

Marine Safety Council

PROCEEDINGS

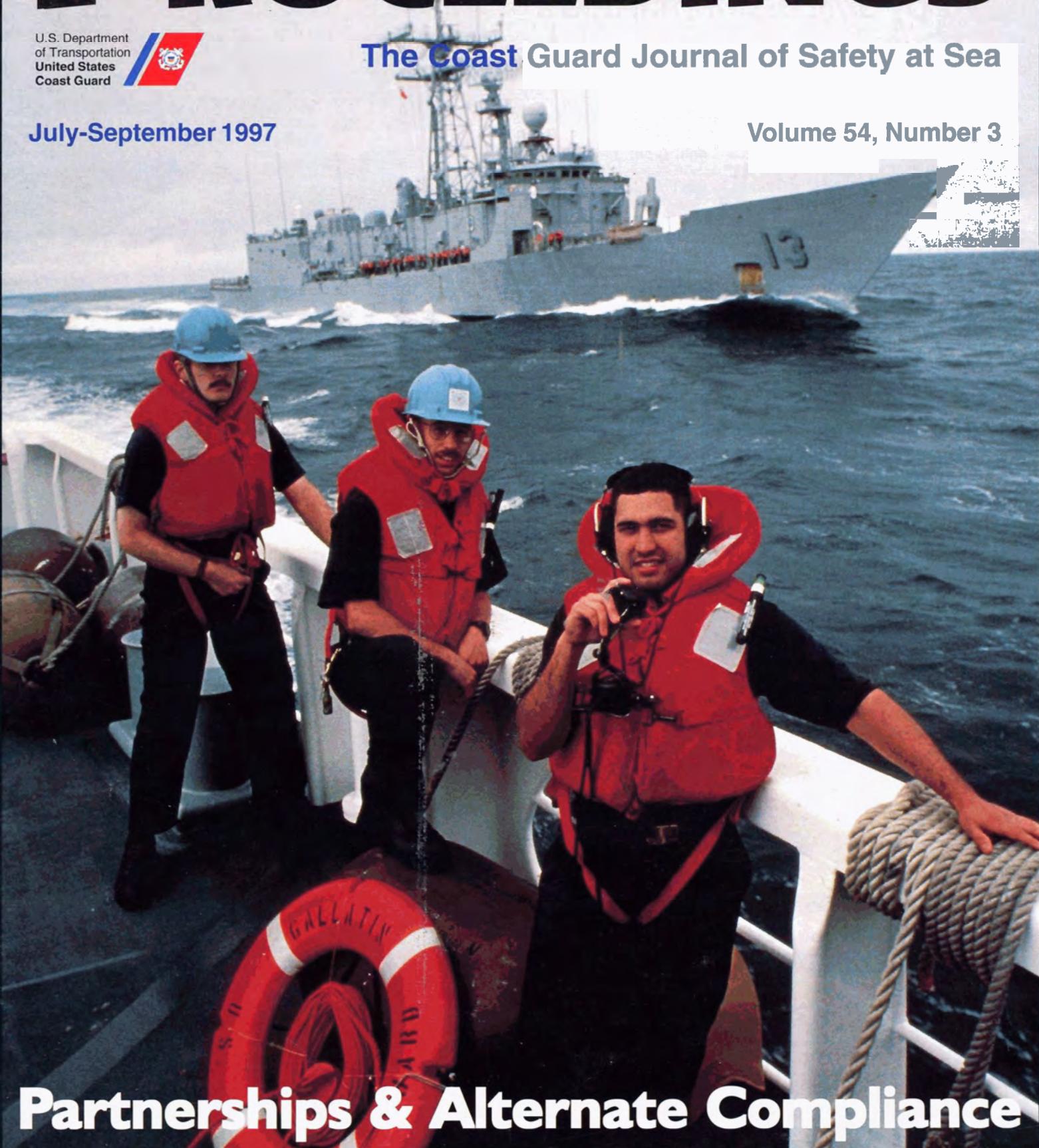
U.S. Department
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Volume 54, Number 3



Partnerships & Alternate Compliance

PROCEEDINGS

of the Marine Safety Council

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Photo by Roger Williams

View from the Bridge

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



Partnering: A Time of Reflection & Renewal

Much has been said in recent years on the use of Partnerships. Perhaps, for many in industry and government, though, the term “partnership” is analogous to new paint on a classic car; it is likely you have been “partnering” for years whether you knew it or not. What is new is that many of the original reasons and decisions for partnering in the first place may have changed, and thus require a thoughtful reflection and renewal of your role and relationships. In fact, it is quite probable that the scope, missions and responsibilities of the involved parties may have lost their meaning or focus and other “external” factors, like technology, may have also changed the picture, figuratively speaking.

For example, under the auspices of our Business Plan for Marine Safety and Environmental Protection, local Coast Guard Captains-of-the-Port are continuing their ongoing development of meaningful partnerships with various civic, industry and local/state and federal officials around the nation. In doing so, they are working in-concert with their valued Area Committee partners to implement more-informed, risk-based decision-making, while seeking to establish more-formal arrangements where all parties are aware of their responsibilities and expectations.

Yet, partnering merely for the sake of partnering is not advised, or even wise. As successful entrepreneurs in the private sector know, overextending oneself simply for the sake of appearing “with the times” can often result in unfulfilled promises, missed opportunities or even discontent. Rather, we in the private and public sectors should leverage our resources by fully embracing those initiatives which provide the “best investments;” those initiatives that provide the greatest return on our investment of time, people, funding and with resources. There are many ways to address a challenge, resources are too scarce and we cannot pursue them all.

The American public demands clean waters and safe, cost-effective waterborne transportation. As a former District Commander, and now, as Assistant Commandant for Marine Safety and Environmental Protection, I well realize that balancing these many delicate priorities can be quite challenging to say the least. To my good fortune, I realized early-on that the synergy created by a unified and shared approach with our many partners in the public and private sector make these challenges (and their successes) even more rewarding.

BY THE WAY

EDITOR'S POINT OF VIEW

By Cheryl Robinson

Proceedings magazine, as always, strives to keep you informed about all aspects of the maritime industry.

On a daily basis, I receive a variety of comments and calls. Recently, I received a call from Carleen Lyden-Kluss. She said, "The Women in Shipping Conference is coming up. You know on October 16th, tens of thousands of women with merchant marine and military heritages will converge on Washington, DC to participate in the events surrounding the Women in Military Memorial Dedication. Will I see you there?"

Out of habit more than anything else, I looked on my calendar. When I knew that I would be there, because I had written an article on the Women in Military Memorial—a ten year project to recognize the contributions of women in the armed forces—back in 1995 for Kirtland Focus newspaper. However, at that time, I had no idea I would be a woman working in shipping. The Women in Shipping Conference (October 16-18) will focus on specific maritime issues—from a woman's point of view.

The Coast Guard will be represented by LT Cindy Stowe whose topic will be "Port State Control as Seen by Registries and Port States"; and by Ms Margy Hegy whose topic will be "Creating a Better Future Today: Infrastructure, Investment and Management." Both of these women are experts in their field, as well as experts within the Coast Guard.

Along with thousands of other women, I am looking forward to enjoying all of the planned events and meeting Ms. Lyden-Kluss.

Photo Credit Omitted

We inadvertently omitted the photographers credit from "Photos Show It All" in Volume 54, Number 2, pages 24 and 25. The photographer is Petty Officer Darryl Wilson, Seventeenth Coast Guard District, Public Affairs Unit, Juneau, Alaska.

NEXT ISSUE:

"GENERAL MARINE INDUSTRY INFORMATION"

UPCOMING ISSUES:

"ANNUAL INDEX/SURVEY & REORGANIZATION ANALYSIS"

"NATIONAL POLLUTION FUNDS CENTER"

"REGULATORY REINVENTION & STANDARDS DEVELOPMENT"

"HAZARDOUS MATERIALS"

USCG/American Bureau of Shipping Based Alternate Compliance Program

The History of the US Supplement to the ABS Rules for Steel Vessels on International Voyages

By Robert Vienneau, ABS

In response to the President's Regulatory Reform Initiative, the USCG initiated a program of Maritime Regulatory Reform. The program was intended to level the playing field and allow US Flag operators to be more competitive in the international arena. A part of this reform is the USCG's American Bureau of Shipping (ABS) based Alternate Compliance Program (ACP). ACP can be attributed to two USCG goals:

- Increasing the international competitiveness of the U.S. maritime industry by reducing the regulatory burden while maintaining equivalent levels of safety.
- Redistributing USCG resources to focus more attention on foreign flag ships in U.S. waters.

In the recent past, the ratio of foreign flag to U.S. flag ships calling at U.S. ports was 14 to 1. The ratio of USCG inspection labor hours spent on foreign flag vessels compared to U.S. flag vessels was 1 to 9. Improving safety required a redistribution of resources to address the large number of foreign flag vessels. Some of these vessels did not adequately meet safety standards. ACP is part of this effort to refocus resources.

ACP is the result of several years of review, training and controlled surveys by ABS and the USCG. The vision was to find common ground in their mutual missions of the protection of life and property at sea. The task was to determine the equivalent sections of international regulations, the Code of Federal Regulations (CFR) and the ABS Rules. The product was the US Supplement to ABS Rules for Steel Vessels. The Supplement contains the technical and inspection differences to be reviewed during plan approval, new construction and the supplemental surveys that need to be done to verify compliance with the CFRs. This is a complex

process that is simply defined by the following equation:

$$\text{CFRs} = \text{ABS RULES} + \text{IMO} + \text{US SUPPLEMENT}$$

With the equation in place, the USCG then delegated authority to ABS, under a Pilot Program defined in the Navigation and Vessel Inspection Circular No. 2-95. ABS was authorized to survey ABS Classed vessels for all the surveys required by:

- The International Convention for the Safety of Life at Sea, 1974, as amended, and
- The International Convention for the Prevention of Pollution from Ships 1973/78, as amended.

Following the highly successful two year pilot program, the USCG and ABS agreed to formally open enrollment in the Alternative Compliance Program for internationally trading, US flag ships effective 1 August 1997. Under the terms of the program, ABS Surveyors will be empowered to act as agents of the USCG in issuing relevant documents to support the issuance of a full term Certificate of Inspection. Although ABS will undertake the necessary surveys and inspection, the USCG will continue to issue the final certificate. The pilot program has proven to be a mutually rewarding experience for both ABS and the USCG, with US Flag shipowners being the ultimate beneficiaries.

A great deal of unnecessary duplication has been eliminated resulting in significant cost savings for shipowners with no reduction in the level of safety standards which continue to be applied to their vessels. An additional significant benefit of the program has been the close working relationship which has developed between ABS and the USCG. Perhaps the greatest success of the Pilot Program has



A Port Engineer's Nightmare: 18 surveyors and 6 inspectors coming aboard.

been that it has allowed USCG Washington to closely observe how a Classification Society performs its daily business. This has allowed the USCG to gain confidence in ABS and in the International Association of Classification Societies.

The other significant benefit for US flag owners is the process of harmonization of USCG requirements with international convention standards, particularly those contained within SOLAS and MARPOL and ABS Rules. The process is going quite smoothly. The entire US Flag fleet will benefit from the harmonization of these standards as has been clearly demonstrated during the ACP Pilot program.

Enrollment of a vessel within the program is simple. An owner need only submit a letter with the normal form of request for inspection. The program will remain voluntary and an owner may elect to withdraw from the program at any time. However, the clear operational and financial savings, which were identified during the pilot, are expected to encourage participation.

The offshore portion of the Supplement is under review and it is planned that from 1 November 1997,

ACP will also be available to owners of MODUs. Both ABS and the USCG continue to explore other areas to which this form of government-industry partnership can be applied. An example, is an agreement between ABS and the USCG that allows ABS to do the full COI inspection of vessels in remote locations, such as Nigeria, where the provision of a USCG Inspector would be both expensive and dangerous to the inspector.

The USCG now recognizes compliance with the ABS Rules, the US Supplement and the IMO Conventions as an acceptable basis for issuing a COI. This also covers acceptance of vessel repairs or manufacture of components for US flag vessels. Before the COI is finally issued to an ACP enrolled vessel, the USCG requires that all appropriate class, statutory and supplemental surveys are satisfactorily completed.

In preparation for the formal roll-out of the program, ABS is cooperating with USCG to run a series of training and familiarization courses for ABS Surveyors at the USCG Training Center in Yorktown. This follows an earlier indoctrination training program conducted in Yokohama, Singapore, London, Rotterdam and all major US ports.

As practiced by both the ABS and USCG staffs, the Supplement is a diminishing document. This has already been demonstrated by the reduction in size between the first and second issues of the Supplement. The third draft has been reviewed and parts of the document have been further reduced. The reductions are in the electrical regulations.

Those who participate in the program will now need only the Supplement, the Navigation and Vessel Inspection Circular (NVIC) 2-95 revised 1 Aug 97 and the Marine Safety Manual chapter 32 to be able to work with and comply with the process.

The Supplement is basically a list of items of USCG Marine Transportation concerns that are not addressed in a classification society's Rules or in International Regulations. The reduction of the Supplement is accomplished by either Regulatory Reform, Rule Development or as SOLAS Interpretations to IMO. The NVIC requires that the USCG be members of the classification society's Technical Committees. In that manner Rules may be made or changed. The entire Marine Community is also on these committees and have the same opportunity to make or change Rules. Some of the

items in the present Supplement are concerns to the USCG and are to be raised at IMO. The understanding is that concerns that can not be satisfied through Rule Development, will be raised at IMO. If they are not ratified at IMO, then the USCG reassess their position. Other Administrations also have Supplements which they refer to as Special Instructions. These Special Instructions have the same validity as the CFRs.

The CFRs are not used in ACP. In ACP things are not done the way the USCG has always done them. The US Supplement to the ABS Rules contains the parts of the CFRs that are not satisfied by the ABS Rules or IMO. There is no default to the CFRs. The process is to be measured by the Supplement, The Rules and by IMO Requirements. If during a boarding or during the COI attendances, the Inspectors find just cause to make an "Inspection", then the ABS Processes, the Supplement, The NVIC 2-95 (revised 1 Aug 97) and the new Chapter 32 of the Marine Safety Manual become the measuring points to determine if ABS has done their job right.

The U S Supplement to ABS Rules history begins in August of 1993. A project was initiated by

TABLE 1

Rule-making	Status	Effect
Inspected & Uninspected Commercial Vessels: Removal of Unnecessary and Obsolete Regulations (Prong 1)	Final Rule: 18 Sep 95	Deleted regulations where no adverse public comment was expected: requirements for nuclear vessels, ocean incinerator ships and ocean thermal energy conversion plant ships.
Adoption of Industry Standards (Prong 2)	Final Rule: 23 May 96	Removed and amended unnecessary provisions in CFR; adopted appropriate industry standards and practices in place of CG specific requirements
Harmonization with International Safety Standards (Prong 3)	NPRM: 19 Nov 96	Removes superfluous and outdated requirements; aligns the CFR more closely with international standards.
Electrical Engineering Requirements for Merchant Vessels (Sub J)	Final Rule: 4 Jun 96	Purges obsolete regulations; harmonizes electrical engineering regulations with SOLAS; revises certain prescriptive electrical equipment design, specification, and approval requirements and replaces them with performance-based requirements that incorporate international standards.

Section	95 Supp. Cites	Prongs 1-2 Deletions	Reduction %	Sub J Deletions	Cumulative Reduction %	Prong 3 Deletions	Cumulative Reduction %	Remaining Cites
I	54	23	43	3	48	5	57	23
II	73	22	30	0	30	1	32	50
III*	8	2	25	0	25	0	25	6
Total	135	47	35	3	37	6	41	79

*The number of cites in this section excludes 33 CFR regulations that apply to all ships.

TABLE 2

the USCG and ABS to develop a U S Supplement by comparing the Code of Federal Regulations (CFR) to the ABS Rules and international requirements. The comparison was done on a line-by-line basis and identified over 240 cites where the combination of ABS Rules and international conventions did not meet the specific requirements of the CFR. In January 1995, the first Supplement was issued by ABS for use in the ACP Pilot Program. This Supplement contained approximately 135 cites.

