediate supervisor. Encourage those around you to take a look at current operations and see if there are areas for improvement. Focus on improving safety with a quality approach. Even if your company feels it is operating at the highest level of safety, recognize that maintaining these high safety levels is a continual process. Meeting and maintaining a high level of quality can be a difficult process, but the safety results are worth it. P

¹ National Research Council. *Enhancing Organizational Performance*. National Academy Press. Washington, DC. 1997.

Nautical Queries

Deck Questions

- When removing the cap from a sounding tube on a MODU, the sound of air escaping indicates the tank _____.
 - is full
 - may be partially flooded
 - level has dropped
 - is completely flooded
- A safe water daymark has what shape?
 - Triangular
 - Diamond
 - Circular
 - Octagonal
- Which statement about sailing close-hauled is TRUE
 - If you ease the sheets, you can sail faster and closer to the wind
 - If you ease the sheets, you can sail faster on the same course
 - If you steer closer to the wind, you will slow down
 - If you sheet your sails closer to the centerline, you must bear away from the wind
- In a message sent by flashing light, what group of letters will direct the receiver of a message to repeat the transmission back to the sender?
 - REPEAT
 - RPT
 - RPB
 - UD AA
- The valve on the discharge side of a cargo pump on a tank vessel will usually be a _____.
 - gate valve
 - butterfly valve
 - globe valve
 - check valve
- If absolutely necessary, the best way to land on a beach in a motor lifeboat is to _____.
 - run as fast as the boat will go and keep the sea on the stern
 - secure the engine, put sea anchor over the bow, put out the oars, use sweep oar and back onto beach
 - go in "under oars" and put out the sea painter
 - put the sea broadside and let the boat drift ashore
- The best information on the location of the blocks when drydocking a vessel is contained in the _____.
 - shell expansion plan
 - docking diagram
 - ship's docking plan
 - general arrangement plan
- Your vessel is equipped with totally enclosed lifeboats. Which statement is TRUE when the boat is enveloped in flames?
 - The ventilators will automatically close by the action of fusible links
 - The motor takes its air supply from outside the lifeboat to prevent asphyxiation of the crew
 - A water spray system to cool the outside of the boat is operated by a high-volume manual pump
 - A compressed air tank will provide ten minutes of air for the survivors and the engine
- Under the U. S. Aids to Navigation System used on the Western Rivers, aids to navigation lights on the right descending bank show _____.
 - white or green lights
 - white or red lights
 - green lights only
 - white lights only
- That center around which a vessel trims is the _____.
 - tipping center
 - center of buoyancy
 - center of gravity
 - turning center

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

Nautical Queries

Engineering Questions

- Higher than normal temperature air passing through the intake of a diesel engine will result in _____.
 - greater overall efficiency
 - greater fuel economy
 - lower horsepower
 - lower compression ratio
- The distance between a generator and its load is 100 feet. What would be the approximate total voltage drop across a two wire supply cable if the current were 5.5 amperes and the resistance of the wire were 2.525 ohms per 1,000 feet?
 - 0.5 volts
 - 1.38 volts
 - 1.90 volts
 - 2.78 volts
- The most common cause of scale formation in an auxiliary boiler is _____.
 - concentrations of calcium sulfate in the boiler water
 - fuel oil in the feedwater
 - improper treatment of the feedwater with calcium sulfate
 - excessive feedwater alkalinity
- A pyrometer is generally used to measure _____.
 - grains of moisture per cubic foot of air
 - salinity concentration of condensate
 - stack temperature
 - level of a fluid in a tank
- A hydrometer indicates specific gravity by comparing _____.
 - density of a substance in water with the density of the same substance in air
 - differences in weight between water and the liquid measured
 - mass of substance measured with the density of the same substance
 - buoyancy of an object in water with the buoyancy of the same object in the liquid being measured
- A direct current passing through a wire coiled around a soft iron core is the description of a simple _____.
 - magnetic shield
 - electromagnet
 - piezoelectric device
 - electromagnetic domain
- The purpose of the commutator and brushes on a DC generator is to _____.
 - transfer generated direct current voltage from the armature to the line
 - convert the alternating voltage generated within the armature to a direct voltage
 - provide a sliding contact method to excite the field
 - reduce sparking between the armature and the carbon brushes
- In the operation of a flash type evaporator equipped with air ejectors, the air and noncondensable gases are evacuated directly from the _____.
 - first stage flash chamber
 - second stage flash chamber
 - first stage after condenser
 - second stage distilling condenser
- Under normal conditions, the refrigerant enters the compressor in an operating refrigeration system as a _____.
 - liquid
 - dry saturated gas
 - wet saturated gas
 - superheated vapor
- The operation of machining a uniformly roughened or checked surface on round stock in a lathe is called _____.
 - checkering
 - crosshatching
 - knurling
 - swaging

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



Mariner's Seabag

JOHN W. BROWN COMES TO LIFE

By ENS Craig Olesnevich & CWO Rick Minnich

This past July, history came alive for Marine Inspectors from Marine Safety Office Toledo and several other MSOs as the World War II Liberty Ship *John W. Brown* arrived at Toledo Ship Repair for a major hull riveting. In addition to gaining valuable experience in the vanishing art of riveted shipbuilding, the Coasties acquired a greater appreciation of the important role that America's Merchant Mariners played during the war.

