U.S. Coast Guard

Fall 2006 / Winter 2007

ENGINEERING, ELECTRONICS & LOGISTICS

Quarterly

You can visit us on the web at www.uscg.mil/systems/EEL_QUARTERLY.htm

All issues are available to Coast Guard personnel on *CG Central* under "Magazine and Newsletter"

Fall 2006 / Winter 2007
Vol. 10, No.39

U. S. Coast Guard Engineering, Electronics and Logistics Quarterly

COMDTPUB P5700.2

RADM Dale.G. Gabel
Assistant Commandant for
Engineering and Logistics

Mr. Kerry L. Freese
Managing Editor and
Publication Staff

The *U.S. Coast Guard Engineering, Electronics and Logistics Quarterly* is published quarterly by the Assistant Commandant for Engineering and Logistics. This publication is unofficial and not authority for action. Views and opinions expressed are not necessarily those of the U.S. Department of Homeland Security or the U.S. Coast Guard. We encourage readers to submit articles and letters to the editor. Authors are encouraged to submit articles through the Program Representative. The *U.S. Coast Guard Engineering, Electronics and Logistics Quarterly* Editor and the Engineering and Logistics Directorate Management Board retain final approval authority for the publication or non-publication of all article submissions. We will make every effort to publish all submissions. We also reserve the right to edit submissions for length, accuracy and grammar. All letters to the editor must be signed along with current address and telephone number.

Article and Photo Submissions:

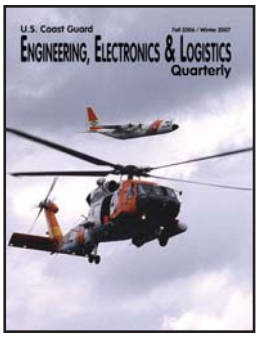
Articles should be about 500 words long; however, C4IT, engineering and logistics specific articles can be up to 2,000 words -- all acronyms must be spelled out when first used. To have your article considered for publication, photo(s) must accompany each article. Articles can be submitted by FedEx in hard copy and/or in Microsoft Word on a 3.5 disk, CD, or e-mailed electronically. Please submit original photographs and graphics. All slides, photos, graphics and illustrations should be in color where possible. Please include **by-line** when submitting article Let us know if you want your photos and graphics returned to you. Submit inquiries, letters, articles, and photographs to:

Editor, *U.S. Coast Guard Engineering, Electronics and Logistics Quarterly*
Commandant (CG-4)
Room 6120
2100 Second St., SW
Washington, DC 20593-0001

Phone: 202-475-5767
FAX: 202-267-4245
E-mail: Kerry.L.Freese@uscg.mil

Submission deadlines are as follows:

Spring 2007 - 03 January 2007
Summer 2007 - 03 April 2007
Fall 2007 - 03 July 2007
Winter 2008 - 03 October 2007



On the Cover: *The Search And Rescue Optimal Planning System (SAROPS) is helping to locate lost mariners during search and rescue cases ... better tools through electronics!* *Read more on page 46.*

Contents

Editor’s Notes: **Due to a few set-backs, that have caused publishing delays to the Fall issue, we have decided to combine the Fall 2006 and Winter 2007 issues into one (this one). We will return to our regular schedule with the Spring 2007 issue. Thank you for your patients and we hope you enjoy this issue.**

From the Assistant Commandant

Welcome to another edition of *Engineering, Electronics, and Logistics Quarterly*. My last column was devoted to the goals and challenges of Logistics Transformation. I will build on that theme this time, and introduce you to some key concepts and terms associated with the effort.

First and foremost, the work of the Logistics Transformation Program Integration Office (LTPIO) is focused on business processes. A **process** is the sequence of operations where time, expertise, or other resources are used to produce a value added output. The LTPIO is aggressively engaged in developing a complete set of logistics processes representing a new logistics model that will be applied to the sustainment of all assets. Once implemented, this set of processes will enable the Coast Guard to more effectively measure, manage, and improve the quality, consistency, and efficiency of our sustainment efforts.

The new logistics model has three key characteristics that I want mention.

❑ Rigorous **configuration management**, with associated compliance inspections, to ensure that all asset and system configurations are safe, effective, and supportable when they are installed and remain so throughout their entire life cycle. Configuration management is all about knowing the systems, sub-systems, and components installed on assets, and is important in ensuring that the correct maintenance is performed, and the correct parts, equipment, and supplies are available.

❑ **Bi-level maintenance** with standard maintenance procedures. Maintenance activities carried out by a unit are considered **organizational level** maintenance. All other maintenance is defined as depot level maintenance. All **depot level** activities for a particular asset type, or group of assets with similar characteristics, are managed by the asset Product Line. The **Product Line** contains engineering and technical services, supply, contracting, depot maintenance execution, and other support functions necessary to sustain the asset during its life cycle, and is the central source of services for a unit. I'll describe the organization and importance of the Product Line concept in more detail in my next column. This structure will significantly streamline the way we manage and deliver logistics, and will eliminate needless hand-offs and coordination among the current complex web of logistics providers.

❑ Centralized **supply chain management** with supply spending driven by maintenance requirements. Accurate configuration information and a flatter organization enable supply management across a wider segment of the system, which in turn allows an improved flow of parts to units based on current and predicted needs at reduced cost.

As you can see, an asset's maintenance program is critically important to the success of the system. All maintenance programs will be developed using **Reliability Centered Maintenance** (RCM). Employing strategies based on the consequences and cost associated with equipment failure modes, RCM results in an optimal mix of reactive, time or interval-based, condition-based, and proactive maintenance practices designed to retain the reliability and safety of an asset throughout its life cycle.

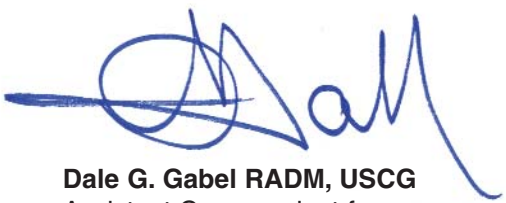
Finally, it's important to understand that all sustainment efforts in this system are **information-enabled**. Asset configuration, maintenance requirements and procedures, discrepancy reporting, readiness status monitoring, supply system responsiveness, and inventory tracking are all maintained in a central information system. This system provides total asset visibility, and near real time information to Coast Guard personnel and select suppliers to improve field level support, supply chain efficiency, and overall management decision making.

I want to conclude by providing a glimpse at the realigned support organization into which this new logistics model fits - the Mission Support Organization. The result of work undertaken to satisfy Commandant's Intent Action Order #4, the mission support organization is responsible for life cycle management of assets (ships, planes, buildings, etc.) from acquisition through disposal, as well as other support functions such as human resources management.

Headed by a Deputy Commandant for Mission Support, the organization incorporates Human Resources; Engineering and Logistics; Acquisition; and Command Control, Communications, and Information Technology under a single leader whose focus is on supporting mission execution. This alignment will improve personnel and materiel readiness, enhance asset support, and strengthen technical program management service-wide. Four Logistics Centers (Aviation, Surface Forces Shore Infrastructure, and C4IT) provide services to the fleet through the asset Product Lines that I mentioned earlier. Additionally, the bi-level support and product line concepts will be extended as much as possible to business lines in other functional areas such as personnel support, training, health and safety, and information system and software management. The model is simple, responsive, and effective.

The Mission Support Organization holds tremendous potential as we build a future where Coast Guard men and women are the best trained and most versatile workforce in government, equipped with the most capable fleet of multi-mission ships, aircraft, boats, and command-and-control systems available. Design work is beginning, and I'll provide periodic progress reports as details are developed.

Thank you for your hard work, dedication, and commitment to sustaining the systems so critical to the Coast Guard's performance. Keep up the great work!



Dale G. Gabel RADM, USCG
Assistant Commandant for
Engineering and Logistics

How healthy are your Electric Motors? (NESU Honolulu)

Naval Engineering Support Unit (NESU) Honolulu has taken a piece of equipment supplied by ELC (017) (Maintenance Branch) and exploited it for the benefit of all District 14 homeported units. Motor Circuit Analysis (MCA) is a small piece of the Condition Based Maintenance initiatives currently being used in the Coast Guard to increase operational availability. A significant advantage over the meager, MCA allows the technician to view the simple and complex resistance, inductance, phase angle, ground insulation condition and other facets to determine the condition of the electric windings.

In anticipation of widespread use of this technology on our cutters, NESU decided to try MCA on all 378 WHEC (High Endurance Cutter) and 225 WLB (Seagoing Buoy Tender) critical motors. Critical motors were designated as those currently on the cutter's preventative maintenance cards which require meager. The trial showed that MCA is extremely feasible to perform in lieu of meager tests, is easy to perform, and provides the technician with more diagnostic information to make a repair decision. Over the eight months of trial, numerous motors were found to have one or more faults, and these faults were also confirmed by the local repair facility. Many of these motors had passed previous meager tests. The increased availability of cutter systems is difficult to ascertain, but if one were to assume each motor would fail during the cutter's next deployment, cost avoidance would be greater than $100,000 in transportation and repair costs alone. If interested in more information please contact NESU Honolulu at (808) 843-3874.

"Service to the Fleet ... And Then Some!" (CG Yard)

The Coast Guard Cutter AXE entered the Yard in April 2005 to begin the first Coast Guard WLIC/WLR (Inland Construction Tender/River Buoy Tender) Maintenance Sustainment Availability (MSA) Project. The overhaul was designed to provide substantial upgrades needed to eliminate problems with obsolete and unsupportable equipment/systems in order to extend the life of the vessel.

Over the past 13 months, skilled Yard engineers and tradesmen worked on the restoration and installation

of 34 work items of which 75% to 85% were prototype systems. Some of the upgrade projects included: new main engines, generators, switchboards, engine/power distribution control systems, reduction gears, shafts, props, shaft seals, and modifications to the fuel piping/air intakes.

The AXE departed the Yard on May 16, 2006, bound for Norfolk, Virginia where it was loaded on a barge and transported to its homeport in Morgan City, Louisiana.

Yard Completes Work on First 210' MEP (CG Yard)

The Coast Guard Cutter DEPENDABLE, homeported in Cape May, New Jersey, entered the Yard last fall to undergo the first Mission Effectiveness Project (MEP) for a 210' cutter. The Yard engineers and tradesmen provided the standard drydock package for the ship's upgrade, but also installed some firsts for the 210s, including the Over-the-Horizon boat davit.

In an effort to catch drug runners, the Coast Guard has been equipping its high and medium endurance cutters with new "Over-the-Horizon" boats. The fast craft have a broad traveling range designed to chase drug smugglers "Over-the-Horizon" and seize their contraband. For Coast Guard ships to carry the new boats, modifications to the cutters are required. Changes include the installation of larger and heavier boat davits, or cranes, that place the boats into and out of the water. The Yard has completed several "Over-the-Horizon" boat davit installations on the 270' and 378' cutter fleet. The CGC DEPENDABLE was the first 210' WMEC (medium endurance cutter) to receive the new equipment under the MEP.

Other MEP firsts for DEPENDABLE included installation of a new garbage grinder and a new moisture separator system to eliminate potential engine erosion.

The 38 year old DEPENDABLE is no stranger to Baltimore having completed its Major Maintenance Availability at the Yard in August, 1997. The Yard concluded this MEP in mid-March and DEPENDABLE departed with the distinction as the inaugural 210' medium endurance cutter to receive an upgrade under the Service's Mission Effectiveness Project.

Earth Day 2006! (CG Yard)

In celebration of Earth Day 2006, the Yard's Facilities Management Division sponsored clean-up activities on April 21st. From morning till noon, civilian and military Earth Day teams tackled Yard clean-up spots, stretching from the shipyard's entrance to the shipways.

The Earth Day 2006 story is graphically depicted in the photos found on the next page: The "Today Is Earth Day" entrance sign greeted campus employees as they arrived to work on April 21 (Pic 1). Yard employees Penny Yacobi and Mary Ann

Stanke planted bulbs near the Drydock Club (Pic 2). Teams tackled clean-up of the old railroad depot between buildings 3 and 24 (Pic 3). Yard Environmental Engineer Howard Galliford bagged trash at the Yard's entrance on Hawkins Point Road (Pic 4). A major focus of the 2006 Earth Day celebration was clean-up of the Yards shipways - before (Pic 5) and after (Pic 6).

Picture 1.

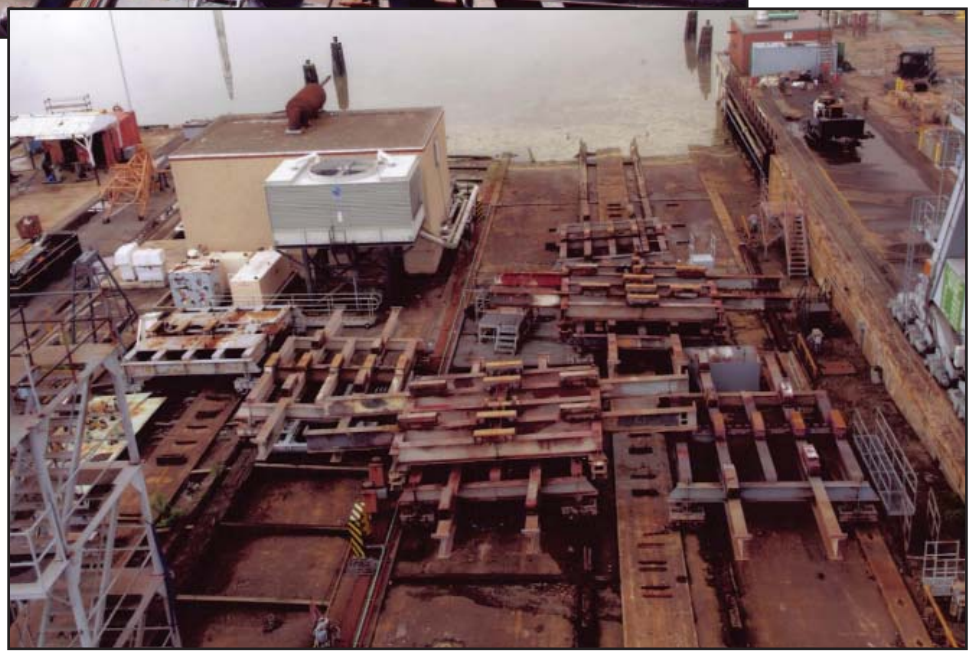
Picture 2.

Picture 3.

Picture 4.

Picture 5.

Picture 6.



Yard Completes First MEP on CGC TAMPA (CG Yard)

Cutter Departs Ahead of Schedule ... The Yard completed the first Mission Effectiveness Project (MEP) on the Coast Guard Cutter TAMPA on February 2, 2006. The Cutter was the first 270' medium endurance cutter to undergo MEP. The project is intended to replace aging systems on board select ships in order to improve reliability and reduce future maintenance costs. MEP is a multi-year modernization project expected to continue at the Yard throughout the next eight years.

TAMPA entered the Yard in May, 2005, with accompanied fanfare befitting the inaugural MEP cutter. An all-hands celebration hosting members of the Maryland Congressional delegation, flag

officers, and invited guests commenced the MEP at the Yard. As the arriving TAMPA crew "manned the rails" and the U.S. Naval Academy Band played "Semper Paratus," the MEP began.

MEP eliminates many of the problems associated with obsolete and unsupportable equipment/systems. Besides having a standard dry docking package (underwater body paint, freeboard and superstructure painting, etc.), the Cutter received the new Over-the-Horizon boat davit; new reverse osmosis water maker, main diesel engine electronic governor control, engine room fire protection system, and oily water separator; newly installed tank level indicator, air conditioning upgrades, and Mark 39 gyro compass, and renovated crew berthing areas including heads. The Yard also absorbed 10% growth work -- new repair items found as a result of modifications to TAMPA.

The MEP is designed to extend the service life of these cutters for an additional 10 to 15 years. The Mission Effectiveness Project is intended to ensure that the Coast Guard medium endurance cutter fleet can perform their assigned missions until replacement cutters are delivered under the Coast Guard's Deepwater Project.

The MEP is an approximately $30 million annual project for the Yard and accounts for nearly 60% of the shipyard's workload. Timely delivery is a key goal. TAMPA's MEP was completed one week ahead of schedule, allowing the ship to depart and return to its operational missions in Portsmouth, Virginia.

Yard Commences Second Trades Training Class (CG Yard)

"Assuring the Future" ... The second trades training class began at the Yard in January 2006 in an on-going effort to "assure the Yard's future" through development of highly skilled employees in the trades. The class of 28 students will study trades theory, receive on-the-job instruction in their respective trades, and attend college courses in math and English over the next three years. While in the program, the students are permanent career-conditional employees. Upon anticipated graduation in 2009, they become WG-10 journeymen and journeywomen at the Yard.

The first trades training class commenced in January 2004. To date, 20 students have been diligently studying and working toward their intended graduation in 2007. With the current age of the Yard's workforce averaging 49 years, the education of these trades training students will assure the Yard's tradition of quality of service to the Coast Guard fleet well into the future.

In the photo above, Yard Industrial Department retiree, T.K. Turner, provides instruction in blue print reading to students of the newly formed trades training class. Offsite classwork is accomplished at the Community College of Baltimore County Dundalk campus.

The student roster of the second trades training class includes: Matthew Aaron, George Bailey, Jeff Cox, Brian Flaxcomb; Richard Frankton, Jason Freburger, Chris Hamlett, Keith Hare, Rick Hare, Jeffrey Kaminski, Travis Mackin, Keith Maith, John Mark, Robert Mitten, Jonathan Overton, Cory Owens, Shawn Pate, John Pickron, Gary Ricks, Clifford Rodique, Dan Sass, Reese Scott, Brittany Slouck, Donald Storm, Melody Teakle, Brian Wagner, Brian Weatherly, and James Young.

CGC TYBEE Enters Yard as First 110' MEP Cutter (CG Yard)

The Commandant of the Coast Guard recently announced that selected 110' cutters will undergo renovation as a Mission Effectiveness Project (MEP) at the Yard. The modernization program is intended to replace aging systems on board these cutters in order to improve reliability and reduce future maintenance costs. MEP is designed to extend the service life of these cutters for an additional 10 to 15 years.

Anticipating completion of six 110' MEPs over the next two years, the Yard welcomed the inaugural 110' MEP cutter, the TYBEE, on March 13th. The 110' Coast Guard Cutter OCRACOKE under went MEP at the Yard in July.

During the 110' MEP, unreliable, high-maintenance, and difficult-to-support equipment and systems will be replaced, in addition to performing structural repairs. Each 110' cutter's MEP will extend over a 12-month period.

The 110' MEP involves hull renewal, electronics upgrades, new prototype equipment such as switchboards and generator sets, rip out and renewal of all electric cabling, and rehabilitated berthing spaces.

Over the past four years, the Yard performed a Bridging Strategy Project (BSP) on eleven of the 110' cutter fleet. The BSP typically covered a 10-month repair period that identified and repaired hull and structural deterioration.

The Yard is also currently performing a Mission Effectiveness Project for 27 cutters in the 210' and 270' medium endurance cutter fleet, a project planned over the next eight years.

Station Juneau Expansion Ribbon Cutter Ceremony

JUNEAU, Alaska - RADM James C. Olson (center), Commander 17th Coast Guard District, Chief Petty Officer Jeffrey Kihlmire (left), Coast Guard Station Juneau officer-in-charge, and Richard Moniak (right), the engineer-in-charge of the project, take part in a ribbon cutting ceremony at the station January 13. The ceremony signifies the completion of an eight-month $920,000 expansion of Station Juneau that will provide additional space for training and increased capability for the station to serve as a backup command center in an emergency. (Official U.S. Coast Guard photo by Petty Officer Eric Chandler)

Deepwater

The Deepwater Program's first-in-class National Security Cutter, the Bertholf, will be launched this autumn and delivered to the Coast Guard next year. The ship, shown here in May when it was approximately 50 percent complete, is being built at the Northrop Grumman Ship Systems yard in Pascagoula, Miss. Photo by NGSS.

Admiral Allen: "Cut Steel, Float Boats"

Commandant Calls Deepwater Program the "Centerpiece" of Coast Guard's Future Capability

by Capt. Gordon I. Peterson, USN (Ret.)

Testifying before the U.S. House of Representatives Subcommittee on Coast Guard and Maritime Transportation on June 14, Coast Guard Commandant, ADM Thad Allen, left no doubt in the minds of subcommittee members of his determination to advance the Deepwater Program with a needed sense of urgency.

"People are nothing without platforms," Allen said in his opening remarks. "I have made it clear that my message is 'ruthless execution.' We must cut steel and float boats."

In describing the important ways that the Deepwater Program will help close today's operational gaps in patrol boat cutter hours and maritime patrol aircraft flight hours, Allen expressed his commitment to meet the program's cost, schedule, and performance objectives.

"The Deepwater Program is the centerpiece of the Coast Guard's future capability in nearly all of our maritime missions," Allen said in his written statement. "The Deepwater Program will provide more capable, interoperable assets that will enable our forces to close today's operational gaps and to perform their demanding missions more effectively, efficiently, and safely."

In the Commandant's view, the Deepwater Program has made steady progress over the past year implementing its revised post-9/11 plan. "The revised plan, a $24-billion/25-year sustainment, modernization, conversion, and recapitalization effort ensures Deepwater cutters and aircraft will be equipped with the right systems and capabilities to operate successfully in all mission areas in the face of a more challenging post-9/11 threat environment," he said.

Still, ADM Allen acknowledged that "not all has been smooth sailing" in the large and complex Deepwater acquisition. Among near-term challenges, the Commandant listed the design and construction of a new patrol boat to restore critical capability, funding of Deepwater's system for integrated logistics, and the recruitment and certification of acquisition professionals needed for program support of the multibillion-dollar Deepwater project.

Aging Assets a Limiting Factor

The Coast Guard's counter-drug operations during the past year illustrate the challenges of performing a high-priority mission with aging legacy assets. "As a result of increases in the level of timely, actionable counter-drug intelligence," Allen said, "we now have an insufficient number of assets to intercept all suspect vessels identified by Panama Express and other successful interagency initiatives."

"Sufficient numbers of long-range maritime air patrol aircraft are critical to the early detection of suspect vessels," he continued. "Cutters, patrol boats, armed helicopters, and fast pursuit boats then play a carefully orchestrated role in their subsequent interdiction and apprehension."

During 2005, working closely with other federal agencies, the Coast Guard prevented more than 338,000 pounds of cocaine from entering the United States by sea -- an all-time maritime record. The Coast Guard also intercepted 9,500 undocumented migrants attempting to enter the United States illegally by sea last year -- a 100 percent increase over 2001 and the second highest number in any non-mass migration exodus over the past 20 years. These trends are expected to continue, Allen said.

"Beyond its vital importance to our national economy," Allen stated, "the maritime domain also is an avenue that could be exploited as a means to smuggle weapons of mass destruction and terrorists into our country. Last year's record seizures at sea of illegal drugs and interceptions of illegal migrants show us the threat is real."

For this reason and others, the Deepwater Program will play an important role in helping the Coast Guard to secure the nation's maritime borders -- notably by closing today's operational gaps. "This long-term plan requires a fine balance between removing legacy assets from service to realize system cost savings and maintaining sufficient capacity," Allen testified.

ADM Thad W. Allen (left), the Commandant of the Coast Guard, tours the Deepwater Program's National Security Cutter BERTHOLF (WMSL 750) on June 9 during its construction at the Northrop Grumman's Ship Systems shipyard in Pascagoula, Miss. ADM Allen was escorted by Jamie Anton, center, sector vice president and general manager, U.S. Coast Guard programs and Northrop Grumman Boat Foreman David Lewis (right), a flotilla commander in the Coast Guard Auxiliary's Flotilla 38 and team leader for the cutter's construction. (Photo courtesy of NGSS.)

The design and construction of a new patrol boat is critical to the Coast Guard's ability to address today's current gap in patrol boat hours. Similarly, the revised Deepwater implementation plan strives to mitigate the Maritime Patrol Aircraft (MPA) gap by keeping more legacy HC-130H aircraft in service longer while adding new EADS CASA CN-235 maritime patrol aircraft. The first CN-235 rolled off its production line in Spain in March and successfully completed its first flight in late June.

Rep. Frank LoBiondo (R-NJ), the subcommittee's chairman, expressed concern, however, over the revised Deepwater Program's projected time line for completion.

"I am disappointed that the plan extends the time period for acquiring new assets from 20 to 25 years," he said. "Every year that we delay the purchase of new assets the men and women of the Coast Guard and our taxpayers lose because maintaining legacy assets significantly increases, eating more and more of the money available to purchase replacement assets. Newer, more capable assets are not available to improve the performance and safety of the service's operations."

ADM Allen expressed his appreciation to the Bush administration, Congress, and LoBiondo's subcommittee in particular for strong support of the program. "The requirements and capabilities reflected in the post-9/11 revised Deepwater implementation plan will be delivered methodically and prudently over the next 21 years," he said in his prepared statement.

"I have stated many times that we should credit the innovation, resourcefulness, and devoted service of Coast Guard men and women for our Service's sterling performance in its multiple missions," he said. "I am convinced we can do even better as we deliver the Deepwater Program's more capable, reliable, and interoperable assets and systems."

A Ready, Aware, and Responsive Coast Guard

President Bush's fiscal year 2007 U.S. Coast Guard budget request of $8.4 billion was delivered to Congress, February 6, as part of an overall request of $42.7 billion for the Department of Homeland Security, an increase of 6 percent over the previous year.

"Our country must also remain on the offensive against terrorism here at home," Bush said on January 31 in his State of the Union Address. "The enemy has not lost the desire or capability to attack us. Fortunately, this nation has superb professionals in law enforcement, intelligence, the military, and homeland security. These men and women are dedicating their lives, protecting us all, and they deserve our support and our thanks."

The President's budget request contains $934.4 million to advance the Deepwater Program's modernization, conversion, and recapitalization of the Coast Guard's aging legacy fleet of cutters, aircraft, and selected systems. This funding will enable continued implementation of Deepwater's revised post-9/11 plan (approved by the Department of Homeland Security in 2005) by acquiring new assets while sustaining, modernizing, and converting selected legacy assets to increase their useful service life.

The Deepwater Program is very much about delivering the more capable and interoperable assets and systems that will directly support Coast Guard operational forces," said RADM Gary T. Blore, since April 2006 Deepwater's new program executive officer. "It will enable commanding officers to execute their demanding missions more effectively and efficiently -- transforming the Coast Guard into a more ready, aware, and responsive maritime force across its multiple missions. This will be a 21st-century Coast Guard better postured to increase operational readiness, enhance mission performance, and create a safer working environment for our men and women."

Deepwater Program officials say that the President's budget request will improve the Coast Guard's ability to secure U.S. maritime borders, to implement the new *National Strategy for Maritime Security*, and to achieve National Fleet Policy objectives calling for increased collaboration with the U.S. Navy.

Hurricane Katrina vividly demonstrated the importance of a Coast Guard that is ready, aware, and responsive. "No one can predict the timing of the next catastrophic event akin to Katrina, or whether it will be natural or man-made," then-Commandant of the Coast Guard ADM Thomas H. Collins said in his introduction to the Coast Guard's 2007 Budget in Brief. Platforms modernized as part of the Deepwater Program, including re-engined HH-65 helicopters and cutters outfitted with the

Deepwater Program's Award-Term Decision Announced

The Coast Guard's initial contract for the Integrated Deepwater System was awarded on June 25, 2002, to Integrated Coast Guard Systems (ICGS), a joint venture between Lockheed Martin and Northrop Grumman. The initial contract specified a five-year base period of performance ending in June 2007 with the potential for five additional award terms of up to 60 months each, for a maximum of 30 years.

On May 19, 2006, RADM Patrick M. Stillman, the program's award term determining official and former program executive officer, notified ICGS that the length of Award Term 1 (the first award term) will be for a performance period of 43 months, beginning in June 2007 and ending in January 2011. As a result of this decision, ICGS is assured the sole-source opportunity to respond to the upcoming request for proposal for work expected to be contracted during the first award term. No specific contract dollar value was associated with the announcement.

Lockheed Martin and aircraft maker EADS CASA rolled out the first production airframe of the CN-235A medium-range surveillance maritime patrol aircraft last March, and it recorded its first flight in late June. Produced in Spain with substantial U.S. content (including avionics, propulsion, and integrated subsystems), the HC-235A is the first new aircraft developed for the Coast Guard's Integrated Deepwater System program. The Coast Guard plans to acquire 36 under current plans. (Photo by EADS CASA)

first increment of command, control, and communication upgrades, supported Coast Guard operations that saved the lives of more than 33,500 after the deadly hurricane struck the Gulf Coast in September.