In an effort to reduce this regulatory burden and as a part of the previously mentioned President's Regulatory Reform Initiative, the USCG conducted several rule-makings to address obsolete regulations, unnecessary provisions and improve the harmonization between the regulations and industry and international standards. These rule-makings are summarized in Table 1.

The subsequent reductions in the Supplement from these efforts can be seen in Table 2. (In examining the reductions, it is more appropriate to reference the cites instead of the number of pages. Page reductions can be misleading due to incorporation by reference.) Please note that the reductions from the Prong 3 rule-making are not finalized since the rule-making is still open.

Following the completion of the Prong 3 rule-making, **over 40%** of the original Supplement cites will have been deleted through various means.

The USCG is developing policy guidance for the further development of Supplements. This project will be based upon the development of USCG procedures for the development of Supplements for other class societies that may be eligible to participate in the ACP at a future date. Specifically, USCG is attempting to take a systems

approach to the two safety networks that are being compared. The CFRs and the combination of class rules and international regulations (such as SOLAS and MARPOL). By using a systems approach a comparison of these two methods will ensure that equivalent levels of safety are achieved without requiring a micro-analysis of the class rules or a line-by-line comparison of regulation cites. The USCG believes, in general, that the combination of international regulations and certain classification society's rules (such as ABS's) provide an adequate level of safety to the system of regulations contained in the CFR.

USCG plan includes breaking apart the Supplement to clearly identify those cites that belong in each of the following categories:

- SOLAS Interpretations
- Statutory Requirements
- Regulations that Apply to All Ships
- Other (generally additions to ABS Rules or SOLAS)
- Miscellaneous (such as arrangements)

SOLAS Interpretations - It is important to note that the regulations in SOLAS frequently leave details and implementation specifics up to the Administration. In fact, the convention expects that each nation's Administration will define these items for their implementation. These are called *SOLAS Interpretations*. The USCG is responsible for defining these interpretations and is embarking on a project at the International Maritime Organization to develop harmonized interpretations and eliminate vague wording from the convention.

Statutory Requirements - There are certain items that are mandated by law and included in the CFRs. These items will be clearly identified and reviewed for relevance. If they are obsolete or unnecessary, the USCG will pursue a change to the law to eliminate them.

Regulations that Apply to All Ships - These are Title 33 CFR cites found in the current Section III of the Supplement. These regulations mostly cover navigation safety and pollution prevention requirements and are applied uniformly to *all* ships - U.S. and foreign flag.

Miscellaneous - There are a few items that may not neatly fit into the other categories such as crew accommodation arrangements. These items will be identified and reviewed for relevance.

Other - This group is made up of *additions* to ABS Rules or SOLAS. Remembering that the Supplement was originally developed through a line-by-line approach, this group of items contains additions that the CFR requires but class rules do not. Relying upon a systems assessment of the combination of class rules and international

regulations to examine critical safety items will allow a determination of whether or not that system adequately covers the item.

An important task is to identify the critical systems and items in ship design, construction, and maintenance requirements. This activity involves gathering expert opinion.

- For new supplements, this will form the basis for review of the safety system of class rules and international regulations.

- For the U.S. Supplement to ABS Rules, the combination of class rules and international requirements can be evaluated by examining the additions in light of what is considered a critical item. Items that have been added via the line-by-line approach but do not significantly contribute to safety be deleted from the Supplement.

- In both cases, any items that are found to be critical will form the basis for U.S. actions at the International Maritime Organization (IMO) and with the International Association of Classification Societies (IACS) to bring their respective standards up to an appropriate level and eliminate any gap between U.S. and foreign flag vessel standards and continue to improve foreign flag vessel standards.

As mentioned earlier, one of the USCG's goals with the ACP is to redistribute resources to focus more attention on foreign flag ships in U.S. waters. Table 3 shows the dramatic decrease in hours spent by USCG personnel in conducting vessel safety inspections on ACP ships through the first half of 1996. Note that the ACP pilot program started in February 1995. A ship specific example is the M/V PRESIDENT JACKSON, prior to ACP, the 2 year cycle time for this vessel included 119 man-hours of USCG inspection. Since the vessel joined the ACP in late 1995, only 24 USCG man-hours have been needed aboard the vessel.

At this time there are some items that will be additional to the normal ABS procedures. The USCG has been making an effort to harmonize with International Regulations. As the harmonization continues, the differences will be diminished. The principle change will be in the responsibilities of the attending Surveyor. The Surveyor is an agent of the USCG when doing a survey under ACP. The



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Photo by
Ronnie Williams

	1994	1995	1996*
Port Safety Hours	3697	1785	262
Marine Inspection Hours	13208	9418	13
Total	16905	11203	275

* Partial year (Jan-June 1996)

TABLE 3

Surveyor now has two bosses; the traditional ABS responsibilities, and a responsibility to the OCMI of the Port. The Surveyor has the same responsibilities as a USCG Inspector to keep confidential all information given in confidence by the crew. The Surveyor also has the responsibility to follow up on crew concerns about personnel safety, the fitness of the "Vessel To Proceed" and the potential of a threat to the environment.

It still is the responsibility of the vessel's Master to report Marine Damages, as defined in 46 CFR 4.03 to the cognizant USCG Officer in Charge Marine Inspection (OCMI). ABS takes the lead in determining "Fitness To Proceed" and is obliged to share this with the local OCMI. If the vessel's damages are severe enough to question the "Fitness To Proceed", or if the vessel presents a hazard to navigation, or if the vessel poses a pollution threat to the environment; such as a Class I structural failure, then the local OCMI will take precedence. This decision must be co-ordinated with the Surveyor in Charge.

US Flag registry is unique in that the CFRs require certain vessels to carry a Certificate of Inspection (COI). The absence of a current COI will prevent a vessel from trading. Under ACP, ABS acts as agents of the USCG and is authorized to conduct surveys and issue the relevant documents that will support the issue of a full term (COI). The USCG, in delegating surveys to ABS, still retains the ultimate responsibility that vessels meet

regulatory requirements. Crucial to fulfilling this

responsibility is active and viable oversight by the USCG of surveys conducted by ABS on behalf of the USCG. The foundation of this oversight is ABS's World Wide ISO 9001 Certified Quality System. As with any successful quality system, it is a smoothly functioning in-service process verification scheme. It provides a source of continuous and timely opinion related to the effectiveness of the processes in place to meet customer requirements. An added benefit is the information it provides to both clients and management to prove that controlled work is being accomplished.

In this respect ABS's ISO certification is very important in facilitating the delegation to ABS of USCG vessel inspection. It provides a framework that will be used as the USCG oversight program for delegated responsibilities. Oversight will consist of internal and external audits of ABS by the USCG. It will also consist of annual boardings of the vessels to conduct renewal and mid-period COI inspections. The boardings will be similar to those done in Port State Inspections and will include a fire drill, a boat drill and a review of documentation on the vessel. It will be a Human Element Inspection and not a material inspection. Therefore, the Officers in Charge of Marine Inspection will rely on the ABS status for their information about the suitability of a "Vessel To Proceed."





All management systems are supported by processes. However, it is when something goes wrong that the processes are sometimes found lacking. Many companies also have Crises Management Procedures. These Crises management procedures are what keeps people out of trouble. In the spirit of managing the unique and infrequent questions, we have made up an "ACP DECISION MANAGEMENT MATRIX." The legend on the matrix is as follows:

SITUATION TO BE CONSIDERED This could be any number of things from what do we do when the life boats are missing to who gets copies of reports.

SURVEYOR This is the ABS Surveyor on the vessel.

INSPECTOR This is the USCG person who is either monitoring the vessel or is in joint attendance with the Surveyor.

SURVEYOR IN CHARGE This will be the Lead Surveyor for the district. This person can have many titles and is responsible for the activities of the Surveyor under his jurisdiction.

OCMI This is the USCG person responsible for the activities of the USCG in the same jurisdiction of the SURVEYOR IN CHARGE.

SURVEY MANAGER This person is the Survey Manager for ABS Americas and has world wide responsibility for Surveys under ACP. This person is presently located in Houston, Texas.

VP ENGINEERING This person is the VP for ABS Americas Engineering and has world wide responsibility for engineering reviews done under ACP. This person is presently located in Houston, Texas.

USCG LIAISON This is the USCG Officer assigned to ABS Americas, Houston, Texas. This person stays in contact with the SURVEY MANAGER and the VP ENGINEERING.

ABS CORP. This is the Corporate Office of ABS in New York city. It is the final court of appeal for answers that can not be sorted out at the Survey Manager or VP Engineering level. It is also the home of the ABS Research and Development group. When unusual conditions are found by the Surveyors, the R&D Group are informed so that

appropriate Rule changes can be made and notices can be distributed to sister vessels.

USCG WASH. This is the main office of the USCG that monitors the ACP activities world wide.

The decision process is intended to take place at the lowest level of authority possible. This puts the decision on the vessel to the Surveyor. There are several instances where the Surveyor may not have the authority to approve a situation. However, it is always the Surveyors responsibility to recommend a repair and to also approve any repairs or temporary situations. The legend for authority is shown as follows:

R This means recommends. That is normally the responsibility of the Surveyor. ABS, as a technical society, can only act through Surveyors or others who are believed to be skilled and competent.

A This means approves. The person who approves may not always be the person who recommends. Approval is usually asked for when a unique situation is being dealt with; such as a major damage affecting fitness to proceed, or a request for an Under Water Survey in Lieu of Dry-docking, or a certificate extension.

I This means informed. While some persons do not actually participate in the recommendation and approvals of repairs, they may have a management responsibility to follow through on unique situations.

C This means consults. Consultation is also a form of mentoring. As vessels become more sophisticated no one should be embarrassed to ask for advice. Consultation is particularly necessary when considering an unusual condition of damage, perhaps due to design.

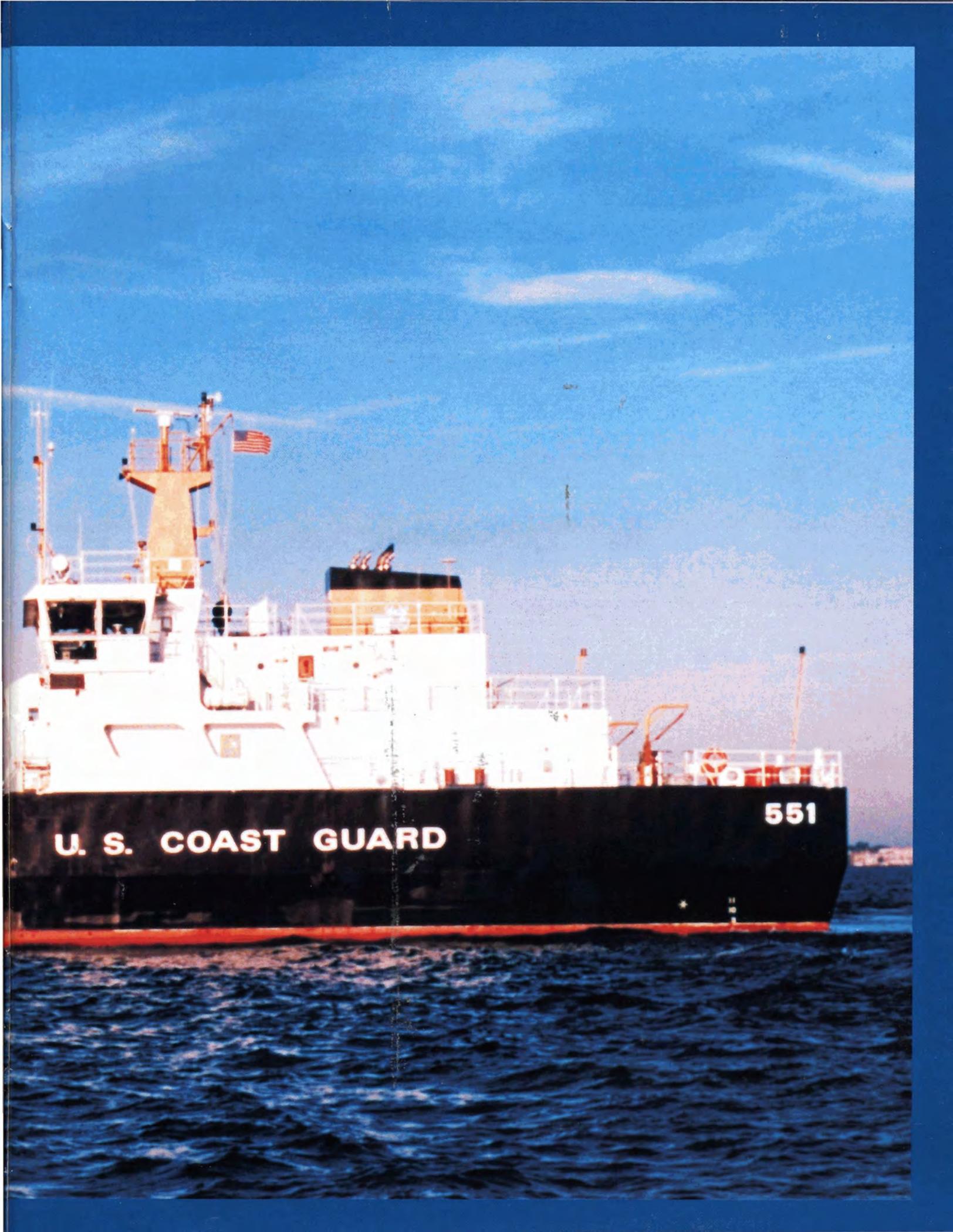
ACP DECISION MANAGEMENT MATRIX

SITUATION TO BE CONSIDERED	SUR.	INSP.	SUR. IN CHARGE	OCM I	SURVEY MGR.	VP ENG.	USCG LIAISON	USCG WASH	ABS C ^{OPR}
ROUTINE MAINTENANCE AND REPAIRS	A	-		-	-	-	-	-	
DAMAGE REPAIRS NOT AFFECTING FITNESS TO PROCEED OR HAZARDS TO THE ENVIRONMENT	A	I	C	-	-	-	-	-	
DAMAGE REPAIRS AFFECTING FITNESS TO PROCEED OR HAZARDS TO THE ENVIRONMENT	R	I	C	A	-		-	-	-
LOSS OF LIFE BOAT TO BE REPLACED WITH LIFE RAFTS	R	I	I	A	C		I		-
PERMISSION TO DO AN UWILD				-	R	-	I	A	-
EXTENSIONS OF TRADING CERTIFICATES		-	C	-	R	-	I	A	-
UNUSUAL CONDITIONS OF DAMAGE PERHAPS DUE TO DESIGN	C	C	C	C	I	R	I	C	A

THE NEW KEEPER CLASS WLM

A PARTNERSHIP IN BUILDING
CUTTING EDGE SHIPS





U. S. COAST GUARD

551

On an unusually clear, calm February day in Newport, Rhode Island, the brand new ship gently edges away from its berth and puts to sea. After the ship has cleared the channel, the Commanding Officer (CO) shifts control to the ship's "Dynamic Positioning System", presses a button and the ship immediately maintains her current position. The CO then twists the "heading" knob and ship spins about its own axis while maintaining its precise position.

By CDR Peter J. DiNicola

While this may sound like a "dream ship" of the future, this event actually occurred recently onboard the newest Coastal Buoy Tender in the Coast Guard's inventory, USCGC IDA LEWIS. On 1 November 1996 Commanding Officer Mark Allen took delivery of IDA LEWIS from Marinette Marine Corporation (MMC) via the Coast Guard Project Resident Office (PRO) located at the contractor's facility in Marinette, Wisconsin.

IDA LEWIS is the first of fourteen planned "Keeper" Class WLMs (the new WLMs are named after famous light house keepers) which are part of a major system acquisition being managed within the Coast Guard Headquarters' Acquisition Directorate. The new WLM is a 175 foot multi-mission platform (see Table 1). Its primary mission will be maintaining our nation's Short Range Aids to Navigation. In addition to the new WLM, the Buoy Tender Replacement Project is acquiring replacement sea going buoy tenders and new stern loading buoy boats.

