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Marine Safety Engineering

A Note From the Director

Greetings and welcome to the December 2013 edition of the Marine Safety Engineering (MSE) Newsletter.

This fall has been a challenging time for the staffs at Headquarters and the Marine Safety Center. First, in early September we both had to relocate; Headquarters is now located at the DHS St. Elizabeth's campus in southeast Washington, DC, while the Marine Safety Center is now located at the Ballston Commons Plaza in Arlington, VA. These moves were challenging and required significant effort by everyone to ensure the transition was smooth with minimum impact on our mission capability. We're still working out a few kinks, but the modern work spaces and technology of the new headquarters facility are quite impressive and, in the end, will be very positive for us. I look forward to a challenging yet productive 2014 in our new "digs."

The second challenge we dealt with was the temporary shutdown of the federal government in October, which ultimately resulted in the furlough of virtually all of the Headquarters staff's civilian employees. I am so proud of how everyone responded to this unsettling event. This included the military members stepping up when we were short staffed due to the furlough, which was then followed by the heartening response of the civilians when they returned to aggressively jump in and make up for lost time on the many important initiatives underway in the Directorate.

A hearty "well done" to everyone for maintaining a positive attitude over the last six months and juggling their work demands to meet the needs of our field units, the public, and industry.

Looking back on 2013, it has been a gratifying year. We published a number of significant regulations and policies. We made solid strides to close gaps in the offshore and we're zeroing in on the issues we face with the burgeoning use of LNG as a ship's fuel, to name but two of our more pressing challenges. We continued to complete plan review in record time, to facilitate the design and operation of novel and increasingly complex commercial vessels and equipment. But, we can't rest on our laurels as we continue to face challenges to uphold our goals of safe, secure and environmentally sound shipping. We have much more to do, especially when considering the constant advance of technology in the maritime industry.

We'll need the help and contributions of everyone. I congratulate all of those MSEs selected for promotion in 2014. I also extend a warm welcome to the 11 officers recently selected for Marine Safety Engineering postgraduate training. Rest assured, there are plenty of challenges for you to look forward to as we eagerly anticipate you joining our community.

In closing, I sincerely thank everyone for their contributions during the last year and I wish each of you a wonderful holiday season and continued success in the New Year. Take some time for yourself and enjoy your families during this special time of the year.

Regards,

Jeff Lantz,
Director of Commercial Regulations and Standards

Raising the COSTA CONCORDIA

By LT Jarred Hinton, Master's Degree in Naval Architecture & Marine Engineering & LT Dale Cressman, Master's Degree in Naval Architecture & Marine Engineering

SERT on location at salvage site.

It has been called the largest salvage operation in history. At the cost of nearly $1 million per day, a multinational team comprised of the world's leading salvage experts has been working around the clock to right, refloat, and remove the 954 foot long cruise ship COSTA CONCORDIA from its temporary home on one of the most pristine reefs in Italy. At the invitation of Titan Salvage, LTs Jarred Hinton and Dale Cressman from the Coast Guard's Salvage Engineering Response Team (SERT) travelled to Isola del Giglio, Italy to observe final preparations for the righting of the COSTA CONCORDIA.

This was undoubtedly the largest, most complex, and challenging salvage operation in the history of mankind and provided the SERT with an unparalleled opportunity to gain training and experience. With the many different companies and agencies involved, the effort to maintain the structure and organization of the salvage effort was enormous and provided some key lessons learned to bring home.

COSTA CONCORDIA salvage operations near Isola del Giglio, Italy.

Through both the experience gained and the relationships built throughout the trip, the SERT has improved its ability to respond to major salvage incidents at home. This coordination also highlighted the Coast Guard's standing as a leading technical organization devoted to safe, secure, and environmentally sound marine transporation.

