Ohmsett Personnel Provide Technical Support

In their on-going research of various oleophilic recovery surface configurations, the University of California Santa Barbara (UCSB) Bren School of Environmental Science and Management conducted a study of “Oil Recovery with Novel Skimmer Surfaces Under Cold Climate Conditions” at the Cold Regions Research and Engineering Laboratory (CRREL) in Hanover, NH during the weeks of February 26 and March 7.

Due to the increase in oil exploration, production and transportation in Arctic water, there is an increase in the risk of an oil spill occurring in cold and ice-infested waters. According to researchers at UCSB, the mechanical oil spill recovery equipment currently used in warmer waters is not designed to collect more viscous oils, let alone oil-ice mixtures.

Funded by the Minerals Management Service (MMS), the study will provide a comprehensive analysis of the adhesion processes between oil or ice-in-oil mixtures, various surface patterns, and materials that are being used or proposed for use in oil skimmers conducted under cold climate conditions.

Ohmsett Oil Spill Training Attracts Multinational Students

When an oil spill occurs, do your responders know how to establish an incident command post? Do they know how the surrounding environmental factors will affect the behavior of the spill and what equipment to deploy?

At Ohmsett - The National Oil Spill Response Test Facility, that is exactly what students learned during the week-long Oil Spill Management course held May 14-18. Response personnel attending the training acquired the skills necessary to make quick and informed decisions during oil spill incidents. They also received hands-on spill response equipment handling and oil recovery training using full-scale equipment with real oil in the Ohmsett test tank.

The training course was taught by first-class instructors from Texas A&M University-Corpus Christi (TAMU) National Spill Control School, and drew spill response personnel from all over the world. Students like Mohsen Almousawi, an environmental engineer for Bunduq Co., Ltd. in the United Arab Emirates and Rolando Chávez Peñaherrera, a regional manager for R-Clean Desmi A/S in Ecuador, came to gain knowledge of the latest spill response techniques to train other company responders and their customers.
"I provide sales and training courses to my customers," said Chávez Peñaherrera. "I came to this course so that I can talk to my customers about operations and oil spill management. It will help me provide them with additional training to handle oil spills and provide better response with our equipment."

The class was divided and students rotated between the morning and afternoon sessions each day. Students started in the Ohmsett classroom, where they learned about contingency plans, operational phases for oil spill response, spill documentation, how to establish a command post and assign roles and responsibilities, environmental fates and effects of oil spills, and spill response technologies and recovery strategies. The instruction also included over eight hours of safety topics associated with an oil spill incident. The course curriculum covers the National Incident Management System (NIMS) 700 series and ICS 100 series sanctioned by FEMA. At the completion of the course, students received FEMA certifications.

"This was more than I thought. I did not expect to get good structure and procedures of incident command," explained Almousawi. "This is what is most important because you need proper training, to have the structure and procedures in place [during a spill]."

In the afternoon, students moved outdoors to the Ohmsett tank. There they participated in recovery of oil released into the tank and observed the effectiveness of response equipment in varying water conditions.

"Ohmsett is the only place in the world with a tank this size where you can spill real oil and clean it up with skimmers and booms," remarked Almousawi. "It's very interesting and useful to be here. The fun part is I see people from all over the world. It is nice to talk to them and share our backgrounds. It adds to further discussion than oil spills."

In addition, students learned about the use of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) applications in oil spill response.

"GIS is a computer-based real-time situation map, sometimes called a Common Operational Picture (COP)," explained TAMU instructor Devon Humphrey. "GIS is used to view maps in layers, such as aerial photos, roads, shoreline types and various resources-at-risk. GPS-linked digital photos are used to provide visual intelligence and are automatically encoded with [latitude and longitude] location and date/time stamps for each photo. This is useful for pre-event field inventories and damage assessment and documentation after a spill. The results of GPS photo mapping can be viewed by clicking on the GIS situation map. This allows for better decisions to be made in the Incident Command Post and provides a record of what, where and when response activities were conducted."

The training included a field trip along Sandy Hook Gateway National Recreation Area and the Raritan Bay, where collection and integration of GPS photos and other useful data were captured for use in spill planning and response exercises.