The culmination of many people's dreams and hard work, this system of new ships and boats will form an integral part of our nation's transportation

infrastructure, thus ensuring the Coast Guard's continued ability to maintain the safety of our harbors and ports, well into the 21st century.

Background

The Coast Guard currently operates an aging fleet of Coastal Buoy Tenders comprised of the 133 foot and 157 foot classes. The 133 foot class was built between 1942 and 1944 while the 157 foot class was constructed between 1964 and 1971. These ships have performed their Coast Guard missions quite admirably over the years, but due to increasing operating and maintenance costs, must be replaced.

The project sponsor, located within the Operations Directorate at Coast Guard Headquarters, examined almost every conceivable aspect of servicing Aids to Navigation (ATON) including how other nations around the world conduct ATON operations. Requirements and trade-off analyses were also conducted to examine the cost drivers in buoy tending operations. The results of these studies, as well as a world-wide search of off-the-shelf technology, were used to draft the sponsor's requirements document. The goal was to create

Table 1

WLM Characteristics & Equipment

Length	175 ft	Engines	2 CAT 3508, 1000HP
Beam	36 ft	Bow Thruster	500HP/DC fixed pitch
Draft (Full Load)	8 ft	Propulsion	Ulstein Z Drive
Displacement (Full Load)	850 LT	Generators	3CAT 3406, 285 KW
Buoy Deck Area	1335 sq ft	Crane	10 Ton; 42 foot boom



requirements which would allow the shipbuilder to focus the ship design process on improved fleet efficiency and lower total system cost.

The sponsor's requirements document was then handed over to the Acquisition Directorate within Coast Guard Headquarters, and the complex major system acquisition process followed.

The replacement WLM acquisition consisted of a single phase strategy, built upon a **performance** based Circular of Requirements (COR), with emphasis on the application of proven technology and design. A Request for Proposal (RFP) was submitted to industry, and, following technical and cost evaluation, a best value contract was awarded to Marinette Marine Corporation (MMC) in June of 1993. This fixed price incentive contract includes the detail design and construction of a lead ship (IDA

LEWIS) with options for up to 13 additional cutters, covering the entire planned 14 ship fleet.

In 1993 a Coast Guard Project Resident Office (PRO) was established in Marinette, Wisconsin to oversee the construction of the WLM as well as the replacement sea going buoy tender, which was also awarded to Marinette Marine. The PRO monitors ship design, developmental test and evaluation and ship construction.

IDA LEWIS is the direct result of the Coast Guard's successful partnership with MMC. Technology that has already been proven in the marine environment is integrated into the new WLM. In fact, it is the Keeper class' advanced technology, consisting of automation on the bridge and in the engineering spaces, along with buoy deck enhancements that allows the Coast Guard to crew

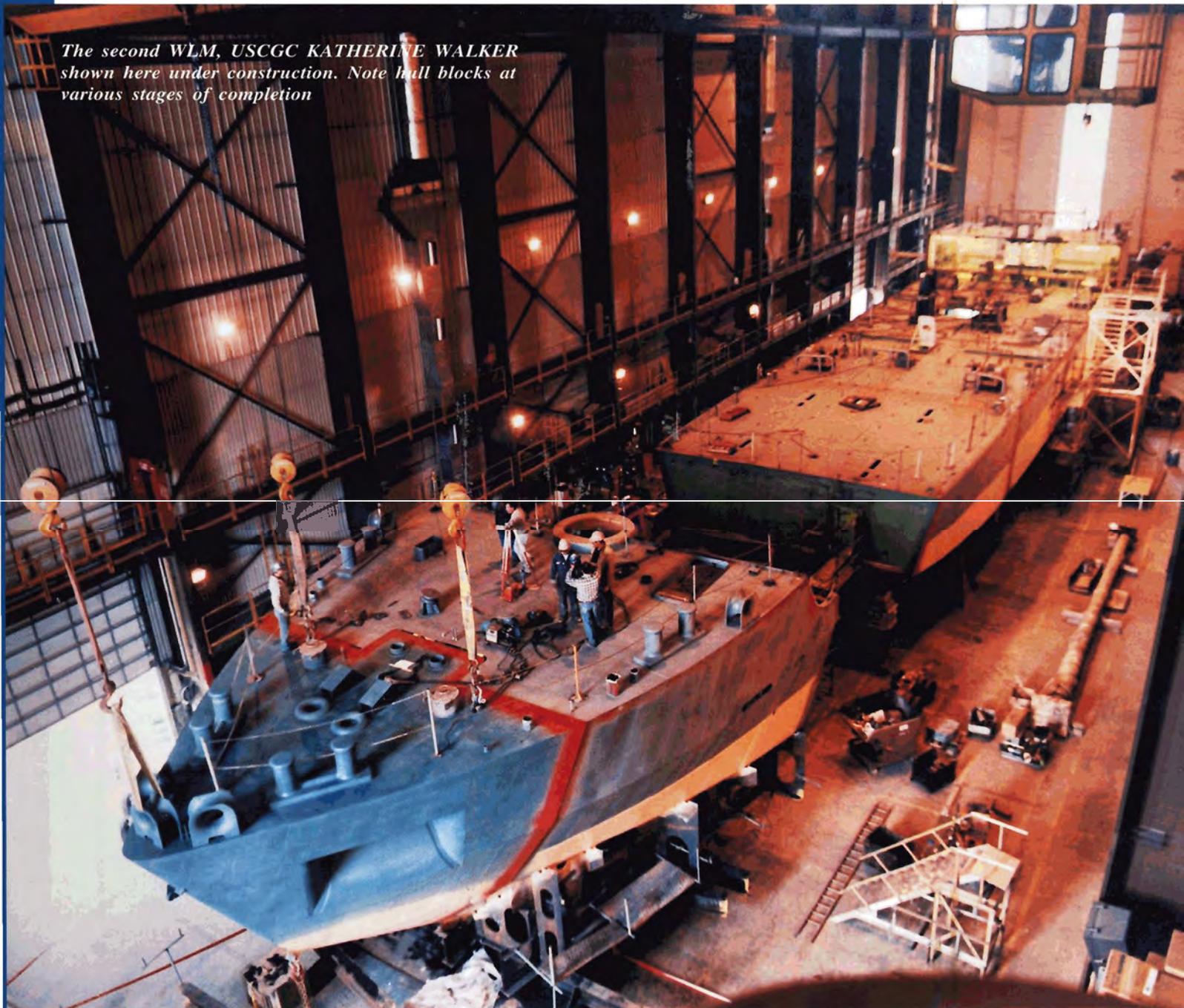
these ships with a minimum number of people. While the ships have mixed gender accommodations for up to twenty-four people, Keeper class crew size is 18, as depicted in table 2.

Recently, the second option for six additional WLMs was awarded to MMC, bringing the total number of WLMs on contract to ten ships. Current plans to exercise the next option for four additional WLMs in late FY 97 or early FY 98 will complete the 14 ship Keeper class fleet. IDA LEWIS is scheduled to commence operational test and evaluation in the spring/summer of 1997.

Construction

Marinette Marine Corporation's construction process is modern and very different from traditional ship yards. MMC uses modular fabrication in conjunction with an assembly line approach to bring the work to the worker. MMC's main construction facility is large enough to complete all structural elements except for the final installation of the stack and mast. Multiple ships can be under construction at one time. To increase construction efficiency, multi-level work shops, tool rooms, and material storage areas are located close to each work site.

The second WLM, USCGC KATHERINE WALKER shown here under construction. Note hull blocks at various stages of completion



MMC constructs the buoy tenders in large sections called hull blocks. Before being joined, each hull block is pre-outfitted with almost all major equipment, piping, wiring, and insulation. These large hull blocks are assembled and moved into position to be connected to other blocks. Once all hull blocks have been connected in the main construction facility, the assembled ship is lifted and "walked out" to where it is launched and then finishing touches are applied.

New Technology

Here's a brief overview of some the new technology applications you can find aboard the Keeper class WLMs:

Integrated Bridge System. The integrated bridge is capable of utilizing inputs from the ships propulsion control system, dynamic positioning system, navigational information, tactical information, interior communications data and various shipboard alarm data. This system provides instantaneous data to the Officer of the Deck (OOD) and Commanding Officer and minimizes the number of people necessary to safely conn the ship.

Differential Global Positioning System (DGPS). DGPS is the enabling technology providing reliable, precise, real-time positioning information to the integrated bridge system. The DGPS allows the ship to use a precise and accurate standardized navigation signal directly displayed on a video monitor for conversion to a real-time automated position.

Electronic Chart Display Information System (ECDIS). The ECDIS processes information from all the ship's navigation sensors such as radar, EORAN, DGPS, gyro compass and speed log to determine the ship's position, heading and speed. This information is displayed in real time on an electronic chart (video monitor) for the OOD. ECDIS' real time positioning information, updated as often as every second, is made available to the dynamic positioning system (DPS). The ECDIS has a radar overlay capability and has also been integrated with the Aids to Navigation Recording System. ECDIS has a logging function for all navigation sensors inputs, position information, weather, and for manually entered information. ECDIS also allows the user to program alarms to indicate when the vessel is within a designated range of a target or position, when the ship is approaching shoal water, when charted depth does not match fathometer readings, when the ship may be off a designated track and for many other navigational functions. ECDIS will help significantly reduce the labor required for time consuming bridge operations.

Table 2

WLM Crew	
1 BOSN 4	1 DC2
1 BMCS	1 SK2
1 EMC	1 SS2
1 QM1	1 BM3
1 BM1	1 MK3
1 MK1	1 QM3
1 EM2	5 SN

Aids To Navigation Data Recording System (ATON/DRS). This system allows aids to navigation data base management and provides the capability to automatically determine the position of a buoy. These features are imbedded within the ECDIS.

Dynamic Positioning System. By using information from automatic position fixing devices (ECDIS), this system allows the ship to approach, maneuver and automatically maintain its position within a radius of 10 meters over a fixed point on the earth. The DPS utilizes information from ECDIS and all navigation sensors to act as an auto pilot enabling the ship to follow a programmed navigation plot with minimal human interface. DPS also uses information from ECDIS and navigation and weather sensors to maintain the ship's position in open water while experiencing winds up to 30 knots and seas with significant wave heights of eight feet. The ship can either keep a steady heading over a specific point or the ship could pivot about a point; for example, the buoy port. Additionally, through commands to the thrusters and main propulsion system, the DPS allows the operator to move and pivot the ship manually.

Main Propulsion Control and Monitoring System (MPCMS). MPCMS is an automated system that controls and monitors all major machinery and auxiliary systems, thus significantly reducing watch standing requirements. Its many sensors and alarms identify and diagnose potential problems or equipment failures. The MPCMS includes alarms

displayed on the bridge, in Damage Control Central, and in the Engineering Control Center (ECC) located adjacent to the engine room. The MPCMS also includes an automatic log keeping function and uses the ship's fiber optic network to send and receive information from the integrated bridge system. The WLM MPCMS complies with American Bureau of

Shipping (ABS) ACCU classification for unmanned engine rooms.

Survival Adaptable Fiber-optic Embedded Network (SAFENET) Local Area Network. SAFENET uses fiber-optical transmission of data on a local area network to interconnect navigation and



Aerial view of USCGC IDA LEWIS executing spin maneuver. Equipped with Z-Drive thrusters aft and bow thrusters, the new WLM is a highly maneuverable ship.

propulsion equipment such as LORAN, DGPS, Sonar, Depth Sounder, DPS, ECDIS and MPCMS. The speed and accuracy of the data transmitted over the LAN allows the cutter to maneuver and position aids to navigation more efficiently, with fewer people and greater accuracy.



Z Drive Propulsion System. A unique aspect of the Keeper class is the Z Drive propulsion system. The new WLMs are equipped with twin Z Drives which direct propulsion thrust over 360 degrees and eliminate the need for a rudder and stern thruster, which should reduce maintenance requirements over the long term. Nozzles surround the propellers and improve thrust characteristics. The Z Drives provide maximum maneuverability with minimal space and weight consumption. The Z Drive model selected for the Keeper class tenders is equipped with an underwater mounting module which allows the Z Drive to be removed and replaced without dry docking the ship.

Buoy Deck Systems. The new WLM has a 42 foot, 10 ton capacity crane with 3 ton capacity whip. A power gripping system is also installed on the buoy deck, and the chain in haul winch is an additional innovation. This winch allows the operator to haul in a variety of chain sizes linked in series without having to halt operations or perform the traditional staged lift operation with the crane. These features are designed to reduce the number of personnel involved in buoy deck operations.

Collectively, these technological advancements and innovations represent a more efficient way for the Coast Guard to conduct aids to navigation operations.

Conclusion

A vision of the future was the seed for the replacement WLM project. With delivery of IDA LEWIS the future has arrived. Together with our partner in success, Marinette Marine Corporation, the Coast Guard is building cutting edge ships. Modular construction and the use of new technologies provide a cost effective way to attain enhanced mission capabilities. The new Keeper class buoy tenders represent a gateway to more efficient Coast Guard service to the public.

CDR DiNicola is currently Assistant Project Manager for the Coastal Buoy Tender in Coast Guard Headquarters (G-AWL). Prior assignments include Commanding Officer of Surface Effect Ship Division and Group Operations Officer in Key West, Florida; Chief of Procurement for the Aircraft Repair and Supply Center in Elizabeth City, North Carolina; Controller for the Eleventh Coast Guard District Operations Center; Commanding Officer of USCGC POINT DIVIDE and First Lieutenant of USCGC VENTUROUS. This summer he attended the Naval War College.

COAST GUARD NAVY

Partnering Among Armed Forces

By LT David Baugh

Partnering between the nation's armed services has existed since 1789 – more than 200 years of joint efforts. Today, with a great deal of downsizing, we have to find more creative ways of jointly utilizing personnel, especially between the seagoing sister services.

The Coast Guard is quite accustomed to an ever-expanding list of mission responsibilities. We continually accept new tasks and challenges which we willingly approach in the true spirit of "Semper Paratus". Our current challenge has been to not only accept new and increased roles, but to do so with fewer Coast Guard members to meet those demands. For this reason, it is essential that we seek and explore new ways to expand our capabilities even though our personnel strength grows smaller. Sometimes, this requires creativity and a willingness to look outside the normal supply market of personnel resources.

In St. Louis, members of the Marine Safety Office realized just such an opportunity in the form of a large number of locally drilling Navy reserves, attached to Navy Reserve Center (NAVRESCEN) St. Louis. NAVRESCEN is home to over 700 reservists who cover a vast spectrum of ranks, rates, skills, specialties and professional backgrounds. Due to recent service-wide streamlining and budgetary adjustments within the Navy, the Command found itself with greatly reduced training and operational funds, but with no significant reduction in personnel force. In essence, they maintained the bulk of their work force, but lost enough funding to impair their ability to fully utilize all those individuals

Learning of this large number of under-utilized Navy reserves, MSO St. Louis began exploring the possibility of putting them to work at the MSO. What followed was a round of meetings between the two commands, culminating in the development of a memorandum of understanding (MOU). The MOU

was formally signed by the two commanding officers, CDR J. M. Holmes of MSO St. Louis and CAPT Vernon Bothwell of NAVRESCEN St. Louis. The MOU describes the simple procedure, developed to enable the Navy Command's reserves to be "shared" by the MSO in support of its various missions and initiatives. The process is very straight forward and begins when the MSO identifies a task, mission or project with which Navy assistance could be utilized. A single page, work request form is then completed by the MSO and faxed to NAVRESCEN. This request form is self explanatory and can be completed quickly. It describes the job, specifies any skills requisites and identifies, by name and phone number, the MSO's point of contact for that project. When the NAVRESCEN liaison receives the faxed request, they identify the best suited Navy



Partners from left to right: LTJG Drew Cheney US Coast Guard, LCDR Barry Fox, US Coast Guard, LCDR Joseph M. Robinson US Navy



Partners from left to right: EMI Wagner Navy Petty Officer, Reserve, MK1 McDurmon Coast Guard Petty Officer

reserve candidate to accomplish the mission. That individual then works in coordination with the MSO to perform the task.