The Fiscal Year (FY) 2007 budget request will fund activities across the Deepwater Program. Notably, for surface assets, it provides for the procurement of long-lead materials and construction of the fourth National Security Cutter (NSC), support of the Mission Effectiveness Project's (MEP) refurbishment of medium endurance cutters, and production of one Long Range Interceptor (LRI, 36-foot small boat) and one Short Range Prosecutor (SRP, 24-foot small boat).

Funding for surface and air asset follow-on support also is provided, including operation of the first NSC scheduled for delivery in 2007, a pre-commissioning detachment for the second NSC; personnel, equipment, training, and flight hours for 29 helicopters outfitted for airborne use of force; and maintenance support for SIPRNET (Secret Internet Protocol Router Network) capability on Deepwater cutters to allow for transmission and reception of classified intelligence and information.

Deepwater aviation platforms also are earmarked for progressive modernization, conversion, and recapitalization. The FY-2007 budget request provides funding for avionics modernization and surface-search radar replacement for 16 HC-130H long-range search aircraft and missionization and fleet introduction of six HC-130J aircraft in FY 2008. Procurement and missionization of one CASA CN-235 300M maritime patrol aircraft and funding for logistics to make air stations operational using the new MPAs are also funded.

Conversion projects for the HH-60 helicopter are planned to upgrade its avionics and extend its service life. The budget request also provides for HH-65 conversions and sustainment to complete the first phase of the

Multimission Cutter Helicopter (MCH) conversion of all 95 (all not covered in first year budget) aircraft in the fleet.

The FY-2007 budget request's investments in C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) will provide needed capabilities for a more aware Coast Guard, including detailed design and development of the Common Operating Picture (COP) and other improvements. The fully implemented C4ISR system will be integrated with Deepwater cutters, aircraft and shore facilities, establishes common software, systems, and components across all surface, air and shore assets. Simply put, program officials say, this system will ensure interoperability, improve situational awareness, and enable new levels of Maritime Domain Awareness.

The budget request also provides for continued development of Deepwater's Logistics Information Management System and upgrades to facilities that will house new assets. This funding will ensure that Deepwater assets delivered to the Coast Guard have the necessary logistics and maintenance support to improve operational effectiveness.

Through June, more than 40 HH-65 helicopters have been re-engined and upgraded as part of the Deepwater Program. This re-engined HH-65C prepares to land on the medium endurance cutter CGC VIGILANT during a patrol off the Florida Keys last December. Three of the more powerful HH-65C helicopters also rescued more than 300 people during the Coast Guard's search and rescue operations following Hurricane Katrina. USCG Photo by ET1 Jonathon Chambers

Fast Response Cutter's Critical Design Review Deferred

Advancing the design and construction of a new Coast Guard patrol boat is a priority to restore critical capacity as quickly as possible. As the result of a number of technical issues associated with its initial design, however, the Deepwater Program's critical design review for the Fast Response Cutter (FRC) was deferred in February 2006 during model tow-tank testing.

"This decision was a prudent step consistent with the Deepwater Program's iterative design process, focus on cost control, and strategy for risk mitigation for our $3 billion-plus investment in the FRC," program officials say.

In early April, the Coast Guard issued a request for information for research to identify patrol boats currently in production with the potential to satisfy the majority of requirements for patrol boat capabilities. More than 20 designs were submitted in response to this market survey by May.

The designs, submitted by a wide range of U.S. and international ship designers and builders, are being reviewed by a working group composed of representatives from the Coast Guard, Integrated Coast Guard Systems, and technical engineering-support contractors. This initial review will assist the Coast Guard in refining requirements for procuring an existing patrol boat design. This preliminary technical assessment will be followed by a more detailed, in-depth review to determine the viability of acquiring existing patrol boats to address urgent operational requirements. The working group's final assessment was slated for completion by late summer 2006.

It will not be known if a new FRC design is required until the Coast Guard completes its assessment of the current design and explores all options. Given the urgency of identifying a course of action that will address the Coast Guard's critical shortfall in patrol boat hours, however, this assessment is a top priority.

RADM Gary T. Blore assumed duties as the program executive officer for the Coast Guard's Integrated Deepwater System acquisition in April. While acknowledging many program milestones achieved over the past year, Blore acknowledges some disappointments also were experienced. "We applaud our successes; we learn from our disappointments," Blore said.

House and Senate appropriators will meet in conference to reconcile their versions of the Coast Guard's appropriation for FY 2007 before a final bill can be readied for the President's approval and signature later this year.

Deepwater's Mission and Vision Statements Revised

The Deepwater Program marked a transition in top leadership on April 17 when RADM Blore relieved RADM Patrick M. Stillman as program executive officer. Stillman was awarded the Distinguished Service Medal at a retirement ceremony at the Washington Navy Yard in May.

"We owe Rear Admiral Stillman a huge debt of gratitude for his vision, dedication, and focus in getting Deepwater established, growing the program, and acquiring the first of the assets we so critically need," said Blore of his predecessor. "I know he would be the first to acknowledge the hundreds who have supported him in this cause, but I believe it was his steadfast leadership that brought it all together."

Prior to assuming duties as program executive officer and upon promotion to flag rank in September 2004, RADM Blore was assigned as a special assistant to President Bush. In that capacity, he served as the Homeland Security Council's senior director for border and transportation security.

Early in his assignment leading the Deepwater Program, RADM Blore reviewed the acquisition's mission and vision statements to evaluate their suitability and relevance. Guided by discussions with a range of staff officers and stakeholders at "all-hands" gatherings and other meetings, he decided that they needed a sharper focus.

"During my discussions," he said in early June, "I felt surprised by the different answers I received regarding our core missions. As a result, I felt strongly that we must assert a common understanding for the core reason for the Deepwater Program's existence -- our primary mission."

This principle of mission focus guides the most successful national and international corporations. "Good business leaders create a vision, articulate the vision, passionately own the vision, and relentlessly drive it to completion," said Jack Welch during his storied tenure as General Electric's chief executive officer. Given the Coast Guard's demanding post-9/11 mission requirements, there was no question in RADM Blore's mind that the Deepwater Program's primary mission is the acquisition and delivery of assets and systems for the Coast Guard's operational forces.

"One reason I decided to revise the Deepwater Program's mission and vision statements," Blore said during an interview, "was to capture more succinctly the real inspiration behind our efforts -- and that is to acquire and deliver more capable, interoperable assets and systems. We play an important role in enabling Coast Guard operational forces to perform more effectively, efficiently, and safely. We must not lose sight of this, because it relates directly to the Coast Guard's ability to increase operational readiness, enhance mission performance, and create a safer working environment. That is our guiding vision, and it should excite us all."

The Integrated Deepwater System

Deepwater Mission

To acquire and deliver more-capable, interoperable assets and systems that support Coast Guard operational forces in executing missions effectively and efficiently.

Deepwater Vision

Deepwater assets and systems will enable Coast Guard operational forces to perform more effectively, efficiently, and safely, resulting in increased operational readiness, enhanced mission performance, and a safer working environment.

Deepwater's system-of-systems construct remains in place, Blore affirmed, and it will guide the continued design, development, and integration of the program's multiple air and surface assets and the systems that support them. "In today's world of joint and inter-agency operations," he said, "a system-of-systems approach towards design and acquisition is essential." The importance of lower total ownership costs also will be retained in Deepwater's acquisition strategy, as will the overarching imperative to maintain the proper balance of cost, schedule, and performance.

But, as new, interoperable platform designs are finalized, the revised Deepwater mission's emphasis on acquisition and delivery will serve as a steady reminder of the compelling need to provide more capable and interoperable assets to the fleet to modernize and recapitalize today's aging platforms.

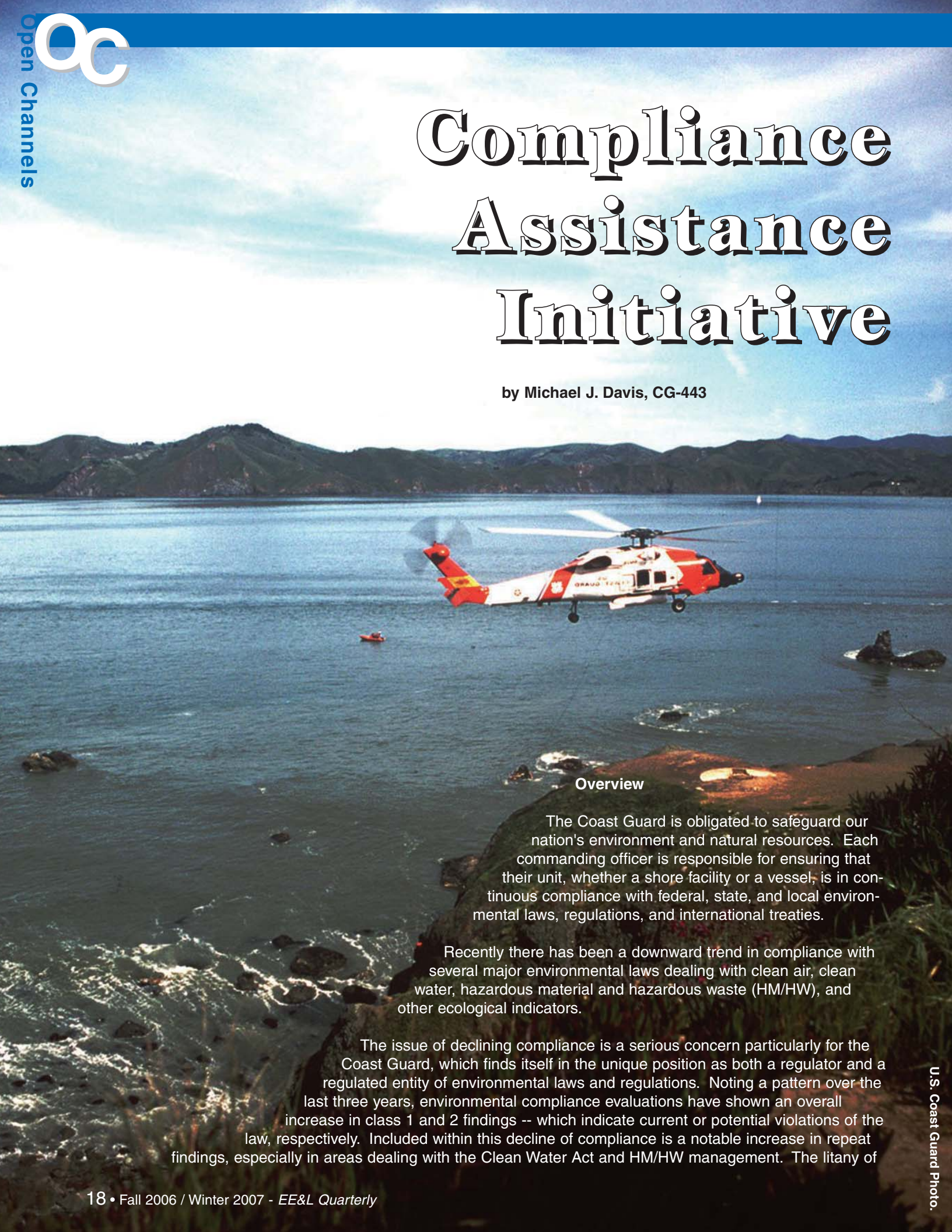
"I'm not saying Deepwater is becoming an asset-for-asset replacement program; it's not," Blore said. "But there are windows of opportunity for us to focus on building platforms, installing C4ISR systems, integrating net-centric capabilities, and building out Deepwater's grand architecture."

Over the months ahead, Blore will work with Deepwater's senior leadership to draft a new strategic plan that will spell out in greater detail the action steps needed to perform Deepwater's revised mission and achieve its long-range vision. "What does it take for us to be successful?" he asked. "We have a unique opportunity to advance the Coast Guard's transformation in many important ways; this awareness underpins Admiral Allen's call for 'ruthless execution' of the program."

Capt. Peterson, a senior technical director with the General Dynamics Corp., supports the Deepwater Program at Coast Guard Headquarters.

Compliance Assistance Initiative

by Michael J. Davis, CG-443



Overview

The Coast Guard is obligated to safeguard our nation's environment and natural resources. Each commanding officer is responsible for ensuring that their unit, whether a shore facility or a vessel, is in continuous compliance with federal, state, and local environmental laws, regulations, and international treaties.

Recently there has been a downward trend in compliance with several major environmental laws dealing with clean air, clean water, hazardous material and hazardous waste (HM/HW), and other ecological indicators.

The issue of declining compliance is a serious concern particularly for the Coast Guard, which finds itself in the unique position as both a regulator and a regulated entity of environmental laws and regulations. Noting a pattern over the last three years, environmental compliance evaluations have shown an overall increase in class 1 and 2 findings -- which indicate current or potential violations of the law, respectively. Included within this decline of compliance is a notable increase in repeat findings, especially in areas dealing with the Clean Water Act and HM/HW management. The litany of

U.S. Coast Guard Photo.

root causes for this recent spike in noncompliance includes expanded mission related activities, shortage of a properly trained professional environmental staff dedicated to unit compliance, a notable lack of general environmental awareness, and limited command support and resource commitments.

One of the main problems, which was identified and discussed in recent Environmental Management Board (EMB) meeting, is that small units that typically exist under the new Sector organizations have little or no dedicated environmental expertise on-site. The EMB approved a proposal developed by the Coast Guard's Division of Environmental Management to provide compliance assistance through contract support. The Compliance Assistance Initiative (CAI) is a Headquarters-funded Fiscal Year 2006 (FY06) prototype project to provide multi-media environmental compliance support for units without dedicated environmental staff to help them meet their day-to-day environmental compliance requirements.

Because this effort is a prototype, only a limited number of units will be covered in the initial phase, however, the expectations are high that a continual and integrated CAI support system for environmental compliance will eventually span across the entirety of the Coast Guard.

The CAI is a two-part plan aimed at remedying at least some of the Coast Guard's compliance problems. Part one is to raise awareness by reinforcing the concept that "***compliance is not optional but mandatory***." This will be accomplished through multiple venues including ALCOAST, reissuing the Commanding Officer's Guide, increased training, and message marketing efforts. Part two will use existing FY06 Operating Expense (OE) funding to establish a support contract that would provide recurring on-site compliance assistance visits, as well as on-line "help-desk" type environmental support and training. The initial phase will be directed to operational units with little or no dedicated environmental expertise that are not in compliance. As an indicator of the CAI's performance, there will be monthly assessments and reports conducted as a quality assurance measure. The commanding officer will still however be ultimately responsible and accountable for unit compliance. Although these efforts will not completely eliminate the CG's compliance problems, this prototype program is a welcome step in the right direction towards improving unit compliance.

The Coast Guard is obligated to safeguard our nation's environment and natural resources.

Contracts

The CAI will provide contractor labor and supplies to conduct compliance assistance visits at selected Coast Guard units. The visits will consist of an initial facility assessment and rotating on-site shop level support designed to assist facility personnel in achieving and maintaining a higher level of environmental compliance. The CAI visits are needed to achieve and maintain compliance with Resource Conservation and Recovery Act of 1986 (RCRA), Clean Air Act (CAA), Clean Water Act (CWA), Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and Emergency Planning and Community Right-To-Know Act (EPCRA), among other laws and regulations. Contractors will also provide basic on-site environmental management training and establish an easily accessible environmental compliance help desk.

The CAI will focus on Pacific Area (PACAREA) and Atlantic Area (LANTAREA) Sectors -- mostly smaller units lacking billeted environmental personnel. A draft list of units to be covered under the FY06 prototype effort is being finalized.

Potential Problems

The Coast Guard's commanding officers and staffs face many challenges in attaining this goal, including increased post 9/11 Operations Tempo (OPTEMPO); assignment of complex environmental responsibilities as collateral duty; and lack of available training, resulting in lack of command awareness, commitment, and support. The CAI has been designed to address the most common causes for environmental non-compliance and costly violations. The ultimate goal of the CAI is to provide a baseline environmental profile at smaller units that emulates programs from units that are already successful. By doing so, the Coast Guard will be well on its way to full compliance.

U.S. Coast Guard Photo.

Ozone Depleting Substances (ODS) R-12, HALON 1301

by LT J. Andrew Goshorn, CG-453

The Office of Naval Engineering, Environmental Policy Division (CG-453) sets policy and manages resources for environmental aspects of the Coast Guard surface fleet. These aspects range from sewage treatment to antifoulant coatings to diesel exhaust emissions. This article's focus is on one particular program that CG-453 has a direct contact with, namely the Coast Guard interaction with the Department of Defense's (DoD) mission critical strategic stockpile of Ozone Depleting Substances (ODS). COMDTINST 4440 (series) *Supply Policy and Procedures Manual* (pg 100-104) and COMDTPUB P6280.3 (Chpt 4) are the policy documents that detail the specifics of this program, but this article will provide a refreshed look at the policy and procedures in place.

The two most notable substances that the Coast Guard relies on for mission critical applications are the refrigerant R-12 and the fire suppressant HALON 1301. With the Montreal Protocol of 1987, the U.S. along with most other countries, agreed to eliminate the use of ODS. These are known to destroy the ozone layer resulting in serious harmful affect to human health and the environment. In support of this goal, the Coast Guard has been migrating to alternatives such as R-134a and fixed CO2 systems. However, there are some situations on legacy assets where the conversion costs are such that it is more resource beneficial to stay with the existing system.

In order to maintain legacy ODS systems, the Coast Guard works with the Navy to maintain a strategic stockpile of mission critical ODS substances. For legacy assets that need to requisition these materials, CG-453, as the Vessel ODS Program integrator, is the final approving authority in the requisition process. In order to keep this process timely, intermediate maintenance mangers should alert CG-453 to orders in the supply system to ensure timely receipt.

A wise man once said, "There is no such thing as a free lunch in life." This statement holds true to the "free" nature of the R-12 and HALON 1301 orders. Both of these substances are at no cost to the unit, but there are some specific procedures that must be followed to ensure proper stewardship of the stockpile is maintained. The inventory is finite and most be only used to maintain the discussed mission critical systems (fire protection, bulk food storage, etc). The two substances have different metrics for reporting and tracking, so let's discuss them here:

R-12

Currently, R-12 is used primarily on 378s for the refrigeration system. Small applications, such as water coolers and small galley refers are not governed by this policy, but are addressed on a case-by-case basis.

Environmental Protection Agency (EPA) certified (either Coast Guard or commercial) AC&R technicians are aware of the reporting requirements for the release of R-12, and our distribution policy is a reflection of that. Prior to any authorization of distribution from the strategic stockpile, CG-453 reviews the quantity of R-12 ordered, the time since the last order, and engages the port engineer to gain insight on the level of repairs being undertaken by the unit to address the decrease in quantity of R-12 on board. A proactive port engineer would find it helpful to let us know before the order is placed so that we can address all aspects of the distribution review in a timely manner. Despite contrary belief, these questions are not intended as Coast Guard Headquarters (CGHQ) trying to get in the weeds of shipboard work, but rather provide a system of checks and balances to the strategic stockpile. Without HQ oversight at the unit level, the possibility of the Machinery Technician (MK) asking a shipmate Storekeeper (SK) buddy to order more "free" R-12, rather than fixing the system, is plausible. Since strategic inventory management is an HQ task, our involvement is necessary to this level.

The rule of thumb that we follow for on board spare R-12 allowance is enough for two entire system recharges. For example, a 140# system would equate to 280#s of R-12 on board. This two charge rule is only a rule of thumb, and can be reviewed for cutters preparing for patrols such as out of hemisphere deployments.

HALON 1301

Since HALON 1301 bottles do not contain corrosive materials, they do not have to be periodically hydrostatically tested (reference NEM and NSTM Chpt 550). That means as long as the bottle has not been discharged, the stamped on hydro-test is not relevant to the Preventive Maintenance System (PMS) of the bottle. However, after any discharge, the bottle will need to be re-hydro-tested prior to refilling. Refilling HALON bottles is not a process that is easily done in the field. It requires a commercial facility that has the capacity to store and distribute HALON prior to filling the bottle. In short, HALON bottles are best exchanged outright with the ODS strategic stockpile rather than seeking commercial refilling. While distribution from the HALON stockpile is at no cost to the unit, it is a resource that the Coast Guard funds. Proper stewardship of these resources demand that a diligent eye is kept towards the maintenance of HALON systems and that no intentional release to the environment due to the "no cost" nature of the product occur.

Units looking to exchange bottles can requisition them from the stock system using the following NSNs:

6830-01-252-2428 is a 60 lb Halon 1301 cylinder manufactured by Ansul
6830-01-294-4455 is a 60 lb Halon 1301 cylinder manufactured by Kidde

6830-01-196-8338 is a 95 lb Halon 1301 cylinder manufactured by Ansul
6830-01-302-2555 is a 95 lb Halon 1301 cylinder manufactured by Kidde

Bottles should be ordered on a mission critical basis only. The National Stock Numbers (NSN) listed are for standard Coast Guard HALON needs, additional sizes are available through the stockpile on a case by case basis. There is no need to stockpile HALON at the unit level, as this would circumvent the whole purpose for a single strategic stockpile. On board allowances are designed to be adequate for all mission requirements, and only an extreme deviation from these requirements would cause consideration for change in on board allowance. It is expected that for every bottle ordered from the stockpile, an empty bottle will be shipped back to the stockpile for re-filling. The DoD has invested considerable resources to maintain an inventory of bottles authorized for HALON use. These costs are passed on to the Coast Guard on an annual basis. In order to keep these costs low, units should ensure that bottles are maintained in good condition and shipped accordingly. Shipment costs are normally absorbed at the unit level. These bottles should be shipped to the following address:

Defense ODS Cylinder OPNS Activity
Gate 13 Openshed 1 RD M
Chippenham Parkway RTE 150 Entrance
Richmond, VA 23297-0004

For any vessel environmental questions that you may have, please do not hesitate to contact LCDR Gerald Slater at 202-267-1998 or LTJG Jay Kime at 202-267-2003.

Engineering and C4IT Officer Workforce Management

A Balancing Act

by LCDR James Kammel, CG-481

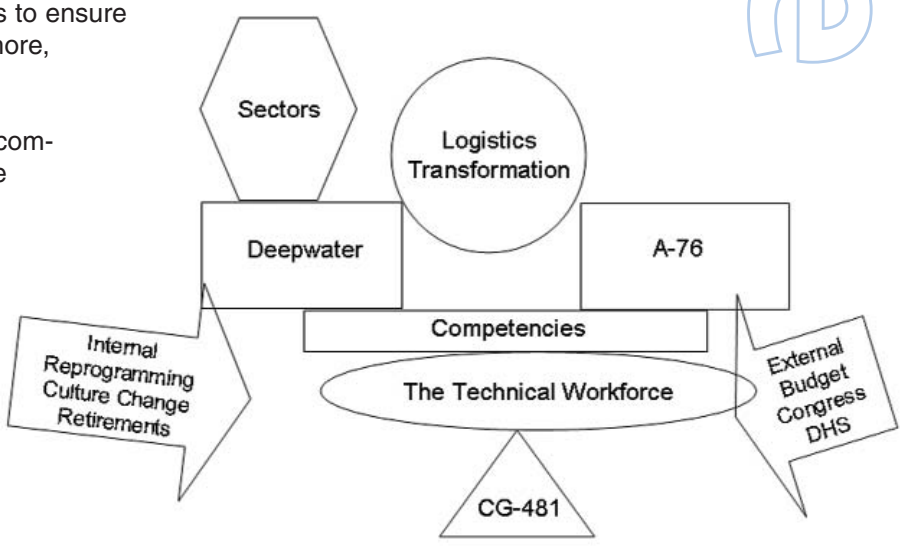
The Office of Engineering and C4IT Workforce Management continues to play a vital role in ensuring we have the right workforce to meet the challenges of our changing operational focus and new requirements. Many times this requires a delicate balancing act, managing the wide range of human resource stressors including, A76, Deepwater, and of course budget impacts. This balancing act has required us to take a comprehensive look at our sustainment functions, our current workforce, and to look into our crystal ball and divine the workforce of the future.

To that end, we have several projects underway to better help us manage the workforce, and better help you prepare for your future in Engineering or C4IT.

Competencies: Following 9/11, the Coast Guard realized that it had to have a clear view of and a level of granularity of the skills, knowledge and abilities of its members to better allocate our personnel where they could best impact operations. So CG-1 (Human Resources Directorate) began the process of developing a Competency management system and in October 2005, released an ALCOAST announcing the set-up of the Coast Guard's Competency Management System. This system is a comprehensive listing of the wide range of competencies our workforce needs to perform our many missions. CG-4 (Engineering and Logistics Directorate) took this one step further. We completed a thorough review of the Engineering and C4IT officer and enlisted positions and their required competencies. Through our close work with CG-1, all Engineering and C4IT officer and enlisted positions now have competencies assigned to them. What does this mean for your? You, the detailers and workforce managers can now see the skills, knowledge, and abilities needed in a billet. So the next question is, what competencies do you have compared to the position? You should know what competencies you have and what you need to do the job you are in. If you need to update your competencies, the following link will help you with the how-to of getting competencies assigned to you -- http://cgweb.psc.uscg.mil/direct-Access/index.htm.

Specialty Management: CG-481 is again working with CG-1 and is currently reviewing our officer specialty system. This system will help us identify those members with a specific specialty, and better help us manage our workforce flow. Expect more on this in future editions of the *EELQ*.

Logistics Transformation: Throughout last quarters edition of the *EELQ*, our efforts in transforming our logistics systems and organizations were explained. You can be sure that CG-481 is intimately involved in the process to ensure we have the right people to keep our assets ashore, afloat, and in the sky operational.



These are just three of our current projects. In coming editions, expect to hear more from the Office of Engineering and C4IT Officer Workforce Management. LCDR Jim Kammel is the team leader for Engineering and Logistics, LCDR Cliff Neve is the team leader for C4IT and Logistics. For enlisted issues LT Ed Semler or the appropriate Rating Force Master Chief are the POCs. Should you have any questions, don't hesitate to contact us. Through all of our collective efforts, Coast Guard Engineering, C4IT, and Logistics Officers will ensure "superior operational performance through engineering, C4IT, and logistics excellence."

Specialty Management: Linking Competencies and Experience

by LCDR James Kammel
Engineering and Logistics Officer Workforce Manager (CG-481)

USCG photo by PA2 Andrew Shinn

In my last article I talked at length about competencies and the need for our engineering, C4IT, and logistics officers to have the competencies they qualify for attached to them in Direct Access. I am happy to note, that we have already seen an increase in the use of competencies amongst our officer corps. In this article, I plan on discussing Officer Specialties and their links to competencies and experience.

Officer specialties are nothing new; we have been using them in the form of Officer Billet Codes (OBCs) and experience indicators for years. In fact our current inventory of engineering, C4IT, and logistics officers are based on the old experience indicators. Additionally, many of the positions in the CG-4 (Engineering and Logistics Directorate) and CG-6 (Command, Control, Communications, Computers & Information Technology Directorate) world of work have competencies assigned that are based on the OBCs. The problem with these legacy systems is the lack of consistency in use, the likelihood that the data is wrong, and the wide ranging and variety of specialties that already existed. To that end, CG-1 (Human Resources Directorate) developed a revised specialty framework that cut the 75 specialties down to 13 specialties and 37 sub-specialties. In May 2006 the Commandant approved this officer specialty framework, and CG-481 began developing the templates for what it takes to be designated within a specialty. These templates were reviewed by each program and approved by CG-4 in August.

These templates (example on next page) are being used by the programs to update their officer inventories in order to have a more accurate count of the officers within each specialty. CG-1 is also working on a process to have these specialties assigned to our officers within Direct Access. This will be accomplished through the competency module. In the coming months, CG-1 will publish the Officer Specialty Management System, which will include a process for members to verify their specialty. Although this may seem cumbersome, it is a vital step in improving our ability to manage the officer corps. Being able to better link the Coast Guard's demand (positions) with our supply (officers within specialty) will help us focus our resources on those specialties that may not be as healthy as others.

