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Marine Safety Engineering

A Note from the Director

Greetings and welcome to the Fall 2009 edition of the Marine Safety Engineering newsletter.

Let me begin by congratulating the Marine Safety Engineers selected for promotion in PY 10. Keep up the good work and continue educating others and mentoring junior officers of the CG-OAP 16 sub-specialty.

Welcome to those shipmates selected for advanced education in a Marine Safety Engineering discipline! At press time, 14 officers had been chosen for postgraduate studies in Marine Engineering, Chemical Engineering, and Marine Engineering Technology. This is the largest number of selectees in recent years and reflects the strong need for increased engineering capabilities and capacities to address the challenges facing the Marine Safety Program.

I would also like to introduce my new Deputy, CAPT Frank Sturm, USCG (Ret). Many of you probably know Frank, as he's served in a number of marine safety field and staff assignments during his 30-years on Active Duty, including Commanding Officer of MSO Charleston, South Carolina, and Commander, Coast Guard Activities Europe, in Rotterdam, The Netherlands. He is a graduate of the Chemical Engineering program, earning his M.S. from John Hopkins University in 1986. He served as a chemical engineer in the former Hazardous Materials Division at Coast Guard Headquarters and in the Cargo Division at the Marine Safety Center. I'm extremely pleased to have Frank rejoin the Marine Safety Engineering ranks in his new capacity as Deputy Director. He brings a wealth of leadership, management and technical skill, (and humor) to the CG-52 team.

We continue to make good progress on business process reforms within CG-52, including how we prioritize, monitor and manage our world of work, and we are starting to see results. For example, regulatory development capacity has greatly increased, as evidenced by the 17 final and interim rules published since October 1st alone!

Together, we're making CG-52 more responsive to the needs of the Coast Guard and to the domestic and international maritime communities that we serve. As an example, CG-52 recently partnered with members of the offshore industry to resolve challenges associated with the implementation of MARPOL NLS carriage requirements on U.S. flag Offshore Supply Vessels. The process used to develop the policy was nimble and timely, and has subsequently been incorporated as a standard CG-52 practice.

Keep up the great work! Wishing you a wonderful holiday season and continued success in the New Year.

Jeff Lantz,
Director of Commercial Regulations and Standards

Congratulations to AY 2010 Marine Engineering, Chemical Engineering, and Marine Engineering Technology advanced education selectees!

LTJG Jeff Bybee
Sector Corpus Christi

LTJG Dixon Whitley
Sector Detroit

LTJG Matthew Sexton
USCGC Chandeleur

LTJG Andrew Gibbons
Sector Northern New England

ENS Kenneth Au
USCGC Bear

ENS Lisa Myatt
USCGC Healy

ENS Evan Reger
USCGC Polar Sea

ENS Andre Douglas
USCGC Vigilant

ENS Zachary Robertson
USCGC Midgett

Picture Unavailable

LTJG Aidan Van Cleef
Sector Hampton Roads

LT Kenneth Hettler
Activities Europe

Marine Safety Engineers and Sector LA/LB Staff Address Novel VRU Design

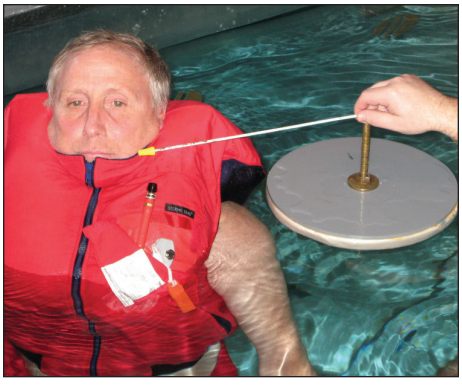
CDR Josh Reynolds

On March 19, 2009 a fire broke out in the novel vapor recovery unit (VRU) design on the 369-foot barge Olympic Spirit. Although the fire was contained in its initial stages, the Coast Guard was concerned it could have been much worse because the VRU operated with flammable vapors at very high pressure. The Sector's inspection and investigation office immediately removed the system from operation and requested technical guidance from CG-52. A team consisting of mechanical, chemical and electrical engineers from CG-521 (Office of Design and Engineering Standards), CG-522 (Office of Operating and Environmental Standards) and the Marine Safety Center worked with Sector LA/LB staff to determine the fire's cause and what repairs and/or design modifications were necessary of this VRU.