The program is already proving extremely beneficial to all involved. The Navy reserves are an incredibly huge force multiplier. At minimal cost to the MSO, the reserves reduce the operational demands placed upon the individuals assigned to the Command. The MOU allows the MSO to substantially increase its response capabilities in many ways. For instance, the Navy is providing personnel sufficient to create a new Disaster Response Unit (DRU). A DRU is a team of members preestablished to stand at the ready for response to events such as floods. The reserves can provide much needed assistance to accomplish tasks for which our members are sometimes too constrained by time to perform themselves.

NAVRESCEN has expressed much enthusiasm

and appreciation for the program. USN members receive the benefit of additional job skills, since they are involved in worthwhile Coast Guard initiatives and prospects. The effect has been so positive within the ranks of the Navy that already, one member has requested transfer into the Coast Guard Reserves.

The program holds much promise and has already yielded dividends to both services. It serves as a prime example of how the Coast Guard can do more with less and do so in a "win-win" manner. The program was easily established and could be simulated in any area where a Coast Guard unit is co-located with the command of another service with under-utilized members.

If you are interested in hearing more about this program or would like assistance in setting up a similar program, contact LT David Baugh at MSO St. Louis (314)539-3091 EXT. 268.

Chart Sketch Exam for First Class Pilots

Partnering Yields a Quality Product

By LT David W. Pierce

When an individual applies to any one of the 17 Coast Guard Regional Examination Centers (REC) for a license as a First Class Pilot (FCP), part of the examining process they undergo is, essentially, drawing the published navigation chart for the area they apply for from memory, without reference! Regardless of whether they are a first-time applicant for one or more specific areas requiring pilotage, or a veteran licensed Pilot seeking an endorsement on their license for an additional area, a chart sketch is one of the test modules they will take. A score of 90% is required to pass this exam. Take one look at the myriad of data contained on a typical harbor chart, and the frequent updates occurring, and one can appreciate the kind of challenge this presents. Each REC has a geographic zone of responsibility which typically contains several ports for which pilotage is mandatory, under U.S. law. All applicants for waters within this zone are examined by the cognizant REC's Pilot examiner.

THE CHALLENGE TO IMPROVE

REC Charleston, South Carolina's zone of responsibility has a total of seven pilotage areas, spanning an area from Morehead City, NC to Brunswick, GA. Within this area there are twelve published charts that depict pilotage areas. Historically, the chart sketch exam has been handled in one of two ways by Coast Guard examiners. The more common method involves the applicant acquiring a "blank" chart, showing only landmass outlines, and submitting it, well ahead of the test date, for the examiner to approve. These "homespun" outline blueprints required close, time-consuming scrutiny by the Coast Guard examiner for potential compromising marks that could be used as reference points by an applicant during the examination, as was the case in San Francisco in 1993. The other method, far more time-consuming, had a reasonably competent Coast Guard member hand-draw the outlines, and then have a blueprinter copy them.

THE OPPORTUNITY, THE PARTNERING, THE RESULT

In the early spring of 1995, we became aware that the U.S. Army Corps of Engineers' (ACOE) Waterways Experiment Station at Vicksburg, MS had the capability and were willing to "scan" and convert these area charts into high-quality landmass-only outlines. All man-made objects or additions, such as jetties, dikes, bridges and permanent moorings were deleted, providing an excellent base on which a Pilot examinee could "re-create" the published chart for the desired area. Through the summer months, this partnership with the ACOE flourished, as we shared information and set guidelines for the production of these landmass outline-only charts. We agreed to match scale with the existing charts, to provide the examinee with a "True North" indicator arrow, as well as a random LAT/LONG indicator "crosshair" mark. In some cases, drafts went back and forth several times for modification. By March 1996, REC Charleston had a professional, high quality "blank chart" for each of the twelve charts within our zone depicting pilotage routes, as well as a 3.5 inch diskette containing each of the "blanks". This data is now being used by a local contractor to make high-quality reproductions for Coast Guard use. We no longer have to task the applicant to provide a chart "blank", or hand-draw our own. This improvement has considerably enhanced the integrity of the Pilot examining process, and has saved us considerable time, as well.

CONCLUSION

Although this was a lengthy process, the results by this partnership are a vast improvement over past procedures. We are extremely grateful to the ACOE Waterways Station staff at Vicksburg, MS for their efforts on this project.

Pierce is the Assistant Chief of the Regional Exam Center, MSO Charleston, SC.

Partnership Brings Education and Compliance to Operators

on the

Kenai River

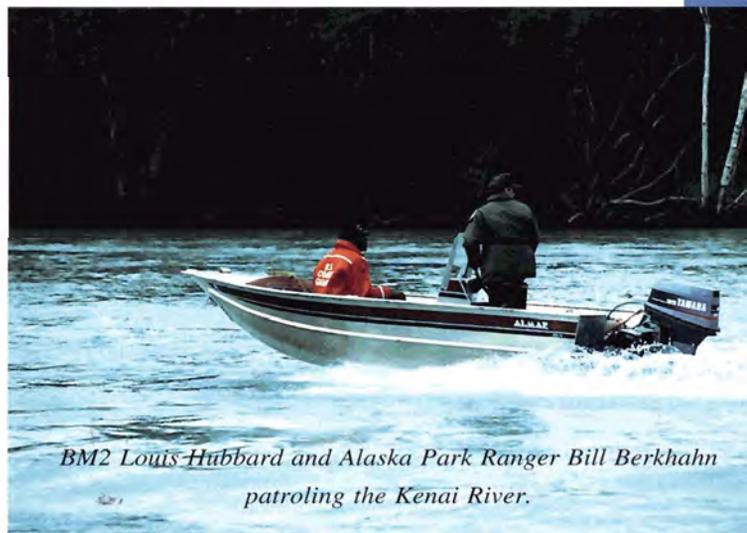
By LT Spencer Wood

The Kenai River, on the Kenai Peninsula in Alaska, attracts thousands of tourists every year to its pristine waters for the opportunity to participate in one of the largest recreational salmon fisheries in the world. Along with the popularity comes commercial opportunities. Hundreds of small business operators in the uninspected small passenger vessel (or OUPV or "Six Pack") trade have sprung up to meet the ever growing demand for river guides on the Kenai.

This growth presented some "not so unique" problems for the local Coast Guard Marine Safety Detachment in Kenai. Like most other units in the Coast Guard, MSD Kenai has more than enough business to keep its staff of five busy throughout the year. With LNG tankers, ammonia ships, bulk freighters, foreign tank vessels, offshore platforms and shore side facilities, inspected small passenger vessels, pollution response, contingency planning and exercising, and on, and on, and on... Six Packers don't always get the attention they desire.

How do you enforce random drug testing requirements on Six Packers? How do you ensure operators of Six Packs are properly licensed? How do you ensure they carry only six passengers or less, or have the required safety equipment on board? One answer ... Partnerships!

Mid-river, gunwale-to-gunwale, impromptu boating safety training.



BM2 Louis Hubbard and Alaska Park Ranger Bill Berkbahn patrolling the Kenai River.

MSD Kenai entered into a partnership with the State of Alaska, Department of Natural Resources, Division of Parks and Outdoor Recreation, Kenai River District (Alaska State Parks for short). It's a simple concept that has proven highly effective in bringing education and compliance to operators on the Kenai River. As operators apply for a permit to operate a commercial business within the Kenai River District to carry "passengers-for-hire" on their boats, the Alaska State Parks is requiring proof of a Coast Guard license and proof of participation in an established program for chemical testing for dangerous drugs on a random basis. No proof, no permit.

In addition, on random days throughout the busy season, MSD Kenai provides assistance in conducting boardings from an Alaska State Parks boat. Our primary mission is to enforce the six-or-less passenger requirements and conduct safety checks. Along with the Park Rangers, we enforce State and Federal fishing and safety laws on recreational boats. It's a real opportunity to educate the boating public while improving compliance.

We may only be able to get out with the Park Rangers two or three times a season, but we're seeing a real impact in awareness from the boating public and from Six Packers in particular. During the first week alone, our phones didn't stop ringing with questions about "these new random drug testing requirements" and "since when does the Coast Guard enforce boating laws on the river?" It soon became obvious, through our partnership efforts, we were having the desired impact... increased public awareness and safer Six Packs.

LT Spencer Wood is the Supervisor, Marine Safety Detachment, Kenai, Alaska.



Ship towed down-river with only inches to spare.

Miami River Partnership Improves Waterfront Facility Safety

By LCDR Steve Hanewich

ANOTHER QUALITY ACTION TEAM AT WORK TO IMPROVE SAFETY

The Miami River is a 5 1/2 mile long federal waterway located in downtown Miami, Florida. The River supports a broad range of interests including commercial freight and fishing vessels, boat repair yards, commercial waterfront facilities, houseboats, recreational boats and many others. Often overshadowed by its neighbor, the bustling Port of Miami, the Miami River ranks as the 5th busiest seaport in

the state of Florida, generating more than \$2 billion dollars in trade each year for South Florida.

Despite its urban setting, the Miami River's reputation as a busy waterway is well deserved. On any given day, its banks are lined with vessels stacked with used cars, trucks, bicycles, mattresses and other cargo bound for Haiti and other Caribbean destinations. Vessels moored several abreast reduce clearance in the congested waterway, while sunken boats, oil sheens and floating debris are a common sight.

Unlike most commercial ports, the Miami River

'... the Miami River has no single port authority, harbor master or other controlling entity.'

has no single port authority, harbor master or other controlling entity. Rather, operations on the River are controlled by private property owners and regulated by more than thirty two agencies with varying degrees of regulatory responsibility over activities on the River. The result has been a lack of focus and organization. Due to the dynamic growth of shipping and other marine activities on the River, they have contributed over time to declining water quality, congestion of the waterway, increased crime and other problems. Complicating matters further, a large number of vessels trading on the River, do not meet international or U.S. standards and have been involved in numerous casualties. On a daily basis, Marine Safety Office Miami and other local agencies receive reports of oil pollution, lack of maneuverability due to vessels improperly moored on the River, abandoned vessels, and other complaints. Although a number of government enforcement committees and private industry groups were working independently on several of these issues, no collective efforts between government, industry, and the public were being pursued. Clearly, the time had come for maritime businesses and regulatory agencies to work together in a partnership to solve some of these problems.

In October 1995, under the leadership of Marine Safety Office Miami, a Miami River Quality Action Team (QAT) was established to address some of these concerns. In the time since its inception, the Miami River QAT has achieved superior results in improving waterfront facility safety, enhancing safe navigation, and protecting the marine environment.

The Miami River Quality Action Team is chaired by the Coast Guard Captain of the Port, CAPT Dave Miller, and is comprised of representatives from local, state and federal governmental agencies, concerned citizens, facility operators, shipping lines, vessel agents, and representatives from port cooperative groups

including the Miami River Coordinating Committee (MRCC) and Miami River Marine Group (MRMG). The executive directors of these groups, Ms. Betty C. Fleming and Dr. Frances M. Bohnsack, respectively, have been extremely proactive members of the QAT and serve as vital conduits of information to the local marine community. All QAT sessions are open to the public.

The diversity of interests on the Miami River reflect the character of the multi-ethnic, international city surrounding it. Managing such a diverse waterway poses many challenges. Although initial QAT meetings often included spirited debate between conflicting interest groups, QAT members quickly recognized that most QAT goals were mutually beneficial. The Coast Guard's Seventh District Total Quality Management staff played a key role in facilitating many of these early QAT meetings as the scope and goals of the team were defined.

Several of the areas the QAT has made an impact in are outlined below:

WATERFRONT FACILITY COMPLIANCE

The QAT has provided a forum for regulatory agencies to work in partnership with vessel owners, agents, waterfront facility operators and others in improving waterfront facility safety on the River. Through the QAT, a series of multi-agency compliance audits have targeted problem facilities on the River. Joint agency audits by Coast Guard, Florida Department of Environmental Protection (FL DEP), Dade County Environmental Resource Management (DERM), and local police and fire departments have provided a unified approach to compliance and enforcement. Balancing education and enforcement, the QAT has achieved phenomenal success in bringing facilities into compliance with federal and local regulations. Since the audits were conducted at nine problem facilities for over nine

months, the number of discrepancies detected during spot checks has been reduced by 400%. Joint inspections of this type have provided a streamlined approach benefiting both the waterfront facility operators and regulatory agencies alike.

MIAMI RIVER RAFTING POLICY

Approximately 300 small freight vessels, ranging in size from 50 to 278 feet in length routinely ply their trade on the Miami River, exporting a variety of goods to various Caribbean Basin ports. Limited pier space results in many vessels "rafting" or mooring two and three abreast on either side of the River. This reduces the clearance for vessel traffic transiting the River, and has contributed to ship collisions and other vessel casualties in the past. To resolve this ongoing

problem, the QAT first identified "hot spots" on the river where rafting was a major problem. Second, the QAT established a series of guidelines to

regulate rafting and mooring on the River. With QAT concurrence, the Coast Guard is in the process of drafting a Notice of Proposed Rulemaking to formally establish this local policy in Federal Regulations. This Miami River Rafting policy will be implemented through a Regulated Navigation Area outlining minimum channel clearance requirements and other safe rafting and mooring regulations.

DERELICT/ABANDONED VESSELS

Derelict and abandoned vessels on the Miami River pose a threat to navigation, public health and the environment. These vessels are often in



View of the Miami River.



Typical Miami River cargo ships.

deteriorated condition, improperly moored, have oily waste aboard, and present a host of other potential safety and environmental problems. The QAT has compiled a list of derelict vessels on the river and is pursuing innovative means to properly remove and dispose of them. One of the most popular means has been through state and county Artificial Reef Programs. Vessels sunk as reefs can create a rich habitat for fish and other marine life, and are a boon to South Florida's tourism industry. Naturally, all vessels sunk as artificial reefs are thoroughly cleaned, made safe for divers, and inspected by the Coast Guard prior to sinking.

While trying to correct the problem, on August 2, 1996, The Abandoned Barge Act, 46 USC Sec. 4704 (01/16/96), was referred to the House Committee on Transportation and Infrastructure. On August 15, 1996, the act was referred to the Subcommittee on Coast Guard and Maritime Transportation.

VESSEL ARRIVALS

Commercial vessels arriving in U.S. waters are required to provide 24 hour advance notice of arrival to the local Coast Guard Captain of the Port. The Coast Guard and other QAT members noted that a significant number of small freight vessels were failing to meet this requirement. Many of these vessels did not have local shipping agents and would tie up to facilities without the consent of property owners causing conflict and further congestion. In addition, several vessels had entered surreptitiously while smuggling illegal migrants into the U.S. To rectify this situation, a partnership was established with Miami River bridge tender personnel to assist

the Coast Guard in monitoring river traffic. Notice of arrival lists are forwarded daily to the bridge tenders and the tenders promptly notify the Coast Guard of any vessel arriving at the River without the required notice. Vessels failing to provide advance notice of arrival face civil penalties and possible expulsion from U.S. waters.

STATEWIDE SUPPORT

The QAT has addressed a host of other issues including hurricane preparedness, flood management control, and vessel overloading to name a few.

The glowing success of the Miami River QAT has quickly captured the attention of local, state and federal officials including Senator Bob Graham, D-FL, former governor of Florida and frequent champion for Miami River interests. A representative from Senator Graham's staff recently attended the QAT's hurricane preparedness meetings, voicing support for the continued positive efforts of the group.

CONCLUSION

The Miami River is a dynamic and critical waterway posing many unique challenges. Marine Safety Office Miami is firmly committed to working in partnership with public and private interests to prevent problems on the river, and make it a safe, pollution free, and vibrant center of commerce well into the next century.

LCDR Steve Hanewich is Chief of the Port Management and Response Department at MSO Miami.

Fighting Pollution

Sea Partners Bring New Approach



These volunteer clean-up workers offer their help for beach clean ups of marine debris during oil spills. However, the Sea Partners environmental outreach team provides the "real clean up" with their awareness and educational programs.



