



Ohmsett: The National Oil Spill Response Research and Renewable Energy Test Facility

Ohmsett, the Bureau of Safety and Environmental Enforcement's (BSEE) National Oil Spill Response Research and Renewable Energy Test Facility, is the premier oil spill training facility for response personnel. Testing at Ohmsett strengthens awareness of oil spill pollution prevention and response methods, while providing an environmentally-safe place to conduct objective testing and to develop devices and techniques for the control of oil spills. This is the only facility where full-scale oil spill response equipment testing, research and training can be conducted in a marine environment with oil under controlled environmental conditions (waves and oil types).

Located on the Naval Weapons Station Earle Waterfront in Leonardo, New Jersey (approximately one hour south of New York City), Ohmsett is operated by BSEE through a contract with MAR, Incorporated. BSEE is the principal United States federal agency that funds oil spill response research through the Oil Spill Response Research (OSRR) Program. Ohmsett is the cornerstone of the BSEE OSRR Program.

For more than 25 years, BSEE has maintained a comprehensive, long-term research program to improve oil spill response technologies. The major focus of the program is to improve the knowledge, technologies and procedures used for the detection, containment and cleanup of oil spills that may occur on the U.S. Outer Continental Shelf (OCS).

The U.S. Coast Guard, U.S. Navy and other federal, state and local government agencies, industry, and foreign countries train with oil under realistic oil spill conditions and increase their proficiency using actual oil spill recovery equipment by collecting and recovering oil. Ohmsett creates oil spills in a safe environment. Without this facility, experiments would have to be conducted in the open ocean, which has significant environmental implications. Twenty-four countries have used the Ohmsett facility.

Testing Capabilities

Ohmsett has been used to test and evaluate mechanical response equipment, such as containment booms and skimmers, temporary storage devices, remote sensing instrumentation, chemical treating agents and chemical dispersants, sorbents and fire-resistant booms. All performance evaluations are conducted to American Society of Testing and Materials (ASTM) Guidelines.

Ohmsett and Deepwater Horizon

Many of the first responders to the *Deepwater Horizon* oil spill received training at Ohmsett, and most of the mechanical recovery equipment (containment booms and skimmers) used in the response efforts to the *Deepwater Horizon* oil spill was tested and evaluated either as prototype technology or commercially available equipment at Ohmsett.

Tests on the chemical dispersants used in response to the *Deepwater Horizon* oil spill and their effectiveness on various crude oil types, various components of dispersant application systems (nozzles, spray bars), dispersant monitoring equipment (fluorometers) and dispersant monitoring training were also conducted at Ohmsett.

The tests conducted at the facility are scheduled months in advance and are oriented towards advancing R&D as well as addressing current issues. The testing capabilities of Ohmsett have been upgraded to provide a controlled environment for cold water testing and training. This capability allows the facility to remain operational year round.

The following test parameters can be controlled or measured at Ohmsett through a variety of mechanical, electrical and chemical systems: sea state (wave height, length, and period); tow speed; meteorological data; water temperature and salinity; volume of oil encountered and recovered by test equipment or protocol; oil-water ratios; physical characteristics of experimental oil; and behavior of treated oils.

Facility

The facility has proven to be ideal for testing equipment, evaluating acquisition options, and validating research findings because of its large outdoor above ground test tank for full-scale equipment. Three movable bridges span the 667 feet long, 65 feet wide and 11 feet deep tank filled with 2.5 million gallons of crystal clear salt water that are used to tow full-size response equipment though the water at speeds up to 6.5 knots to simulate actual deployment at sea. The tank's wave generator creates realistic sea environments by producing different wave types of up to 3-feet high while state-of-the-art data collection and video systems record test results.

The facility also has:

- A main towing bridge capable of towing test equipment at speeds up to 6.5 knots
- An auxiliary bridge oil recovery system to quantify skimmer recovery rates
- A wave generator capable of simulating regular waves up to one meter in height, as well as a simulated harbor chop, FM Slides with selectable: slue rates, start and stop
- Pierson-Moskowitz & JONSWAP spectra parameterized by wind speed & scale
- An oil distribution and recovery system that can handle heavy, viscous oils and Emulsions
- A control tower with a fully-computerized 32-channel data collection system as well as above-and below-water video
- A movable, wave-damping artificial beach
- A centrifuge system to recover and recycle test oil
- Blending tanks with a water and oil distribution system to produce custom oil/water emulsions for testing
- A filtration and oil/water separator system
- An electrolytic chlorinator to control biological activity
- Permanent and mobile storage tanks that can hold over 227,000 liters of test fluids
- A vacuum bridge to clean the bottom of the tank
- Staging and shop area for special fabrication
- On-site chemistry laboratory
- 15,000 lb forklift
- A fully equipped machine shop, chemistry laboratory and a 50-seat training facility