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Scientists and Observers Come to Ohmsett for Dispersant Tests

On January 31, 2007, more that 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 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 4-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 dispersant is 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, Philadelphia, PA. "This is my first exposure to dispersant testing. I'm looking forward to coming here for [oil spill responder] training in the spring."

During the second experiment, with visitors on the bridge, on the tank deck and at the observation windows, approximately 100 liters of weathered Alaska North Slope (ANS) crude oil, onto the waters surface, but in this case Corexit 9500 dispersant was sprayed onto the slick at a dosage of 1:20. 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.

Observers are able to see the effects of dispersants on the oil spill

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 Breast, 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.

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