By MCPO Linda Reid

A Coast Guard visit by personnel in polo-style shirts is an alternative compliance technique practiced by the Sea Partners environmental outreach team in Wilmington, N.C. Sea Partners from Marine Safety Office Wilmington have developed a strategy of making informal visits to waterfront facilities which have the potential of posing pollution problems through improper dumping of waste products. The Coast Guard team brings a shopping bag of information, including pamphlets, an oil spill demonstration kit, and sample sorbent material, as well as, a positive approach to educating the vessel or facility owner. A number of days after the outreach visit, an inspection team will conduct a follow-up and treat any noted discrepancies as violations. Perhaps not surprisingly, MSO Wilmington has seen a 94% decrease in oil spills from facilities in the past year, and gives partial credit for this success to their Sea Partners.

The USCG's Sea Partners program was instituted in 1994 as part of a new approach to compliance among the marine user populations outside the deep-draft commercial vessel sector. For the past three years, the program has been largely

funded with limited, but vital, funding from the Department of Defense Civil-Military Cooperation Action Program, which authorized use of the military for projects enhancing the environment or improving education in local communities. Each USCG Marine Safety Office in the country, including Puerto Rico and Guam, recruited a team of Coast Guard reservists to manage outreach programs in their area. The reservists received classroom training in regulations and public presentations. Each local team then proceeded to develop a local strategy on reaching various types of audiences.

Sea Partners teams use a variety of educational materials – pamphlets, posters, videos, slide shows and children's coloring books – to get their message to the public. Although some of the materials have been developed in-house, the program has also drawn on materials from other agencies, such as the Environmental Protection Agency, or from outside organizations, such as the Center for Marine Conservation.

In operation for a little over three years, the Sea Partners program has reached over 800,000 people through personal contacts, either by classroom-style presentations or Sea Partners display booths at

events such as boat shows, regional fairs and waterfront festivals and distributed over a million pieces of literature. Many members of Coast Guard Auxiliary are now working alongside reserve and active duty members involved in the program, increasing the pool of outreach experts severalfold. Auxiliarists are also beginning to incorporate marine environmental protection messages in their Boating Skills & Seamanship classes and Courtesy Marine Exams.

One of the purposes of the campaign is to educate the general public on the existence of the National Response Center's toll-free number for reporting of pollution incidents (1-800-424-8802). Early detection and reporting of spills potentially means faster action by Coast Guard or commercial response operations. Many of the Sea Partners public informational items promote the use of this "1-800" number.

The "MARPOL Wheel," a 7 x 8 inch cardboard wheel which lists regulations on garbage dumping and oil/chemical/sewage discharge, has become a much-requested item by industry. This wheel has been printed in Spanish and Vietnamese, as well as English, to reach out to special populations in certain

areas of the country.

The program provides the MARPOL V garbage dumping restrictions sticker at no charge to anyone on request. The information on this sticker is required by 33 CFR 151 to be prominently posted on all vessels 26 feet in length or longer. This sticker will soon be available in Spanish, Vietnamese, Portuguese and Creole, as well as English.

Enforcing many of the marine pollution regulations, particularly MARPOL V garbage dumping restrictions, has been related to that of state troopers enforcing local litter laws – it's just not possible to write a ticket for every single violator. By educating the waterways-using public on the devastating effect plastics and other forms of pollution can have on the marine environment and their economic livelihood along our nation's 47,000 miles of shoreline, the Sea Partners Campaign strives to have a positive influence on motivating people to take personal responsibility for their actions.

For more information about Sea Partners, contact the local Marine Safety Office or USCG Headquarters Office of Response (G-MOR) (202-267-6891).

Oil pollution prevention involves everyone...including volunteer clean-up workers





Petty Officer Russ Beaty hands marine pollution placard to a Lake Superior boater.



Coast Guard Auxiliarist working with the MSO San Diego Sea Partners reaches out to a boater with marine pollution information.

Facility Self Inspection Program

SHARED APPROACH TO PROBLEM-SOLVING

The facility owners/operators and the Coast Guard enter into a partnership in which the companies administer portions of the facility inspection process traditionally reserved for Coast Guard facility inspectors. This partnership is beneficial for both the Coast Guard and industry. It gives Coast Guard personnel a better awareness of daily facility operations and problems, while giving industry personnel a greater awareness of what CG facility inspectors are requiring during inspections.

Additionally, by developing proactive methods of training, the Coast Guard will assist industry in achieving a similar interpretation of regulatory requirements and measures of compliance between Industry and the Coast Guard.



By Petty Officer Tim McGraw, USCG, and Mr. Carlos Gavilanes
Contributors: LCDR John Farthing and LT Todd Offutt

Historically, the Coast Guard Marine Safety program has committed considerable assets to the enforcement of safety/oil pollution prevention regulations dealing with waterfront facilities. In the past the Coast Guard has attempted to inspect each facility annually, perform a survey every two years, and conduct spot checks on a monthly basis. Although Title 33 Code of Federal Regulations Section 154.120 allows the Coast Guard to inspect waterfront facilities there is no inspection schedule mentioned in the regulations.

In 1994, with the publishing of the Business Plan for Marine Safety and Environmental Protection, the Coast Guard changed the fundamental approach to the way they carry out their missions from detailed performance standards to outcome-oriented goals. With this change came the authority for each Marine Safety Office (MSO) to determine the frequency of their facility inspection program. The Facility Self Inspection Program (FASIP) is a program to better use our resources and simultaneously meet our goals, and has been implemented at MSO Morgan City. Benefits of the MSO Morgan City program include the shared approach to problem-solving in varying capacities.

INCREASED LEVEL OF COMPLIANCE

The FASIP is designed to enhance a facilities' average level of compliance for two reasons. First,



because facility owners and operators will have a better understanding of the regulations and what they require, thus avoiding noncompliance due to differences of regulation interpretation. Secondly, facility owners and operators engaged in self inspection will attain a greater, more continuous rate of compliance, rather than only at the time they are scheduled to undergo a Coast Guard inspection.

DECREASED COST TO FACILITIES

Facilities will realize significant cost savings by participating in the FASIP. The decrease in operational and administrative costs will be due primarily to two factors. Industry participation in this program will promote consistency in the determination of regulatory compliance, which will provide preventative maintenance, decrease costs related to correction of discrepancies and should result in the decrease in civil penalty violations levied by the Coast Guard against the facilities.

The FASIP will also significantly reduce or eliminate the facility downtime previously needed to prepare for a Coast Guard inspection. Often, facilities' level of regulatory compliance lessens as time elapses since the last Coast Guard inspection. The FASIP will ensure that the level of regulatory compliance is maintained high.



BETTER USE OF SCARCE GOVERNMENT RESOURCES

The FASIP is expected to substantially decrease the man-hours allotted for facility inspections by Coast Guard personnel. This will provide the Coast Guard with the flexibility to concentrate inspection resources on facilities presenting higher risks in the COTP area of responsibility.

All involved parties benefit from the Facility Self Inspection Program. Subsequently, many COTPs nationwide have instituted similar programs. Call your local MSO for details.

For more information on the program, contact the Chief of the Marine Environmental Response Division of the Port Operations Department at MSO Morgan City at (504) 380-5300.

JUST OVER THE HORIZON

By CDR Jim Harmon

The Coast Guard has demonstrated a strong "Just Over the Horizon" (JOH) presence when carrying out our Search and Rescue (SAR), Law Enforcement, oil spill response and port state control of foreign vessels. In contrast this JOH presence is not applied to the enforcement of safe operations on all commercial vessels. As a result MSO/Group Los Angeles-Long Beach (LA-LB) implemented a program which applies a JOH presence to other commercial vessel activities.

The Coast Guard's objective is that all commercial vessels navigating U.S. waters operate in compliance with the applicable regulations at all times. The public expects safe boats and competent crews. Are these expectations really being met? Owners have admitted that many items are checked for compliance only when they know the Coast Guard is coming. These inspections frequently uncover numerous serious safety deficiencies that are usually corrected on the spot. This practice lengthens the inspection and decreases the quality standard expected of the industry we regulate.

In early 1995 MSO/Group LA-LB began a pilot

program of conducting spot inspections of small passenger vessels underway. This program uncovered notable unsafe and unlawful practices such as masters operating a vessel while under the influence of drugs and alcohol, poaching lobsters, smuggling drugs, operating with undermanned crews, operating with expired certificates of inspections and numerous safety violations. The program was expanded to unannounced dockside inspections of small passenger vessel in November 1995.

In February 1996 the MSO/Group LA-LB JOH Quality Action Team was chartered by the Commanding Officer to develop a unit program for 24 hour inspection/law enforcement of all vessels navigating our waters. The goal was to emphasize the importance of operating commercial vessels in compliance with the regulations at all times. The program's intent is to: improve marine safety, minimize potential accidents, efficiently use Coast Guard resources and reduce waste and ensure that vessels are being operated safely at all times. The team had one member from the Investigations, Port Operations and Group Operations Departments and two members from the Inspections Department.

The team first had to reach a consensus on the definition for the JOH Concept of Marine Safety. They decided on the following: the MSO/Group LA-LB will ensure the Coast Guard marine safety mission is consistently implemented throughout all time periods for all commercial marine operations.

The team analyzed various programs that addressed commercial vessel safety and determined if a JOH presence already existed. Port State Control, unannounced dockside inspection of small passenger vessel (pilot program), Port Operations, Group patrol boat boarding of small passenger vessels (pilot program), and Group patrol boat boarding of fishing vessels were examined. The team qualitatively evaluated the risk posed by each commercial vessel



activity. Emphasis was placed on the two highest risks identified by the business plan, major loss of life from a passenger vessel sinking and a significant pollution incident from a vessel grounding. The higher risk vessels or activities identified were: foreign tankships, foreign passenger ships, U.S. tankships and barges, U.S. small passenger vessels, bulk liquid transfers, vessel traffic and hot work within the port.

After reviewing the existing programs and the risks associated with the various types of vessel activities, the team proposed several initiatives to minimize the threat of major marine casualties and emphasize our JOH presence. These included at sea boardings of high risk tankships and bulkers, boardings of small passenger vessels by Group patrol craft, unannounced dockside boardings of small passenger vessels by inspectors, covert riding with an excess number of passengers on small passenger vessels and increased Coast Guard interaction with commercial tug boats and tank barges.

Since a pilot program with small passenger vessels already existed over the last year, the team proposed development of the details for this program first. The two key elements of this program are the unannounced dockside inspections and the underway boardings. In November 1995 the Inspections Department implemented an unannounced dockside inspection program of small passenger vessels. Under the procedure, inspectors conduct a random inspection at a predetermined location or landing in our Area of Responsibility (AOR). The vessel is boarded upon return to berth with passengers onboard. The inspectors interview the passengers and crew and spot check priority safety items. The word of these unannounced inspections quickly spread throughout our AOR, resulting in significantly fewer discrepancies at scheduled inspections. JOH is also a solid first step towards creating an alternate compliance program for small passenger vessels.

A modified underway boarding policy under the Coast Guard MSO/Group LA-LB pilot program was implemented in June 1995, adding inspected and uninspected passenger vessels to the list of vessels subject to boarding. In the past, small passenger vessels displaying valid inspection stickers were not boarded. Due to the continued record of non-compliance at scheduled inspections of many of these boats, certificated boats are now subject to a boarding in an effort to improve the quality of regulatory compliance and safety. Boarding officers from Group



patrol craft conduct a limited scope inspection similar to the unannounced dockside inspection using a checklist developed jointly by the Inspections Department and Group Operations.

A key underlying principle of both the unannounced dockside inspections and the underway boardings is brief examinations that are as unobtrusive as possible to the vessel's operations. This was instrumental in successfully marketing the programs to the marine industry. These examinations typically take less than fifteen minutes. Common sense and discretion are also used to ensure vessel operations are not adversely impacted and unsafe conditions are avoided. For example, party fishing boats are not boarded when they are drifting with lines out and sport diving vessels are not boarded when divers are in the water.

In the past, afloat and marine safety units were viewed as completely separate entities. But as these fields grow larger in scope and we strive to provide better public service overlapping of responsibility inevitably occurs. This creates the need to enhance the cross-training received by field personnel to conduct inspections and boardings. Coast Guard afloat units have an approach towards law enforcement, dealing primarily with Customs and INS issues. The marine safety field conducts port operations and commercial vessel inspections, ensuring compliance of laws governing these activities to prevent harm to personnel and the environment. The Group can benefit from a program using inspectors or investigators visiting units to conduct training on how to interface with commercial enterprises. Each will learn more about other aspects of the maritime community while conserving resources.

The JOH concept offers several advantages over the Coast Guard's traditional methods of ensuring that vessels are in compliance and are being operated safely. Among the potential benefits of this enforcement concept are:

- Sending the message that vessels may be inspected at anytime. This expectation encourages owners and operators to remain in compliance with regulations at all times, increasing the quality of regulatory compliance and safety for the citizens of America.
- Reducing the time we spend on scheduled inspections because of increased quality of small passenger vessels due to an everyday commitment to compliance by owners and operators. With fewer deficiencies found at inspections the result is a virtual alternate compliance program.
- Leveling the playing field for both certificated and non-certificated vessels. All know what we expect.
- Providing a method of measuring commercial vessel regulatory compliance other than what we see at a scheduled inspection which sometimes gives us a false picture and unsupported confidence in safety.
- Providing the OCMI with an enhanced confidence in vessel regulatory compliance and a reduction in risk so a shift of resources to other vessel activities with more risk is possible.

- Increasing commitment to regulatory compliance and ownership for safety by vessel owners/operators. Several operators are actually eager and proud to demonstrate that they are in compliance.

The intent of the JOH concept of marine safety is to ensure that all vessels are in compliance with the regulations at all times. This program should decrease the number of marine casualties and encourage vessel owners/operators to understand their safety responsibilities. Most importantly, this program ensures safety equipment and systems and are ready for use should an emergency arise any day the vessel operates. As an added benefit, the number of problems found at periodic inspections decreases allowing Coast Guard resources to be used elsewhere. These are just the initial steps of a more comprehensive program to come. In the near future, JOH programs will be implemented for tugs and other vessels, keeping the Coast Guard in the lead as the world's premier maritime agency.



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Preparedness for Response Exercise Program Drill

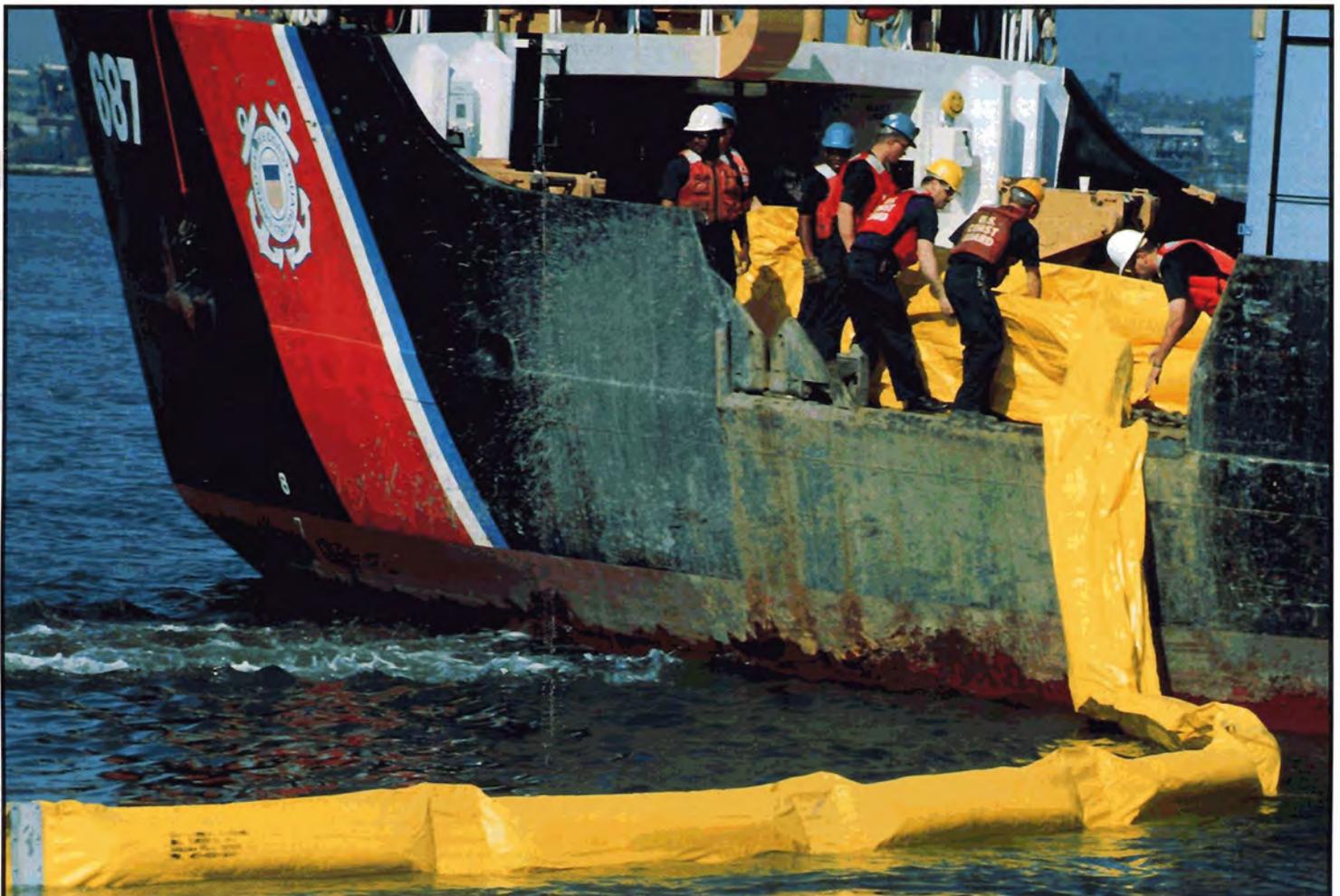
By LTJG R. A. Rinelli

The infamous grounding of the supertanker in Prince William Sound, Alaska, has become the icon of maritime pollution disasters in the United States. Many Americans recognize the ship's name and remember the horrors of the 11 million gallon spill, but if you were to ask them what good came of it, few would mention the United States Coast Guard's National Preparedness for Response Exercise Program (PREP).