As Humphrey guided students through the steps in setting up the GPS unit and how to synchronize it with their digital cameras, he encouraged them to look at the area very closely for terrain features and possible staging areas.

"Think about your role during the response," Humphrey said. "Use your eyes and think about the environment - sand, vegetation, docks, launch areas - and look for access and usable roads."

The last day of training was a classroom exercise that incorporated everything the students learned during the week.

"At Ohmsett, we had a lot of different languages, cultures and nationalities where we had to work together and communicate in very professional way - like it is [in a] real incident," commented Almousawi. "It was worth a million dollars!"

GIS situation map: This is used in the Incident Command Post to represent the current status of the spill response. All protection and cleanup strategies are posted on this display and other information such as resources-at-risk, real-time weather and aerial photography are all included for planning purposes. The GPS photos are hot-linked to this GIS situation map, so that by clicking on the map, the photo from a particular location can be viewed. This includes both pre-spill inventory photos and post-spill damage assessment photos.
In March, the United States Coast Guard (USCG) came to the Ohmsett facility for the Oil Spill Response Technician (OSRT) course, the first of three training courses this year. Not only does this training draw USCG members from all over the United States, but also Coast Guard members representing other countries.

Phillip Walker of Halifax, Nova Scotia, Canada has been a member of the Canadian Coast Guard Search and Rescue (SAR) Preparedness Office for the past 10 years. When asked by his supervisor if he wanted to attend the USCG OSRT at Ohmsett on behalf of environmental response, he jumped at the opportunity.

Even though their mission is slightly different, SAR works together with environmental response teams towards a common goal - to save and protect lives in the marine environment and to minimize loss of life, injury, property damage and risk to the environment.

"We [at SAR] work in the same arena as environmental response," Walker explained. "We have dual roles - we’re the same department, just a different section."

"We have a long history with the USCG. We share the largest border in the world and we work together in environmental response and search and rescue," Walker said. "Environmental and Search and Rescue do not have a border so we all have to be there and work together."

According to Walker, there was an incident in Canadian waters few years ago in which the USCG Atlantic Strike Force team brought their equipment to help with the clean up.

Because of this inter-service relationship, Walker looked forward to networking with his counterparts in the U.S., to see what equipment and procedures the USCG is using, and to train alongside oil spill response crews.

The USCG OSRT training emphasized classroom exercises and practical hands-on use of oil spill equipment in realistic conditions. Classroom training focused on general Coast Guard oil spill response, safety briefings, and specific SORS/VOSS response equipment systems.

The Ohmsett facility provides students an opportunity to experience real oil spill recovery operations using Coast Guard equipment in the test tank. There they practiced recovering oil with actual spill equipment used in the field under conditions that simulate an actual oil spill by generating waves and currents.

Ohmsett Oil Spill Training

Ohmsett training can be configured to meet your specific needs. Hands-on training sessions are available with or without classroom instruction. Tank training can even be conducted using your own equipment.

Contact us at 732-866-7183 to design a class for you!
Scientists and Observers at Ohmsett for Dispersant Tests

On January 31, more than 80 scientists from private industry, academia and government agencies including ten observers from Canada, France, Norway and the United Kingdom gathered at Ohmsett - The National Oil Spill Response Test Facility in Leonardo, NJ to observe two cold water dispersant effectiveness (DE) experiments.

The Ohmsett Visitor's Day event was part of a two week experiment program funded by the Minerals Management Service (MMS) to determine the dispersibility of fresh and weathered Alaskan crude oils (Alaska North Slope, Endicott, Northstar and Pt. McIntyre) in very cold water and waves using Corexit 9500 and 9527 dispersants.

"Large-scale test basin research at Ohmsett is an important link between small-scale laboratory tests and field studies. The Ohmsett experiments simulate real-world conditions without the high costs and regulatory difficulties of at-sea field trials," said Joseph Mullin, MMS program manager for Oil Spill Response Research.