The *John W. Brown* is one of only two World War II-era Liberty Ships remaining from a fleet which numbered in the thousands by the end of the War. While the Dec. 7, 1941 attack on Pearl Harbor marked the United States' official entry into the war, years earlier President Roosevelt recognized the need to keep our British allies supplied with war materiel. Enter the Liberty Ship program.

On Jan. 3, 1941, President Roosevelt announced a \$350 million shipbuilding program. The program would involve building, in just three years, the equivalent of more than half the number of the pre-war merchant ships of the world. The Liberty cargo ships were designed to be built as quickly as possible in order to sail in support of the War effort. The history of the *John W. Brown* began May 1, 1941, when the Bethlehem-Fairfield Shipyard in Baltimore was awarded a contract to build 12 liberty ships, among them Hull number 312. On July 28, 1942 the keel of Hull 312 was laid. Hull 312 was named for John W. Brown, a well-known labor leader. His most significant contribution to the cause was his column "Workers Should Know" in the Shipyard Worker, the Industrial Union newspaper. June 19, 1941 John W. Brown died from an accidental discharge of his rifle. His spirit still lives on and John W. Brown will remain immortal in the ranks of American labor. At 12:15 p.m., Sept. 7, 1942 (Labor Day) Hull number 312 was launched!

During the War, the *John W. Brown* was considered a "lucky" ship. She transported tons of equipment, supplies, and of course, soldiers across the Atlantic. Despite her combat record and numerous near misses, she was never seriously damaged. After the War, the Maritime Commission loaned her to the City of New York where, for the next 36 years, she served as a floating high school. In 1982, a non-profit organization, Project Liberty

Ship, selected the *John W. Brown* for restoration because she was in such good condition, and her layout makes her ideal for use as a museum ship. The ship is crewed by over 70 mariners, all of whom are volunteers, and many are World War II veterans!

Project Liberty Ship has worked to restore the vessel to full operating condition, employing her not only as a dockside museum, but also for short cruises where passengers can experience, briefly and much more safely, what life was like during a Trans-Atlantic convoy in the early 1940s. Public Law exempts the vessel from many modern day passenger ship regulations, however, she is still subject to certain safety regulations. Lifesaving gear, fire fighting equipment and the 140-ton triple expansion steam engine must be inspected regularly, and periodic hull exams are still required.

The vessel is homeported in Baltimore, Md., and Officer in Charge Marine Inspection Baltimore, along with Headquarters' Traveling Inspectors, have handled most of *John W. Brown's* inspection issues. The *John W. Brown* came to Toledo this summer because Toledo Ship Repair is one of the nation's few remaining shipyards that is capable of handling a major riveting job. Over a period of six weeks, skilled craftsmen replaced over 14,000 rivets in the 58 year-old hull. Marine Inspectors spent over 200 man hours diligently monitoring the work, which included an extensive internal structural exam. Internal structural exams are among the toughest tasks Marine Inspectors perform. Contorting their bodies through dark, dirty, maze-like 36-inch high inner-bottom tanks, they look for upset plating, structural deformations, deteriorated steel and other problems which could imperil the safety of the vessel. While some new steel was added during this visit, overall the hull was in surprisingly good condition after 58 years! After re-floating the ship, the inspectors ensured the historic vessel's lifesaving and fire fighting equipment, and engineering plant, were in proper working order. The vessel then embarked on a good-will tour of U.S. and Canadian cities on the Great Lakes.

Marine Inspectors who participated on this project said it was one of their most rewarding experiences. Not only did they get valuable training in the art of ship riveting, more importantly, they got to meet and work with several of the *John W. Brown's* original crew!

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CWO Rick Minnich inspects some of the rivets that will be replaced on the *John W. Brown*.

USCG photos by ENS Mike Block



The *John W. Brown* dwarfs Station Marblehead's 47-footer along the Toledo waterfront.



(See Mariner's Seabag on page 53 for story)

CWO Rick Griffin takes a turn at driving a rivet on the *John W. Brown*.