Impacting every facet of oil spill response throughout the nation and the world, PREP personnel travel the country to help prepare all levels of government for a full spectrum of Prince William Sound type incidents. Based at the U.S. Coast Guard National Strike Force Coordination Center in Elizabeth City, N.C., PREP personnel coordinate six oil pollution exercises annually, as mandated by the Oil

Pollution Act of 1990. One such exercise was held recently in Corpus Christi, Texas.

The city of Corpus Christi is a sprawling cosmopolitan tourist mecca of hotels and palm-lined boulevards. More than 100 miles of pristine beaches are its number one tourist draw. However, Corpus Christi also has a proud tradition as a port of debarkation for foreign vessels providing vital supplies, including petroleum, from all over the globe. Oil carrying vessels and barges move about 2 million barrels of oil in and out of the port of Corpus Christi every day. The coexistence of the pristine tourist beaches and this huge volume of oil movement made Corpus Christi an excellent location for a PREP exercise. The exercise was designed to simulate a major oil spill, incite a response from the Federal and State governments, the maritime industry, and ultimately, better prepare those participants for an actual response to a worst-case oil discharge



scenario.

The 30-hour exercise began around noon in which a simulated collision occurred between a barge in tow, operated by Coastal Towing Company Inc. of Houston Texas, and a tank ship operated by France Ship Management (Franship) based in Nantes, France. The simulated collision occurred in the shipping channel at the entrance to Corpus Christi Bay. The barge, damaged in the collision, immediately began discharging its cargo of heavy oil into the bay, while the tank ship continued outbound to an offshore anchorage. At 3:00 PM that afternoon, a fire and explosion ensued on the tank ship, causing several cargo tanks to rupture, releasing thick #6 Oil into the Gulf of Mexico. Within the first five hours of the exercise, a total of 5 million gallons of oil entered the sensitive Gulf waters around Corpus Christi.

How did Federal, State and local governments respond? What actions did the responsible parties take? The answers unfolded over the next 30 hours as the exercise was played out in Corpus Christi, across the United States, Mexico, and France.

The primary intent of a PREP exercise is to evaluate the Area Contingency Plan (ACP). An ACP outlines response strategies utilizing area response resources, and was prepared by members of the response community, including federal, state, and industry, to optimize an effort for these types of responses. Guidelines established for PREP have identified 16 national

Important information may be gained utilizing information posted throughout the control and playing spaces at an exercise.



RADM North (center), the former 8th Coast Guard District Commander, was briefed by Exercise Staff personnel during the drill.

objectives. From these, the Exercise Design Team will select those which they feel require testing. To what degree each objective is met is a measure of the success of an exercise. Even when an exercise is declared a success once all objectives have been met, valuable lessons learned are realized. As always, safety is paramount. Pre-exercise briefings for all participants is mandatory. Safety precautions and emergency procedures are discussed and are closely adhered to.

An hour from the start of the Corpus Christi exercise, responders from the Coast Guard, environmental protection representatives from the Texas General Land Office, and the responsible parties, formed a unified command to map out the monumental task at hand — cleaning up a multi-million gallon oil spill. Within two hours of the spill, public safety precautions were in place. The ACP, along with Vessel Response Plans as required under OPA 90, was utilized and a staff assembled to decide the best course of action. Three hours into the scenario, tons of equipment, some simulated, some not, were either enroute or had arrived at the spill site.

As the exercise proceeded, simulated events such as impacted wildlife and changes in weather conditions are injected by exercise controllers to drive the many exercise objectives and issues. This kept the exercise challenging and provided realism to exercise participants.

As the first day of the Corpus Christi exercise progressed, the Unified Command organization was established and appeared to have things well in hand. Objectives were met, and it appeared the exercise might end ahead of schedule. However, as planned, the simulated



explosion and fire on board the tank ship, now anchored offshore, dictated a change to the action plan already devised by the unified command. This assured another full day of activity that would allow for further examination of the ACP.

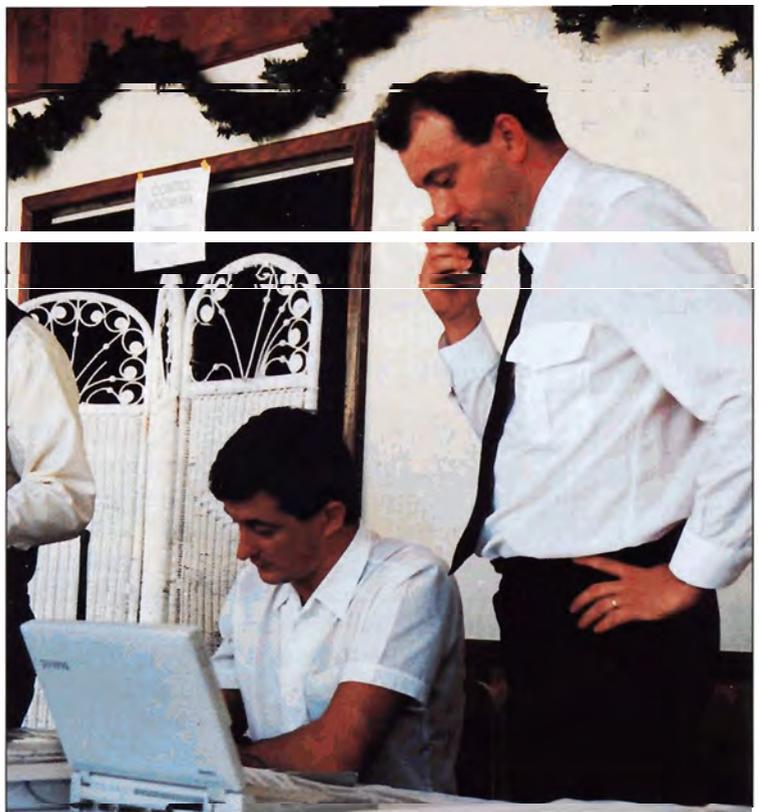
A large-scale exercise like the one in Corpus Christi entails a tremendous amount of coordination throughout all levels of government and private industry, as well as a cadre of concerned citizens. With a foreign shipping company playing, international concerns were represented by personnel in France.

France Shipmanagement, a wholly owned subsidiary of Compagnie Nationale de Navigation, a major French ship-owning group since 1882, was present. The Mexican government participated as well under the joint U.S.-Mexico Contingency Plan for Marine Pollution. Both countries were instrumental in the design of the drill and contributed significantly toward its success.

About 28 weeks of coordination go into the design and execution of each PREP exercise. Each exercise culminates with the development of an evaluation report which reviews the adequacy of various response plans. All participants benefit from the experience. Industry participants have the added benefit of using an exercise of this type to receive credit toward the OPA 90-mandated requirements that they exercise every component of their response plan within a three year time frame.

Was the exercise a success? There is little doubt that when the words "stand down" were

Keeping track of what's happening, updating charts, is a constant job throughout the duration of a drill.



Vessel Masters' expertise is utilized to inject realistic information into the exercise.

passed by the senior controller, an overwhelming feeling of relief permeated playing spaces worldwide. After 30 consecutive hours, physically and mentally exhausted personnel were able to catch their breath long enough to attend an evening social and prepare for the following day's debrief to discuss just that topic—the success of the exercise.

The debrief is a vital part of the evaluation of the exercise. At the debrief, the pace was less hurried. In order to identify areas for improvement, exercise participants spend several hours honestly identifying their response plans' strengths and weaknesses. Presentations of the strengths and weaknesses of the plans, are discussed and this information is later used in the development of the exercise evaluation report. The report, in turn, will be used to formulate changes to the ACP and the other response plans, to "fine tune" these documents for future use. Closing remarks are then made and accolades are passed.

Was it a success? Coast Guard Captain Thomas Rodino, Commanding Officer of the Coast Guard Marine Safety Office in Corpus Christi and the Federal On-Scene Coordinator, summed it up when he said, "The port of Corpus Christi is now better prepared to provide a well-coordinated effort, the optimum effort, in its battle against oil pollution."

Spill of National Significance Exercise

Forges New Partnerships

By Catherine McDermott, USCG Public Affairs

The U S. Coast Guard is staging a SONS (Spill of National Significance) exercise in Philadelphia, September 16-18, 1997. The purpose is to examine and develop agency-specific and interagency critical issues, decision making process, and options at the senior executive level in responding to a Spill of National Significance, such as that of Exxon Valdez.

The Coast Guard's National Strike Force is responsible for the National Preparedness for Response Exercise program (PREP), which meets the intent of section 4202(a) of the Oil Pollution Act of 1990 (OPA 90). In as regard, PREP plays a key role in assuring the preparedness of the National Response System to successfully respond to major oil and hazardous chemical incidents.

This is the first exercise of this magnitude the Coast Guard has undertaken. One of the main objectives will be to gather senior executives from a wide spectrum of interests, responsibilities, and jurisdictions to discuss individual issues, discover commonalities, and plan for an orchestrated response to a Spill of National Significance. In addition, the Coast Guard is to introduce and evaluate the use of the National Interagency Incident Management System Area Command Concept for responses that exceed field command resources.

Interactive seminars will also be introduced as a method of decision making, education, and issue exchange. Senior-level executives from government and industry will come together to discuss relevant issues that might arise during an actual SONS. Among those invited include Secretary Slater, the Director of FEMA, the Administrator of EPA, the Commanding General of the Army Corps Of Engineers, and the Chair of the White House Council on Environmental Quality. The Naval War College will facilitate the seminar discussions.

By undertaking such an exercise, the Coast Guard hopes to further prevention efforts, forge new partnerships between government and industry, and maximize the collective resources available for a response to a nationally significant spill.

SONS

WHAT:

SPILL OF NATIONAL SIGNIFICANCE

WHEN:

SEPTEMBER 16-18, 1997

WHERE:

PHILADELPHIA, PA

Partnership in Maritime Medicine

By Timothy J. Unga, MD, MS, (CAPT, USPHS)
and Michael L. Adess, Ph.D. (CAPT, USPHS)

The U.S. civilian workforce experiences each year approximately 6,500 job-related deaths due to injury, 60,300 deaths due to disease, 13,200,00 nonfatal injuries, and 862,200 illnesses. This job-related morbidity and mortality creates an enormous personal and economic toll (\$171 billion direct and indirect costs), a toll borne by individual workers, their families, their employers, and the nation as a whole.

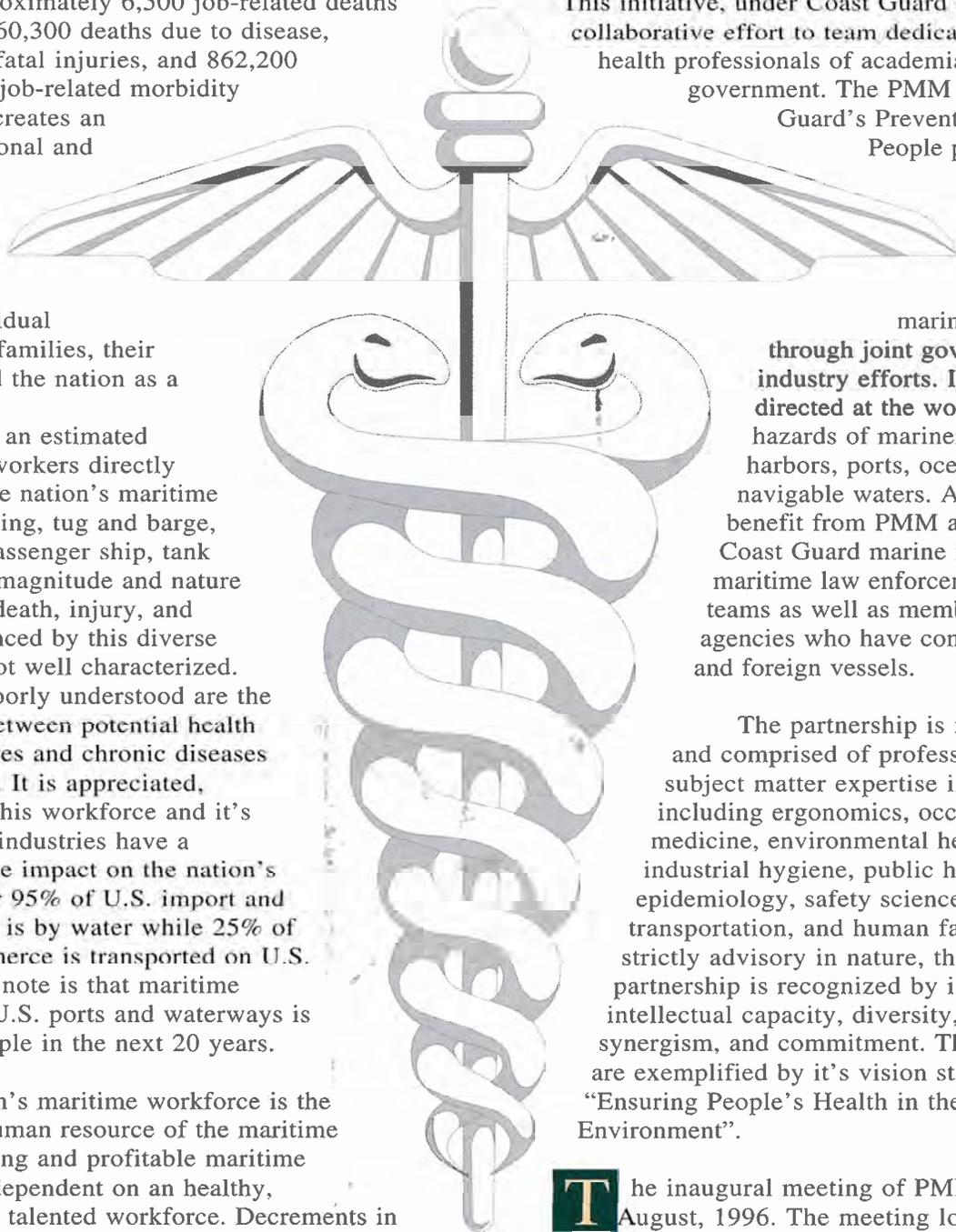
There are an estimated 250,000 U.S. workers directly employed in the nation's maritime industries (fishing, tug and barge, bulk freight, passenger ship, tank ship etc). The magnitude and nature of job-related death, injury, and illness experienced by this diverse workforce is not well characterized. Particularly, poorly understood are the relationships between potential health hazard exposures and chronic diseases such as cancer. It is appreciated, however, that this workforce and its corresponding industries have a disproportionate impact on the nation's economy. Over 95% of U.S. import and export tonnage is by water while 25% of domestic commerce is transported on U.S. waterways. Of note is that maritime commerce by U.S. ports and waterways is projected to triple in the next 20 years.