Officer Specialty: Engineering		**Sub-specialty (if applicable):**	**DA Code:** CG-ENG10
Specialty/ Sub-specialty Description	Officers assigned this specialty include officers who have completed their initial tour within any of the Engineering sub-specialties including Ocean, Naval, Civil, Industrial, Aeronautical and Logistics.		
Program Requirements for Designation within the Specialty/ Sub-specialty	**Competencies**	**Competency Code**	**Competency Short Description**
		1. ENG MGT	Engineering Management
	Experience	One tour in engineering coded position.	
Program preferred for designation within the specialty/sub-specialty	**Education**	BS Degree in an Engineering, Math, or Science Discipline	
	Experience in lieu of Education	1. Previous experience in CG engineering rate including CWOs (MK, DC, EM, AMT, AET, AST)	
	Training Courses	Successful completion of the EOIT Program, Parts 1-4.	
	Licenses &/or Certifications		
Specialty/Sub-specialty Designation Duration	Certification in this specialty expires 7 years from date of designation, if, at that time, the officer has failed to meet the following requirements for continued designation/reassignment within the sub-specialty, the officer will automatically lose their designation.		
Program Requirements for continued	**Competencies**	**Competency Code**	**Competency Short Description**
		1. Per sub-	

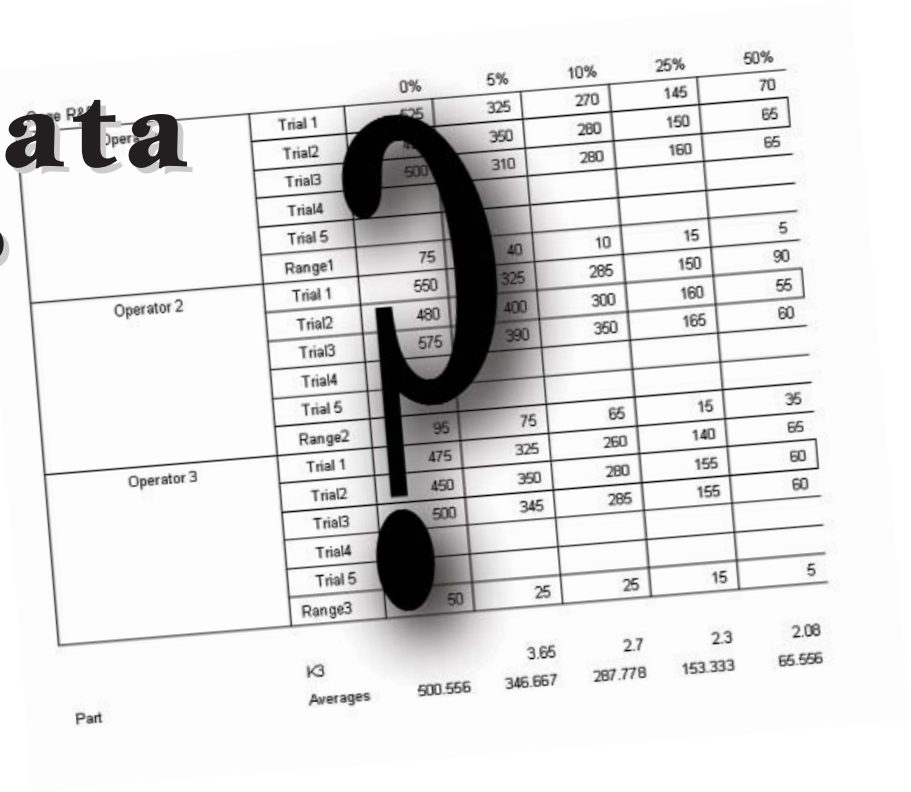
This data will allow us to develop a metric for the health of a specialty, develop recruiting needs, and ultimately help create an officer specialty management system that ensures the Coast Guard has the right mix of technical acumen, leadership skills, and management competency to lead our organization into the future.

With all of the stressors affecting our technical workforce, it is imperative that we can manage these specialties with concrete data that is systematic and verifiable. For more on the officer specialties, take a look in CGCENTRAL: log-in and click on career management, officer, my specialty.

By being able to clearly link those competencies and experience needed within a specialty to specific positions and people, we will ensure our technical workforce is aligned to ensure "superior operational performance through engineering, C4IT, and logistics excellence."

designation or reassignment in the Specialty/Sub-specialty		specialty requirements	
		2. ENG- LMGT	Engineering Logistics Management
		3. NE-PM	Engineering Procurement Management
	Experience	Multiple tours in Engineering coded positions.	
Program Preferred for continued designation or reassignment in the Specialty/Sub-specialty	**Education**	MS degree from an accredited college or university in any technical discipline.	
	Experience in lieu of Education	Continued assignment in Engineering coded positions.	
	Training Courses		
	Licenses &/or Certifications		
Notes/Comments	Specialty Manager: CG-481 Advanced Education Program (AEP) Manager: see sub-specialty		

Is Your Data Accurate?



by MKC John Poker, USCGR

Every day we all make decisions.

Some are important, some are minor. All are made by data in one form or another, whether it is tabular data or in our mind from past experience or preconceptions. If the data is not accurate, we can make a bad decision. The following is a presentation of a gage Reproduction and Repeatability (R&R) done on the hand held visgage used for measuring the viscosity of engine oil. Engine oil is checked for fuel oil dilution at least every day and every four hours of continuous use. This project came about as an E-8 EPME task for a team project. The visgage was chosen because I am an Machinery Technician (MK) and had a preconceived notion it was not accurate. The R&R test has been around for quite awhile, gaining popularity in the early 1960s for manufacturers with government contracts. Basically, it consists of a number of samples to be checked by several people using the same gage to check several times. In this instance I prepared five oil samples -- new oil with 0% dilution, 5% dilution, 10% dilution, 25% dilution, and 50% dilution. The dilutions were mixed by volume of oil and #2 diesel. The "operators" were then given the samples to check. They do not know which sample is being checked and are not allowed to discuss their results with each other. Each sample is checked three times and the data recorded and then analyzed. This can be done manually with a calculator, or with software. We used "QI Macros" which is an Excel add-on software that runs for about $130.00. A good text to use is the *Automotive Industry Action Group (AIAG) Measurement Systems Analysis* book. It has all the forms and equations you will need to perform an R&R.

Gage R&R		0%	5%	10%	25%	50%
Operator 1	Trial 1	525	325	270	145	70
	Trial2	450	350	280	150	65
	Trial3	500	310	280	160	65
	Trial4					
	Trial 5					
	Range1	75	40	10	15	5
Operator 2	Trial 1	550	325	285	150	90
	Trial2	480	400	300	160	55
	Trial3	575	390	350	165	60
	Trial4					
	Trial 5					
	Range2	95	75	65	15	35
Operator 3	Trial 1	475	325	260	140	65
	Trial2	450	350	280	155	60
	Trial3	500	345	285	155	60
	Trial4					
	Trial 5					
	Range3	50	25	25	15	5
	K3		3.65	2.7	2.3	2.08
Part	Averages	500.556	346.667	287.778	153.333	65.556

Figure 1.

		Constants					
		5	4	3	2	#	
XDiff	28.6667	Trials	Trials	Trials	Trials	Trials	3
UCL	94.6000	2.11	2.28	2.58	3.27	D4	2.58
LCL	0.0000	0	0	0	0	D3	0
Repeatability(EV)		2.21	2.5	3.05	4.56	K1	3.05
Reproducibility(AV)	71.8121	3.65	2.7			K2	2.7
Gage Capability(R&R)		2 Ops	3 Operators				
Spec Tolerance							
Acceptability(%)	265.81						

AIAG - Automotive Industry Action Group Formulas

	% using TV	% using Spec Tolerance		
EV (Equipment Variation)				Equipment Variation (EV)
%EV	12.2%	# Parts	#Trials	% of Total Variation (TV)
AV: (Appraiser Variation)		5	3	Appraiser Variation (AV)
%AV	7.9%			% of Total Variation (TV)
				Repeatability and Reproducibility (R&R)
R&R (Gage Capability)				
%R&R	14.5%			% of Total Variation (TV)
PV (Part Variation)				Part Variation (PV)
%PV	98.9%			% of Total Variation (TV)
TV (Total Variation)				Total Variation (TV)

Gage system may be acceptable based on importance of application and cost

Figure 2.

MK3 Zack Nalley (left) and MK1 Jason Rahn (right) are taking viscosity readings with a hand-held "visgage."

Figure 1 shows the data and figure 2 the results of the test.

In Figure 2 we are concerned with the %R&R which in this case is 14.5%. Ideally, the %R&R would be 10 or less. That would indicate the gage is suitable to the application. Between 10 and 20, the gage may or may not be suitable. The very last line in Figure 2 states that. Over 20 and you are taking a risk using the gage or the people using it may need more training on how to use the gage.

Using the "multi-vari" chart in the QI Macros, we can see graphically the variation in one sample measured three times by the same operator and all the operators -- see Figure 3.

This chart shows three vertical lines. Each of these lines represents an operator. The three colored shapes on each line show the three readings taken by that operator of that sample.

In an ideal world we would only see one of the shapes. This would be due to all three readings being identical. The greater the distance of the three shapes on the same line, the greater the variation between the readings. At first glance comparing the three lines to each other we do not see a great variation between the three operators. This is when we need to look at the numerical scale on the left side of the chart and get a better idea of the variation.

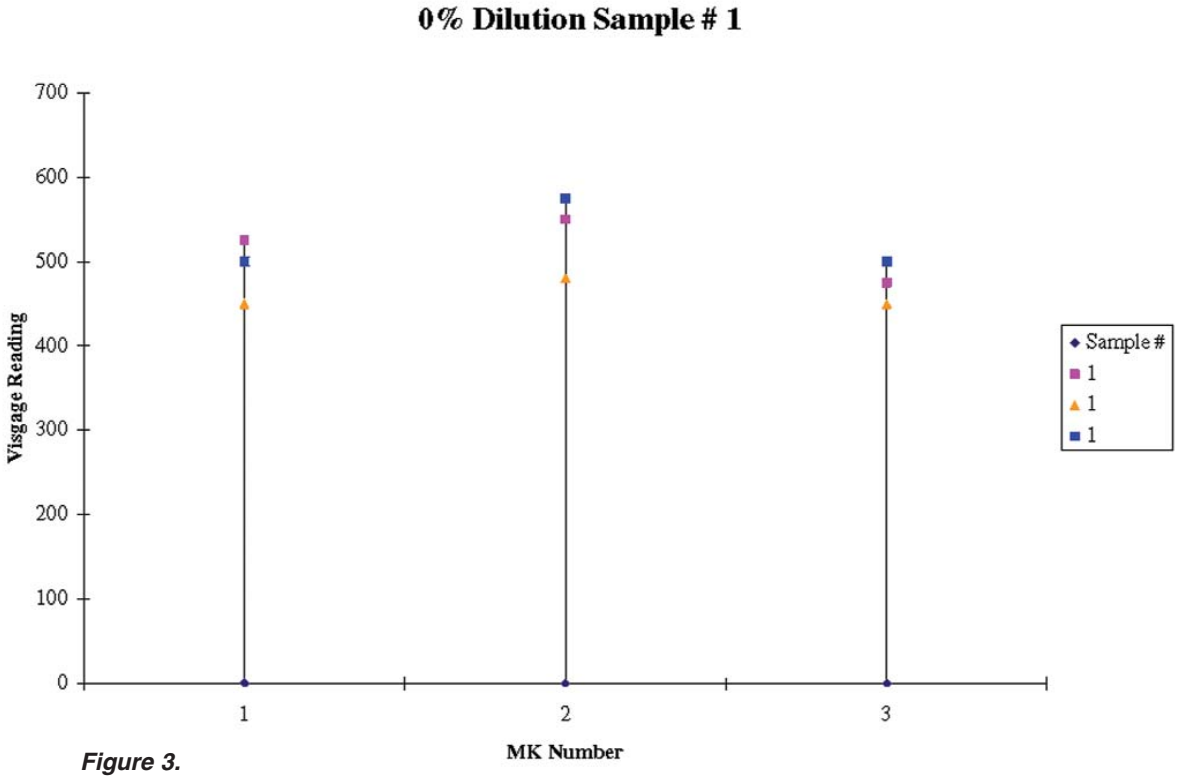


Figure 3.

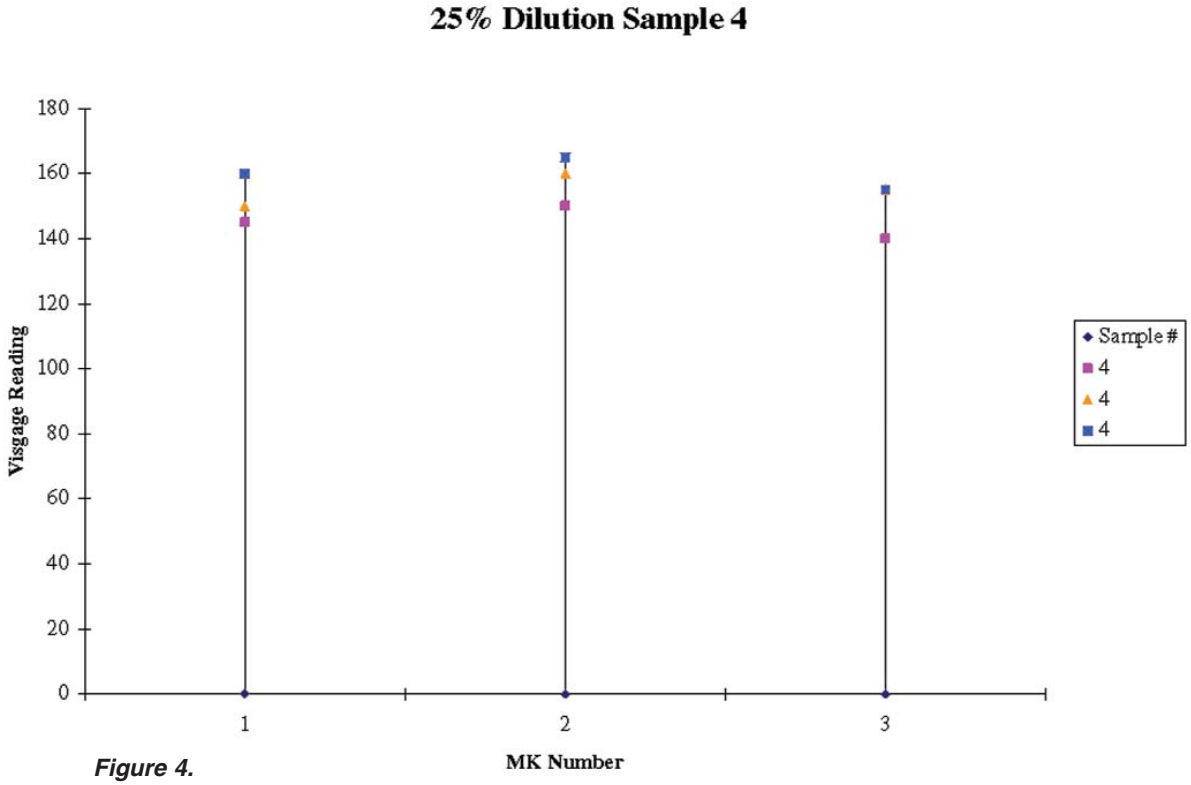


Figure 4.

Referring to Figures 3 and 4 we see what appear to be very similar results. The big difference is when you compare the variation on the numerical scales on the left side of the charts. Figure 3 shows about a 100 point difference between the high and low readings. Figure 4 shows about a 20 point difference. A chart like 3 and 4 was made for each sample. What struck us as interesting was as the dilution increased the range between the high and low readings for the operators decreased -- see Figure 5.

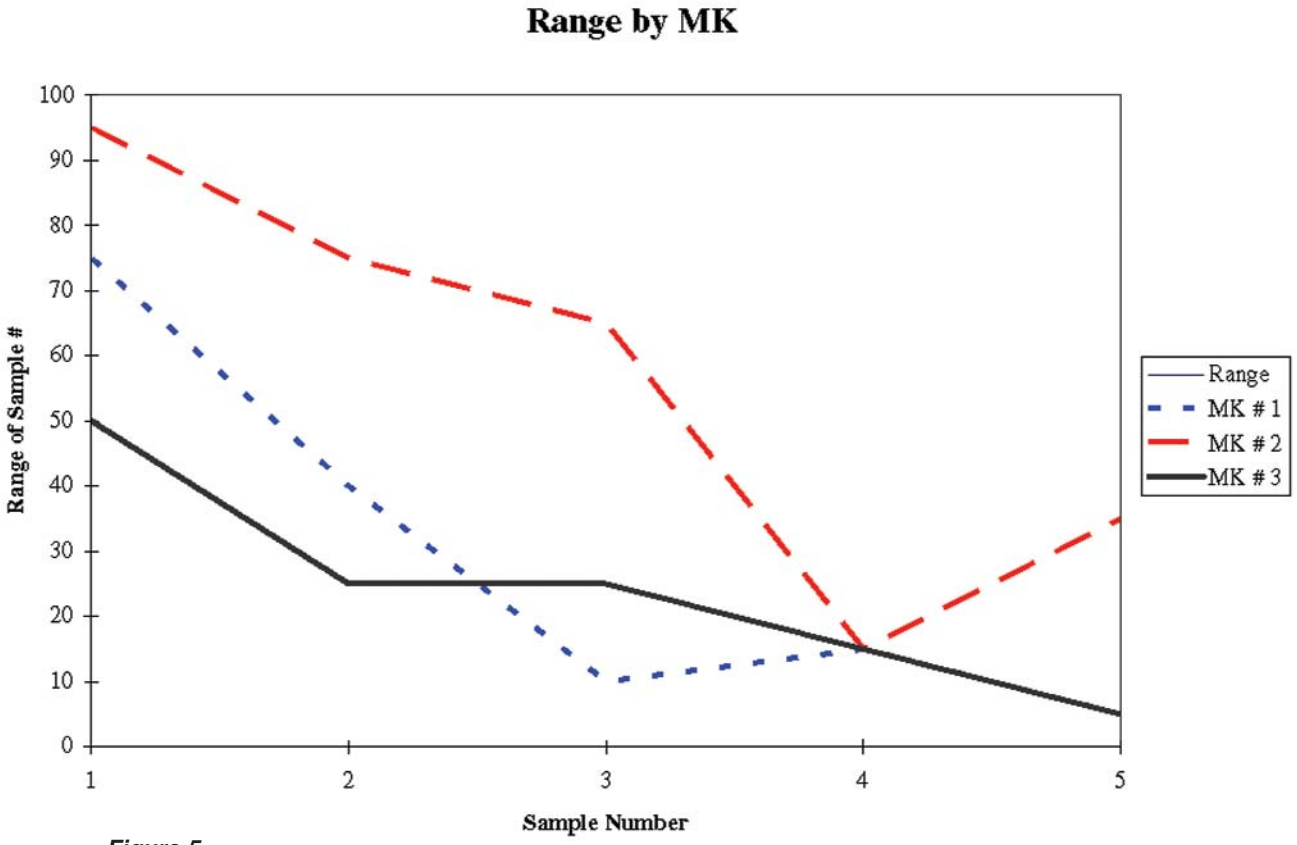


Figure 5.

This was surprising, because when the samples were tested, the ball moved at a fairly slow speed for the "not very diluted" samples and at 50% dilution the ball moved VERY rapidly. There probably is an explanation for this, but would require an in-depth study to determine why this is.

It is also apparent that operator #2 or MK #2 had the greatest variation in his readings. Reading the manufactures instructions, they say to hold the visgage at a 30° to 45° angle when taking the measurement. We set up a protractor head with 12" rule from a combination square set in a vise set at 30° and 45° and had him take three readings with the zero percent diluted oil and see what happened. The results are in Table 1.

	original readings	30° protractor	45° protractor.
	550	485	490
	480	490	500
	575	485	490
average	**535**	**487**	**493**
range	**70**	**5**	**10**

Table 1.

The average went down some, but what is really interesting is that the range dropped from 70 to 10 and 5. The other interesting thing is that with a difference of 15° between 30 and 45 degrees, the average did not change much at all, and with the steeper 45° angle, the average was higher. This would seem to be something for small boat stations to consider doing if all they have to check viscosity with is a hand held gage. A person could cut an angled piece of plywood to 40° and use it to rest the gage on when taking readings. From the table above it appears that consistency of the angle is more important than the angle itself. This would not help when taking visgage readings underway on a small boat, but would increase the repeatability of the readings when doing daily checks.

The last part of the test was to compare all the readings to a falling ball gage. This data is shown in Table 2.

Sample	% Dilution by volume	% Dilution by Visgage	% Dilution Falling Ball
A	0	0.25	0.25
B	5	7.5	5
C	10	11	8.5
D	25	*	27
E	50	*	*

* = could not get a value

Table 2.

MK3 Zack Nalley (left) and MK1 Jason Rahn (right) are taking viscosity readings with a hand-held "visgage."

We could not get a value for the 25% and 50% samples because the viscosity chart stops at 15%. We did a regression analysis to see what it should be, but it was not linear -- pretty close, but I didn't want to guess. We could have gotten a reading for the 50% sample on the falling ball, but we were afraid it would fall so fast it might make a mess. The falling ball gage does not give a numerical value for viscosity; it gives the results in percent dilution. We ran each sample through the falling ball gage three times. We could not see any difference on the scale of the samples.

That was the end of the test / project. I would like to thank the team members; MK3 Zac Nalley, MK1 Jason Rahn, MKC Mike Biggs for their help. Thanks also to BMCS Hiller for the use of Station Sturgeon Bay and his people. As for the results. I had a preconceived notion that the hand held gage was not that accurate. The maker of the gage claims 95% accuracy. While we did not see that in our test, I believe it is an honest claim. If a person were to take enough readings, they will get close to that. Should they make some sort of "angle gage" to rest the visgage on, the readings will get better. That is a good reason to base your decisions on data instead of hunches.

Other uses of the R&R test, any time you use a gage to measure something, you can do a gage R&R. If you were weighing a fiberglass boat to see if it is waterlogged you would want to know if the scale is accurate. A low scale reading could lead to a waterlogged boat being kept in service. A high scale reading could lead to a perfectly good boat being removed from service. Making sure the gage is in calibration is crucial. Gage R&R does not have to be used exclusively by engineers. One application I thought would be interesting is in chart work. An R&R could be set up to plot three positions on a; 1/20,000, 1/40,000, 1/80,000, and 1/125,000 chart. The distance from the "target" could be plotted and the data analyzed as above. It could then be determined if everyone is within 50 yards per nav standards. Should anyone have any comments or questions, I'm the only Poker on the global.

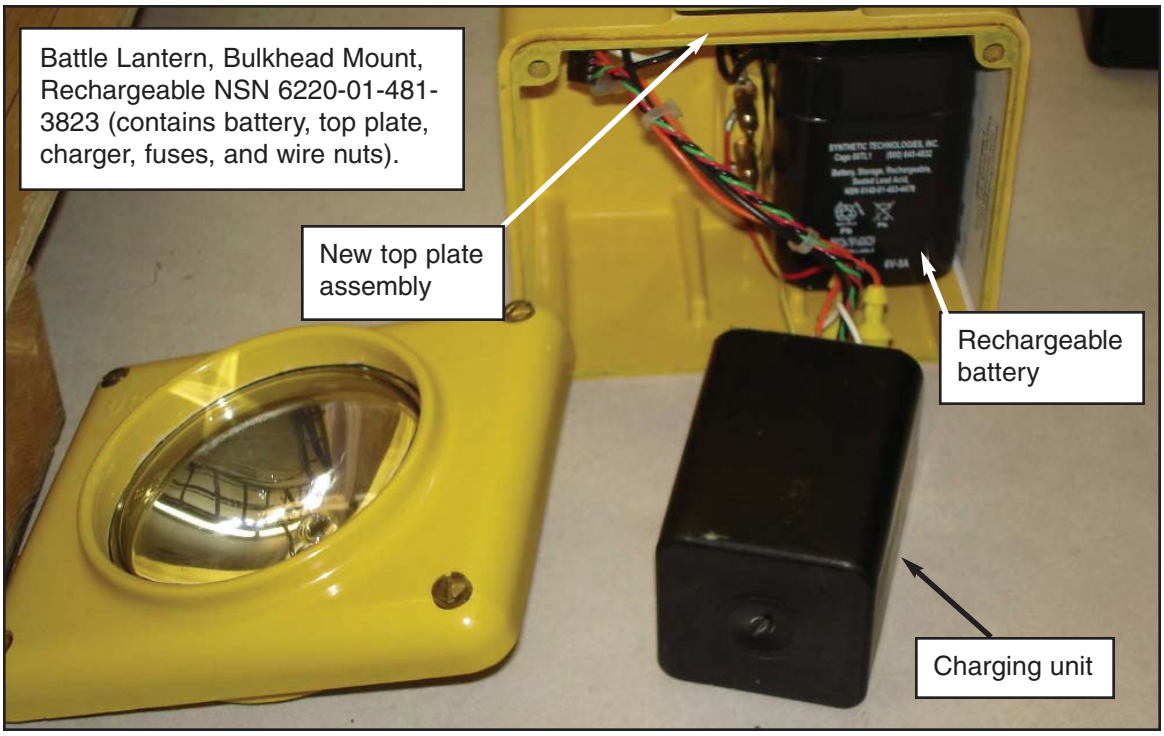
Emergency Lighting

by LT J. Andrew Goshorn, CG-453

Emergency lighting on your Coast Guard vessel has never looked so good. Recent advances in rechargeable batteries and light emitting diode (LED) lighting technologies have created a battle lantern that can stay illuminated for over 70 hours. These advances reduce maintenance intervals and use of consumable batteries (batteries can be changed yearly or greater, vice the current quarterly periodicity), which means more time and money to spend on other shipboard projects.

While not every vessel has the resources to acquire LED bulbs for their battle lanterns, the rechargeable battery element should be within everyone's resource funding. In the Naval Engineering Advisory ALCOAST 038 dated 26 JAN 05, rechargeable battle lanterns were discussed as providing a return on investment in as little as two years. This article will provide some clarity to what units can expect to receive if they order various rechargeable battle lantern components via the national stock system.

The simplest rechargeable lantern conversion is to remove both of the existing batteries and replace them with one rechargeable battery and recharging module (which is the same shape and space as the previously installed second battery). This conversion kit can be ordered via stock system with NSN 6220-01-481-3823. This stock number will provide all the components you need to convert an existing bulkhead mounted battle lantern, to a rechargeable battle lantern. The conversion to a rechargeable lantern takes on average about 30 minutes to complete. The three key components of the rechargeable lantern conversion kit are shown on the next page.



Some words of caution while migrating to a rechargeable lantern:

- While you have the unit disassembled, take an extra minute to replace the incandescent bulb. Incandescent bulbs are rated for 4.7 volts, and this matches the output of a standard battery after some time has elapsed (and the battery has lost some of its charge). Since the new rechargeable battery will carry a full charge all the time, this may cause in place bulbs to fail prematurely.

- Take caution and ensure that non-rechargeable batteries are NOT installed into a rechargeable battle lantern. This can lead to catastrophic failure.

If you would like to order a complete new rechargeable battle lantern (this includes the lantern case, bulb, lens, and above mentioned rechargeable components), use the following NSN: 6230-01-351-3875.

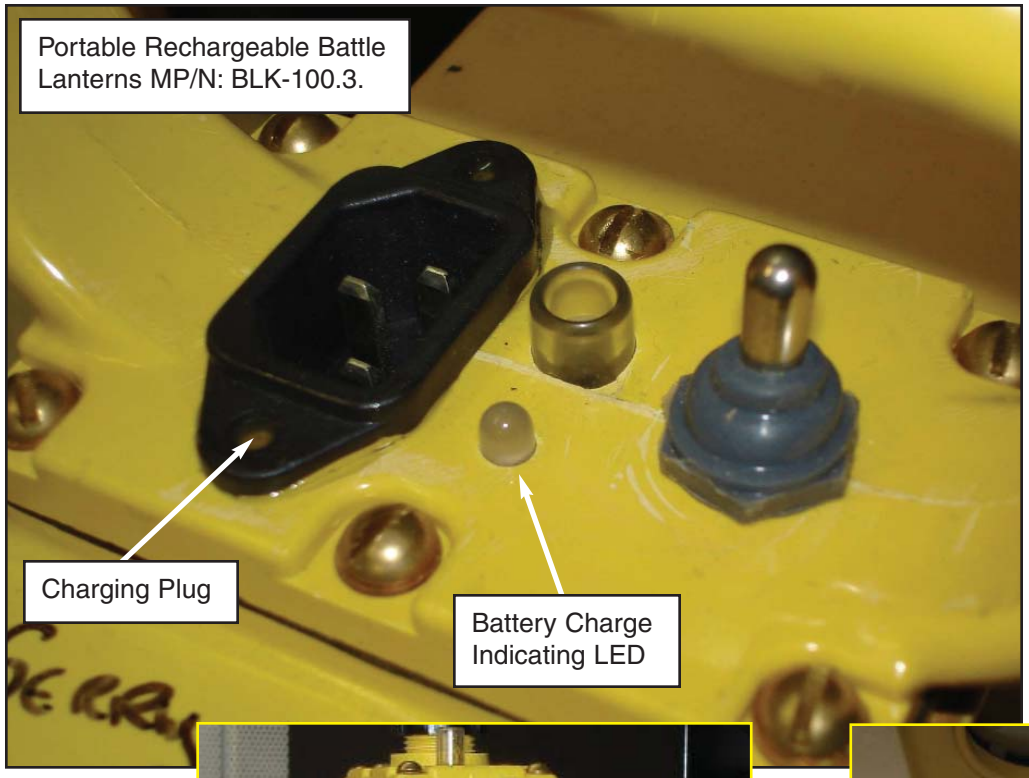
If your emergency lighting needs require portable battle lanterns, these are also available in the rechargeable configuration. The recharging unit requires 115 VAC, but incorporates a plug for your portable needs. Portable battle lanterns are not currently listed in the stock system, but can be purchased from a manufacturer (other distributors may exist):

Seacoast Development Corp
1125 New Market Dr., Virginia Beach, VA 23464
POC Breeze Stewart - Tel: 800-645-4832
SDG@High-performance.com
Military Part Number (MP/N): BLK-100.3 Conversion Kit to retrofit Portable Lanterns

The MP/N will provide similar components as the bulkhead mounted conversion kit, with the exception of a modified top plate to incorporate the 115 VAC plug.