The U.S. Coast Guard - Atlantic Strike Team (USCG-AST) and the U.S. Environmental Protection Agency - Emergency Response Team (USEPA-ERT) accepted MMS's invitation to participate in the dispersant effectiveness experiments, using the Ohmsett DE test as a training exercise for the SMART (Special Monitoring for Applied Research Technologies) dispersant monitoring protocol and the use of fluorometers.

The USCG-AST sent a ten-man detachment and the USEPA-ERT sent a four-man detachment to train, demonstrate and answer questions related to the SMART protocol.

"There is no unique solution to the engineering problems of oil spills," said Leonard Zabilansky, a research civil engineer for the U.S. Corps of Engineers Cold Regions Research and Development Center (CRREL) in Hanover, NH. Zabilansky conducts research of oil herding in ice. "Oil dispersants are different then oil herding - oil herding is on top of the water and dispersants mix in water below. It's an interesting, but different approach."

Visitors huddled in groups against the brisk winter wind off the Sandy Hook Bay as they gathered on the deck of the Ohmsett tank to observe the dispersant experiment.

During the first experiment, a control test, technicians discharged approximately 100 liters of weathered Alaska North Slope (ANS) crude oil onto the waters surface, without dispersants being applied. Everyone watched as the oil spread out in the water while the wave action moved the oil to the north side of the tank. After 30 minutes the waves were shut off. Since no dispersant was applied there was no dispersion of oil into the water column. The Ohmsett staff recovered approximately 90 liters of ANS crude oil. Of the remaining 10 liters that was not recovered, some evaporated, and the remainder was assumed to adhere to the tank side walls, the end containment boom and recovery hoses.

For Norwegian Ingeborg Ronning, a toxicologist with Statoil, this was her first visit to Ohmsett and her first time to observe this type of experiment. "I deal with the effects of dispersants on the ecosystem, [so] it is really good to see the demonstration instead of reading about it," said Ronning. "This is also the first wave tank I've seen. It is good to compare it to other [facilities]."

Following the control test, visitors had the opportunity to divide into smaller groups for a tour of the Ohmsett facility.

"I'm very impressed with the facility and what it has to offer," said Brent King, U.S. Coast Guard, Sector Delaware Bay, Phila-
Technical Support
Continued from page 1

ditions. This will help develop new and possibly improve existing mechanical response equipment so that skimmers can be used more efficiently under these conditions. During the study, novel drum skimmer surface geometries and materials, tailored to increase the rate of oil recovery in cold and ice infested marine conditions, were tested.

Previous tests conducted at Ohmsett in August and October 2005 proved the concept that grooved or pleated surface geometries and novel surface materials could dramatically enhance oil recovery in temperate conditions. Data for this series of tests showed that while the selection of the recovery surface material can increase recovery rates up to 20%, the novel surface pattern can increase the recovery efficiency up to 200%. These results were used to support the concept of similar tests of oil spill recovery in cold-water conditions and ice infested waters.

For the CRREL test series, all necessary equipment related to oil handling, distribution and recovery, and monitoring was on loan from Ohmsett. Having already used this equipment and successfully tested the experimental procedure at Ohmsett, the researchers felt that this would help ensure a successful and repeatable test program at the CRREL facility.

An Ohmsett technician and engineer, both of whom worked with UCSB on the previous Ohmsett tests, traveled to CRREL to assist with equipment set up, oil distribution and recovery, data collection and analysis, and quality assurance monitoring.

The novel drum skimmer test at CRREL was part of an on-going research project conducted by UCSB Bren School of Environmental Science and Management.

Dispersant Test
Continued from page 4

delphia, PA. "This is my first exposure to dispersant testing. I'm looking forward to coming here [oil spill responder] training in the spring."

During the second experiment, with visitors on the bridge, tank deck and at the observation windows, approximately 100 liters of weathered ANS crude oil was discharged onto the waters surface, but in this case a 1:20 dosage of Corexit 9500 dispersant was sprayed onto the slick. Within minutes the observers could see the effects of the dispersant on the oil slick and watched as wave energy dispersed the crude oil from the water's surface into the water column and the 10 million liters of crystal clear salt water in the tank turned into a muddy brown color.

During both experiments, particle size analyzers and fluorometers mounted on the main bridge quantified the dispersed oil droplet size and oil concentration in the water column. Grab samples of water were also taken throughout the tank for analyses in the Ohmsett chemistry laboratory.