The nation's maritime workforce is the fundamental human resource of the maritime industries. Strong and profitable maritime industries are dependent on an healthy, competent, and talented workforce. Decrements in worker physical and mental health can affect human performance which will impact the ability of industry to optimize. It is in the best interest of the individual, the industry, and the nation to have a healthy maritime workforce. An important contributor to a health workforce is a safe work environment free of undue health hazards.

The Coast Guard's Partnership in Maritime Medicine (PMM) was formed to bring national focus to the occupational health and safety problems affecting the maritime industries and its workforce. This initiative, under Coast Guard sponsorship, is a collaborative effort to team dedicated safety and health professionals of academia, industry, and government. The PMM supports Coast Guard's Prevention Through People program which was established to prevent maritime casualties and reduce marine pollution through joint governmental and industry efforts. In turn, PMM is directed at the workplace health hazards of mariners of the nation's harbors, ports, oceans, and navigable waters. Also expected to benefit from PMM activities are Coast Guard marine inspectors and maritime law enforcement boarding teams as well as members of federal agencies who have contact with U.S. and foreign vessels.

The partnership is multidisciplinary and comprised of professionals with subject matter expertise in areas including ergonomics, occupational medicine, environmental health sciences, industrial hygiene, public health, epidemiology, safety science, marine transportation, and human factors. Though strictly advisory in nature, the power of the partnership is recognized by its strength of intellectual capacity, diversity, focus, synergism, and commitment. These qualities are exemplified by its vision statement "Ensuring People's Health in the Maritime Environment".

The inaugural meeting of PMM took place in August, 1996. The meeting location was the U.S. Transportation Safety Institute, located in Oklahoma City. The Transportation Safety Institute was specifically chosen to emphasize the importance transportation has, specifically water transportation, on the nation's economic health and world leadership. The inaugural and subsequent meetings have each brought together more than 25 experts



The U.S. civilian workforce experiences each year approximately 6,500 job-related deaths due to injury, 60,300 deaths due to disease, 13,200,00 nonfatal injuries, and 862, 200 illnesses.

from a host of institutions, agencies, and organizations. A sampling of these include Johns Hopkins University, Coast Guard Research and Development Center, University of Washington, Tulane University, Battelle Research Center, National Safety Council, Liberty Mutual, U.S. Navy, Environmental Protection Agency, Sea River Maritime Inc., and various Coast Guard health and marine safety elements. The institutions and organizations represented by each member multiply the potential effectiveness of the PMM by providing a major potential resource of additional talent and capabilities.

The PMM membership discerns that an important mission of the Coast Guard is to address occupational and environmental health and safety problems that impact the maritime workforce and worksite. Accordingly, the purpose of the PMM is to: 1) support the CG mission through advocacy, advisory, and scientific pursuits; 2) provide expert work-related health and safety guidance to the maritime industries; and 3) provide emphasis and national leadership directed at the workplace health and safety hazards of mariners. These activities will take place through collaborative efforts constructed on the basis of sound science, mutual trust, and effective organizational practices.

Despite the youth of the partnership, there has been quick and exciting action to date with much more promising in the near future. The group has established its basic governance, communication linkages, vision and mission statements, and 1-to-5 year plan of action. Members are all connected through an Internet-based communication system allowing ready discourse and free flow of information. A World Wide Web site on the partnership and maritime preventive medicine is moving from its early stages forward to increasingly a more developed electronic resource. Follow-on meetings are set to continue solidification of the partnership and start aggressive efforts on providing meaningful output and deliverables to its intended customers.

The work set before the PMM is daunting. The occupational and environmental health and safety

problems affecting the maritime industries and its workers are diffuse, complex, and difficult to approach. An unique complexity of the maritime arena is that a vessel commonly serves as both workplace and home. Living quarters are in close proximity to engine spaces, cargo holds, storage spaces, and propulsion systems. It is not unusual to find a single ventilation, sanitation, and water system that serves both living and work quarters. The physical constraints of most vessels compress and intermingle work spaces, berthing, passageways, and various ship holds. Crowding of many people in tight living spaces has been a historic concern at sea. Most vessels have many holds accessed through narrow passageways and tight bulk heads with multiple decks connected by steep ladders. Space is at a premium. Workers potentially may never be truly isolated from job-related or worksite health hazards while on board a vessel. This explains, in part, why noise is the most pervasive health hazard.

Another unique facet of the maritime workplace is the macro environment itself. Vessels operate and mariners work and live in and around water. By nature, vessels have to accommodate self contained life support systems that are not needed for most land-based industries. Water environments can present the extreme of thermal conditions and weather states. Vessels commonly operate in isolation and at long distances from shore. There may be little refuge from onboard fire, explosion, ruptured tanks, and leaking hulls. Members who are injured or become ill at sea may not have their urgent health problems adequately addressed for days.

The historic development of marine industries and communities has resulted in sets of law, regulation, work practices, attitudes, and cultures that are often very different from those of land-based industries and communities. In addition, the maritime industries are composed of a host of sub-industries and worker communities that frequently are very different from each other. For example, the commercial fishing industry has little resemblance or interaction with the tank ship industry. This diversity of industries, management, and workers must be taken into consideration when attempting to



effectively remedy occupational health and safety problems.

Like most occupational settings, the majority of known health hazards appear deceptively simple. Most reported deaths and injuries at sea are acute and traumatic. Physical and mechanical hazards serve as the casual basis for most of these. Slips on ladders, falls into holds, entanglement in lines, crushing by shifting cargo, caught by machinery, thermal burns, and falls overboard are among the more commonly sited causes. What is less well known, though perhaps more feared, is cancer, loss of cognitive function, or major physical impairment due to exposure to hazardous chemicals. In recent years, another major concern poorly characterized is illness due to communicable diseases or hazardous biologic agents.

The Partnership in Maritime Medicine was specifically formed with appreciation of all the

complexities described above in mind. The Coast Guard fully believes that meaningful endeavors to act on the intricacies of these maritime issues requires collaboration, leveraging of resources, and team work. There is every hope that the energies and capabilities that the partnership possesses will translate into problem solving of occupational and environmental health and safety concerns in the nation's maritime arena.

CAPT Ungs is Medical Director of Coast Guard's Occupational Health Program and Maritime Medicine Program.

CAPT Adess is Chief of Coast Guard's Human Factors Division.

Success Story



—Prevention Through People, Circa 1964

By Capt. Paul Ives and CDR Peter Randall



Introduction

The Coast Guard's Prevention Through People and Partnership initiatives are new, but the concepts behind them are not. For over 30 years, the Mariners' Advisory Committee for the Bay and River Delaware, or MAC, has embraced and used the basic principles of managing risk, a shared commitment to safety, and seeking and respecting the opinion of mariners and port shareholders to work out problems and find solutions. On a complex waterway that includes 3 states, several port authorities, 2 pilot commissions, overlapping federal jurisdictions, and a diverse international and domestic commercial and recreational customer base, it is the premier forum for marine safety in the Delaware Estuary.



The Waterway

The Delaware River and its principal port, Philadelphia, is one of the oldest seaports in the nation. The wide and open Delaware Bay has a natural depth of 17 feet, necessitating the construction and maintenance of a 40 foot project channel which varies in width from 1,000 feet to 400 feet in the upper river. Deep draft navigation extends from the Delaware Capes to Morrisville, PA, 130 miles from the Atlantic Ocean. Its shoreline borders the states of Delaware, New Jersey, and Pennsylvania. This tri-state Delaware Valley Region is heavily industrialized and supports eight oil refineries, several large container terminals, and numerous bulk handling facilities.

According to recent ACOE tonnage statistics, this port complex ranks second in oil and overall tonnage in the U.S. It is the largest foreign oil import port, and it continues to grow. 125 to 150 thousand DWT tankers are the norm, and 290,000 DWT vessels have called.

In 1964, most of the major oil companies

operated their own fleets of American Flag tankers supported by extensive marine departments. The average ship was in the 32 to 50 thousand ton class, while chartered foreign flag crude carriers were approaching 70 to 80 thousand tons. United States Steel had recently constructed a modern steel mill at Morrisville and was transporting iron ore from Venezuela in 50 to 70 thousand ton vessels.



The MAC's Origins

It was the development of this bulk trade in the upper river and the completion of the 40 foot channel above Philadelphia which occupied the attention of the early Committee. On the last day of August, 1964, a small group of pilots, the marine superintendent of a fleet of bulk carriers, and the local manager of a steamship operator/agency met in the office of the president of the Pilots' Association for the Bay & River Delaware in Philadelphia. The meeting lasted most of the day, and the mariners were determined to solve some of the vexing problems associated with the transit of large deep draft iron ore vessels through the Delaware Bay and River to near the head of navigation at Morrisville, PA.

The pilots, entrusted by law and tradition with ensuring the safety of their vessels, were beginning to feel they might be reaching the upper limits of safe navigation, given the condition of the channel, the uncertainties of the weather, and available technology of the day. On the other hand, the vitality of industry in the three state Delaware Valley depended more and more on the economies generated by larger cargoes and deeper drafts.

It was in this cooperative spirit and a mutual desire for both efficiency and safety that it was agreed to form the Navigation Committee for the Delaware Bay & River, later renamed the Mariner's Advisory Committee for the Bay and River Delaware. The stated purpose of the Committee was: to primarily concern itself with the safety of navigation with particular regard to large ocean going vessels. In this regard, it will recommend safe drafts on the

**The Articles of Organization
go on to state that
“the Committee shall make
specific recommendations:**

- To the local US Corps of Engineers with regard to extent, details, and frequency of hydrographic surveys of the navigable channels.
- To the local US Coast Guard, with regard to number, location, type, and characteristics of navigation aids.
- To existing committees in the area with regard to improvements which would be beneficial to navigation.
- To bridge authorities with regard to coordination between opening of bridges and river traffic.
- To channel users in general with regard to channel characteristics and limitations as they may affect safe navigation of vessels”.

basis of experience in navigation and in the light of current channel information as published by competent authorities.”

This was a unique group from the very beginning. It was quickly decided that membership should be limited to master mariners and local pilots, with representatives of the U.S. Coast Guard and U.S. Army Corps of Engineers participating in the deliberations. The participants would bring extensive knowledge and experience to the table, and they were empowered to make decisions for their principals. The committee would have no specific authority, but voluntary compliance with their recommendations was almost assured because of the wide scope and support of the membership.

The first formal meeting was held on 26 October 1964. The agenda addressed several items, including an agreement that all increases in draft should continue to be made in six inch increments, following a period of experience and review with the previous draft. A ship owner brought up his concern with navigating the upper river in marginal weather conditions. The Committee unanimously agreed that: “... where, after proper consideration of the situation, the pilot considers it unsafe to proceed, the vessel should remain alongside the pier or proceed to an anchorage.” It was further agreed to circularize the marine industry and seek broader representation on the Committee. Within a very few months, representatives of most of the major oil tanker owners and operators had joined the discussions.

As membership expanded to include oil company captains and marine superintendents, a whole new aspect of the Committee developed. It was suggested that the morning part of the meetings be devoted to problems of the lower river and bay, and afternoon sessions concern themselves exclusively with the upper river. Meetings were held quarterly, more often when needed.

The recommendations of this Committee became the standard of due care and preventative action in the local maritime community. As vessel size continued to increase and complex new risks and safety issues were addressed, the finest talent in the maritime industry tackled these problems and guided the growth in a safe and efficient manner. Recommendations to the Corps of Engineers included clearing the 40 foot project channel to its full dimensions with over dredging where practical, and enlarging the anchorages. To the Coast Guard,



the MAC recommended new and brighter aids to navigation and ice resistant buoys and structures. To the owners and operators, the Committee recommended maximum draft guidelines, real time tide management, maximum size vessels for certain anchorages, use of stand-by tugs under certain conditions, and a host of other practical operational issues.

Public members of the Committee appreciated the opportunity to air their concerns and get some really good advice on local matters, a few of which ultimately found their way into the federal regulations. For the most part, regulation was never a goal. Members of the Committee voluntarily complied with their own recommendations and no operator would even think of going out of bounds. In periods of heavy winter ice, when floating aids were often off station or missing, the Committee willingly imposed draft reduction as an additional safety measure, in spite of the heavy cost of lightering. A Captain of the Port Order was never necessary.



The MAC, Three Decades Later

The MAC grew, evolved, and adjusted over the years, and continued to actively solve problems, as a few later day examples illustrate.

In 1991, a collision and several near misses made it apparent there was a serious traffic problem at the mouth of Delaware Bay. The MAC established an ad hoc work group to address the problem, including pilots, ships agents, ship and towing companies, the Maritime Exchange for the Delaware River and Bay, and the Coast Guard. It found that the increasing size of taws enroute to and from New York had, defacto, changed the traffic patterns, and that the existing aids to navigation, pilot area location, traffic separation lanes, and communications practices (or lack of them) were contributing to the risk and confusion of foreign shimasters approaching the Capes. Inbound ships were seeing taws cross ahead, twice, in an effort to follow the charted scheme. The MAC recommended to the Coast Guard that the pilot area be moved and that specific buoys be added, deleted, changed, and moved, creating a less congested entrance scheme. The Coast Guard readily accepted and implemented the recommended changes, which have worked well, and began the international process of realigning the sealanes at IMO.

The winter of 1994 was extremely cold and harsh in the Northeast and brought the worst icing in

• Information sharing and awareness.

A shared sense of responsibility for safety.

• Open and frank discussion, cooperation, and respect.

• Recognition that no single entity has the best solution, but the community team usually does.

• A willingness to recognize the recommendations of the MAC as the de fact^o standard-of-care.

• The ability of non-regulatory solutions to be very effective.

• The high value of expert local input to regulatory solutions.

25 years to the Delaware Valley. Ice extended south to the mouth of Delaware Bay. Range lights were iced over or destroyed, buoys were dragged off station and sank, and ice flows caused ships to drag anchor or tear free of their moorings. The severe weather also created an energy crisis in the Northeast as pipelines froze and oil and gas reserves were caught desperately low. Rolling brown outs and blackouts ensued.

Per the MAC's charter, the Coast Guard requested an emergency MAC meeting. The MAC established operating guidelines and a unified command system-type organization that included the USCG, Army corps of Engineers, the state and docking pilots, the Maritime Exchange, the state offices of emergency management, and the maritime industry itself. The unified organization gathered and passed information, prioritized icebreaking and cargo movements, managed anchorage and dock utilization, and responded to daily emergencies such as ships losing power due to sea chest icing. As a result of the MAC's actions and the willingness of mariners to follow it's recommendations, the waterway remained open and the energy crisis was quickly relieved, safely, without any significant incidents and without the use of federal regulatory authority.

Bigstone Anchorage in Delaware Bay has historically been the best anchorage in the port for ships riding out a blow. Suddenly, in early 1996, as many as 12 tankers in a month dragged anchor when northwest winds reached 25 knots, with 3 of them

grounding. The COTP again asked the MAC to address the problem. In an emergency MAC meeting, it was agreed that the holding ground might be deteriorating due to silting or turnover, and that several operational facets were aggravating the problem. Significantly, no single participant was aware of all of the aggravating factors prior to the meeting. A one-page protocol, and associated responsibilities, was agreed to and immediately implemented as the port standard-of-care. Since then, there have been no recurrences.

The above examples don't fully reflect the anticipatory, preventative work that the MAC routinely does at its quarterly meetings, largely through awareness and information sharing. But they do illustrate many of the elements of its' success:

- Information sharing and awareness.
- A shared sense of responsibility for safety.
- Open and frank discussion, cooperation, and respect.
 - Recognition that no single entity has the best solution, but the community team usually does.
 - A willingness to recognize the recommendations of the MAC as the de facto standard-of-care.
 - The ability of non-regulatory solutions to be very effective.