The most energy efficient alternative in emergency lighting is the use of LED bulbs in the battle lantern. By utilizing this low power draw bulb, lanterns can shine for beyond 70 hours without draining the single rechargeable battery. In order to achieve this level of performance, the LED bulbs are actually a composite bulb consisting of four white LED bulbs in the white lantern and two red LED bulbs are used in red light lanterns. The photos below give an indication of how bright this configuration can be. However, this performance does have a drawback as the LED bulb conversion kit costs $135 (for the 4 bulb assembly, $131 for the 2 bulb assembly) via the stock system and does not include any components for the rechargeable battery feature. While this would preclude most units from completely outfitting their entire vessels with LEDs, the LEDs may be advantageous in critical lighting areas such as switchboards, high traffic areas or ladderwells. The NSN (National Stock Number) listed on the next page includes all parts necessary to retrofit the existing faceplate assembly only on all battle lanterns to accommodate the LED bulbs.

All of these options are in keeping with the battle lantern policy that was promulgated via Naval Engineering



Advisory ALCOAST 038 in Jan 05. Feedback from the fleet indicated that there was some confusion regarding what NSN would order what parts. Hopefully this article will serve as a good pictorial reference for all your future emergency lighting needs. For any additional questions, comments or feedback please contact the Office of Naval Engineering, Environmental Task Leader LTJG Jay Kime at 202-267-2003. Please visit the Naval Engineering Community in CGCentral for this article and any other Naval Engineering needs you may have.

VOIP Deployed in Central Pacific

by LCDR Todd Offutt, Sector Honolulu

During recent preparations for hurricane season in the Pacific, personnel from CAMSPAC (Communications Area Master Station Pacific) deployed a Voice-Over-Internet Protocol (VOIP) system at Integrated Support Command Honolulu. The deployment, made at the request of Sector Honolulu and the support of District Fourteen, capped off a week-long exercise that included deployment of personnel to their alternate command post, and incorporated many of the hard-learned lessons from the devastating twin sister Hurricanes of Katrina and Rita in the Gulf of Mexico.

The cutting edge technology supports most any Incident Command System (ICS) scenario by providing office like functions and capability anywhere where you need it. It works like a regular phone service, proved to fill a critical niche in testing the Sector's Continuity of Operation (COOP) Plan, and particularly, coordination with local, federal and state users following a man-made or natural disaster.

LCDR Todd Offutt, Chief of Contingency Planning and Force Readiness, described the value of the system. "Over the past year and a half, we've been working closely with other CG units and fellow Department of Homeland Security agencies to provide a comprehensive array of contingency communications for when things go bad. Experience has shown time and again that communications are the critical link that determines the success or failure of any response." He added, “ultimately we'd like to test the full capabilities of the Transportation Communications Center trailer, but this initial effort has

Nearly four dozen crews from ISC Honolulu, Electronics Support Unit, District 14, and the Sector attended a brief by OSC David Marsh on the VOIP in Honolulu in connection with the start of HURREX 2006.

brought together the talents of the operational and support units."

When deployed with CAMSPAC's mobile satellite capability, twenty simultaneous phone conversations are supported, and CG Data Network service (like your office) is available without the need for remote access tokens. While Coasties use their standard computer tools, partner agencies can simultaneously use their own unique tools by accessing the Internet directly (not the Coast Guard Data Network (CGDN)).

The two-person team, headed by Operations Systems Center (OSC) David Marsh and IT2 Kris Chiviro, set-up the communications suite in a matter of hours at the start of the Hurricane exercise.

Service/Functions At-a-Glance:

- ❒ Provides up to 50 internal phones and 20 external lines
- ❒ Each phone has a standard computer connection port (RJ-45)
- ❒ All standard and advanced office telephone features including personalize voice mail
- ❒ STE & STU compatible
- ❒ Supports conference calling
- ❒ Easy extension mobility (your number follows you to the phone you are using)
- ❒ Phones may be configured to remotely control marine band VHF/Police/Fire radios
- ❒ Protected from irregular/dirty power conditions through the use of a universal power supply

Requirements - Various platforms where the VOIP can be used. All four requirements mentioned below are individually available and deployable (not tethered to the Transportation Communications Center, a trailer sized mobile platform).

- ❒ Standard telecommunication phone services (T1) to support voice calls
- ❒ Standard data circuit (DSL line, cable modem or data grade T1)
- ❒ Standard 110VAC electrical service

VOIP Antennas are deployed in front of Station Honolulu.

VOIP Module is set-up under the capable hands of IT2 Kris Chiviro.

- ❒ Marine band VHF/Police/Fire radios

The test was the first phase of a broader strategy to test the full array of CAMSPAC's Transportable Communications Center in later exercises.

How to request the VOIP or any Contingency Communications Service:

Pacific Area users can consult APPENDIX 6 TO ANNEX K TO COMPACAREA SOP: TCC services must be requested by District Commanders for District units or operations. Area units may request them directly. Requests shall be by message or letter to COMPACAREA COGARD ALAMEDA CA//PT/PCC//, INFO COMCOGARD MLCPAC ALAMEDA CA//T// and COGARD CAMSPAC PT REYES CA.

For emergency deployments, telephone requests may be made to COMPACAREA (Ptt) (510) 437-3230 during normal working hours or COMPACAREA COMMAND CENTER (PCC) (510) 437-3700/01 after hours. Telephone requests must be verified by message. Deployment requests for non-emergency situations shall be made at least 30 days in advance. Specific communications requirements (e.g., circuit types, quantity) shall be included in the message request.

A crane lifts the Mk 3, 57 mm gun just prior to mounting to the deck of BERTHOLF. Photo: courtesy of Northrop Grumman.

one-shot

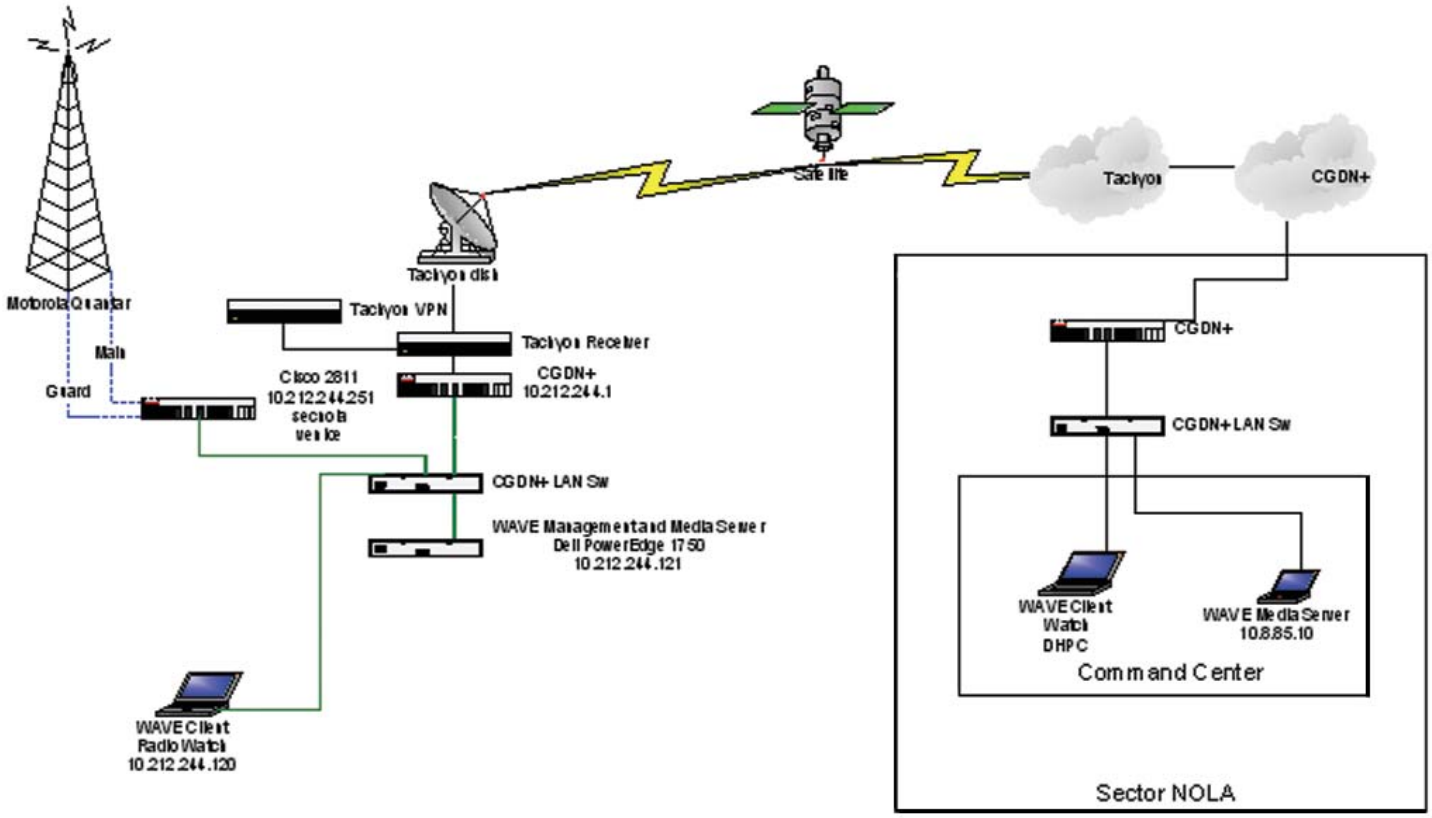
VTS Prototype Saves Day In Big Easy

A view of New Orleans and its Superdome after hurricane Katrina.

by ENS Jon Parker, C2CEN

The skills and ability of the Coast Guard to respond was significantly tested during Hurricane Katrina. The post hurricane devastation not only effected the daily lives of civilians who live in those areas, but also those responsible for protecting them. No place was more greatly affected than Coast Guard Station Venice, LA. Damage to the communications infrastructure drastically reduced VHF coverage for Sector New Orleans by severing connectivity between the Sector Command Center and the VHF communication resources located at the station 84 miles away. In addition to producing a blind spot, the station was required to stand additional communications watches, fatiguing personnel.

Back on the East Coast, the Command and Control Engineering Center (C2CEN) was in the process of engineering a replacement communications platform to standardize the mixed bag of systems located at the various Vessel Traffic System (VTS) sites. In addition to meeting core program requirements, the desire was to design a system that was efficient, easily deployable, and required minimal equipment to operate. The solution was WAVE. Wide Area Voice Environment (WAVE) is a vender neutral COTS (Commercial-Off-The-Shelf) product manufactured by Twisted Pair Solutions of Seattle, Washington. WAVE manages IP (Internet Protocol) packets for voice over IP for transmission across an IP network; in the form of Voice-Over IP (VOIP). WAVE's peer-to-peer functionality and non-reliance on central administration, makes it survivable, scalable, and low on maintenance. A strong point of the software is the ability to connect new and legacy analog and digital commercial radios, cellular, and landline telephone systems onto an IP based multicast or broadcast network, managed and operated via a PC Client work-



station configured with WAVE client software. WAVE supports the specialized requirements of most radio systems, including tone injection, hardware signaling devices, and voltage manipulation. It has the ability to provide instant playback of transmission without additional hardware.

Responding to the crisis at Sector New Orleans, C2CEN in collaboration with Maintenance and Logistics Command (MLC) Atlantic, dispatched members of the WAVE Implementation Project Team to assist with restoration of communications between Sector New Orleans and Station Venice. Electronics Support Unit (ESU) New Orleans had provided Station Venice with a Tachyon unit to restore Standard Workstation connectivity to the CGDN+ (Coast Guard Data Network+). Tachyon consists of a portable 1.3 meter dish, transceiver, and Virtual Private Network Client which provides high speed broadband connectivity via satellite (Figure 1).

Figure 1.

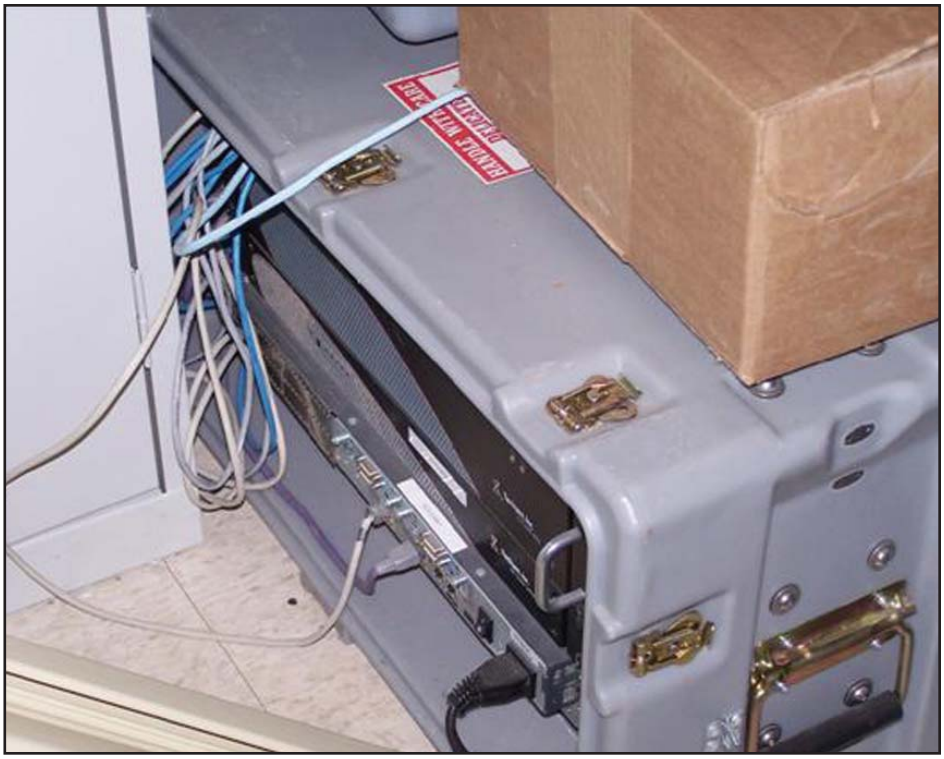


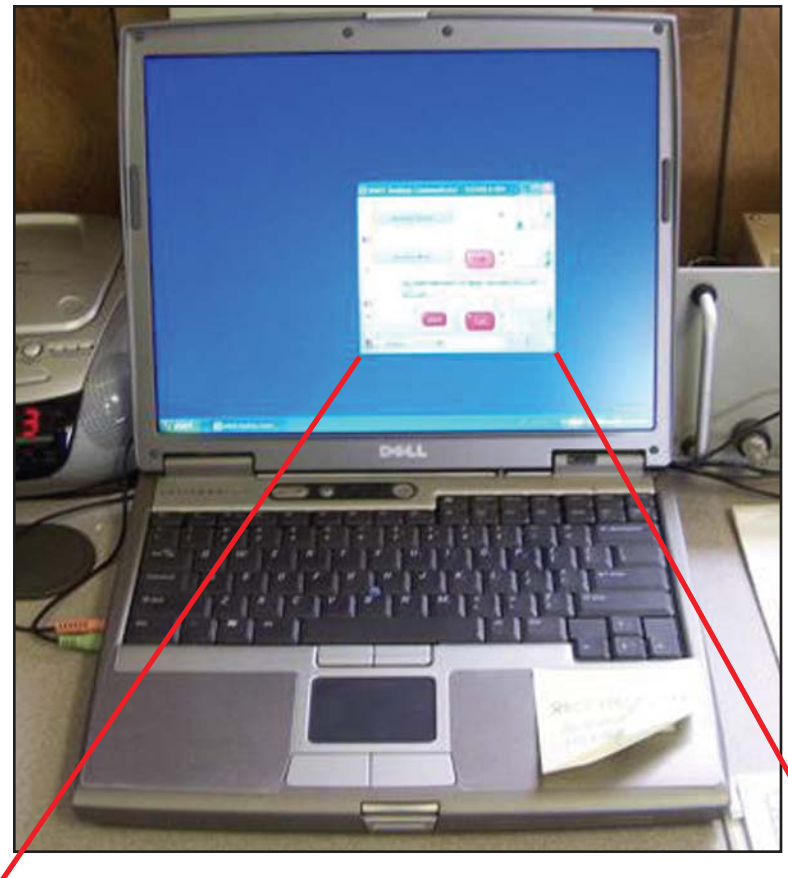
Figure 2.

Figure 3.

Figure 1.

Exploiting this resource, C2CEN installed a CISCO 2811 router and a Dell 1750 server onto the network provided by the Tachyon (Figures 2 and 3). In addition to WAVE Management and Media Server software the 1750 server has Windows 2003 as the Operating System. Normally installed only at the transmitter site for radio signal tone injection, the media server software was loaded at the station and sector to optimize bandwidth between the two sites. Connection of the router to the Tachyon was made via the fractural T1 WAN Interface Card (WIC) on the 2811 router. Two Ear and Mouth (E&M) Voice Interface Cards (VIC) on the router provided the connection of the station's VHF Quantar transceiver to the network. Users at the station and sector were provided laptops loaded with WAVE client software, with which they were able to access the Quantar at Station Venice (Figures 4 and 5). The intuitive design of the user interface allowed immediate use of the system with minimal training.

Figure 4.



The initial prototype deployment of WAVE was scheduled as a "proof of concept" test at VTS Seattle as the possible future replacement to the divergent communications platforms throughout the VTS system. Sector New Orleans provided a unique opportunity not only to validate the feasibility of WAVE in an operational environment, but also punctuates its effectiveness as a rapidly deployable contingency communications platform. Foreseeing the need for emergency communications, MLCLANT has pre-positioned Tachyon units at every Electronics Support Unit within its AOR (Area of Responsibility). Taking into consideration the relatively low cost of $17K for the software suite used at New Orleans which supported two radios and provided recording capability, WAVE would appear to be the best fit for the Coast Guard continuing communications needs. This is also a testament to what can be accomplished when elements of Team Coast Guard work together for the common good of the organization.

Figure 5.

USCG photo by PA2 Lisa Hennings.

2M/MTR PROGRAM

by ETCM Joseph Harold, USCG HQ (CG-642)

The 2M/MTR Program is key for 21st Century Logistics Support and Coast Guard Transformation. This program increases fleet readiness for aging shipboard systems, personnel training, equipment reliability, and maintenance. The program leverages technology to optimize capabilities and Total Ownership Costs.

The MK92 Fire Control System and the Close-In Weapons System (CIWS) equipment mainly used this program for troubleshoot and repair up until mid-2003. Since the ET/FT (Electronics Technician/Fire Control Technician) merger, the program has expanded to all Navy Type Navy Owned (NTNO) systems and continues to grow with possibilities to cover a number of Coast Guard specific systems.

The Office of Electronics, CG-64, sponsors training at TRACEN Yorktown, Virginia, for the 2M/MTR Program. There are three parts to this 2M/MTR training: Miniature Electronic Repair, Microminiature Electronic Repair, and Module Test and Repair. This training takes a total of seven weeks to complete. There is also a self-paced course that can take place on board ship to recertification technicians to maintain their skill levels. This recertification is required every18 months to maintain certification.

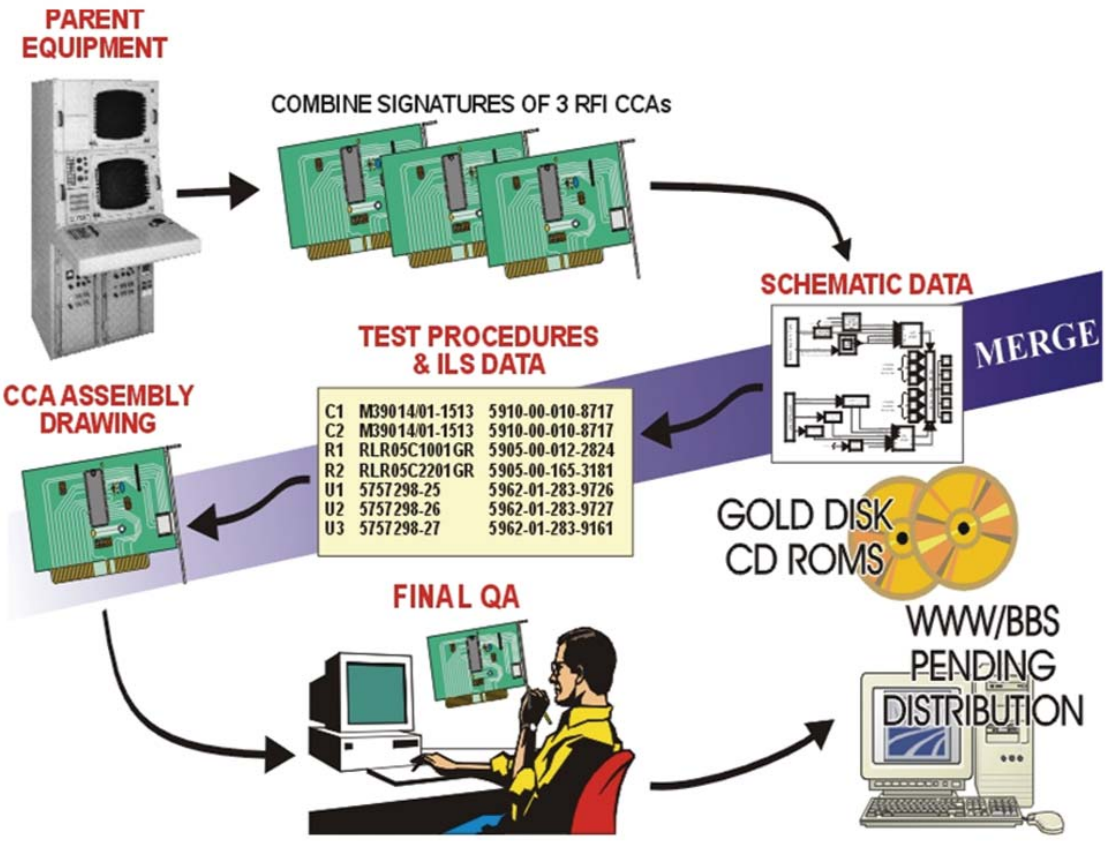
The program provides a low cost and portable capability to repair circuit cards and other electronic assemblies on board floating units and at shore side units. The technicians who take these courses learn reliable means of troubleshooting, screening, and repairing circuit cards that can improve operation while underway or during wartime. As part of this training the technicians learn how to track and report failed parts and man-hours, giving the Coast Guard a means of measuring money saved.

The 2M/MTR Program is used throughout all Navy communities: Surface, Submarine, Navy/United States Marine Corps (USMC) Aviation, and USMC Ground; Army, Special Forces; Air Force, National Guard; and numerous allied countries. The Joint Fleet Maintenance Manual (CINCLANT/ CINCPACFLTINST 4790.3) in Volume IV, Part 1, Chapter 11, describes the requirements and responsibilities for the 2M/MTR Program.

The 2M Module test suites are installed on all 378 cutters, all 270 cutters, seven Naval Engineering Support Units/Weapons Augmentation/Assist Teams/Maintenance Augmentation/Assist Teams (NESU/WAT/MAT), three Electronic Support Unit/Electronic Support Detachments (ESU/ESD), a Communications Station (COMSTA), and two training centers. A few other units are coming up to speed with their equipment and will be on-line soon.

ETC Kelly Letourneau is the Coast Guard Liaison at the Naval Surface Warfare Center (NSWC) Crane, IN, who oversees the installation and system certification part of this program. Right now, he is answering the challenge of getting all the currently equipped units up-to-date and certified. He maintains the 2M Database that shows who needs recertification or any of three basic training elements. The 2M/MTR work station must also be recertified every 18 months and this work is mainly done by our Coast Guard Liaison at NSWC Crane, IN.

ETCS Joseph Ronan, who is detached to Naval Undersea Warfare Center (NUWC) St Juliens Creek in Portsmouth, VA, maintains the MTR part of this program. He is responsible for the support of the MTR equipment, the compilation of the MTR tracking data and the creation of Gold Disks that contain the signal data that is used in determining if a circuit card is good or faulty.



As we expand the program throughout the Coast Guard, we are considering establishing a rewards program for the high performers. The goal is to be able to grant up to 72 hours of special liberty for those highest performers during a quarter with significant contributions to the program, reported cost savings, and screening rates. We also plan to formally recognize Gold Disk developers as we try to expand the program into Coast Guard specific systems.

We are faced with many challenges in the future like the Field Unit Inventory Reposition Project (FUIRP) sponsored by RADM Dale G. Gabel and how the Coast Guard plans to forecast and pre-position material required to perform preventative maintenance. With your help and support of the 2M/MTR Program having less parts on board can become a way of life.

Keep an eye out for Electronic Advisories, messages, and articles if you have an interest in being a part of this program and/or a technician with a future in electronics. If you have any questions I can be reached at 202-475-3621 or e-mail me at jharold@comdt.uscg.mil.

What's Under the Hood of Your Coast Guard Command and Control System?

by LT Pete Cook, CG Academy

You've used or heard of Coast Guard Command and Control (C2) systems such as the Shipboard Command and Control System (SCCS), Sector Command Center (SCC) system, Vessel Traffic System (VTS), Command Center (CC) system, Common Operational Picture (COP), etc. Have you ever wondered what makes these systems work?

The foundation of Coast Guard C2 systems is the Defense Information Systems Agency's (DISA) Common Operating Environment (COE). The COE started in 1993 as a replacement for the World-Wide Military Command and Control System. The proof-of-concept for the COE was the Global Command and Control System (GCCS) and was operationally fielded in 1995. Later in 1995, DISA expanded the GCCS COE to include areas beyond C2, take advantage of new technologies, and incorporate Commercial-Off-The-Shelf software. This new COE became the Defense Information Infrastructure (DII) COE. Benefits of the COE include software and data reuse, interoperable systems, secure architecture, and data sharing. The key to achieving these benefits is meeting certain levels of COE compliance. Levels of compliance range from 1 to 8, with 7 being the minimal level to guarantee interoperability.

The Joint Chiefs of Staff took the GCCS COE concept and developed the GCCS-Joint (GCCS-J) system to provide joint command and control throughout the military services. The GCCS-J utilizes the COE, but also provides specific support and mission applications needed by today's warfighters. These applications are what make the -J distinction. Unfortunately, the applications offered by the GCCS-J did not completely meet any services' needs. So, the services took the COE and added their own support and mission applications. Resultantly, the U.S. Army created the GCCS-Army (GCCS-A), the U.S. Air Force created the GCCS-Air Force (GCCS-AF), the U.S. Navy created the GCCS-Maritime (GCCS-M), etc. There are a total of 10 different flavors of GCCS throughout the military and government.

The Coast Guard does not use any of these different flavors of GCCS. While some Coast Guard C2 systems "follow the GCCS-J," they really use the COE with only support applications from the GCCS-J. Several Coast Guard C2 systems also use the COE with support applications from both the GCCS-J and GCCS-M. The benefit of "following the GCCS-J" is that maintenance support can be contracted from commercial companies and certain certifications and accreditations can be more easily obtained. The benefit of not following a particular GCCS is that support and mission applications from any of the systems can be used. And, due to the inherent nature of the COE, mixing applications should not cause any interoperability problems.