One of the shortcomings the team uncovered involved the approval process for VRUs. The current process in 33 CFR 154 Subpart E assumes that vapor recovery is done shoreside at lower pressures, but Olympic Spirit recovered vapor on the barge at high pressure. This meant additional vessel standards had to be applied, and an inspection and testing regime had to be developed. The team worked closely with the VRU designer and an independent engineering firm, and accomplished this within a few weeks. The team's work helped ensure that the lessons learned from this incident will be applied in a way that prevents recurrence on other similar VRU designs.

Risk Based Analysis of PFDs

Marty Jackson



Measuring freeboard for a PFD used in the tests and algorithm development.

The Lifesaving and Fire Safety Division (CG-5214) is responsible for the regulation and approval of lifejackets (PFDs). A primary focus is finding ways to improve the wear rate of lifejackets by the boating public. Casualty statistics clearly show that most drownings occur not because lifejackets performed poorly, but because lifejackets that were available were not worn. Consistent with the Marine Safety Performance Plan goal of promoting lifesaving innovation, CG-5214 works with the lifejacket industry, standards organizations such as Underwriters Laboratories (UL), ISO, the American Boat and Yacht Council (ABYC), and the National Boating Safety Advisory

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"Casualty statistics clearly show that most drownings occur not because lifejackets performed poorly, but because lifejackets that were available were not worn."

Sam Wehr (CG-5214 Retired) instrumented for mouth immersions waiting for a wave series in the wave tank.

An ECO offshore supply vessel under construction at North American Shipbuilding.

Council (NBSAC) to make changes to lifejacket standards and approval processes that foster innovation with the goal of increasing wear rates. The changes include international harmonization of standards, encouraging competition between laboratories, and reducing time and costs to obtain approval of innovative concepts.

Instrumented manikin set up for wave series in the NSWCCD wave tank.

While there is a huge body of knowledge available on ship design and analysis, the design of lifejackets and the assessment of their performance are very much works in progress. The infinite range of potential lifejacket wearers, and the wide range of conditions in which lifejackets may be used, make accurate and repeatable evaluation of their performance a challenge. To address this challenge, CG-5214 conducted dynamic testing at the Naval Surface Warfare Center-Carderock Division wave tank on a family of instrumented manikins engineered through an R&D project. Electronic data on mouth immersions, body angles, and in-water motions were recorded and correlated to human subject data including freeboards, ease of donning, jumping, and comfort, culminating in development of a prototype virtual test subject capable of virtual performance assessment. This is being used for development of a unique risk-based PFD standard employing design and performance criteria in an algorithm yielding a risk index for a candidate lifejacket. Such a standard promises greater design flexibility than the current, more prescriptive standards.

MSC Engineers are Taking Their Show on the Road

LCDR Scott Johnson

Always striving to build on their understanding of customer needs, to increase their engineering competence and enhance service delivery, MSC engineers are now traveling more frequently to field units, shipyards, marine design offices and classification societies. This action is part of broader strategic initiatives to enhance Marine Safety Engineering capability and capacity, to improve oversight of third parties authorized to conduct plan review on behalf of the Coast Guard and to supplement MSC plan review services with on-site technical support to field commanders.

MSC engineers LT Andy Lawrence, LT Harrison Liang and Digvijay Singh discuss plan review for an offshore supply vessel.