The high value of expert local input to regulatory solutions.



Into the 21st Century

Things have changed since the 60's. The ships arriving on the Delaware have grown and changed, and bigger tankers and containerships dominate the traffic today. There are more bridges and recreational boaters for mariners to deal with, and prevention of incidents that might result in oil pollution while keeping the critical, ever increasing oil "pipeline" open is a bigger concern than ever. The MAC's membership has changed, too.

In addition to the original "core" group representation, tug and barge companies, representatives of the foreign flag ships, ship's agents, and oil company marine departments predominate the membership today.

The MAC's challenges in the foreseeable future are many:

- Changes with the deepening of the ship channel to 45'.
- Continued refinement of the Vessel Traffic Information System (VTIS).
- FASTSHIP, the 40 knot containership project.
- Possible riverboat gambling on the Delaware.
- Smaller crews, more fatigue, and nagging questions of crew competence.
- Bridge Resource Management.

How new technologies like DGPS fit in the port safety equation.

In addition to new challenges, the MAC will continue to deal with the ever present pressures and challenges of nature and the elements, commercial competition, limited monetary resources, and the ever present human element that leads to 80% of the casualties and near misses. It will continue its tradition of successful, practical maritime safety and prevention through people and partnerships.

Capt Paul Ives has been an active state pilot since 1954, and is past president of the Pilots Association for the Bay and River Delaware.

CDR Peter Randall, USCG, is Executive Officer at Marine Safety Office/Group Philadelphia, and has served as the Coast Guard Chief of Port Operations and Assistant Chief of Inspections in Philadelphia.

If you'd like more information of the Philadelphia Mariner's Advisory Committee (MAC), contact its present president, CAPT Mike Linton, at (215) 922-7172.



Partnerships & PTP

By Kriste Hall

Critical elements of Prevention Through People (PTP) are regulatory reform, cooperative effort, and a risk-based approach to safety. True regulatory reform reduces the dependence on prescriptive regulations while encouraging the marine industry to exceed regulatory minimums. Our approach to reducing maritime accidents (PTP) fits hand-in-hand with the charge in President Clinton's directive of March 1995. In that memo the president promoted four steps to ensure that regulatory reinvention is carried out. Those steps were "cutting out obsolete regulations, rewarding results and not red tape, getting out of Washington and creating grassroots partnerships, and negotiating rather than dictating to our regulated communities."

One of the actions the Coast Guard is taking in our reinventing government efforts is the formation of partnerships. We have formed formal partnerships with industry organizations to work together to address problems. Currently we have partnerships with the American Waterways Operators (AWO), the Passenger Vessel Association (PVA), jointly with the American Petroleum Institute (API) and U.S. Chamber of Shipping (USCS), and most recently the International Council Of Cruise Lines (ICCL). We will outline the activities of each of the partnerships. (There is a separate more detailed article on the PVA partnership included in this issue.)

AWO Partnership

Our first partnership agreement was signed with the AWO in September 1995. The first act was the formation of the Towing Vessel Crew Fatalities Quality Action Team (QAT). They found that the primary cause of death was from people falling overboard, particularly young people new to the industry. Based on their research, an education and outreach program has been developed. This program, S.A.F.E. decks (Stay Alert For the Edge) is aimed at teaching these people how to survive in their work environment. A brochure has been developed as one of the first elements in this new safety program. In April 1997, U.S. Deputy Secretary of Transportation M. J. J. Downey presented Vice President Gore's special recognition, the Hammer Award, to the U.S. Coast Guard-American Waterways Operators quality partnership, as they commemorated their first year of activities. "This partnership is a model of President Clinton's vision of making government work better and cost less, while also

contributing to safety and environmental protection," according to Downey. "The

trust and communication established between the Coast Guard and AWO illustrate how the government and the private sector can work together and achieve results."

In the fall of 1996, we formed a second QAT under this partnership to look at tank barge transfer spills, the biggest source of chronic oil pollution. The final report was presented to the CG and AWO partnership's national steering committee in February this year. Preliminary findings support the positive impact that can be made by Prevention Through People. "People" was identified as the cause of tank barge transfer spills in 46% of the cases studied. The preliminary recommendations of the QAT include items geared towards improved company procedures and personnel training, as well as an industry survey of "best practices," many of which relate to the human element in transfer spills.

API and USCS Partnership

Increasingly, the area of communications is another part of the working environment where the Coast Guard and industry are looking. As one of the tasks for our partnership with API and USCS, we are working to minimize the non-essential communications that occur during critical operations and generally improving communication between the members of the bridge team. Some of these critical times are during docking or anchoring and while moving through areas where maneuverability is restricted. The recommendations are still in the developmental stage, but some of the possible solutions revolve around the timing and standardization of routine communications and detailed planning before critical operations so that everyone knows exactly what is expected of them.

ICCL Partnership

The purpose of the partnership with ICCL is to promote safety and environmental protection while strengthening communications and the working relationship between the international passenger vessel industry and the USCG. Admiral Card signed the agreement at the Seatrade Conference in March 1997. This partnership is not intended to undermine the authority of the foreign-flag or international conventions which govern safe operations, nor is it intended to supplant the role of the U.S. Port State Control program. However, the partnership is intended to complement these governing bodies through an efficient means for joint Coast Guard/industry talks and action.

RADM James Card,
former Chief Marine
Safety and
Environmental
Protection and
Mr. Richard Mosteller,
1995 PVA President,
sign the Partnership
Agreement at the
25th
Convention
St. Louis, Mo.



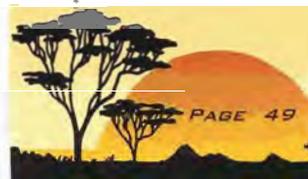
Other Cooperative Efforts

PTP cooperative efforts and partnerships go beyond these partnerships, however. One of the most effective is through mariner involvement in the risk assessments being carried out around the country. Last year the USCG in consult developed a summary guide or Risk Based Decision Making Guideline; this past winter those guidelines were delivered to our Captains of the Port (COTP), all the districts and Coast Guard activities. These guidelines provide tools that can be used in a marine community where stakeholders can gather to identify the hazards in the port/operations and systematically address these hazards. A critical step in that process is the involvement of local masters and pilots in identifying hazards that casualty statistics may not show. Conducting a risk assessment in this manner can also help focus local contingency planning efforts, thus addressing the consequences of accidents. The end result of this process will be cost-effective countermeasures. A copy can be obtained by calling G-MSE (202) 267-2997.

This risk-based approach has been implemented in a number of ports around the country. In San Diego, California, local marine firms approached the COTP for alternatives for mobile transfer facilities handling oily water/bilge slop transfers. Together, the COTP and industry representatives determined what practices could be modified to ease the burden of compliance without endangering the environment. In Boston, Massachusetts, the COTP and representatives from a local liquid natural gas (LNG) distributor developed time and labor saving practices to accommodate

expected increased LNG shipments to the local harbor. The COTP at MSO Juneau, Alaska, had noted an increase in the number of small passenger vessel casualties in Tracy Arm, a fjord southeast of Juneau. The MSO and several passenger vessel operators developed an industry standard of care for operating in this narrow ice-choked waterway. Working together, the USCG and the operators familiar with the conditions in Tracy Arm gathered to outline the risks of operations, rank the risks, and decide on appropriate and effective procedures to minimize the risks. The result is the "Tour Operator's Suggested Guidelines for Vessel Operations in Tracy Arm." A copy can be obtained by contacting MSO Juneau, Alaska.

Those are just a few examples of PTP inspired partnerships between local businesses and port authorities working together to head off problems. The principle of PTP that seems to get to the forefront of almost everything we are doing is "honor the mariner." This means that we do all we can to include the mariner. Use their professional and practical knowledge of the best way to do his job safely. We need their wisdom to find the balance between people and technology, and between different components of our transportation system. Communication is the key. Use a systematic approach to safety by concentrating on the human and organizational elements to provide continuous improvement in the way we do the business we all care about - maritime safety and protection of the harbors and seas.



Nautical Queries

Engineering Questions

1. Improper seating of an air starting check valve in an operating diesel engine is indicated by

- A. noise coming from the air starting valve
- B. an overheated air supply pipe to the cylinder head
- C. continuous operation of the starting air compressor
- D. zero air pressure in the air starting system

2. An axial piston, variable stroke pump is used in a vessel's hydraulic steering gear. Under pressure, oil continually leaks out from between the valve plate/cylinder barrel and will

- A. cause loss of hydraulic oil from the system
- B. result in extreme damage to the pump
- C. cause damage to the pump if not continually drained from the pump casing
- D. result in the system high side pressure to substantially drop off

3. If the viscosity of the liquid being transferred remains constant as the discharge pressure increases, the rotary pump

- A. capacity will increase
- B. capacity will decrease
- C. suction pressure will increase
- D. suction pressure will decrease

4. Which instrument is used to take crankshaft deflection readings?

- A. Web deflection gage
- B. Outside micrometer
- C. Strain gage
- D. Gage block

5. The rotary motion of a diesel engine crankshaft is obtained from the up and down motion of the piston via the

- A. camshaft
- B. reduction gears
- C. rocker arm
- D. connecting or piston rod

6. The vertical motion of a floating vessel is known as

- A. surge
- B. sway
- C. heave
- D. pitch

7. A semiconductor is a material with a

- A. conductivity higher than a normal conductor
- B. conductivity higher than a normal insulator
- C. high conductivity at low temperatures
- D. low conductivity at high temperatures

8. In an induction motor, rotor currents are circulated by the

- A. slip rings and brushes
- B. an armature and brushes
- C. inductive reaction of the rotating stator field
- D. external variable resistors

9. If the synchronous speed of a 12 pole, polyphase, induction motor operating at 60 Hz were 600 RPM, how many poles will be required in a similar motor operating at the same frequency but having a synchronous speed of 900 RPM?

- A. 4
- B. 6
- C. 8
- D. 18

10. Excessive lost motion in the valve mechanism of a duplex reciprocating pump will cause the

- A. pump to short stroke continuously at both ends of the stroke for both cylinders
- B. pistons to stop in mid-stroke
- C. pump to operate sluggishly
- D. cushioning valves to wear

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

Answers

Deck Questions

1. According to Buys Ballot's law, when an observer in the Northern Hemisphere experiences a northwest wind, the center of low pressure is located to the

- A. northeast
- B. west-southwest
- C. northwest
- D. south-southeast

2. When a tug is pulling on a hawser at right angles to the ship, and the pilot wants to come ahead or astern on the ship's engine, care must be taken that the pilot

- A. does not break the towline
- B. does not get too much way on the vessel
- C. keeps a steady course so the towline will remain tight
- D. turns the ship toward the direction of pull

3. Wind direction may be determined by observing all of the following EXCEPT

- A. low clouds
- B. waves
- C. whitecaps
- D. swells

4. Why should foam be banked off a bulkhead when extinguishing an oil fire?

- A. To coat the surrounding bulkheads with foam in case the fire spreads
- B. To cool the bulkhead closest to the fire
- C. To prevent any oil on the bulkheads from igniting
- D. To prevent agitation of the oil and spreading the fire

5. You are the Chief Mate of a 30,000-DWT tankship. The vessel is engaged in trade with another country signatory to MARPOL 73/78. Which statement is TRUE?

- A. The Certificate of Inspection serves as prima facie evidence of complying with MARPOL 73/78.
- B. The IOPP Certificate is valid for 4 years.
- C. An IOPP Certificate is invalidated if the ship carries cargoes outside the classes authorized thereon.
- D. An IOPP Certificate is renewed at each inspection for certification.

6. The York-Antwerp Rules relate to the

- A. minimum required number of officers and crew
- B. settlement of general average claims
- C. ship owner's responsibilities to provide a well-found vessel Subtopic: in a charter party
- D. navigation regulations that apply in the English Channel

7. The owners of the S.S. Short Haul agree to a charter with the Longsplice Steamship Company. The owners stipulate in the charter party that the regular Master must be employed as the vessel's Master for the entire life of the contract. Which charter has been affected?

- A. Bareboat
- B. Lease
- C. Time
- D. Voyage

8. The usual depth of a beam bracket is

- A. 2 1/2 times the depth of the beam
- B. 5 times the depth of the beam
- C. 10 times the depth of the beam
- D. same depth as the beam

9. Which type of line will stretch the most when under strain?

- A. Polypropylene
- B. Dacron
- C. Nylon
- D. Manila

10. In a Williamson turn, the rudder is put over the full until the

- A. vessel has turned 90° from her original course
- B. vessel has turned 60° from her original course
- C. vessel is on a reciprocal course
- D. emergency turn signal sounds

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



Mariner's Seabag



Changes In Merchant Marine Exam Generation And Distribution

Changes in the merchant marine examination system have proceeded at a rapid pace over the past few years. This has resulted in significant savings in time, supplies and postage.

Five years ago modules were randomly generated on an antiquated computer land mailed to the Regional Exam Centers (REC's). This was a lengthy process as the modules then had to be formatted, lengthy questions copied from another file and answer keys corrected. The most time consuming operation were the reviews by 3 or 4 subject matter experts. At that time the exam branch consisted of 12 people and the personnel were unavailable to extensively review each module which had to be reprinted after each review. After this processing, they were printed in bulk and the required number of modules for each REC were packaged. The boxes were then sent by certified mail. A distribution letter was included stating when to replace the corresponding old modules. Module correction letters were later mailed, if it became necessary to correct any questions.

Three years ago, we began transmitting modules electronically by e-mail. This reduced the time in transit to the REC's from several days to just a few hours. It also effected great savings in paper and postage. At the same time, we reduced most modules to a single review as the exam branch was being streamlined to 4 people and the question item quality increased. In using e-mail we managed to keep up a weekly distribution of new modules. Distribution letters and module change letters were sent and received the same day at the REC's.

At present, we are generating modules on a modern Pentium computer utilizing the Windows NT environment. This eliminates the need for any special formatting of the finished product. Module review is now accomplished more rapidly on the computer's monitor. They are then stocked on a more sophisticated central computer called the SUN. We are now in the process of increasing the available supply of each subject module to 10 or more available at any given time. With the new Random Generation Exam System (RGES), it is possible to generate a module in less than

one minute. At this rate, modules can be replaced in the system more frequently ensuring a consistently fresh supply to the field. In this manner, the most frequently used modules will be replaced most often.

The REC's can access the SUN computer and print the modules using the Merchant Mariner Licensing and Documentation system (MMLD). After the applicant has completed the module, the paper copy may then be destroyed. The REC's will not keep any modules on file as in the past and likewise, there is no necessity for hard copy files at the National Maritime Center). Any corrections or changes to modules are made by specialists at the NMC directly into the SUN computer thereby ensuring that each module subsequently printed is current. This eliminates the need for distribution or module change letters.

In the future we envision the generating of unique modules at the REC's. Each applicant for a merchant marine license or endorsement will have a randomly generated exam for his or her use alone. NMC will not be directly involved in exam generation and its primary concern will be to maintain, populate and upgrade the data base.

The accompanying diagram shows the evolution of the exam generation and distribution process.

EVOLUTION OF EXAM MODULE DISTRIBUTION

**5 Years Ago
MVP-5**

**3 Years Ago
MVP-5**

**Present
NMC**

**Future
NMC**

**Random
Generate**

**Random
Generate**

**Random
Generate**

**Maintain
Database**

**Format
Modules**

**Format
Modules**

**1
Review**

**4
Reviews**

**1
Review**

**Stock
Central
Computer**

**Print
Copies**

E-Mail

**Package
Modules**

**Certified
Mail**

REGIONAL EXAMINATION CENTERS
Past Present Future

**Modules
on File**

**Individually
Printed**

**Individually
Printed**

MERCHANT MARINER APPLICANTS

U.S. Department
of Transportation

United States
Coast Guard

National Maritime Center
4200 Wilson Blvd., Suite 510
Arlington, VA 22203-1804

Official Business
Penalty for Private Use \$300