All COE-based systems have the same COE foundation, regardless of whether they are GCCS-Joint, GCCS-Korea, GCCS-Army, a mixed system such as with several Coast Guard C2 systems, etc. That is, the COE is a foundation for building systems with a standard set of building blocks. These building blocks, except for the COE kernel, are installed in manageable units called segments. The COE kernel is the heart of the system and provides the minimal amount of

software for a system to run. The kernel components are shown in Figure 1: Security Services, Administrative Services, and Network Management Services. Continuing with Figure 1, the Infrastructure Services interact with the kernel's services, but also provide the framework for managing and distributing the flow of data throughout the system, for example, the Communications Services handle Transmission Control Protocol/Internet Protocol (TCP/IP) and User Datagram Protocol (UDP) transmissions. The Common Support Applications adhere to the same principle as the Infrastructure Services, but instead manage and distribute the flow of processed data. Hence, these services tend to be mission-domain specific. For example, the Mapping, Charting, Geodesy, and Imagery (MCG&I) Services handle the display of electronic charts for the Coast Guard's SCCS. The Software (S/W) Development Services provide the development kits for programmers to create mission applications. Shared Data Environment (SHADE) provides an integrated global environment where any authorized user from any authorized system can access shared data from any other authorized system. The perfect example of SHADE's benefit is the COP where thousands of tracks are shared throughout the Coast Guard and other government/military services.

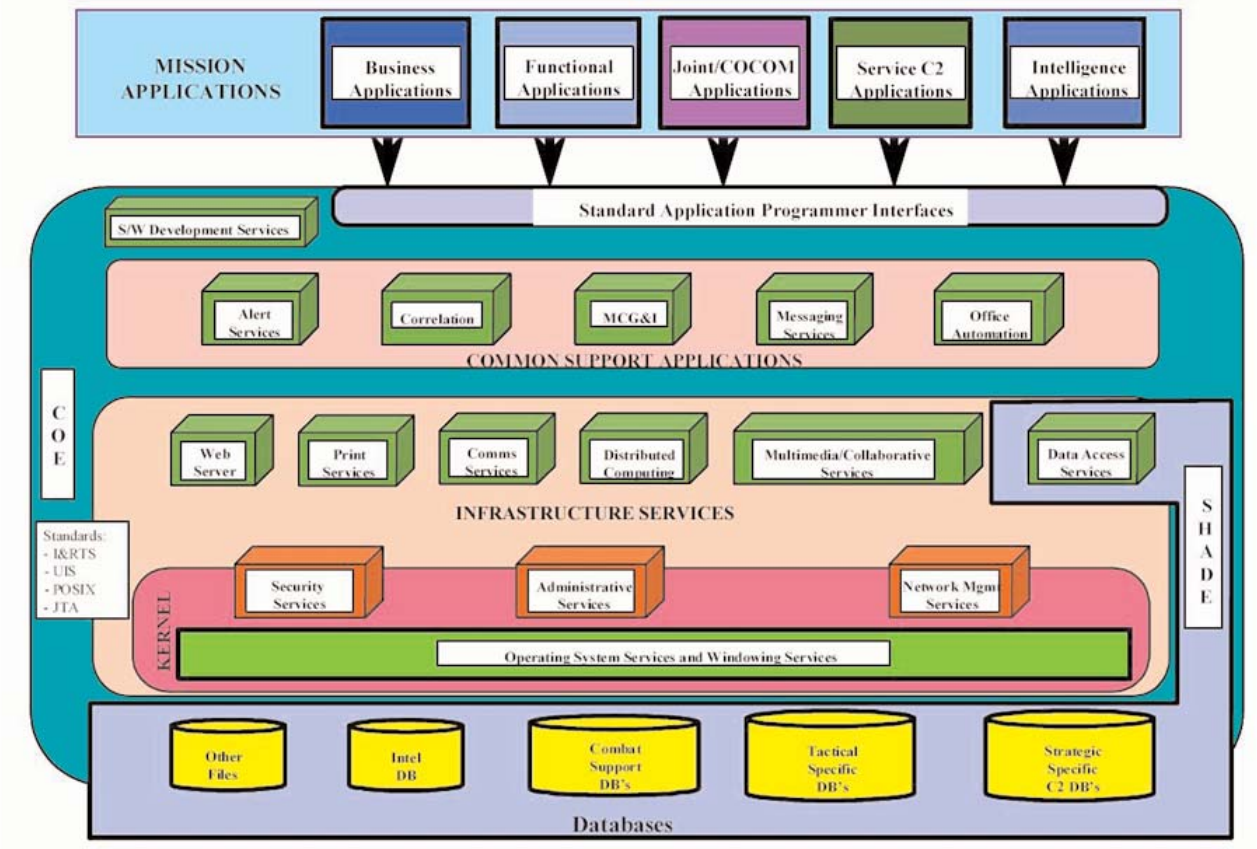
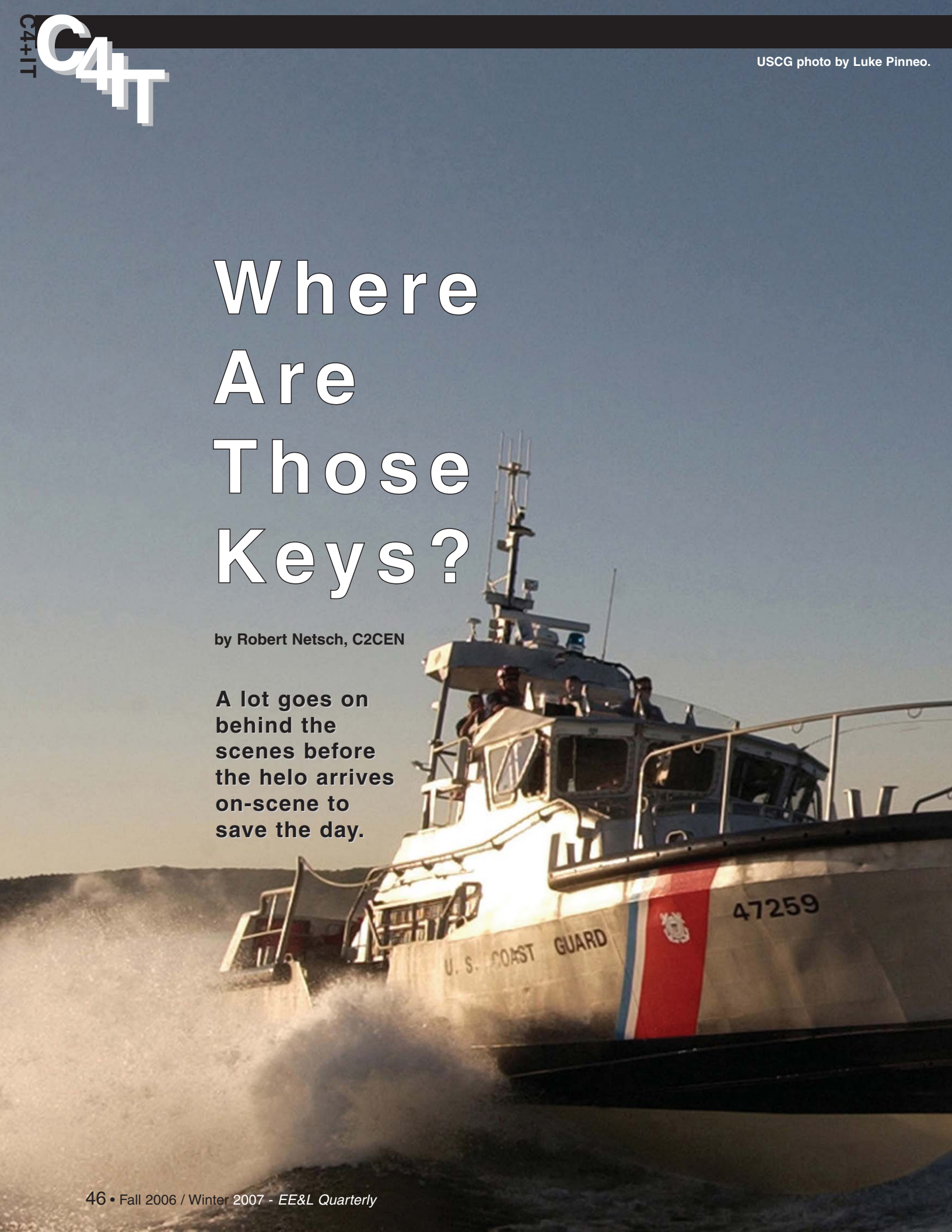


Figure 1: COE Architecture.

While a great concept, the COE has limitations. Most significantly, the architecture is platform specific. For example, mission applications developed for the Solaris operating environment cannot be efficiently utilized in the Windows environment. The COE's limitations, the fact that each military service required different GCCSs, and the need to better collaborate information sharing led the Joint Chiefs of Staff to initiate a new C2 program called Net-Enabled Command Capability (NECC) (formerly called Joint Command and Control (JC2)). NECC will move away from the COE's platform specific architecture to a more robust architecture that is net-centric, where each service's data and individualized applications coexist on the Department of Defense's Global Information Grid (GIG). The first major milestone of NECC was completed in January 2006 and full implementation is expected by 2008.

For more information visit these sites:

http://cmdocs.mont.disa.mil/
http://www.sei.cmu.edu/str/descriptions/diicoe_body.html
http://www.disa.mil/main/prodsol/index.html

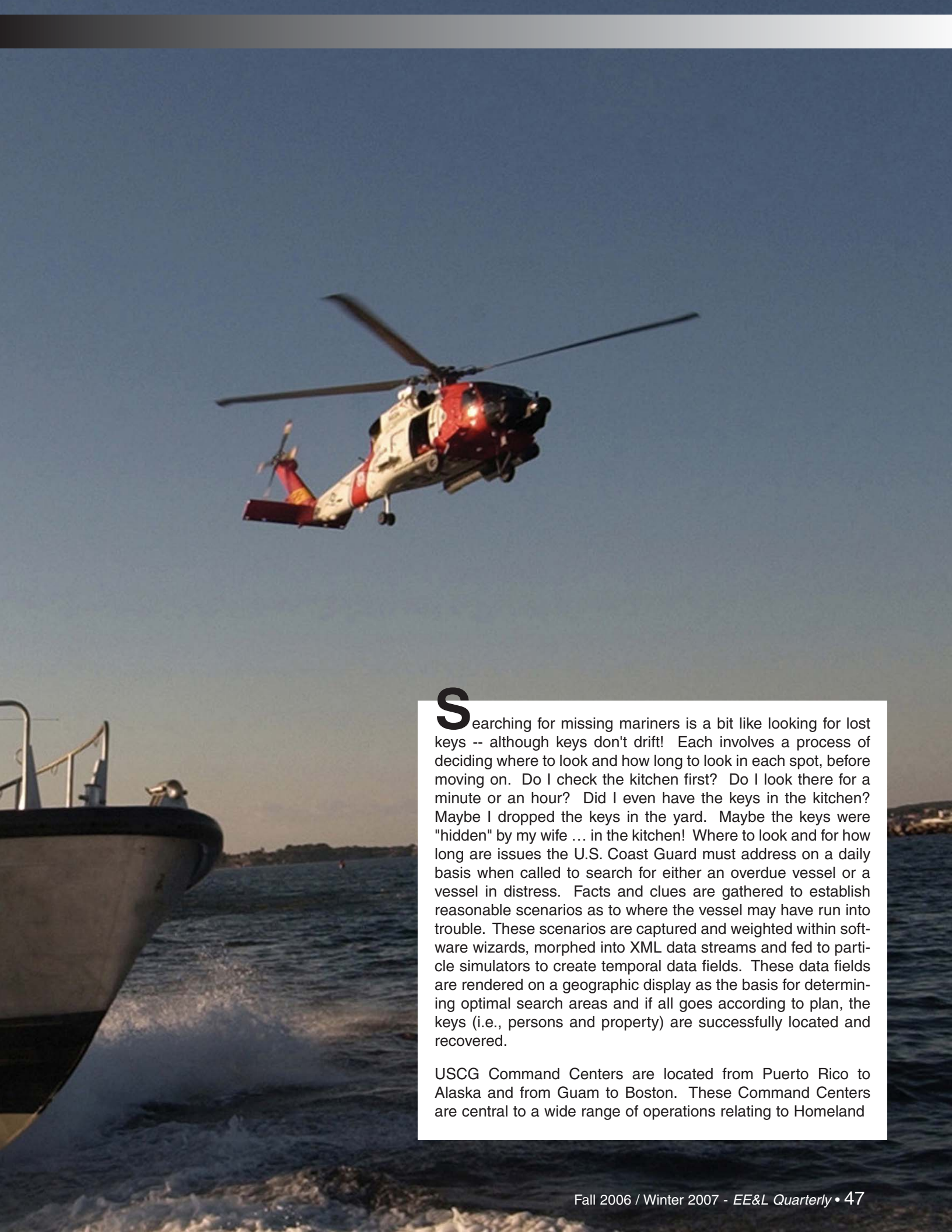


USCG photo by Luke Pinneo.

Where Are Those Keys?

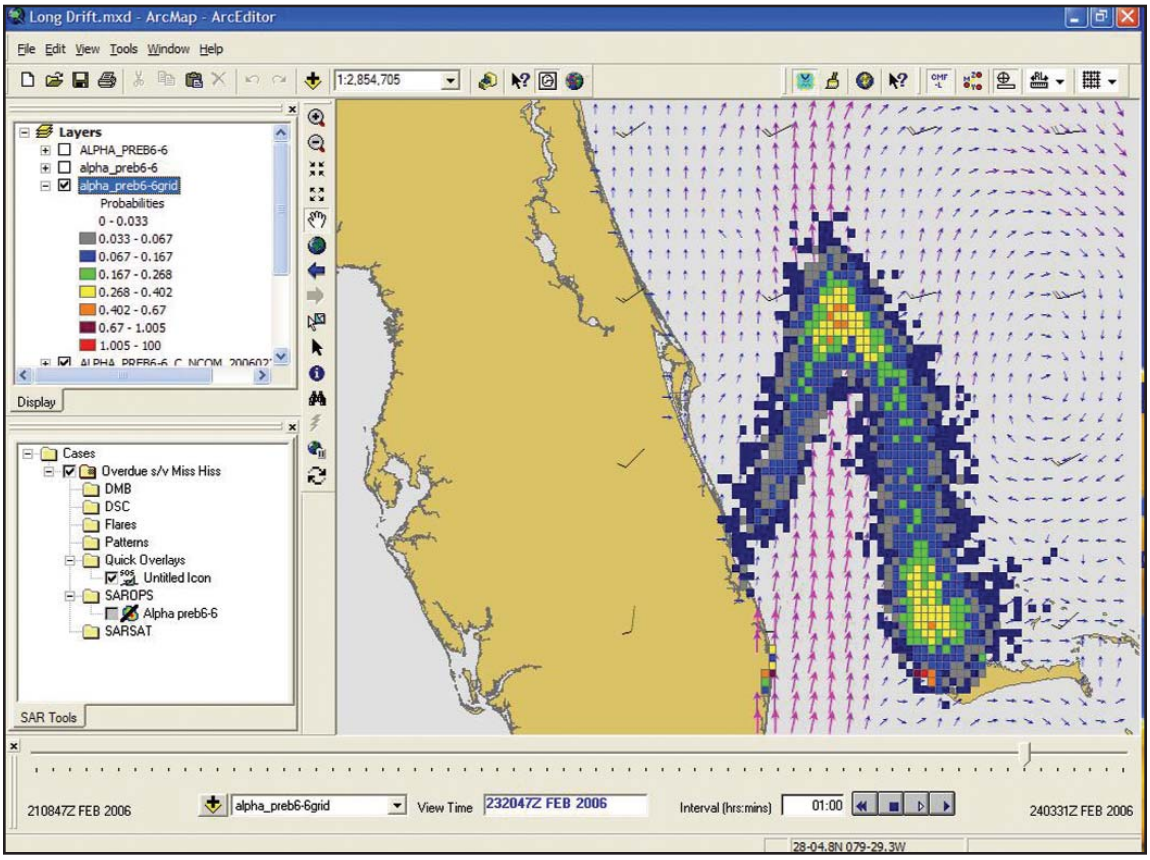
by Robert Netsch, C2CEN

A lot goes on behind the scenes before the helo arrives on-scene to save the day.



Searching for missing mariners is a bit like looking for lost keys -- although keys don't drift! Each involves a process of deciding where to look and how long to look in each spot, before moving on. Do I check the kitchen first? Do I look there for a minute or an hour? Did I even have the keys in the kitchen? Maybe I dropped the keys in the yard. Maybe the keys were "hidden" by my wife … in the kitchen! Where to look and for how long are issues the U.S. Coast Guard must address on a daily basis when called to search for either an overdue vessel or a vessel in distress. Facts and clues are gathered to establish reasonable scenarios as to where the vessel may have run into trouble. These scenarios are captured and weighted within software wizards, morphed into XML data streams and fed to particle simulators to create temporal data fields. These data fields are rendered on a geographic display as the basis for determining optimal search areas and if all goes according to plan, the keys (i.e., persons and property) are successfully located and recovered.

USCG Command Centers are located from Puerto Rico to Alaska and from Guam to Boston. These Command Centers are central to a wide range of operations relating to Homeland

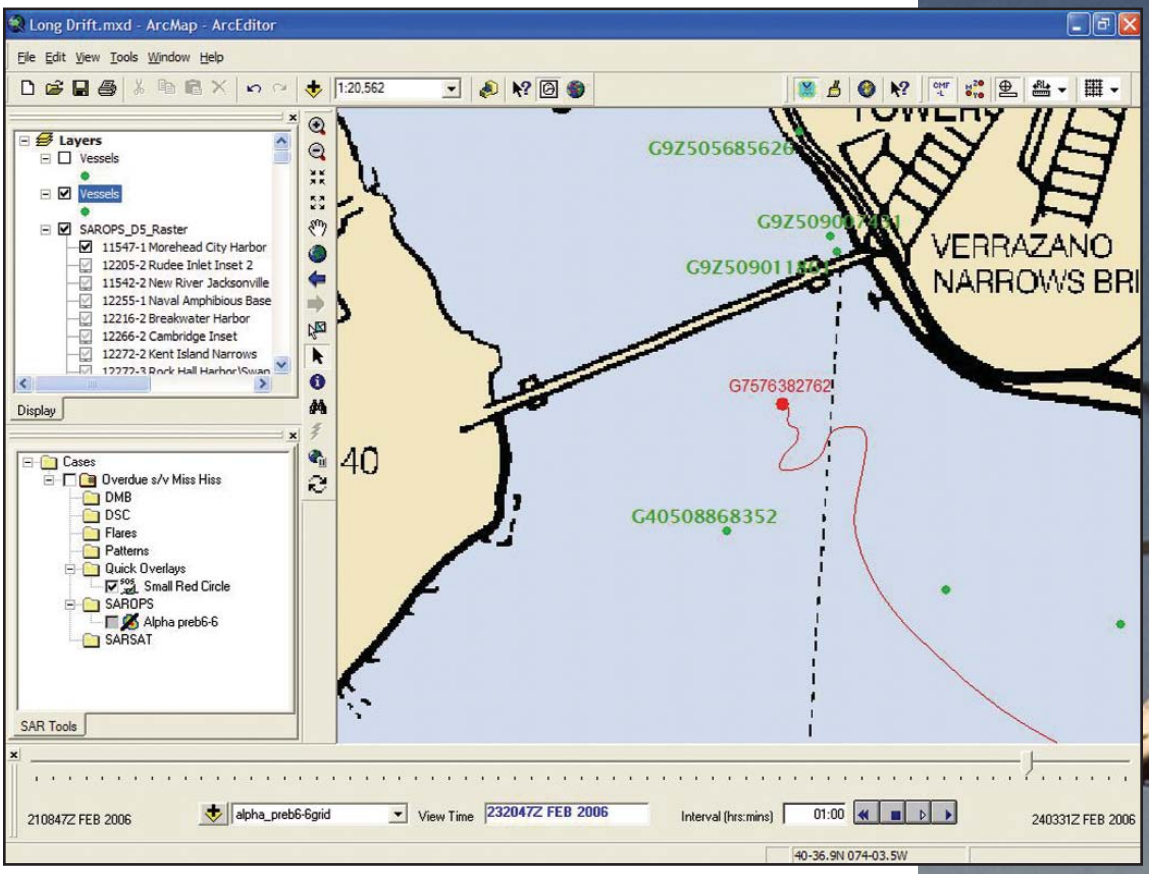


SAROPS screen shot with probability map. An open ocean case with a long drift interval (the time between a search object's Last Known Position (LKP) and the searcher's on scene time) can easily require the expenditure of hundreds of search hours over thousands of miles.

Security, Law Enforcement, Marine Environmental Protection, and Search and Rescue (SAR). Every year the U.S. Coast Guard (USCG) receives approximately 30,000 calls for assistance, some of which evolve into significant Search and Rescue (SAR) events. The Search And Rescue Optimal Planning System (SAROPS), is designed to maximize the potential of bringing these SAR events to a happy ending. SAROPS is a software system built upon Geographic Information System (GIS) technology, provided by the Commercial Joint Mapping Tool Kit (C/JMTK). GIS revolutionizes any mission with a geographic component, from establishing an optimal search plan for a missing boater, to geographically scrutinizing the curious behavior of an inbound Liquid Natural Gas (LNG) carrier.

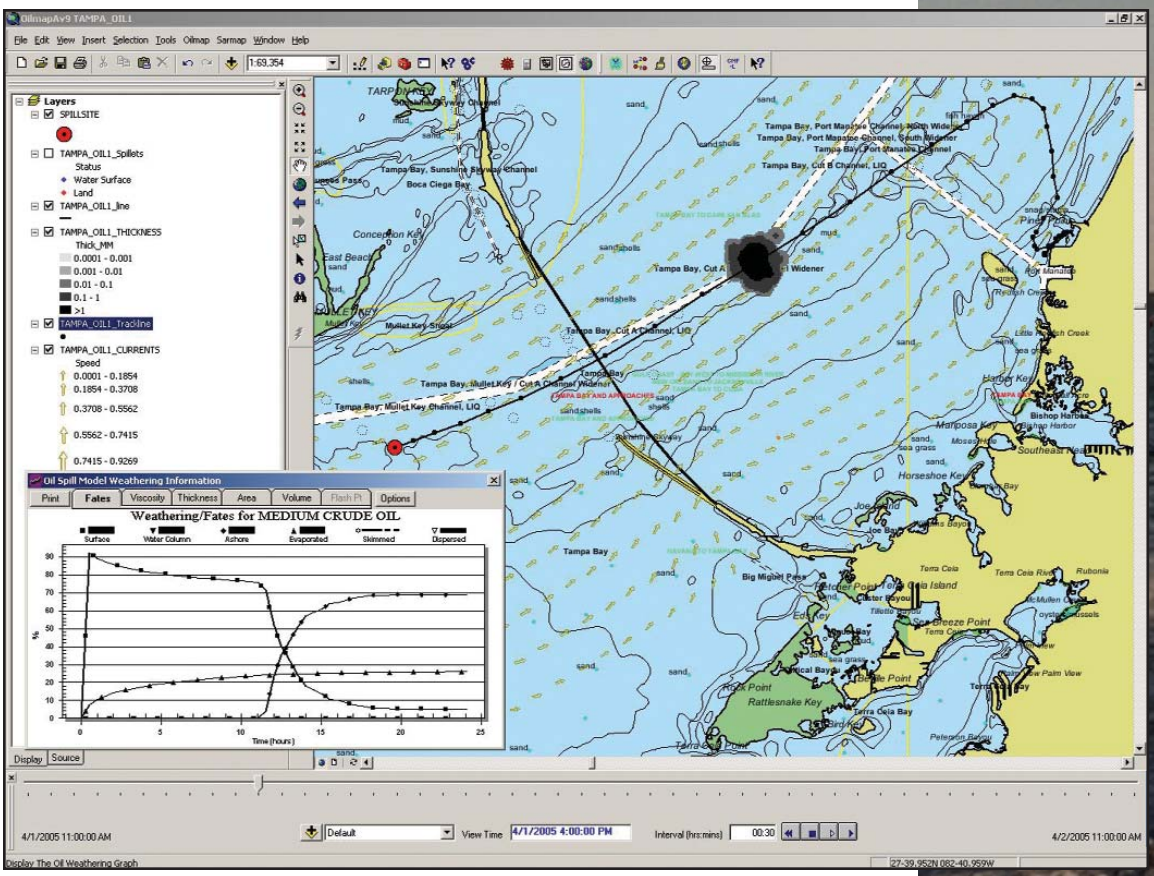
The SAROPS architecture has two primary components, a centralized environmental data server and a PC client running a GIS. The client configuration consists of ArcMap© with a collection of custom extensions, which provide features to create a tailored ArcMap© interface, collect user inputs, run simulation models and build custom layers for static and animated display. SAROPS also uses ArcIMS© services for map and data feeds. For example, the Coast Guard has an Internet Mapping Service (IMS) to provide a nautical chart mosaic for a given map extent. Additional services provide: Areas of Responsibility (AOR), Critical Infrastructure, Imagery and Common Operational Picture (COP) track data. SAROPS also stands ready for future expansion. To support Marine Environmental Protection, business partners have built extensions to model pollutant and hazardous waste drift. These drift models are useful for exercises and in response to actual events.

While SAROPS was designed for maritime SAR, its utility goes much further. USCG decision makers, mission planners and analysts are realizing multi-mission GIS benefits through the use of C/JMTK within SAROPS. The core C/JMTK capabilities allow a tremendous amount of data fusion and subsequent domain awareness right out of the box. An added benefit is that the architecture follows industry standards and is fully open, allowing talented third parties to contribute specialized features for unique missions. The results are standardized systems to support custom needs -- which after all, is the key we've all been looking for.

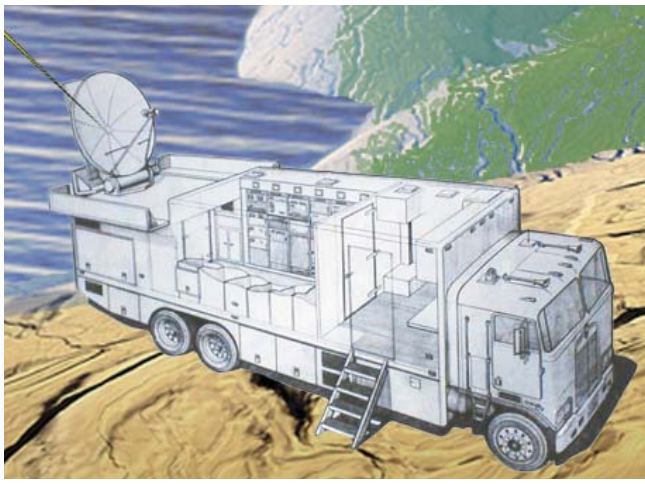


SAROPS screen shot with enhanced UCOP image. The Coast Guard maintains a constant vigil over who comes and goes from our nations ports.

SAROPS screen shot with visible oil slick. Knowing how to respond to a spill requires knowledge of where the spill came from and where it's going.



Will JUICE-06 Energize DHS Response Capabilities?



by LT Klaus Barboza
Homeland Secure Data Network

Frances Fragos Townsend, Homeland Security Advisor to the President, acknowledged in the aftermath of Hurricane Katrina that the Secretary lacked real-time, accurate situational awareness of both the facts from the disaster area as well as the on-going response activities of the federal, state, and local players. In the report to the White House *The Federal Response to Hurricane Katrina: Lessons Learned*, national preparedness, integrated use of military capabilities, and communications are listed as the top three Hurricane Katrina Critical Challenges. JUICE-06 exercise addresses these critical challenges that could hinder an effective response to future national disasters.