Transport of Shale Gas Extraction Waste Water by Barge

By Dr. Cynthia Znati, Chemical Engineering Subject Matter Expert

The twin advances of horizontal drilling and hydraulic fracturing have led to increased production of natural gas from previously inaccessible sources such as the Marcellus shale. This "unconventional" natural gas is not available using conventional drilling techniques. It has been estimated that shale gas may account for up to 50% of U.S. production by 2035. The process of hydraulic fracturing, also known as "fracking," injects water, sand, and chemicals under high pressure into the shale causing the rock to fracture and release natural gas. The sand remains in the well while the injected fluid is recovered as highly concentrated salt brine that may include minerals or chemicals from the ground as well as the chemicals that were injected. The recovered brine, referred to as shale gas extraction waste water (SGEWW), is stored at the drilling site or transported by rail or truck to storage sites, reprocessing centers, or injection wells. Industry has expressed interest in transporting SGEWW by barge to disposal sites in OH, TX, and LA.

Post-Graduate Selectees for AY 2014

Chemical Engineering-HAZMAT
LCDR Julie Blanchfield

Electrical Power Systems & Controls Engineering
LTJG Derek Balke

Fire Protection Engineering
LT Kelley Brown

Marine Engineering
LT Daniel Kilcullen
LT James Schock
LT Maria Wiener
LT Christopher Rabalais
LT John Di Nino
LTJG Jonathan Duffett
LTJG Eric Doherty

Mechanical Engineering
LT Laura Williams

If you have any comments about this e-newsletter, or would like to contribute an article to an upcoming edition, please contact LT Jason Kling:

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Shale Gas Extraction Waste Water (cont.)

The chemical composition of SGEWW varies depending on chemicals in the drilling fluid, the well site, and the age of the well. SGEWW is generally very high in total dissolved solids, which can include some heavy metals such as mercury, arsenic, and barium, and it may contain a small amount of volatile organic compounds such as benzene. The main concern with SGEWW is its potential for contamination with radioactive isotopes such as radium -226 and -228. Radium is of particular concern because it is chemically similar to calcium and so will easily form surface residues which may lead to radioactive surface contamination of the barges.

As detailed in Parts 151 and 153 of Title 46 of the Code of Federal Regulations, all hazardous material cargoes must be listed in the regulations or receive approval from the Coast Guard prior to shipment. SGEWW is not currently listed in the regulations and may present different hazards from the listed bulk liquids. The Coast Guard, with the advice of other federal agencies, has determined that SGEWW may be safely carried by barge. The Hazardous Materials Division (CG-ENG-5) published a proposed policy letter in the Federal Register on October 30, 2013, which details the safety measures that must be met before SGEWW may be transported by barge.

CGA's Marine Safety Summer Training Program

By LCDR Dan Cost, P.E. – Master's Degrees in Naval Architecture & Marine Engineering and Mechanical Engineering

This past summer, Coast Guard Academy cadets headed out for their summer training programs and 90 of them took advantage of the Academy's Marine Safety Summer Training Program. The 1/c cadet program consisted of commercial ship rides and follow-up training at a Sector Prevention Department. Four 1/c cadets sailed on Alaskan tankers, gaining an appreciation for the professionalism of the licensed mariner and the ships they operate. They saw firsthand the increased commercial activity in the Arctic and the importance of a proactive Coast Guard Arctic strategy.

2/c cadets on the Staten Island Ferry GUY V. MOLINARI.

Eleven 1/c cadets took part in the Cadet Towing Vessel Rider program. Five American Waterways Operators companies hosted the cadets for 1-2 weeks, providing them with exposure to towing vessel operations underway, vessel repair facilities, and shoreside management. The 2/c cadet program enabled 73 cadets to observe operations at a nearby Sector Prevention Department in New York, Boston, Long Island Sound or Southeastern New England. For one week, cadets participated in Port State Control Exams, domestic marine inspections, casualty investigations and Command Center operations. Their training focused on COTP and OCMI authorities, vessel inspection procedures and objectives of the Port State Control Program. With some cadets even giving up a week of leave to participate in the Marine Safety Summer Training Program, we can't wait to see what next summer will bring!