Recently, MSC engineers Mr. Digvijay Singh and LCDR Josh Pennington visited the American Bureau of Shipping (ABS) Technical Office in Houston for a brief internship with their Ship and Offshore Engineering Divisions. In addition to becoming familiar with ABS plan review processes, including their Engineering Manager Plan Review System, they had the opportunity to test drive the software ABS uses to evaluate the strength of ships and offshore structures. The knowledge they gained will greatly enhance the breadth of MSC's oversight review capabilities. In addition to the internship at ABS,

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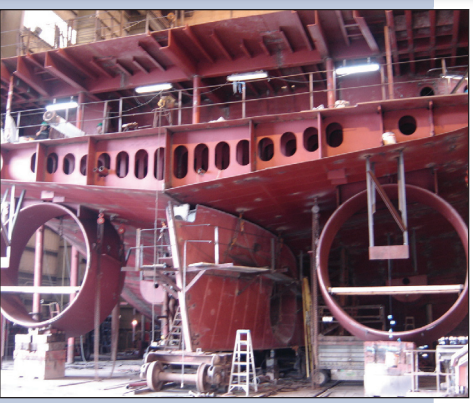

An ECO offshore supply vessel under construction at North American Shipbuilding.

MSC engineers LT Andy Lawrence and LT Harrison Liang visited Edison Chouest Offshore (ECO), an offshore supply company that builds and operates a large fleet of state-of-the-art offshore supply and research vessels. These officers spent several days shadowing ECO engineers at their North American Shipbuilding facility in Larose, LA learning how they approach ship building from conceptual development to the creation of 3-D construction plans. They also observed the construction process from uncut steel plates to a near-complete offshore supply vessel. Additionally, LT Lawrence and LT Liang witnessed vessel operations at ECO's Port Fourchon, LA facilities. These officers learned much about the dynamics and complexity of the offshore operations and how Coast Guard regulatory actions impact the marine industry.

Where Are they Now? "Techies" in the Field

CDR Scott Kelly

CDR Wilford "Buddy" Reams salutes his relief, turning over Command of MSU Lake Charles, LA to another Marine Safety Engineer, LCDR Rob Compher.

The cruise industry continues to grow with over 10 million people boarding cruise ships in the U.S. every year. Today's cruise ships are larger and more technically complex than ever, with novel designs that present a myriad of unique challenges. So, it is no surprise that the Coast Guard picked CDR Buddy Reams, a "techie," to be the first Supervisor of the Cruise Ship National Center of Expertise (COE) in Miami, FL. As the boss of the Coast Guard's first COE, CDR Reams will train new COE members, liaise with the cruise ship industry, and provide technical advice to inspectors conducting cruise ship examinations all over the world.

"It is no surprise that the Coast Guard picked CDR Buddy Reams, a 'techie,' to be the first Supervisor of the Cruise Ship National Center of Expertise (COE) in Miami, FL."

How did CDR Reams get this job? Well, he is no stranger to providing technical advice. After earning masters degrees in both Naval Architecture & Marine Engineering and Industrial Operations Engineering in 1999, he served three years as a Marine Safety Center (MSC) Staff Engineer conducting plan review and responding to vessel casualties as a member of the MSC's Salvage Engineering Response Team (SERT). CDR Reams then fleeted up twice, ultimately becoming the Hull Division Chief, where he managed the Coast Guard's technical review program for all passenger ships and participated at the International Maritime Organization in the development of new international stability standards. Building on his successful technical tour, CDR Reams assumed command of MSU Lake Charles in 2006. While there, he led responses to major pollution and hurricane incidents, initiated sustainable joint law enforcement activities, and managed personnel and resource growth that more than doubled the unit's size. At his Change of Command ceremony last Summer, CDR Reams turned the keys to MSU Lake Charles over to another MSC alumnus, LCDR Rob Compher. Rob is also a naval architect and former MSC SERT team member.

"With a fellow techie at the helm, we are certain of their success and that this consolidation of cruise ship technical knowledge and skill will be an invaluable asset to the Marine Safety community."

We look forward to working closely with CDR Reams and his staff as they stand up the Cruise Ship COE for full operation. With a fellow techie at the helm, we are certain of their success and that this consolidation of cruise ship technical knowledge and skill will be an invaluable asset to the Marine Safety community.

Engineer in the Spotlight

LCDR Jason Hall

"While in uniform, Mitch Eanes served ashore and afloat as a Machinery Technician, as a detailer, and as an instructor of advanced machinery courses at Yorktown."

Mitch Eanes is a Senior Staff Engineer in the Machinery Branch of the MSC Engineering Division.