The observers' consensus was that these experiments accurately simulate real-world conditions. Francois-Xavier Merlin, the head of research and development at CEDRE in France, was on the bridge during the dispersant experiments.

"We do not [test] dispersants the same way because we do not have a large facility like Ohmsett," commented Merlin. "It is good to consider all [methods] to do the same type of job."

MMS believes that the results from Ohmsett dispersant testing will assist Regional Response Teams in making science-based decisions on the use of dispersants as a response tool in U.S. waters. These experiments also demonstrate that standardized tests conducted in the Ohmsett tank are a reliable way to measure dispersant effectiveness.

To schedule a test at Ohmsett call 732-866-7183 ext. 11
JBF Skimmer is Tested at Ohmsett

In December 2006, Slickbar Products Corporation of Seymour, CT came to Ohmsett to test and evaluate the performance of the Slickbar JBF 420/DIP-400 skimmer.

The JBF oil recovery skimmer system is a submersion moving plane type skimmer that operates in front of a 28 foot vessel.

During oil recovery operations, the vessel is operated in the forward direction with the oil containment sweeps extended to entrap and direct surface oil into the DIP400 oil recovery system. The skimmer separates the floating oil layer from the water surface by redirecting the oil below the waterline and down the moving plane (belt). When the oil reaches the end of the belt, it enters into, and floats to the top of, the collection well. The collected oil is typically pumped into an onboard collection tank. The skimmer system was also tested in waves for mechanical integrity and wave following characteristics using a harbor chop.

Using diesel fuel, the objective of the research conducted at Ohmsett was to quantify how efficiently the system performs in calm water and waves under conditions representative of those encountered during actual spill response operations using this equipment.

An oil distribution rate ranging from 10-50 gpm per run was targeted, depending upon tow speed, to create a 1 mm slick thickness for recovery. A hose running from the main bridge oil distribution system down to the water surface created an oil slick in front of the JBF 420/400 skimmer system. Two runs were performed at each tow speed to simulate a greater volume of oil distributed to the skimmer, ideally a total of 160 gallons. Longer duration tests increase the total volume of oil distributed and recovered, minimizes inherent measurement error, and improves measurement resolution.

Slickbar is looking forward to continued testing and development of various spill recovery and containment equipment at Ohmsett.

MAR Incorporated awarded contract for the operation of Ohmsett

MAR, Incorporated (MAR) has been awarded a contract by the U.S. Department of Interior, Minerals Management Service (MMS) to operate and maintain the Ohmsett facility for a base and four option periods. MAR has provided operations and maintenance for the Ohmsett facility since 1991.

MAR, a small business, is a professional services firm based in Rockville, MD. The company specializes in Systems Engineering and Integration, Intelligence and Special Programs, Marine Services, Facilities Management, and Information Technology.

"We are enthused about continuing to provide quality support to MMS and the premier oil spill response testing facility in the world," said MAR Chairman and Chief Executive Officer Mike Norcio. "Our strong desire is to provide exceptional customer service to MMS and those who use the Ohmsett facility for testing, research and training."

Ohmsett is the only facility in the world where full-scale oil spill response testing, research and training can be conducted with oil in a realistic simulated marine environment under controlled conditions. The facility consists of a large test basin measuring 667 feet long by 65 feet wide by 8 feet deep filled with 2.6 million gallons of crystal clear salt water, conference rooms, maintenance/machine shop, chemistry laboratory, and offices.

Under the new contract, MAR will continue to support and conduct research and development tests and evaluations of oil-spill response equipment and technology, as well as oil spill responder training.
The opinions, findings, conclusions, or recommendations expressed in this report are those of the authors, and do not necessarily reflect the views or policies of the MMS. Mention of trade names or commercial products does not constitute endorsement or recommendation for use. This document has been technically reviewed by the MMS according to contractual specifications.
Test With Oil! Train With Oil!
Ohmsett is managed by the U.S. Minerals Management Service and operated by MAR Incorporated.
For more information call (732) 866-7183 or visit our web site at www.Ohmsett.com