

Center for Secure and Resilient Maritime Commerce (CSR)



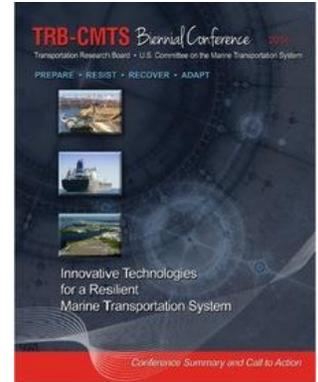
NATIONAL CENTER FOR MARITIME RESEARCH

CSR NEWSLETTER – FEBRUARY 2015

Stevens professor provides subject matter expertise in a newly released report entitled *Innovative Technologies for a Resilient Marine Transportation System*. Dr. Thomas Wakeman, co-Director Stevens Maritime Systems graduate program, provided guidance and subject matter expertise in the preparation of a newly released report entitled *Innovative Technologies for a Resilient Marine Transportation System*. Sponsored by the Transportation Research Board (TRB) and the U.S. Committee on the Marine Transportation System (CMTS), the report is a research and development call to action based ideas and outcomes from the TRB's 2014 biennial Marine Transportation System (MTS) research and development conference.

The conference included thought leaders from academia, industry, and Federal and State government agencies, to discuss current and emerging issues in the following areas: Future of Navigation, MTS Resilience, Engineering with Nature, Innovative Technology, Security, Data Management and Sharing, Asset and Maintenance Management, and System Performance.

The call to action report highlights key outcomes from the biennial conference and offers suggestions for future work within MTS research and development. To review the report and the call to action items, please visit the CMTS webpage at: <http://www.cmts.gov/Bulletin.aspx?id=91>



NY Times video shows footage of the USCGC Sturgeon Bay during an ice breaking mission in the busy Hudson River. (U.S. Coast Guard photo)

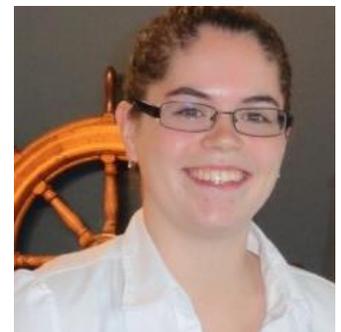
USCGC Sturgeon Bay clears icy waterways for the safe navigation of vessels in the Hudson River. Lt. Kenneth Sauerbrunn, mentor and USCG active duty advisor to the [Stevens Institute of Technology USCG Auxiliary Detachment](#), and his crew aboard the Coast Guard Cutter Sturgeon Bay were recently featured in a NY Times article and video. The news item, *Under Thick Coating, an Icebreaking Ship Uncovers the Hudson*, shows footage of the 140-foot Bay class cutter as it clears the ice covered Hudson River, for the safe navigation of vessels, including those responsible for transporting heating oil and gasoline to the Northeast region.

During the winter months, the crew of the Sturgeon Bay are responsible for aiding vessels and for keeping the 120 mile waterway between the New York Harbor and Albany, NY, clear of ice. In addition to their icebreaking missions, the crew performs search and rescue operations, and harbor security patrols during high-profile events. Click here to watch the NY Times video and to hear the sounds of ice breaking in the Hudson: [USCGC Sturgeon Bay - NY Times](#).

DHS CDG graduate writes article on Maritime Identity Fraud. Grace Python, DHS Career Development Grant (CDG) Maritime Systems Master's Degree Fellowship graduate (Stevens Institute class of 2013) and current Analyst at Analytic Services Inc., recently published an article entitled [Maritime Identity Fraud: Challenges and Opportunities in the Pacific](#) in the Banyan Analytics' electronic news brief. The article discusses the inherent threats of falsified vessel Automatic Identification System (AIS) data and suggests the need for a layered and systematic approach to manage potential maritime threats.

Banyan Analytics' biweekly brief provides analysis of selected issues in the Asia-Pacific. Click on the link above for the full text of Ms. Python's article.

During her tenure in the Maritime Systems Master's Degree Fellowship program, Ms. Python participated in an internship at the U.S. Coast Guard Atlantic Area Operations Analysis Division in Portsmouth, VA, and completed a Master's thesis focused on decision making guidelines to enhance port resilience to flood events.



Grace Python, former DHS CDG Fellow, writes article on Maritime Identity Fraud.