Mitch Eanes is a Senior Staff Engineer in the Machinery Branch of the Marine Safety Center's (MSC) Engineering Division. He conducts plan review of commercial vessel engineering systems, trains junior personnel, and provides technical assistance to field units, Headquarters, and the maritime industry.

Mitch regularly sets design criteria and safety parameters for innovative proposals. One such design is the HSV 2 SWIFT, a 98-meter Wave Piercing Catamaran contracted by the Military Sealift Command. This unique high speed aluminum vessel can maintain 35 knots while fully loaded with cargo and personnel. Mitch applied his extensive engineering skills to identify creative solutions that permit the safe use of novel piping materials, fuel systems, and fire suppression systems aboard this vessel. He also deploys as part of MSC's Initial Control Verification Exam program to test fire suppression and detection systems on cruise ships under construction overseas.

The HSV 2 SWIFT presented a number of unique engineering challenges, many of which were resolved by Mitch Eanes, a Senior Engineer at the USCG Marine Safety Center.

Mitch enlisted in the Coast Guard in 1980 and retired after 24 years as a Chief Warrant Officer. While in uniform, he served ashore and afloat as a Machinery Technician, as a detailer, and as an instructor of advanced machinery courses at Yorktown. During his last assignment as an engineer in MSC's Machinery and Electrical Branches, he graduated from Old Dominion University with a BS in Mechanical Engineering. Since, Mitch has served as a civilian at the MSC and was recently promoted to Senior Staff Engineer.

In his off time, you will find Mitch volunteering at Walter Reed Army Medical Center assisting wounded soldiers with rehabilitation. He is also an avid skier and fisherman. If you run into Mitch, take the time to listen to a few of his "sea stories" – you're guaranteed to learn something new!

LT Wheeler conducting an inspection of the main machinery plant. Engineering plant inspections check for deterioration and other hazards associated with aging vessels.

Summer Internships

LCDR Marie Byrd

This past Summer current marine safety engineers and prospective members spent some time learning how to apply their technical skills towards completing marine safety missions and responsibilities. For example, in preparation for a planned internship at the Marine Safety Center (MSC) in 2010, MSC worked with Sector Ohio Valley and SUNY Maritime to host Mr. Randall Schiffelbein in Louisville, KY for an 8-week Internship over the Summer. Randall is currently a Junior studying Naval Architecture at SUNY Maritime. His initial internship at Sector Ohio Valley provided exposure to Coast Guard field operations, both ashore and afloat, with a strong emphasis on commercial vessel design, construction, maintenance, inspection and repair.

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LTJG Woessner measuring FM-200 piping to ensure that the runs are within 10% of the design length.

LT Wheeler inspecting installed, remote operated fire suppression system.

Closer to home, the MSC recently hosted a 4-week Summer Internship for Midshipman 1/c Trevor Reuss. Trevor, who is studying Systems Engineering at the U.S. Merchant Marine Academy, spent his first week becoming familiar with the work performed in each of MSC's Divisions. Afterwards, he worked in MSC's Engineering Division, conducting research on the new Environmental Protection Agency Standards for Emissions Reduction for Ocean Going Vessels. Among other things, this Rule establishes new requirements that will decrease the allowable levels of sulfur in fuel used in marine vessels by 99 percent. Midshipman Reuss' work helped give MSC engineers a better understanding of how these new standards will affect MSC's policies related to vessel plan review.

LT Wheeler inspecting and testing the installed bilge and ballast system aboard the vessel ISLAND ROMANCE, Casco Bay Line's oldest ferry boat.

In the First District, LT Judson Wheeler (currently enrolled at University of New Orleans, NA/ME) was a break-in marine inspector at Sector Northern New England. There he worked for the Chief of Inspections, a fellow "techie," LCDR Kevin Ferrie. Another Class of 2010 student, LTJG Nick Woessner (currently enrolled at University of Michigan, NA/ME) spent his summer as an intern at the Volpe Center in Cambridge, MA.

LT Wheeler reviewing official paperwork and deck logs maintained aboard vessel ISLAND ROMANCE.