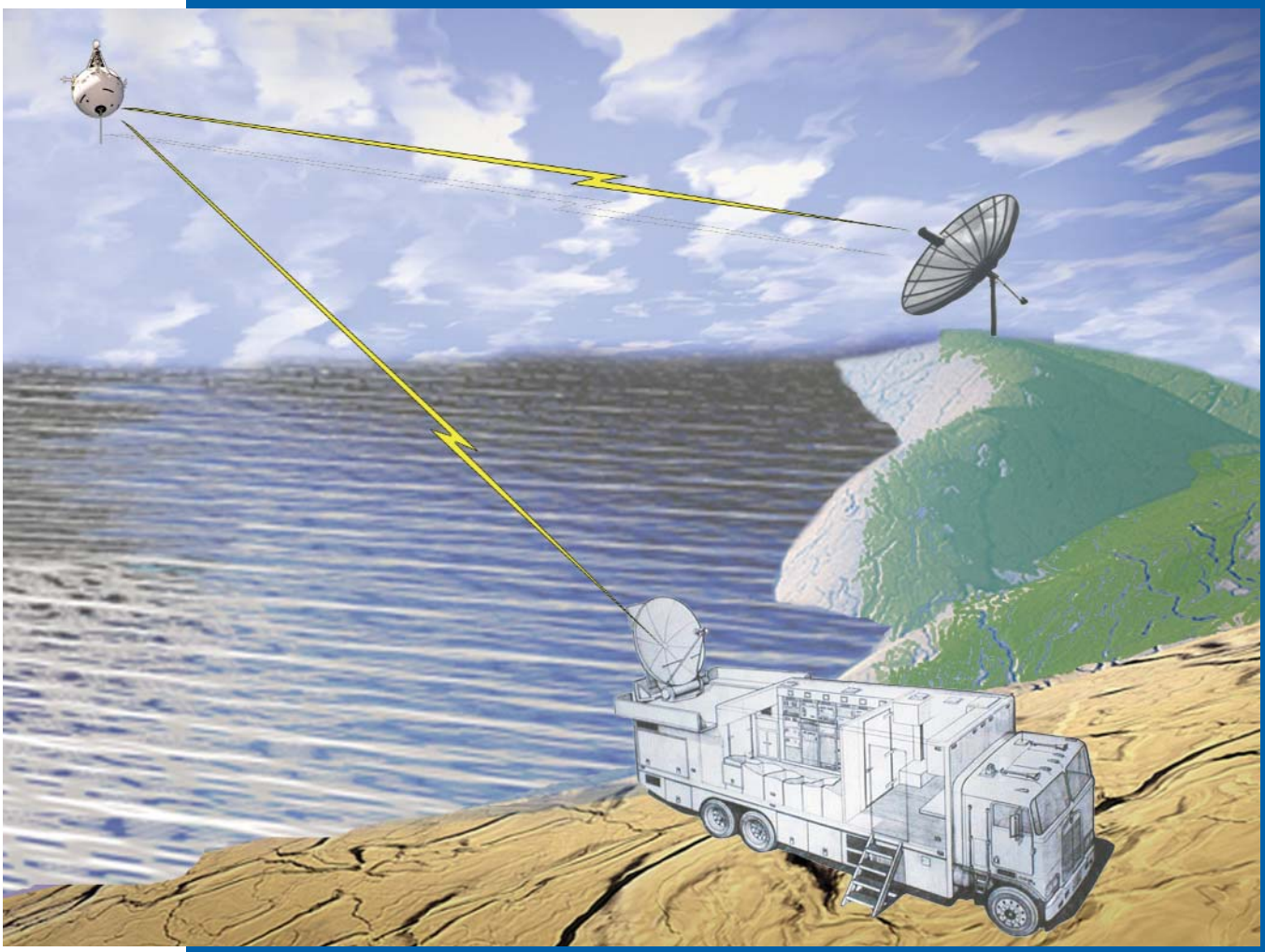
It is a well-known fact that the chaos that permeates disasters often causes an inaccurate understanding of the situation by headquarters command centers and people with the authority to effectively mobilize the resources needed for an appropriate response. In military circles, this inaccurate understanding is known as the "fog of war." Response personnel and people with authority sent to perform on-field assessments and coordinate response activities often do not have the tools to securely send and receive information and effectively coordinate relief efforts. In today's environment, where it is well within the realm of possibilities that a major catastrophe is caused by human beings, the situation is further complicated because some communications cannot be relayed "on the open" but have to be kept unknown to the general public for a certain amount of time.

One step to remove some of the "fog of war" is the deployment of mobile units with satellite transmitters capable of secure communications using Public Key Infrastructure or PKI. This system involves FEMA (Federal Emergency Management Agency) vans that transmit to the Department of Defense tactical satellite network into the U.S. Coast Guard Communications Area Master Stations that provide the electronic keys to encrypt data going through DHS's (Department of Homeland Security) own secret network, the Homeland Secure Data Network or HSDN. JUICE-06 is the name of the exercise conducted in July and August of 2006 that tested this capability. In the future, it will be possible for field-deployed elements of a National Response Plan to officially send messages encrypted using Fortezza certificates that will authenticate their authority, individually secure their communications, and validate the receipt of their transmissions.

PKI is a relatively new technology. On June 22, 2006, the Coast Guard started providing keys or certificates to unlock the information inside the messages relayed over HSDN. The Department of Defense is still in the process of migrating to PKI with an infrastructure better known as the Defense Messaging System or DMS. In the private sector, only a handful of companies, mostly engaged in securing financial transactions, have the authority to issue these electronic keys or certificates, and therefore entitled to be recognized as a Certificate Authority. They are Swift, Verisign, Entrust, and RSA.

PKI is the solution to the first-responders requirement to differentiate among the different originators at one end and the different recipients at the other end using just one circuit. Rest assured that senior government officials have Fortezza

Joint Users Interoperability Communications Exercise 2006 (JUICE-06)



certificates that allow them to digitally sign a message making it clear to the recipients that it originates from them, that clears them to send and receive messages at their security clearance level, and verifies that their transmission was received appropriately, all of this happening automagically, in a blink of an eye and without the intervention of battalions of communication technicians.

The PKI system works by encrypting the message using a private key and a public key. The message is sent over the circuit with the public key, the private key remains on the originator end of the circuit. At the other end of the circuit, there are corresponding private keys for the public keys being transmitted over the circuit. Both, matching public key and private key, are needed to decode the message back to the original. These keys have the capability of being associated to information that can identify originator and recipient with more precise granularity, such as security clearance, level of access, authority, etc. Due to its intrinsic security features, PKI, in conjunction with other process controls, could provide a significant level of protection of the information, even when transmitted over public circuits, such as the Internet.

Sounds too good to be true? Well, JUICE-06 is a reality. Maybe in the future the Fortezza card technology can be implanted inside our skin so by just approaching a computer we are validated. Although someone out there would certify that this is now technically possible, this is not a capability that JUICE-06 is attempting to test. This will probably be left for another exercise, will it be JUICE-07?

The Final Chronicle of ONSS

by LCDR Frank W. Klucznik
USCG Atlantic Area Command

OVERVIEW This is the last in a four part series intended to chronicle a new Coast Guard Information Technology (IT) project from concept to official approval by CG-6 (Command, Control, Communications, Computers & Information Technology Directorate). Parts one through three were published in the Fall 2005, Winter 2006, and Spring 2006 editions of the *Engineering, Electronics & Logistics Quarterly* periodical and are available for download on CG Central.

The ONSS project went from "just an idea" to becoming an IT system approved by CG-6 for Coast Guard wide deployment in only 24-months at a cost of just under $300k. The system directly supports several Headquarters divisions, both Areas, nine Districts, 33 Sectors, and more than 20 field units in the management of the Ports, Waterways, and Coastal Security's (PWCS) Operation Neptune Shield (ONS). While in operation, the system will yield a financial savings of more than $246k per year in reduced labor costs. The ONSS project also generated a set of tested requirements G-RPD (Office

USCG photo by PA3 Krystyna Hannum.

of Security and Defense Operations) evaluated and coordinated with G-PRI (Office of Information Resources) and G-RCC (Office of Command and Control Capability) to use in developing ONSS functionality in MISLE (Marine Information for Safety and Law Enforcement) and/or AOPS (Abstract of Operations-System). Incorporating the process into MISLE and AOPS is expected to take 18-24 months, during which time ONSS will continue to provide critical support and cost savings benefits to units throughout the Coast Guard while being hosted and maintained by Maintenance and Logistics Command Atlantic (MLCA).

This chronicle contains a diary of significant milestones achieved during 2006, discusses the future direction, conveys the impact of the project on the Coast Guard, and communicates a short note of thanks to the significant contributors of the project.

MILESTONES Chronicles I, II, and III of ONSS contain details on the first year of ONSS development; however, Figure 1 (see next page) is provided as an overview of the project's timeline for readers who are not familiar with its history.

By December 2005, development on the ONSS project achieved significant progress and garnered the attention of senior Headquarters' staff during periods of elevated MARSEC (Maritime Security) levels. However, vertical alignment was scheduled to take place in January 2006, and the project's future was uncertain because its program sponsors and supporters were being dissolved into an unfamiliar organizational structure. Regardless of the uncertainty, development forged ahead.

At the very end of December 2005, CG-6 extended LANTAREA's approval to operate the system for an additional 90 days, and allowed expansion to all Atlantic Military and Economically Strategic (LANT MES) ports starting in January 2006. January also marked the release of ONSS V 2.0.0, which incorporated the Sector construct in all MES ports. In preparation for the V 2.0.0 release, user training was conducted over the Christmas and New Year holidays, and any problems encountered were ironed out in the January / February reporting periods.

The team also took the V 2.0.0 release as an opportunity to test system operation in Pacific Area (PACAREA) Military and Economically Strategic (MES) ports. Consequently, PAC users were also trained in December and tested the system in January and February. When the test period ended in March, PAC units stopped using ONSS until the system received final approval in September 2006. The test with PACAREA proved ONSS could communicate and operate Coast Guard wide, and MLCA host servers and network had more than sufficient bandwidth to manage the workload.

In March 2006, the third round of Systems Development Lifecycle (SDLC) documentation was submitted to Headquarters for review and approval. This package contained everything the sponsors and CG-6 needed to approve the system for implementation under the SDLC development process. March also marked the beginning of transition planning. The decision to shift the project to Headquarters was made because vertical alignment at Atlantic Area (LANTAREA) impacted the development team members. Consequently, the LANT members helped with the transition process by renegotiating the maintenance and support contract between MLCA and Headquarters, negotiating a training contract through an MLCA contractor, oversaw the development of a hard-copy users' manual, and physically relocated the development contractor from LANTAREA to MLCA.

July 1st marked the official transition date of the project from LANTAREA to G-RPD management, and everything went off without a hitch. G-RPD hit the ground running by completing a formal contract in July to provide semi-annual system training to all end users, and in August they initiated meetings with G-PRI and G-RCC to review the ONSS requirements documentation. The meetings with G-PRI and G-RCC were designed to develop a plan for incorporating scorecard functionality in to one or more of the Coast Guard's existing enterprise IT systems.

September ushered in two significant events: the approval of ONSS by CG-6 for use Coast Guard wide in all MES ports, and the announcement of semi-annual ONSS training for all end users. The CG-6 approval came almost 24 months to the day from when the idea of a web-based scorecard was presented to a group of Headquarters level system managers. In the end, ONSS delivered as promised because it provided field units and staff elements with the IT support they needed for scorecard reporting, established a central data repository for trend analysis and program management, and generated a set of tested requirements IT managers could use to incorporate the process into an existing enterprise system. The team recognized it would take time to incorporate the process into an existing system. So maintenance, support, and training contracts were established to ensure ONSS would continue to serve the Coast Guard until G-PRI and G-RCC could incorporate the functionality into existing systems.

Finally, October saw the renewal of the development contract with MLCA at reduced levels. The reduction was intentional because development was only expected to support troubleshooting problems and fielding ONSS V 3.0.0, which contains the graphical map functionality used for briefing senior staff elements on MARSEC attainment. The ONSS training contract also went into effect in October, and with it system users now have the opportunity to refresh their ONSS knowledge twice a

Operation Neptune Shield Scorecard Historical Timeline

Date	Event
Dec 2003	- Operation Neptune Shield OPOrder released and scorecard reporting was initiated.
Oct 2004	**- Idea of web-based solution presented to HQ program managers.**
Nov 2004	- Web-based scorecard concept presented to PWCS/ONS stakeholders and approved. - Established project team w/ HQ, LANT, PAC reps.
Dec 2004	- Software Development Began - Established informal agreement MLCA for maintenance and support.
Mar 2005	- G-MP and G-OP established as joint formal sponsors for ONSS pilot project. - Beta test of web-based scorecard conducted by six field units and five district offices.
Apr 2005	- First SDLC documentation submission.
May 2005	- ONS / ONSS Training Conference in OK City, OK.
Jun 2005	- Completed ONSS V 1.0.0.
Jul 2005	- Official system designation letter from CG-6. - LANTAREA requested permission to operate ONSS on a limited basis ISO elevated MARSEC levels. - Formal maintenance and support agreement established w/ MLCA.

year. G-RPD anticipates having end users trained, and ONSS operational in all 55 MES ports, including PACAREA, by the end of the calendar year.

THE FUTURE ONSS was never intended as an end-state solution. The project's three overarching goals were to provide immediate support to individuals who were generating scorecard reports in Excel spreadsheets, create a single data repository for Ports and Waterways Coastal Security (PWCS) data, and generate requirements documenting the process. The original vision was for ONSS to become an interim solution to a long-term process. As such, it was designed with a life-cycle of 5-8 years, and developed as a web-based tool providing maximum flexibility, a short development timeline, and low cost. The agility offered by a web-based environment allowed ONSS to change and adapt as the PWCS program matured, and the low cost contributed to its survivability.

As of this writing, G-RPD plans to release ONSS V 3.0.0 with the map report functionality sometime during CY06. The intent is to cease developing new functionality in ONSS at that point in order to stabilize requirements.

This will provide G-PRI and G-RCC an opportunity to incorporate the process into their systems. Once incorporation is completed, all of the data collected by ONSS will be ported directly into the existing systems, and ONSS will enter the final stage of the SDLC process, Disposition. The total cost of the entire project from concept to disposition is projected at less than $550k, and expected to produce an annual savings of $245K in reduced work hours.

OVERALL IMPACT The overall impact of ONSS has been significant to Coast Guard operations and resource management within the PWCS program. The system records and reports MARSEC attainment levels at each of the MES ports Coast Guard wide. It also captures reasons why units are not meeting 100% of the standards through quantitative measures, records the impact of the PWCS program on other Coast Guard missions, and provides operational commanders with the opportunity to communicate challenges and impediments to their chain of command.

ONSS data is used to help determine resource allocation, identify opportunities to improve resource management, track progress of the Coast Guard's Mounted Automatic Weapon program implementation, and document the unique characteristics of each and every MES port. Scorecard reports have resulted in changes to surge operations, drawn attention to locations not in compliance with organizational policies and standards, and clearly articulated how hard our field personnel are working to keep up with the increased demands of a post 9/11 environment.

Although not a perfect process, the ONS Scorecard is helping to shape the way the Coast Guard manages resources and the PWCS program. The uses described in this section are designed to highlight reasons why it is crucially important to enter accurate and timely data into the ONSS and all other Coast Guard IT support systems. The Coast Guard, for perhaps the first time in its history, is shifting to a data driven management system, and ONSS as well as other programs like it are the beginning of things to come.

NOTE OF THANKS This part of the article was actually written first and offers a sincere public (at least within the circulation of this publication) thanks to those who contributed to the project.

It is often said an accident is a series of events which lead to an undesirable outcome, and by changing any single event in the series one can change the outcome. Consequently, if anyone of the individuals below had not contributed to the project, ONSS might not have been approved. I am forever grateful and indebted to this group of people for their support and belief in the project.

ORIGINAL PROJECT TEAM
CAPT James Pennewell (PAC), LCDR Frank W. Klucznik (LANT), and LT Molly Wike (HQ)

G-MPP-1 FUNDING SUPPORT
Mr. Eric Chapman

ORIGINAL G-MP / G-OP SPONSORSHIP
Mr. Anthony Regalbuto, Gordon Garrett

MLCA SUPPORT / CONTRACTING
LT. A. J. Edwards, LT Donald Hunley, Mr. Brian Moss, and Ms. MaryAnn Graham

SECURITY CLASSIFICATION
Mr. Mike Shumaker

CG-6 ASSET MANAGER
Mr. Derrick McCorvey

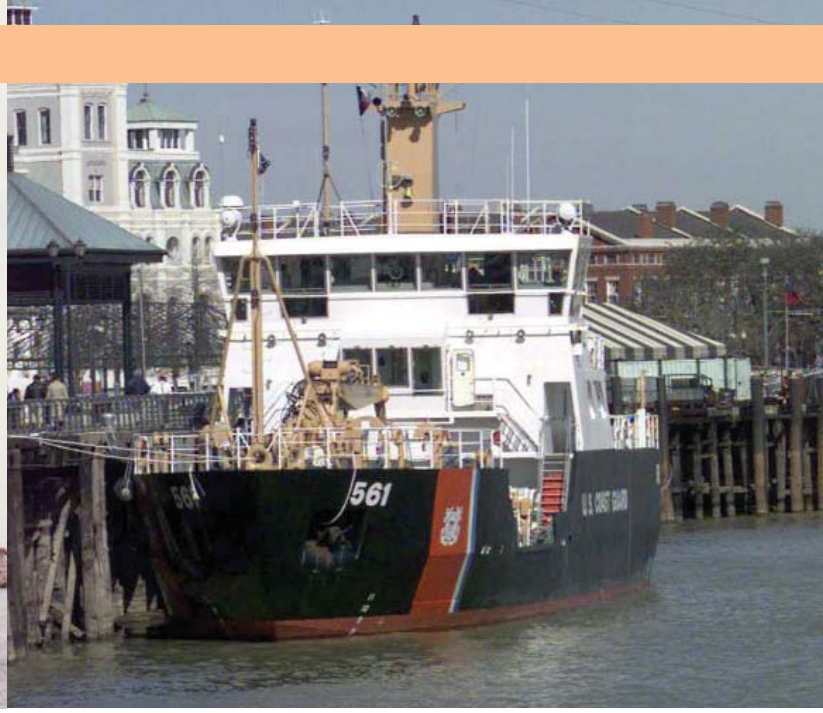
G-RCC / G-PRI REPRESENTATIVES
LCDR Joseph Healy, LCDR Alan Yelvington

CURRENT G-RPD PROJECT TEAM
CDR Patrick Foley, LCDR Tuan Thompson, LT Jay Davis

BIO

LCDR Frank W. Klucznik entered the Coast Guard in 1980 and holds a BS in Computer Science (ODU, 2000), MBA (Touro, 2005), and an MSITM (Touro, 2006). He is currently assigned to the Atlantic Area Prevention division and specializes in using Information Technology to automate manual data collection and report generation processes. His most notable projects include the D-GPS Nationwide Control Station, ONSS web-based scorecard, OWL (Office WorkLoad Manager), and the BAT (Boat Analysis Tool).

U.S. Coast Guard photo.



USCG photo by PA2 Patrick Montgomery

WLB Logistics Transition

by Stacey B. Kearney, CACI

The final 225' WLB (Seagoing Buoy Tender) Project Logistics Transition Planning meeting was held on Tuesday, April 4, 2006. This was held in conjunction with the first Sustainment-sponsored 175' WLM (Coastal Buoy Tender) /225' WLB Integrated Logistics support Management Team (ILSMT) meeting.

Guest speaker, LCDR Timothy Wendt, Commanding Officer, USCGC OAK, spoke about his crew's involvement in repositioning and servicing buoys following Hurricane Katrina. LCDR Wendt stated that their success was due in part to the philosophy of preparedness -- preparing plans, personnel, equipment, and infrastructure. As an example, USCGC OAK, homeported in Charleston, SC, was positioned to work aids in southwestern Florida before Katrina made landfall so that they would be able to respond quickly.

During relief efforts, USCG air rescues generally received the most press coverage and LCDR Wendt felt that the Coast Guard (CG) missed an opportunity to share the whole CG response with the nation. Although he offered 4-6 racks on board for embedded reporters desiring to cover the Aids to Navigation (AtoN) portion of hurricane Katrina relief efforts, those that were interested did not want to stay on for the required two week period. LCDR Wendt discussed with the public affairs detachment in Jacksonville the probability of getting reporters off sooner, but ground transportation was the limiting factor.

LCDR Wendt offered several lessons learned and recommendations to the attendees that would improve future hurricane response. He stressed the need for underway connectivity and the need for the three districts, D5, D7, and D8, to maintain charts and share aid databases. LCDR Wendt recommended increasing the purchasing limit for fuel to $100K, utilizing 5x9 Lighted Foam buoys with steel Dor-Mor anchors pre-staged for hurricane response, and postponing AtoN work until after hurricane season (September-December) to give aids a better chance of surviving a major storm. Finally, he encouraged Headquarters to continue the pursuit of Integrated

LCDR Timothy Wendt, Commanding Officer, USCGC OAK.

From left to right, Mr. Al Dawson (G-AWL), CDR Doug Subocz (G-AWL), and CAPT Kevin Jarvis (ELC).

Aton Platform Modernization Program and AToN funding. Following LCDR Wendt's presentation, discussions of remaining logistics transition action items culminated in the hand-off of the 225' WLB logistics authority from acquisition to sustainment. CDR Doug Subocz, G-AWL (Buoy Tender Replacement Project), highlighted the Acquisition Project Office's innovations and achievements, stating that other acquisitions programs were using the WLB program as a model. Captain Kevin Jarvis, Engineering Logistics Center, graciously accepted a certificate of appreciation from CDR Subocz, stating that the relationship between the two commands had been one of respect, and he was going to continue the good work that began in acquisition. This was the U.S. Coast Guard's first formal logistics transition from acquisition to sustainment of a major acquisition and it was deemed a success by all.

Once the logistics transition had occurred, Mr. Jim Shorter, ELC-013 Logistics Manager, appointed the ten Logistics Element Managers who would oversee the ten areas of logistics for the 175' WLM and 225' WLB platforms.

More information about this event, including meeting minutes, links to the briefs, and attendees can be found by visiting http://cgweb.elcbalt.uscg.mil/Buoytenderproject/default.htm on the USCG Intranet, or contacting Mr. Jim Shorter (James.P.Shorter@uscg.mil, 410-762-6153).

Logistics Element Managers pictured from left to right: Mr. Howard Stohr, ELC-017 (Maintenance Planning); LT Whitney Houck, G-RCU (Configuration Management); Mr. Stan Synowczynski, CG-431 (Facilities); SCPO Casher Haggerty, CG-1B3 (Manpower & Personnel); and Mrs. Pat Shandrowski, ELC-05T (Technical Data).

Not pictured: Mr. Jerrold Markowitz and Mrs. Deborah Stephenson, G-WTT (Training); LT Will Callihan, CG-631 (Computer Resources); LCDR Harry Wilson, CG-64 (Support & Test Equipment); and Mr. Steve Mohr, ELC-02 (Supply and Packaging, Handling, Storage & Transportation).

USCG photo by PA2 Barry Lane.

Property Management VS. Logistics Management

by Shelley Diedrich, Norm Robbins and Brooks Minnick
Logistics Transformation Program Integration Office

USCG photo by PA3 Christopher D. McLaughlin.

Acknowledging the Overlap and Defining the Boundaries

Property Management

Logistics Management

What are the fundamental requirements for *Logistics Management*, and how do they relate to the requirements for *Property Management*? As we endeavor to transform U.S. Coast Guard (USCG) Logistics we must understand the governing statutes and how these distinct, yet related, disciplines interrelate. Within this article we'll first examine the origins of property and logistics management within the federal government, which will provide a backdrop for looking at how these two programs have coexisted within the Coast Guard.

Property Management Origins

The Federal Property and Administrative Services Act (FPASA) of 1949 (now USC 40) is the underlying governance that established Federal property management programs. The FPASA's intent was to provide the federal government governance with an economical and efficient system for the procurement and supply of personal property and non-personal services. To be clear, the definition of "personal property" applies to anything acquired by the government exclusive of real property (i.e., land), and includes aircraft, ships and C4I systems, spare parts (consumable and reparable), administrative equipment, and so on. The Federal Property and Administrative Services Act further states in title II, Section 205(b) that: *"The Comptroller General after considering the needs and requirements of the executive agencies shall prescribe principles and standards of accounting for property, cooperate with the Administrator and with the executive agencies in the development of property accounting systems, and approve such systems when deemed to be adequate and in conformity with prescribed principles and standards."*

In compliance with the requirements stated above, the General Accounting Office has published an accounting manual that provides that "*property accounting records will be an integral part of the Federal Administrations accountability system."* The manual requires that agency property records reflect all transactions affecting the agency's investment in property including acquisition (who made it and by what means), use, depreciation, disposal, and transfer. Also, it directs that periodic checks (inventories) be made of property and related records to assure the accuracy of the accountable file system.

The FPASA in turn spawned the development, or improvement, of such disciplines as Logistics, Acquisition, Maintenance, Configuration, and Procurement Management as means for federal agencies to comply with this (FPASA) governance. Finally, further building upon the foundational requirements of the FPASA, the Chief Financial Officer (CFO) Act requires property management systems to be approved by the Agency Chief Financial Officer and that agencies provide an audited statement reflecting the financial results and program performance for all appropriations and any revolving/trust funds.

Logistics Management - A Closer Look

As stated, there is no clear, statutory mandate to perform Logistics Management, however, the logistics discipline has evolved in order to meet the requirements levied by FPASA, and to provide a disciplined and repeatable approach to delivering the mission capabilities of military organizations. Though logistics had its beginnings as a military discipline, and the Coast Guard largely prescribes to that military model, it and its elements are now widely applied in many forms of industry as well, though perhaps under differing terms such as Supply Chain Management, Maintenance Management, and Enterprise Asset Management. The Coast Guard's official definition of Logistics is "*Logistics encompasses all the activities associated with developing, acquiring, sustaining, and eventually retiring the components of capability: People, Information, and Systems.*" In concert with that definition, Logistics incorporates the procurement, maintenance and transportation of supplies, services, facilities, and equipment required to accomplish a given task, in addition to controlling and accounting for them. Further,

Logistics is responsible for providing the needed product support capability to maintain the readiness, sustainment and operational capability of a system. Life-cycle logistics is the planning, development, implementation, and management of a comprehensive, affordable, and effective systems support strategy. Affordable, effective support strategies must meet goals for operational effectiveness, optimum readiness, and the facilitation of iterative technology enhancements during the system's life cycle.

Logistics Management also incorporates, or applies, other critical disciplines in order to satisfy its overarching objectives. Some of these disciplines are:

Acquisition Management: The discipline used to manage the investments in technologies, programs, and products necessary to acquire capability.

Systems Engineering: A process to transform required operational capabilities into an integrated system design solution. Systems engineering principles influence the balance among the performance, cost, and schedule parameters and associated risks of the system.

Configuration Management: A process for establishing and maintaining the consistency of a product's physical and functional attributes with its design and operational information throughout its life.

Property Management and Logistics Alignment

To illustrate the similarities between Property and Logistics management, the following comparison is offered. There are four recognized phases within the property management life cycle: *(l) Requirements Determination; (2) Acquisition; (3) Accountability, Utilization, and Controls; and (4) Disposal*. Similarly, the Coast Guard Logistics definition is "*Logistics encompasses all the activities associated with developing, acquiring, sustaining and eventually retiring the components of capability.*" The following table provides a map of these two perspectives, illustrating the similarities between them:

Property	Logistics
Requirements Determination	Developing
Acquisition	Acquiring
Accountability, Utilization & Control	Sustaining
Disposal	Retiring

This alignment should come as no surprise, since we contend that the discipline of Logistics arose out of the need to meet the requirements for Property Management set forth in the FPASA. However, as we'll discuss in future sections, this conceptual alignment has yielded little ***actual alignment*** between the Coast Guard's Logistics, Engineering, and Property Management programs.

USCG Logistics and Property Management History

Prior to 1987, the Coast Guard did not have a chartered Logistics program office. Many of the functions that we would associate with Logistics Management were conducted from within the Comptroller organization, or within the engineering programs of the Engineering Directorate (G-E). In 1987, the first Logistics Program Office (G-ELM) was established within the Engineering Directorate and the Property Management function for the Coast Guard was also relocated to this new Logistics office. However, in 1993 the Property Management function was relocated back to the Financial Management community (then G-CFM, now CG-842) under the new CFO. In 1996, the Streamlining initiative placed Logistics Management in the new Systems Directorate as G-SL. Later, Systems was split into CG-6 and CG-4, and the Logistics Program was established as CG-44. As we'll discuss in the following section, the relative newness of Logistics thinking within the Coast Guard (i.e., the first Engineering Logistics CONOP was signed in 1993), and the changes in perspective about where Property Management functions should be performed, has led to some unintended consequences with which our service must now wrestle.

So What's the Problem?