Chemical Legacy: Techniques and Results of Deep-Water Sea-Disposed Munitions Assessment

By Dr. Margo Edwards

Senior Research Scientist, Hawaii Institute of Geophysics and Planetology

ABSTRACT

Over the past seven years the University of Hawaii (UH), Woods Hole Oceanographic Institution (WHOI) and the environmental consulting firm Environet have assessed munitions and the surrounding environs at a deep-water munitions disposal site (HI-05) south of Oahu, Hawaii as part of the Hawaii Undersea Military Munitions Assessment (HUMMA). Platforms used for this assessment included two human occupied vehicles (HOVs), WHOI's JASON 2 remotely operated vehicle (ROV), a towed, high-resolution, downward-looking camera, and two autonomous time-lapse camera systems. Attached to these platforms were various sensors including a deep-ocean mass spectrometer, video cameras, and equipment to collect sediment, water and faunal samples within two meters of suspected chemical and conventional munitions as well as at control sites. During HOV dives, submersibles conducted daytime operations while the towed camera system was deployed at night, collecting photographic and oceanographic data. For the JASON 2 field program, the ROV accomplished four dives of 1-, 2- and 3-days duration, with elevators bringing samples to the surface.

Analyses of sediment samples collected less than two meters from munitions show the presence of mustard agent and its degradation products. These results were confirmed at sites where the mass spectrometer conducted surveys. Shrimp scavenging nearby and sea stars living directly on top of munitions exhibited no trace of contamination from chemical constituents, although energetics (2,4,6-TNT, 4-Am-2,6-NDT, 1,3,5-TNB and nitrobenzene) were detected in the shrimp at levels lower than 0.2 mg/kg. Lesions observed on the arms of sea stars living in direct contact with chemical munitions contained parasitic crustaceans and were not the result of contact with mustard agent. Time-lapse animations indicate that, in Hawaiian waters, munitions serve as habitats for a diverse suite of mobile animals. Results of the technological "bake-off" between HOVs, ROVs and JASON will be discussed during this presentation.

BIOGRAPHY

Margo Edwards is a Senior Research Scientist with the Hawaii Institute of Geophysics and Planetology at the University of Hawaii at Manoa. She received her doctoral degree from Lamont-Doherty Earth Observatory of Columbia University in 1992. Edwards specializes in remote sensing of the seafloor using optical and acoustic systems. Her research focuses on processes involved in creating and modifying the seafloor and oceanic crust; recent research includes investigations of the Arctic Basin and the use of high-resolution photographic and acoustic data to assess military munitions that were disposed at sea. Edwards recently served as Center Director of the DHS National Center for Island, Maritime and Extreme Environment Security (CIMES), the sister center to Stevens Institute's Center for Secure and Resilient Maritime Commerce (CSR).

EVENT DETAILS

DATE:
Monday,
February 2, 2015

TIME:
12:00 PM- 1:00 PM

LOCATION:
Babbio Center, Room 607
Maritime Security Laboratory
Stevens Institute of Technology

ATTENDANCE:
This event open to all Stevens' students, faculty, staff and invited guests.

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Senior research scientist, Dr. Margo Edwards, provides CSR invited talk on sea-disposed chemical munitions. Dr. Margo Edwards, Senior Research Scientist, Hawaii Institute of Geophysics and Planetology, and former Director, Center for Island, Maritime and Extreme Environment Security (CIMES), recently provided an invited talk entitled *Chemical Legacy: Techniques and Results of Deep-Water Sea-Disposed Munitions Assessment*, to the Stevens Institute of Technology community.

Dr. Edwards' talk focused on research conducted as part of the Hawaii Undersea Military Munitions Assessment (HUMMA), to assess the impacts of a deep-water munitions disposal site on its surrounding environs. The research team, including the University of Hawaii, Woods Hole Oceanographic Institution and Environet, utilized remotely operated vehicles, human operated vehicles, autonomous time-lapse and near-bottom-towed cameras, plus various sensors to collect environmental data and physical samples to analyze the underwater environment within two meters of suspected chemical and conventional munitions.

The team's work detected trace amounts (parts per million or lower) of mustard agent in the samples of sediment collected, however, sea stars living directly on top of disposed munition casings, exhibited no trace of contamination from chemical constituents.

For more information about the HUMMA project and to watch a video of Dr. Edwards' presentation, please click here: [Sea-Disposed Munitions Assessment](#).

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CSR is a DHS S&T national Center of Excellence in Port and Maritime Security.