LT Wheeler participated in a wide variety of over 30 foreign and domestic vessel inspections and examinations. Vessels included whale watch tour boats and high speed ferries. His analytical skills and technical background earned as an Engineer Officer in Training and DCA facilitated immediate progress inspecting the wide variety of propulsion plants, auxiliary machinery plants and bilge and ballast systems. During several inspections, LT Wheeler tested various systems including fixed fire suppression and electrical distribution systems. LT Wheeler was also introduced to the marine inspector's library, including CFRs, IMO conventions and NVICs. LT Wheeler described his experience at Sector NNE as "first-rate" and is thankful to the marine inspectors, especially LTJG Andrew Gibbons (an AY10 Marine Engineering advanced education selectee) and Charlie Kippouras for serving as his mentors.

LTJG Nick Woessner interned for six weeks with the Department of Transportation's Volpe Center. The Volpe Center solves engineering problems for various federal agencies. The Army's watercraft division, MARAD, and the Coast Guard are usual customers. LTJG Woessner worked on three projects; two for the Coast Guard and one for the Volpe Center. The Coast Guard projects consisted of the certification of an FM-200 installed firefighting system onboard the USCGC FARALLON and the re-organization of CG Cutter repair lockers.

Thank you to the sponsoring units for their support and for taking the time to train these members in marine safety engineering. The investment in their professional development will pay dividends in their career and is healthy for the "techie" sub-specialty.

Rear Admiral Kevin Cook, Director of Prevention Policy (CG-54)

Rear Admiral Kevin Cook brings a variety of expertise and experience as the Director of Prevention Policy where he is responsible for many of the Coast Guard's Marine Safety, Security and Stewardship missions that affect waterways management, domestic and international shipping, fishing and recreational boating, and port facilities. His career, a mix of marine safety and waterways management, brought him on a natural path to Prevention – "I was doing Prevention before Prevention was even thought of as a specialty," RDML Cook noted.

A Bachelor of Science degree in Ocean Engineering from the Coast Guard Academy served him well through his three tours aboard seagoing buoy tenders and six marine safety technical and field tours. "The buoy tenders performed waterways management activities which, combined with marine safety activities, turned out to be the forerunners of the Prevention specialty."

RDML Cook speaking at the Cargo Ship Symposium in Reston, VA on September 24, 2009.

Admiral Cook advises junior officers who are entering the marine safety engineering field that "Engineering is a great basis, not just for the Coast Guard's technical work, but field work as well. It gives a person a more thorough understanding of all the issues." In his opinion, becoming a "techie" does not restrict officers to a narrow career path and believes that "Working outside one's area of expertise leads to a broader, well-rounded experience as it relates to further opportunities and promotions within the Coast Guard."

The Coast Guard provided him the opportunity to pursue his advanced degree at any school where he was accepted. His Master's of Science degree in Chemical Engineering from Princeton University put him in a position where he could add value in a specialty unfamiliar to many others. This technical degree allowed him to fill a role within the Coast Guard where he helped develop regulations in the areas of chemicals, liquefied gas and oil tankers.

Chemical engineers and other "techies" are vital to the Coast Guard according to Admiral Cook, "because we live in a technical world, and because there are many technical issues associated with marine transportation. Techies also serve to enhance the Coast Guard's international reputation with the International Maritime Organization where they contribute to the international body of regulations."

Admiral Cook epitomizes his stated belief that "Technical training creates a great foundation for many other follow-on assignments in the Coast Guard – in ports, in administration, in the development of regulations, on ships, and in the international arena."

"Engineering is a great basis, not just for the Coast Guard's technical work, but field work as well. It gives a person a more thorough understanding of all the issues."

World Maritime Day

On October 16, 2009, CG-52 took the lead in hosting the 2009 International Maritime Organization's World Maritime Day Parallel Event in New York City. The theme was "Climate Change". The successful event included panel discussions on emerging technologies to reduce greenhouse gas (GHG) emissions, best practices to reduce GHG emissions, and GHG regulatory schemes.

Admiral Allen welcomes participants to World Maritime Day.

Jeff Lantz addressing the audience on engineering environmental initiatives.