The GAO has articulated the problem for the entire federal government this way: *"GAO and other auditors have repeatedly found that the federal government lacks complete and reliable information for reported inventory and other property and equipment, and can not determine that all assets are reported, verify the existence of inventory, or substantiate the amount of reported inventory and property. These longstanding problems with visibility and accountability are a major impediment to the federal government achieving the goals of legislation for financial reporting and accountability. Further, the lack of reliable information impairs the government's ability to (1) know the quantity, location, condition, and value of assets it owns, (2) safeguard its assets from physical deterioration, theft, loss, or mismanagement, (3) prevent unnecessary storage and maintenance costs or purchase of assets already on hand, and (4) determine the full costs of government programs that use these assets. Consequently, the risk is high that the Congress, managers of federal agencies, and other decision makers are not receiving accurate information for making informed decisions about future funding, oversight of federal programs involving inventory, and operational readiness."* **(Source: GAO-02-447G, Executive**

Guide, Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property, March 2002, page 6.)

Within the Coast Guard, we have historically struggled to reconcile the intersection, overlap, and boundaries between these two disciplines, their requirements and the information technology that supports them. This struggle has manifested itself in the form of conflicting and confusing guidance to CG field units, redundant information systems with clumsy interfaces requiring reconciliation and duplicate data entry, confusing rules and terminology which serve to confound our managers and leaders, and ultimately result in material issues impacting the Coast Guard's CFO Act compliance. As an illustration, the list below of instructions that, in one form or another, touch on the area of asset/property management.

Collectively, these instructions can make it difficult for field units to apply consistent, auditable management procedures which will pass CFO. An outgrowth of these various instructions, which were promulgated by our vari-

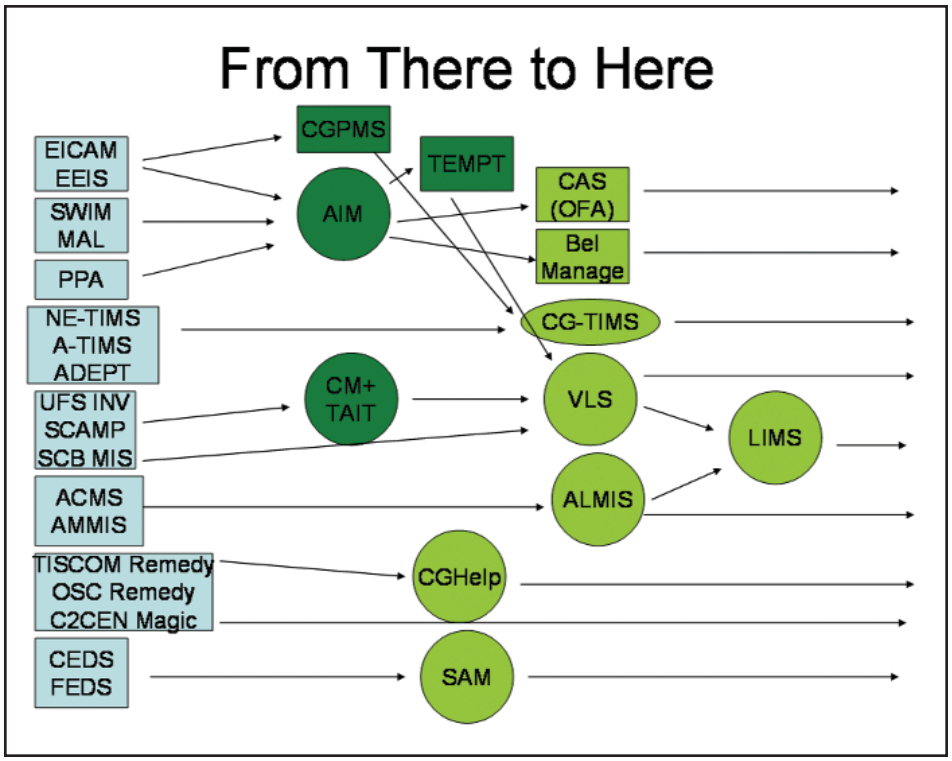
Commandant Instruction Manuals

M4081.16	Maritime Safety and Security Team (MSST) Configuration Management Plan	G-OPC
M4105.8	Systems Integrated Logistics Support (SILS) Policy	CG-441
M4105.11	Logistics Element Manager's (LEM) Desk Guide	CG-441
M4121.4	Uniform Supply Operations Manual	CG-441
M4130.8	Configuration Mgmt for Acquisitions and Major Modifications	CG-441
M4130.9	Configuration Management During Sustainment	CG-441
M4130.10	Configuration Control Boards	CG-441
M4150.2F	Major Systems Acquisition Manual	G-A-2
M4400.19B	Supply Policy and Procedures Manual	CG-44
M4408.8	Spare Parts Breakout (SPBO) Program	CG-441
M4500.5A	CG Property Management Manual	CG-842
M6700.5C	Health Services Allowance List, Ashore	CG-1121
M6700.6E	Health Services Allowance List, Afloat	CG-1121
M6700.7A	Health Services Allowance List, Part III (Shore Units and Vessels)	CG-112
M7100.3	Financial Resource Management Manual	CG-8
M8000.2C	Ordnance Manual	G-OCU
M8071.1	Coast Guard Radiac Program	CG-45
M9000.6E	Naval Engineering Manual	CG-451
M10470.10E	Rescue and Survival Systems Manual	G-OCU-2
M10550.25	Electronics Manual	CG-64
M11000.11	Civil Engineering Manual	CG-43
M13020.1F	Aeronautical Engineering Maintenance Management Manual	CG-41
M13520.1B	Aviation Life Support Systems Manual	CG-41
M16500.6A	Lighthouse Maintenance Management Manual	CG-432
M16500.7A	Aids to Navigation Manual - Administration	G-OPN-2
M16500.10A	Major Aids to Navigation Preventive Maintenance System Guide	CG-43
M16500.17	Alternating Current Aids to Navigation Servicing Guide	CG-432
M16500.19A	Short Range Aids to Navigation Servicing Guide	CG-432
M16500.25A	Aids to Navigation Manual - Structures	CG-432
4000.5A	Coast Guard Logistics Doctrine	CG-44
4000.11	CG Logistics Master Plan (LMP)	CG-441
4080.1	Logistics Support for Deployed Units	CG-441
4100.7	USCG Engineering Logistics Concept of Operations (ECONOP)	CG-441
4105.4	Long Range Planning of Logistics Support for Operational U.S. Coast Guard Cutters	CG-441

Commandant Instruction Manuals (cont'd)

4105.7	Equipment/System Integrated Logistics Support Plan (EILSP) and Equipment Support Sheet (EES) Development and Maintenance Responsibilities	CG-441
4130.6	Coast Guard Configuration Management	CG-441
4200.38B	Coast Guard Standardization Program	G-CPM-1
9664.1B	Cutter Standard Repair Locker Inventory	CG-451

ous logistics programs or "business lines," were program-unique information systems to track the materiel for which that particular program was responsible. The following is only a partial list of systems employed to track or manage our assets over the last 10-15 years, and attempts to show the evolution of some of these systems as we've worked to modernize our asset management applications portfolio to its present state.

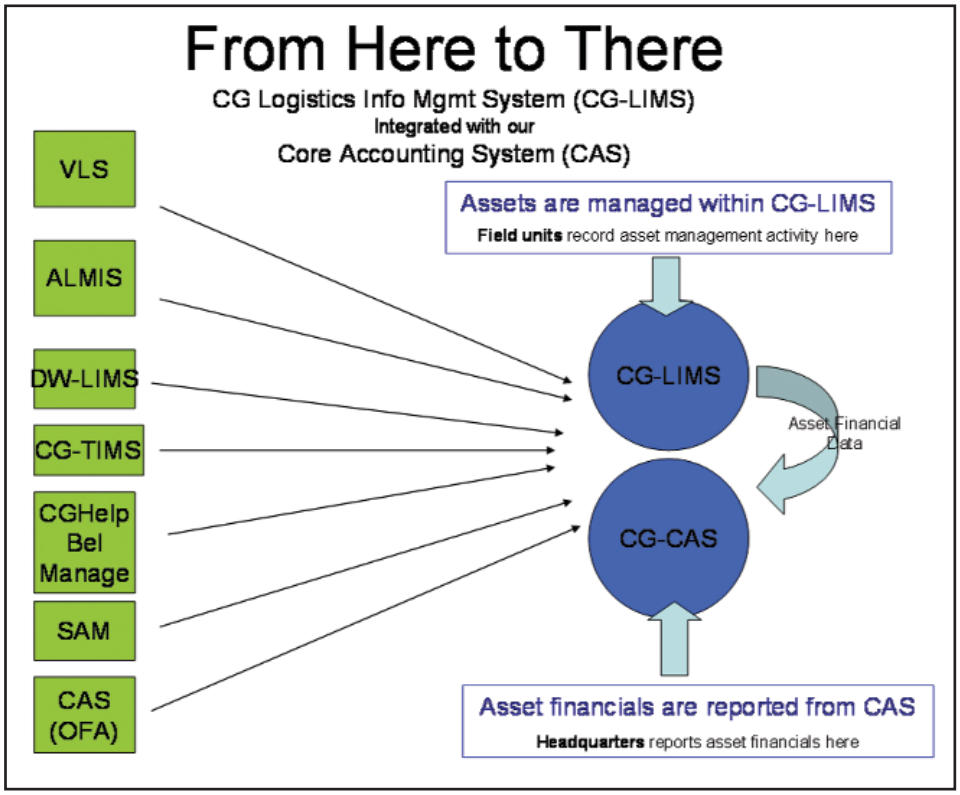


Regrettably, while some consolidation has occurred, much redundancy remains.

The FPASA establishes overarching guidance for all things property related, which is promulgated within the Coast Guard through our CG Property Manual by our Property Management program office in CG-842. Additionally, information on Coast Guard property is reported through our Core Accounting System (CAS), which includes the Oracle Fixed Assets (OFA) module for property tracking. However, while the Property program sets the requirements and has established a data system, within the Coast Guard it's typically the Acquisition and Logistics programs through which assets are acquired, sustained, and disposed of, and once acquired these assets are normally tracked throughout their service lives using one of our enterprise logistics data systems such as VLS, ALMIS, LIMS, or SAM. These systems contain functionality built to support the interrelated configuration management, maintenance management, and supply management functions that logistics personnel employ in support of their sustainment activities. However, in some cases these data systems were not built to comply fully with property management requirements, or the interfaces between them and CAS are either inadequate or non-existent, resulting in unsynchronized data or a requirement for duplicate data entry and reconciliation on the part of field users. Finally, confusing or conflicting guidance issued by our separate Property and Logistics communities, as illustrated above, has befuddled field users who want to know what to record, and how and where to record it. A common complaint heard from the field is "can't I just record the data once, and let HQ figure out how to share the data?" It's not an unreasonable request.

To drive this point home, maybe some real-world examples are in order. During recent CFO Act audit mitigation efforts, it became difficult to appropriately classify things. Items recorded within the CMPlus inventory module were uniformly classified as "OM&S" (Operating Materials and Supplies -- one type of Property), when in reality some of this material (i.e., reparable) should actually be classified as PP&E (Plant, Property, and Equipment -- another type of Property with different tracking requirements). In many cases we carelessly referred to all of this material as "inventory," but financial accounting standards estab-

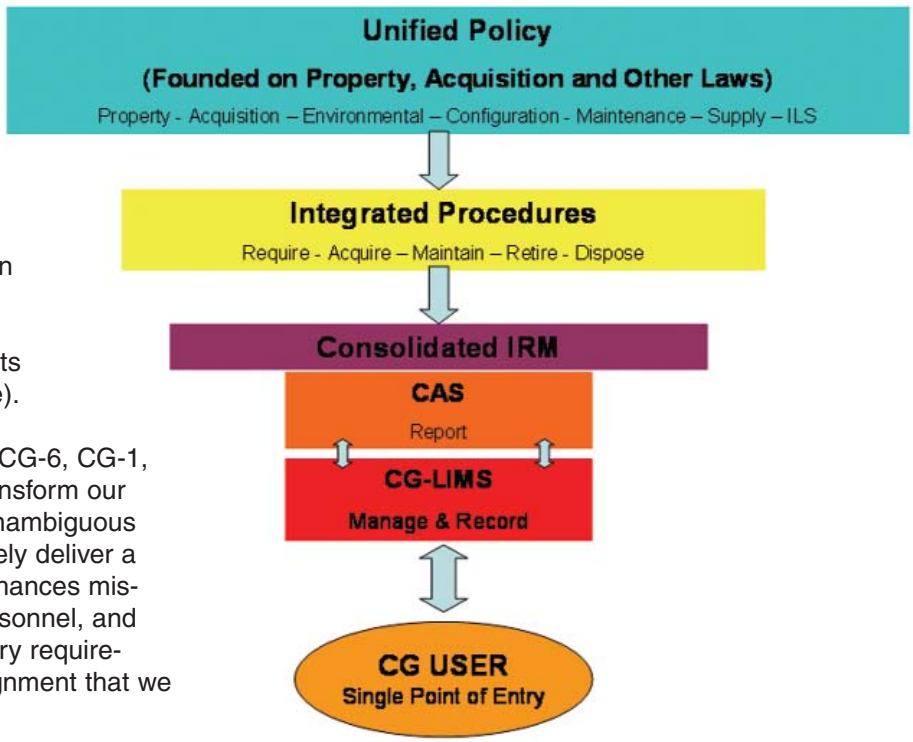
lished by the Federal Accounting Standards Advisory Board (FASAB) state that the term "inventory" has a very specific meaning, which is material held for sale. In another case, much of our enterprise electronics equipment (e.g., VHF radio) was recorded within the Fixed Assets property system as "property," even if that radio was installed on a cutter. In the aviation community, that same radio installed in an aircraft was not recorded as a separate property item at all, but merely as a component of the larger recorded property item, the aircraft, within ALMIS.



In the end, our inability to capitalize on the natural alignment between Property and Logistics Management, due in part to the separate programs, procedural guidance and data systems that we employ, has placed Coast Guard CFO Act compliance in jeopardy.

Conclusion and Recommendation

The Coast Guard (and ultimately DHS) must properly define the relationship between *Property Management* and *Logistics Management*, and bring the two programs into closer alignment. Understanding the root of these programs and their relationship to statutory compliance will enable the Coast Guard to establish a business model that will deliver the capability to meet mission goals, and also ensure CFO Act compliance through the fulfillment of our Property Management, and broader Financial Management, responsibilities. Stated another way, ***Property Management is a requirement and effective Logistics Management is the means by which we can achieve that requirement, while Financial Management establishes the controls to definitively assert that we have***.



Integrated Logistics and Financial Management must be a cornerstone of our future Coast Guard. To fulfill our CFO Act obligations and to also meet the key Program Objective stated within the Logistics Transformation Program Integration Office (LTPIO) charter to "… implement a unified logistics and finance system as the FOC milestone." This final illustration depicts our desired end state (see illustration above).

To accomplish this vision, the CG-8, CG-4, CG-6, CG-1, and G-A directorates must join efforts to transform our programs, establish clear, consistent and unambiguous policy and procedural guidance and ultimately deliver a unified logistics and finance system that enhances mission performance, simplifies life for field personnel, and simultaneously enables us to meet regulatory requirements. This final diagram illustrates the alignment that we ultimately seek to achieve.

INVENTORY MANAGEMENT SYSTEM (IMS)

by SKC Radeka
Group/Air Station Port Angeles

Since 2001, Group/Air Station Port Angeles has grown to now include seven 87' Coastal Patrol Boats (CPB), one 110' WPB, four small boat stations as well as the helicopters for the air station. This rapid growth created a significant demand for additional service and support. The opportunity to capitalize on the economy of scale for logistics support was present and the time was right.

In January of 2005 we decided to act and consolidate the Operating Materials and Supplies (OM&S) for the four CPBs that were already in commission prior to the arrival of the remaining three. We wanted to treat the 87's spare parts inventories similarly to the Air Station's parts inventory for its three HH-65 helicopters. A Group/Air Station Port Angeles Centralized Source of Supply Tiger Team was chartered, with the assistance of the Engineering Logistics Center (ELC), Maintenance and Logistics Command Pacific (MLCPAC), Operations Systems Center (OSC), and District 13 (D13), to develop the supply system.

Formally named the Inventory Management System (IMS), this system was viewed as a sensible course of action, considering that every CPB was outfitted with an identical set of spare parts. With four of the eight 87' patrol boats located within one-hour driving time of the Group, the CPBs were the ideal starting point for the implementation of IMS.

The first step was to establish a CMPLUS data base for the Group. Once the necessary permissions were received and the database licensed, the Operations Systems Center (OSC) established a CITRIX server to house the Group's CMPLUS. This configuration was critical to the success of the IMS because it would eventually allow each of the units involved to view the consolidated inventory, make initial requests within the system, and receive parts quickly.

Once the Group's database was operational, the team, in concert with the cutter's EPOs, identified which parts were required to remain in "shop stock" aboard the cutters and which items would be managed centrally in the Group's warehouse. The EPOs and SKs involved followed one guiding principle throughout the process "If I can't fix it underway, then I don't need it on board." With this rule in mind, the Group started with CGC WAHOO's inventory as a baseline. With the help of ELC personnel, WAHOO's inventory was physically moved to Group Naval Engineering and entered

into the Group's CMPLUS database. By April of 2005, the process was complete, allowing CGC ADELIE's inventory to be consolidated into the newly created Group IMS.

Initially, there was a very steep learning curve for all parties concerned, in part, due to communication problems using the "Group to Unit/Unit to Group" functions within CMPLUS. Given the criticality of the cutters knowing exactly what was in the IMS, a solution was necessary for the success of the project. Over the course of several weeks, the Group sent several suggestions, as well as numerous CMPLUS help tickets to OSC who resolved them quickly. A few of the problems identified were directly related to how CMPLUS processes information and could not be changed. Fortunately, the CMPLUS team at OSC helped to establish solid processes that enabled the system to run efficiently. Units can now view and request parts directly from the IMS using their own CMPLUS to transmit requests.

A solid operating consolidated inventory management system was in place by November 2005. OM&S for the four CPBs was under central management through the Group/Air Station IMS. Each CPB has a "shop stock" that sails with them of only 200 line items -- valued at approximately $12,000. 1,090 line items were removed from each vessel. Management of OM&S is now largely at the Group/Air Station level freeing significant time for the cutter to perform other duties.

The Inventory Management System is now consolidated in one location managing a total of 4,343 line items worth $3,109,780. It manages 1,764 line items for the CPBs and 1,579 line items to support the helicopters. In the spirit of continuous improvement, several subsets of materiel were added to the IMS; all OM&S for Small Boats, previously held by Group Naval Engineering, is now managed by the IMS. Another portion is the Environmental Management System in which the Group/Air Station and its tenant command's hazardous material inventories are handled through the IMS. Other objectives to be achieved by the end of FY06 is to induct OM&S for the remaining three CPBs, the CGC CUTTYHUNK, as well as the four stations in the AOR.

Group/Air Station Port Angeles has become a one stop shop for its units, the Materiel Assist Teams and a flexible source of supply for you. The days of calling your fellow EPOs to see if a part you need for a particular job is available, and then barter for it, is no longer necessary. Thanks to the efforts of a great many people the Group/Air Station Port Angeles IMS is now running smoothly.

ELC and Configuration Management

LTJG Igor Landyshev, ELC-02

To accommodate the growing need for the proper Configuration Management (CM), the ELC (Engineering Logistics Center) has recently conducted an internal reorganization. We realized that Configuration Management is fundamental to our many day-to-day logistics processes. Configuration Data Managers (CDMs) were relocated from Platform Management Division (01) into the Equipment Management Division (02) where they became part of the Integrated Product Teams (IPT). Working within IPTs, which typically consists of maintenance analysts/provisioners, inventory managers, equipment specialists (COTRs), and engineers, empowers CDMs to bring CM perspective to an early stage of equipment life-cycle management and planning development. System based methodology assures uniform approach to all equipment types within a given branch. We've also introduced a new billet -- CDM Functional Manager (FM). CDM FM roles and responsibilities include, but are not limited to, development of internal Configuration Management ELC processes, Configuration Data analysis, Configuration Management training, CDM desk guide development, collecting monthly status/performance measures, assessment of CDMs' performance, monitoring CDMs' workload etc.

As we previously mentioned, Configuration Management is an inextricable part of various ELC routine business processes. Configuration Management is based upon four major activities. These activities are Configuration Identification, Configuration Control, Configuration Status Accounting, and Configuration Audits.

Configuration identification

Configuration Identification is widely used by the ELC in the processes of Engineering Change (EC) development and cleaning up of existing CM data. In order to augment and refine COMDTINST 4130.6 (Configuration Management) the ELC has recently instituted internal "Configuration Item selection policy." This policy provides a set of criteria organized in the decision making flowchart. This flowchart offers practical guidance on how to properly identify "Configuration Item worthy" items. Configuration Item selection is the most critical activity of CM. By selecting the Configuration Item we determine that the item is going to be supported throughout its sustainment phase. The same Configuration Item selection flowchart is being used in the process of data clean-up. Data clean-up includes the elimination of not "CI worthy" items from unit's configuration as well as populating the

"CI worthy" items with accurate data. Figure 1 is a screen shot from our current enterprise configuration database, FLS (Fleet Logistics System). As Figure 1 demonstrates there are a plethora of instances where existing configuration item provides no valuable information (has no part number, no CAGE number, and no National Stock Number).

An approved EC provides the authority to change an existing product base line. This denotes that once an EC is signed, all changes must be made through the formal process of the Engineering Change (ref. NEM chpt.41). Implementation of each EC is finalized when a unit sends an OPNAV 4790CK (part of EC package) back to the ELC, and the ELC updates unit's configuration. Even though this process is explicitly described in the NEM it is rarely followed. As a result, over the period of time the ELC looses the configuration picture of the unit's configuration (see Fig. 1). Absence of accurate configuration insight cripples the ELC's ability to provide the logistic support (correct maintenance procedure cards, replacement parts, technical manuals, etc.) to the unit. The ELC is actively involved in bringing units' configurations up to date through the ILO (Integrated Logistics Overhaul) project. Unfortunately, only a limited number of cutters go through ILO. The rest of the fleet should use the existing processes to keep their configuration up to date (contact the ELC for any details).

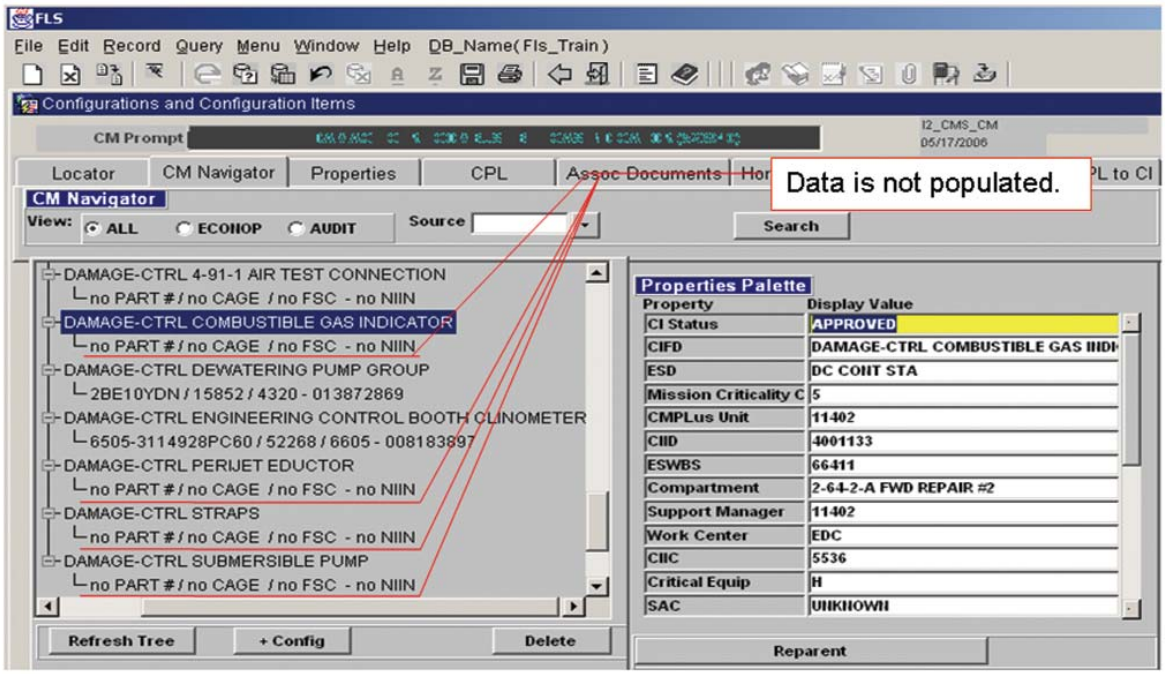


Figure 1.

Configuration Control

The above described process of updating unit's configuration through the 4790CK process is part of Configuration Control. Another problematic portion of Configuration Control is unauthorized changes. ELC realizes that in many cases operational needs dictate unauthorized configuration changes. In some instances, unauthorized configuration changes are driven by the break in the supply chain. Whatever the reason for unauthorized configuration change, units shall report them to the ELC. The ELC will research the correct part availability or will issue either a waiver (may remain for the life of the unit) or a deviation (limited period of time) authorization. Unauthorized configuration change reports could also trigger an ECP (Engineering Change Proposal) if the correct replacement part is no longer supported. The ELC will also take on the responsibility of updating the unit's configuration.

ELC and OSC (Operations Systems Center) introduced an automated configuration update process as part of approved EC. Recently we have introduced a new functionality in FLS. Now the ELC's CDMs will be able to create a CM Set (section of the configuration data that represents EC). CM Sets will be associated to all platforms where an EC is going to be implemented. CM Sets will reside in the FLS waiting for the installation to be completed. As soon as the equipment is installed and the status of the project is changed to "completed," the CM Set will *automatically* update the unit's configuration. Our next step is to have the same automated process to function for unit's configuration in CMPlus.

Configuration Status Accounting

The ELC is widely involved in Configuration Status Accounting. We keep track of all ECs in DARTS, i.e., a database tracking the status of all Engineering Changes from initiation to the final approval. We maintain the status of configuration items (pending, reviewed, or approved) in the FLS.

Configuration Audit

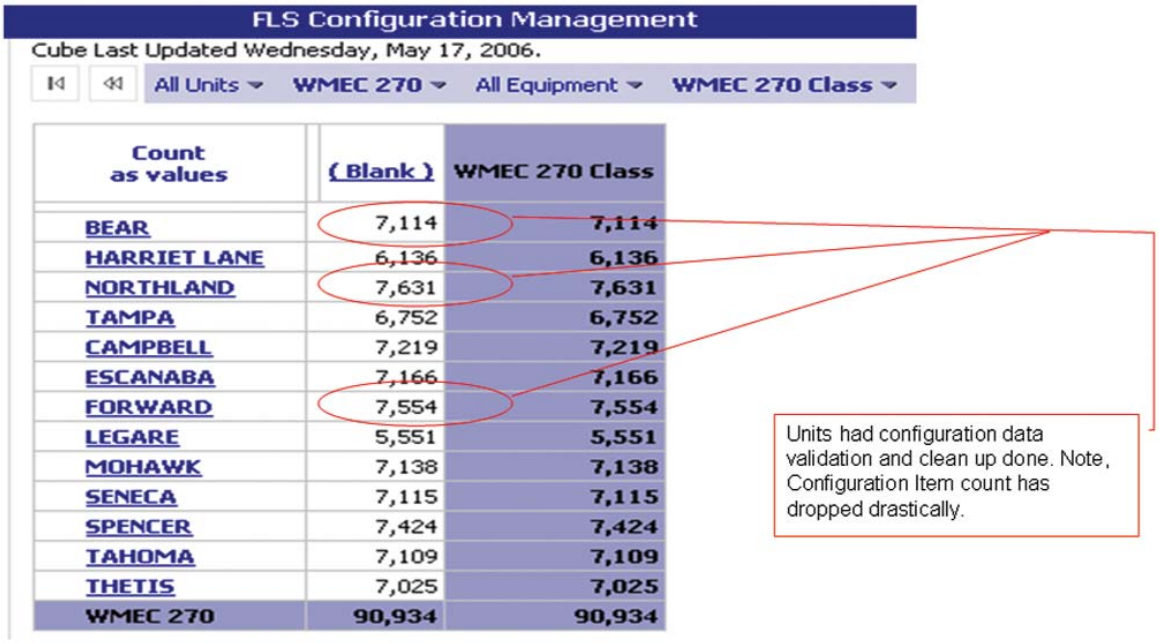


Figure 2.

Configuration Audits were mentioned in previous paragraphs. The concept behind Configuration Audits is to bring unit's configuration deviation to the acceptable level. Configuration validations are done on all cutters that fall under the ILO program. Validations are performed by the team of contractors. Currently, configuration of two 270s was validated and base lined (see Fig. 2). Unfortunately, the ELC does not have enough resources to validate a wider array of CG units. For this reason we highly encourage cutters to conduct their own validations. The ELC is willing to provide assistance to units wishing to improve their configuration data accuracy.

OSC has recently introduced CM Cubes which is an extremely flexible search engine that can be accessed through the CG Intranet without any password restrictions. CM Cubes is a one way window that retrieves configuration data from FLS at a variety of different angles. This is a great resource for units to access and view their most current configuration. CM Cubes do not provide ability to update unit's configuration, this can be done through the proper configuration change form (ELC website: http://cgweb.elcbalt.uscg.mil/ccf-form.htm).

Not a single CM initiative will be effective unless there is CM awareness throughout the fleet. We use every opportunity to advertise the importance of proper CM by affecting all possible entry points of the engineering community (CG Academy, "C" schools, MLCs). For more info, please contact LTJG Landyshev at ilandyshev@uscg.mil or (410) 762-6254.

LTPIO Transforming Coast Guard Logistics

Agile Development

by LCDR Frank W. Klucznik
Atlantic Area (Amr)

Editor's Note: *This article is to raise awareness of Agile Development; however, it does not represent an official change in CIO policy on use of the System Development Lifecycle for development of CG systems.*

INTRODUCTION

Advances in technology over the past 60 years have introduced new devices and sensors that provide information, entertainment, and communications capabilities to consumer electronics, industrial automation, retail automation, and medical markets.[6] Examples include iPods, PDAs, RFID tags, smart cards, and cellular telephones, as well as a myriad of sensors that determine temperature, moisture, wind speed, etc. all of which require increasingly complex electronic system support and systems integration. Meanwhile, global competition is pressuring companies to constantly reduce their development cycles to remain competitive within any given market segment.[6] The time to deliver a new product to market has dropped from 33.5 months in the early 1990s to 11.3 months in 2002. The increased complexity combined with reduced development time is forcing changes in system engineering and design methodologies. This article briefly describes the history and current direction of system design methodologies used in IT systems development.

SYSTEMS ENGINEERING

Systems engineering is an interdisciplinary approach established shortly after World War II as a means for developing and deploying systems, where a system is a collection of interrelated components working together to achieve some objective.[7] When systems engineering was formally established, it involved the linear steps shown in Figure 1, which included defining requirements, designing the system, developing sub-systems, integrating the sub-systems into a single system, system installation, system evolution, and system decommissioning.[4] Together these logical steps formed a design methodology that met the needs of the time for systems managing potable water, sewage, electricity, automobiles, people, computers, etc.

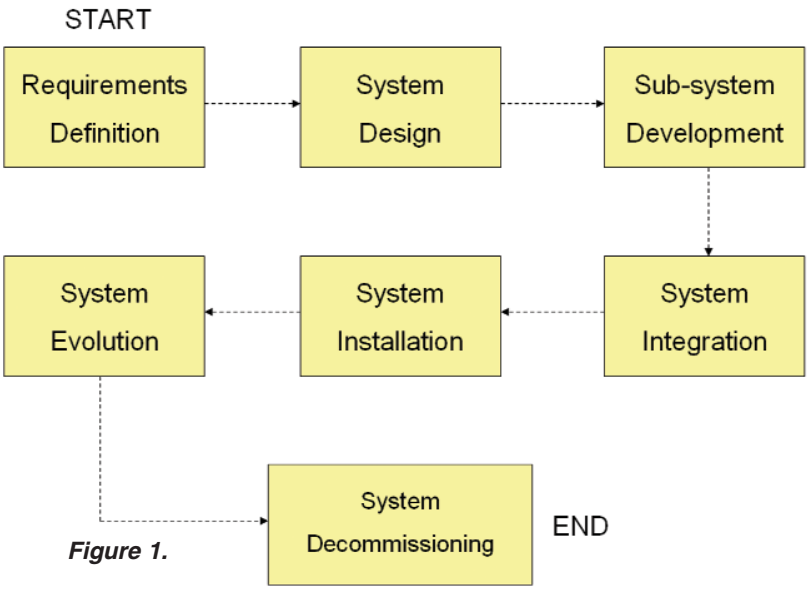


Figure 1.

Over time, systems became larger and more complicated as cities and technology evolved; consequently system engineering methodologies were modified to better manage system

Something to Think About

alterations. A linear approach appears to have worked well if the system was relatively static and rarely required modification. However, most of the examples mentioned above required tremendous amounts of capital investment to create and replacing them when they didn't meet customer needs any longer was not a viable option. In response to this need, engineers devised ways to expand structures and build add-ons as a cost effective option for extending the operational life of systems. To support expansion projects, the waterfall method depicted in Figure 2 was created and offered an improvement over linear methodologies because it involved sequential iterations of development, which included feedback loops. These feedback loops allowed engineers to use information gathered in anyone of the five stages of development to introduce improvements into the system.[4] While the ability to iteratively improve systems was a tremendous improvement in engineering methodologies, the waterfall model was rigid in its partitioning of work into stages and only involves the customer during requirements gathering.[4] The lack of customer involvement in development other than requirements gathering led to the creation of systems, which met all customer requirements but were not practical to use.[4]

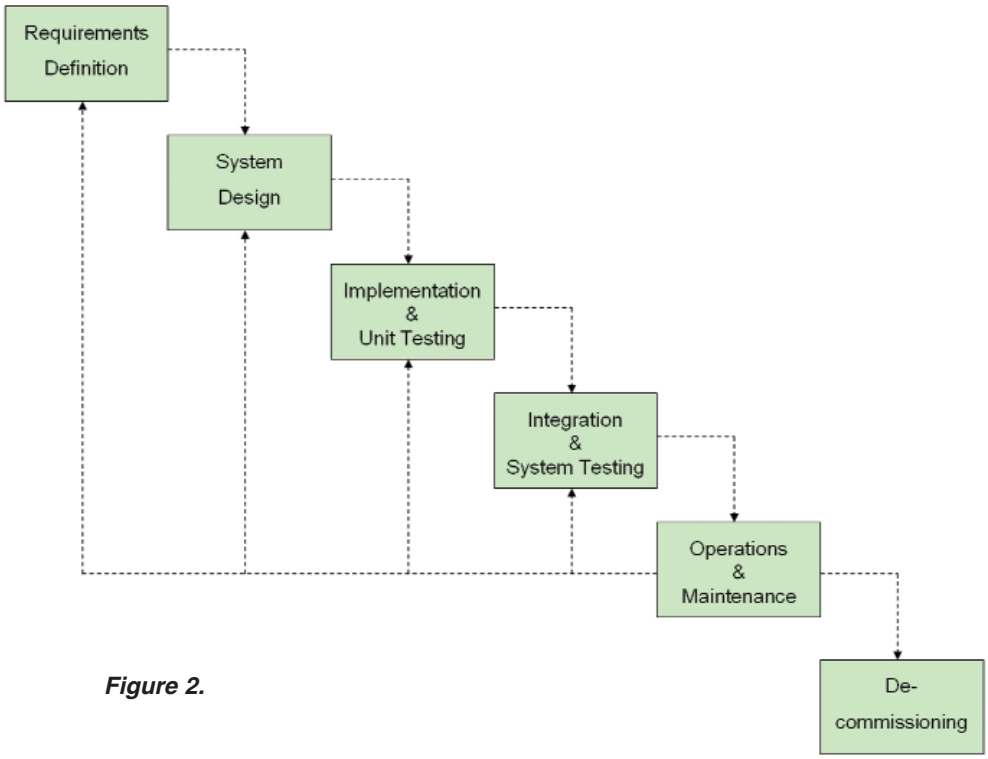


Figure 2.

The System Development Lifecycle (SDLC) process evolved out of the waterfall model in response to the introduction of information technology to the systems engineering field. The SDLC process involves several phases including: concept, requirements, design, development and testing, implementation, Operations and Maintenance (O&M), and finally disposition.[3] Figure 3 shows the seven phase SDLC process used by the U.S. Coast Guard, while Figure 4 shows the myriad of plans and documentation required to support the SDLC process. The process was designed to ensure end-state solutions met user requirements, and support the organization's strategic goals and objectives.[3] In addition, the SDLC was developed as a detailed guide to help

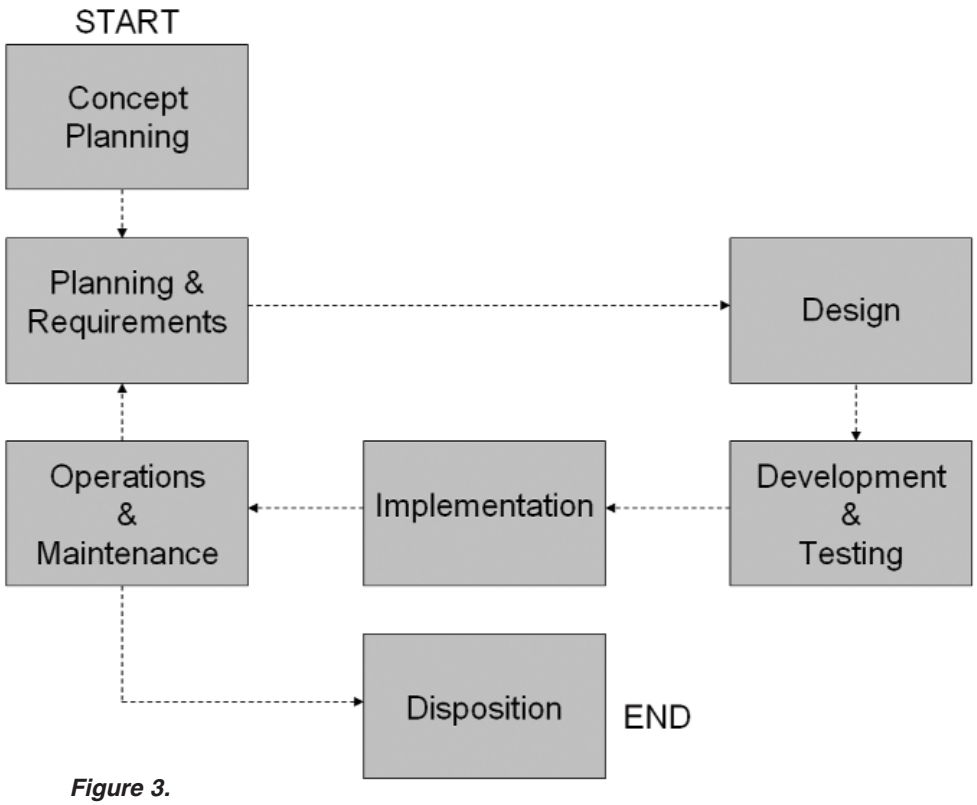


Figure 3.

Program Managers with all aspects of system development, regardless of the system size and scope.[3] The process involves a comprehensive checklist of rules and regulations governing systems, and is the Coast Guard's way to ensure system developers comply with all applicable government regulations.[3] In general, an SDLC methodology follows the following steps:

1. The existing process is evaluated and areas for improvement are identified. This is often done by interviewing users of the system and consulting with support personnel.[5]

2. System requirements are defined, and a business case is developed. In particular, the deficiencies in the existing system must be addressed with specific proposals for improvement.[5]

3. The proposed system is designed. Plans are laid out concerning the physical construction, hardware, operating systems, programming, communications, and security issues.[5]

4. The new system is developed. The new components and programs must be obtained and installed. Users of the system must be trained in its use, and all aspects of performance must be tested. If necessary, adjustments must be made at this stage.[5]

5. The system is put into use. This can be done in various ways. The new system can be phased in, according to application or location, and the old system gradually replaced. In some cases, it may be more cost-effective to shut down the old system and implement the new system all at once.[5]

6. Once the new system is up and running for a while, it should be exhaustively evaluated. Maintenance must be kept up rigorously at all times. Users of the system should be kept up-to-date concerning the latest modifications and procedures.[5]

The SDLC offers several improvements over the waterfall model including customer involvement, and a single manageable iterative development loop. Though the process is linear from the requirements phase through the O&M phase, it offers an iterative process by returning customer feedback from the O&M phase back into the requirements phase, which marks the beginning of another development cycle. Customers are heavily involved throughout each phase of development, and feedback is one of the key elements evaluated prior to allowing development to move on to the next phase. The primary drawback to the SDLC process is the large amount of documentation required; see Figure 4.[3]

LATEST TREND

The some of the most recent trends in systems engineering methodology are beginning to move away from traditional system engineering principles toward a more robust and lean process referred to as "agile" system development. Traditional systems engineering methodologies involve linear thinking, prescriptive processes, and standardized, unvarying practices.[2] And while there is value in these items, agile project management values: Individuals and interaction over processes and tools, working systems over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a plan.[1] Agile engineers believe systems development must be geared toward mobility, experimentation, speed, and most of all business objectives.[2]

One of the more noteworthy changes in system development as a result of advances in technology is a dramatic increase in the rate of change. Bridges, buildings, roads, sewage and water systems, etc. are all relatively static and do not change frequently. However, modern systems relying on computer and electronic technology have a relatively high rate of change associated with them because technology is advancing in 18 month cycles, which requires relatively frequent system updates. As a result of an increased rate of

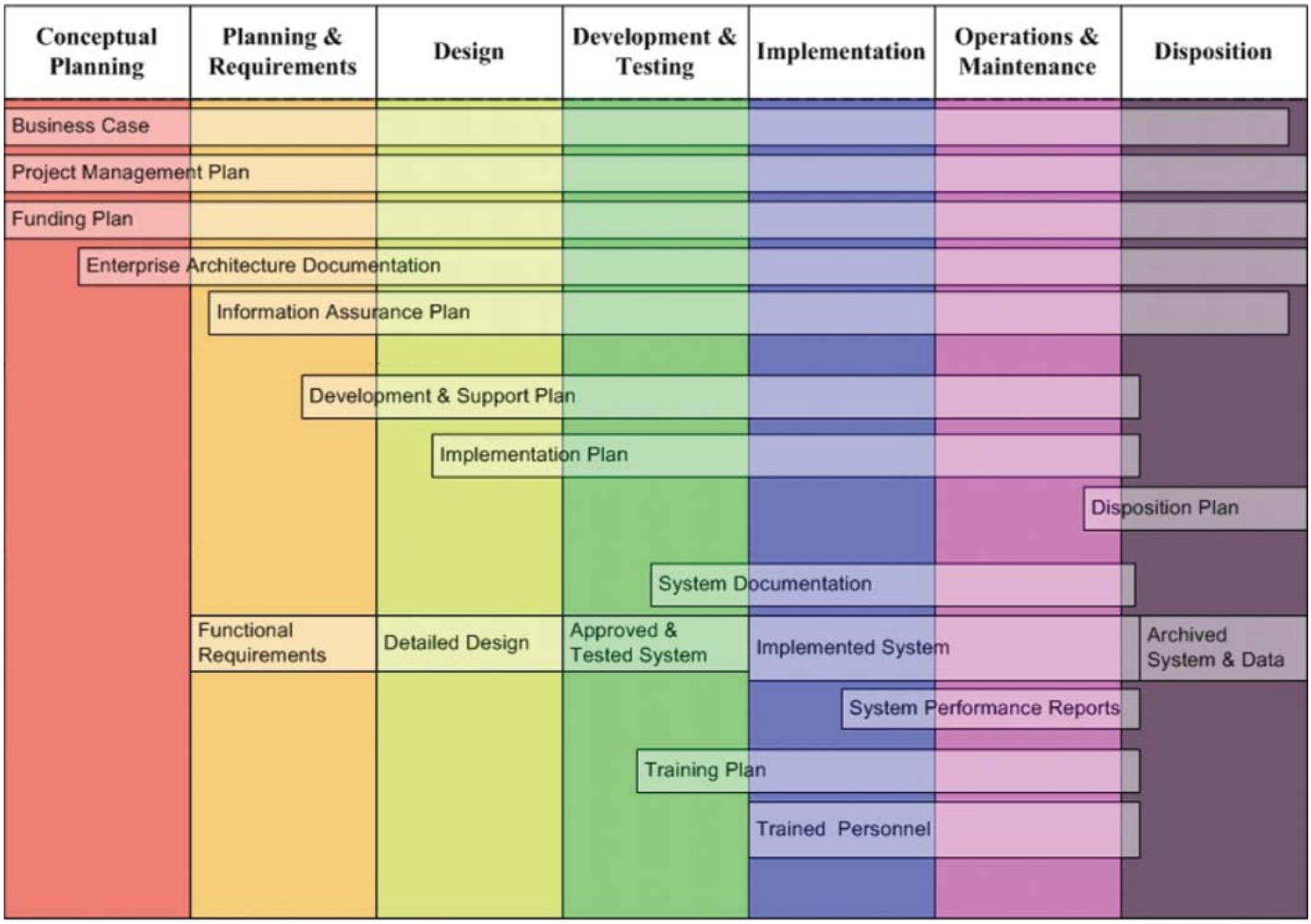


Figure 4.

change, system development teams struggle to keep documentation up-to-date with the current system state. In addition, experience has shown developers, in general, do not have a need to refer to historical system documentation to implement new functionality. End-Users of modern Information Technology (IT) systems often focus on what the system does now, and how they need it to function in the future. It is rare that a customer will ask for functionality available in a previous version of the system because of changes in technology. As a result, a large portion of the documentation created during system development is placed in file cabinets or on bookshelves, never to be looked at again.

If one were to apply Quality Management or Six Sigma process improvement techniques to standard engineering development principles, the result would be an agile process. This is true because the goal of process improvement is to eliminate waste and steps that do not add value, and based on the previous discussion on system documentation, much of it does not add value to a modern IT system. That is not to say all documentation is a waste, because rapid prototyping suffered from a lack of documentation in the late 80s and proved IT systems need some level of documentation. The challenge for system developers is to generate only the documentation that adds value, and eliminate everything else that does not. And, agile development attempts to accomplish this goal by offering a process in the middle ground between traditional engineering development and rapid prototyping.

Agile development uses modern terms to describe old processes such as: "Envision" for gathering requirements; "Speculate" to mean develop a sub-system component; "Explore" to describe testing; "Adapt" to evaluate requirements; and "Close" as the O&M stage.[2] The agile process is depicted in Figure 5 and contains many of the traditional process associated with systems engineering. The major differences between traditional engineering development and agile development are shorter development cycles, constant customer involvement, and drastically reduced documentation requirements.[2]

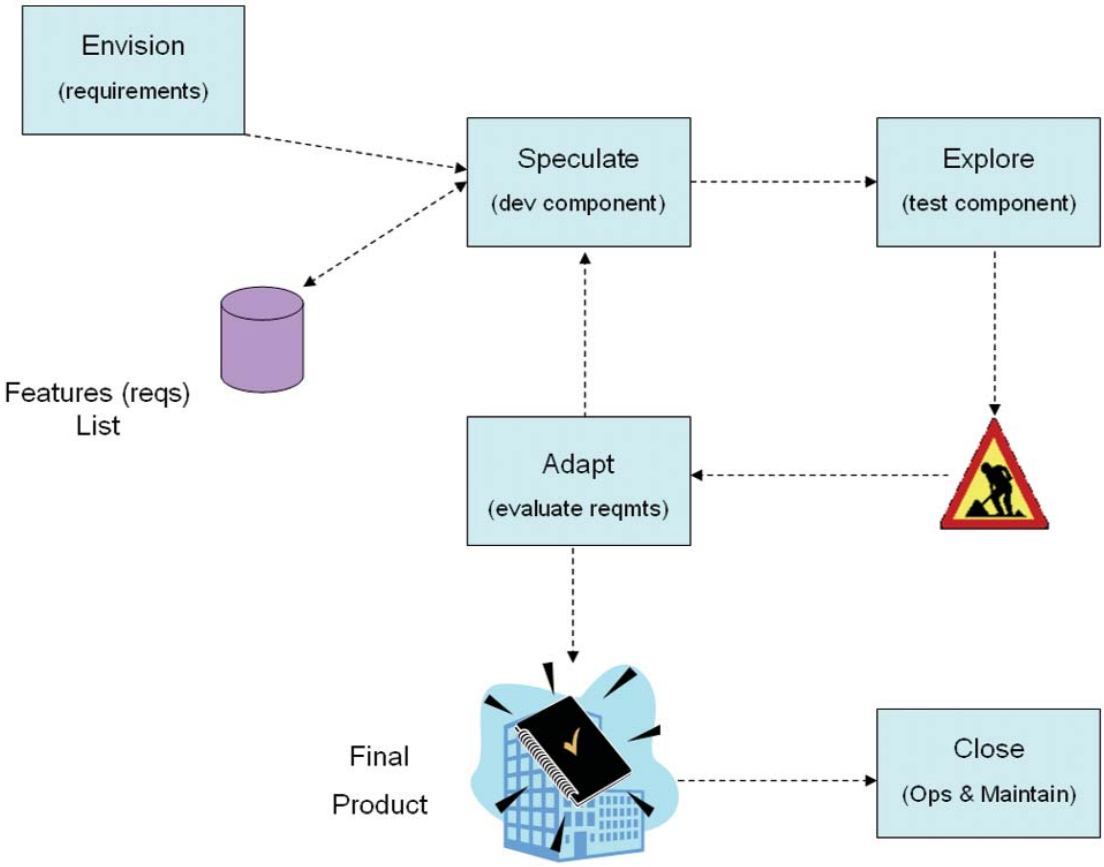


Figure 5.

The process begins with an idea or vision for a new system. This idea is converted broken down into a list of features or parts. These parts then become a component which is developed and thoroughly before its shown to the customer and evaluated against the original idea and list of features. Customer feedback begins a second cycle of development when another component is built, added to the system, thoroughly tested and shown to the customer. Iterations of speculation, exploration, and adaptation continue until a useful product is produced. Development is controlled by customer feedback and iterations of development.

The iterative cycles of the agile process reduce the time required to develop a new product, better meets customer needs, and does not require the volumes of documentation and rigid linear processes associated with traditional engineering methods. For example, consider constructing a simple coffee cup. The customers would meet with the engineering development team and asked to describe the different parts of the cup (i.e., handle, bottom, lid, and body). When the descriptions are completed, the engineering team may elect to begin building the handle first, and will use the descriptions provided by the customers to create one. When finished, the handle is tested and shown to the customer for approval. If approved, the team may chose to build the body of the cup next, which is attached to the handle when completed. The customer is then shown the body with the handle of the cup for approval. The team continues building the different parts of the coffee cup, and modifying them to meet customer requirements until the project is finished. In the end, the minimal documentation was generated during the development process, and the customer was involved in every step of the development.

Agile development also supports the introduction of changes and modifications throughout development. Consider the coffee cup example described. It was originally designed for an

indoor office environment; however, during development requirements changed, and the customer now needs to transport and consume coffee in an automobile. No problem, the team simply designs a lid and a wider base for stability. These changes may be introduced anytime, and with little impact to the delivery timeline originally established for the product.

When completed, the development team was still responsible to provide documentation on the final design, test plans, safety stickers warning users about the hot contents, user manuals, etc. However, reducing documentation required during development and for final produce approval significantly reduces the time required to develop and deliver a product that better meets customer expectations.

SUMMARY

The increasing complexity of modern structures built in a global economy has caused systems engineering and engineering methodologies to change dramatically over the past 60 years. Early methodologies involved linear thinking, rigid process flows, prescriptive processes, and standardized practices. Over the years improvements were made to support system expansion and the inclusion of information technology. Some of these improvements included feedback loops in the waterfall model, or increased customer involvement in the System Development Lifecycle process. However, all of these improvements had limitations and introduced new disadvantages such as the large volume documentation required by newer SDLC processes.

The latest trend in systems development involves agile processes that value: Individuals and interaction over processes and tools, working systems over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a plan. Agile system engineers believe development must be geared toward mobility, experimentation, speed, and most of all business objectives. The agile processes involve iterative development cycles that reduce the time required to develop new products, better meet customer needs, and do not require the volumes of documentation and rigid linear processes associated with traditional engineering methods.

References

[1] Beck, Kent, et al. "Manifesto for Agile Software Development." http://agilemanifesto.org. 2001.

[2] Highsmith, Jim. "Agile Project Management." Pearson Education Inc. 2004.

[3] Klucznik, Frank W. "Chronicles of ONSS, Part II." Engineering, Electronics, and Logistics Quarterly. U.S. Coast Guard. Fall 2005.

[4] Summerville, Ian. "Software Engineering." Addison-Wesley Publishers Inc. 5th Ed. 1995.

[5] Tech Target. "Systems Development Lifecycle." http://searchsmb.techtarget.com/sDefinition/0,,sid44_gci755068,00.html. 2006.

[6] University of L'Aquila "Overview." Centro di Eccellenza DEWS. http://www.diel.univaq.it/dews/overview.htm. February 2006.

[7] Wikipedia. "Systems Engineering." http://en.wikipedia.org/wiki/System_engineering. February 2006.

The 2006 White House Closing the Circle Award's ARSC

OFFICE OF THE FEDERAL ENVIRONMENTAL EXECUTIVE
WHITE HOUSE TASK FORCE ON WASTE PREVENTION AND RECYCLING
1200 PENNSYLVANIA AVENUE, NW MAIL CODE 1600S WASHINGTON, DC 20460
(202) 564-1297 WWW.OFEE.GOV TASK_FORCE@OFEE.GOV

PROMOTING SUSTAINABLE ENVIRONMENTAL STEWARDSHIP THROUGHOUT THE FEDERAL GOVERNMENT

For Immediate Release
Tuesday, June 20, 2006
Contact: Juan D. Lopez,
(202)343-9481,
lopez.juan@ofee.gov

WHITE HOUSE HONORS 2006 CLOSING THE CIRCLE AWARDS WINNERS

On June 13, 2006, Federal employees from across the United States gathered in Washington, DC, to accept Closing the Circle Awards (CTC) for their outstanding performance in the areas of environmental management systems, pollution prevention, recycling, green product purchasing, alternative fuels, sustainable buildings, and electronics stewardship.

The CTC Awards recognize outstanding achievements of Federal employees and their facilities for efforts that resulted in significant contributions to, or have made a significant positive impact regarding to environmental stewardship. The awards focus on waste prevention, recycling, and green purchasing activities under Executive Order (E.O.) 13101, environmental management under E.O. 13148, green/sustainable buildings under several executive orders, and reduced fuel usage under E.O. 13149. This year the program also recognizes four (4) Gold level partners of the Federal Electronics Challenge (FEC).

"Sustainable environmental performance has become an integral part of how we do business in the Federal government," said Mr. Ed Piñero, the Federal Environmental Executive. "These award wining programs and individuals truly exemplify how our management and operations can be made more sustainable through enhanced environmental stewardship."

Created by executive order, the Office of the Federal Environmental Executive (OFEE) is a chartered task force under the White House Council on Environmental Quality. It works to promote sustainable environmental stewardship throughout the Federal government by assisting agencies in integrating environmental considerations into their operations. OFEE assists agencies with such sustainable practices as implementing environmental management systems, purchasing green products, constructing sustainable buildings, electronics stewardship, and waste prevention and recycling.

Department of Homeland Security
US Coast Guard Aircraft Repair and Supply Center, Elizabeth City, NC
Engineering Support Team

Corn Starch Dry Blast Media

The Aircraft Repair and Supply Center adopted EnviroStrip GPX ®corn starch blast media as its primary dry blast media for de-painting operations. Most plastic bead blasting was eliminated and use of chemical stripper was minimized through use of the corn starch blast,. In 2005, 97,200 lbs of EnviroStrip (98 percent) was returned for reutilization. The end result, 17,000 pounds of plastic blast media waste and hazardous waste were successfully eliminated.

Three of the last five G-S/CG-4 (Directors/Assistant Commandants) meet at the Innovation Expo, from left to right, RADM John Tozzi (USCG, Retired), RADM Dale G. Gabel (current CG-4) and RADM Erroll M. Brown (USCG Retired). The Sixth Annual Coast Guard Innovation Exposition (EXPO 2006) was held at the Tampa Convention Center in Tampa, Florida on 26-28 June 2006. EXPO 2006 was sponsored by the Commandant's Innovation Council.

CG-4 supports you who search for and rescues those needing help!

Commandant (CG-4)
United States Coast Guard
2100 Second Street, S.W.
Washington, DC 20593-0001