

The Ohmsett Gazette

Leonardo, New Jersey

Train with oil. Test with oil.

Spring/Summer 1999

Only at Ohmsett Flames, Waves and Oil

The 1997-98 testing season at the recently refurbished Ohmsett facility saw a wide variety of testing and training—including fireboom tested in flames, tow force testing, decant and sorbent testing, and hands-on training in the tank.

Ohmsett, located in Leonardo, New Jersey, is the only place in the world where full scale oil spill response equipment testing and training with oil can be conducted in a marine environment under controlled conditions.

The facility has been operated and maintained by MAR Incorporated, under contract to the U.S. Minerals Management Service, Department of the Interior, since 1992.

Ohmsett's concrete tank is 667 feet long and 65 feet wide, with a water depth of eight feet. A wave generating system and wave dampening artificial beach simulate actual ocean conditions.

Moveable bridges tow equipment at speeds up to 6.5 knots. State-of-the-art data collection and video systems record test results.

Ohmsett is available for use by public and private sector organizations on a reimbursable basis.

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Fire! Fire! Fire!

Fire Resistant Boom Blankets Tested in Propane Burn Setup



Things really started heating up at Ohmsett in 1998—on the order of about 900 degrees centigrade. In a joint endeavor, SL Ross Environmental Research, GPC, and Ohmsett technicians rigged an underwater propane bubbling system in Ohmsett's tank to test fire-resistant boom blankets in flames.

The air injected propane burner system was developed by S.L. Ross in a project sponsored by the U.S. Minerals Management Service and the Canadian Coast Guard.

The propane test method produces little smoke, is easily and safely controlled, and is less expensive than other tests. It promises to be a particularly useful testing tool in the research and development of fire-resistant booms and protective blankets.

Booms with protective blankets contain

spills to be cleaned up via on-site burning. On-site (in-situ) oil burning is an effective response technique approved for coastal waters off Alaska and in the Gulf of Mexico.

Three candidate fire protection systems—prototype water-cooled blankets designed to be draped over US Navy USS-42HB Oil

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The propane burn system at dusk

Tow Forces On Boom Measured

Minerals Management Service Funds Study

In a July 1998 testing series, SL Ross Environmental Research used Ohmsett's tank and towing bridge to measure and document tow forces on seven different containment booms. The U.S. Minerals Management Service funded the project.

Booms are used in a spill to contain and thicken the oil before cleanup with a skimmer or through on-site burning. Ordinarily, booms are either towed in a "U" shape or held still against a current.

Spill remediation personnel need to use the right boom for the right situation—in other words, a boom of sufficient strength for the job is needed, along with the right sized tow vessels and towing gear.

In the past, boom towing forces have been estimated using formulas involving the size of the boom, and water, wind and wave conditions. Recent field-testing suggests that those formulas may be inaccurate.

The actual forces on the boom may be much higher than previously estimated.

SL Ross set out to address this problem and determine the actual tow forces for vari-



Boom towed in the characteristic "U" shape

ous boom drafts, profiles, wave conditions and towing speeds.

According to Stephen Potter of SL Ross, conducting these tests in the Ohmsett tank offered an opportunity not found in the field.

"Compared with 'field' testing, Ohmsett allows one to better control test conditions," says Potter, "Yet, the tank is big enough to allow the use of full-scale equipment."

The test results will be submitted to an ASTM subcommittee task group established to review existing boom strength values.



Ohmsett technicians installing sensors

Meet the Ohmsett Staff

William Schmidt Program Manager
 David DeVitis Test Director
 Kathleen Nolan Technical Writer
 Ed Fitzgerald Q. A. Engineer
 Richard Naples Health & Safety Specialist
 Don Backer Instrumentation Technician
 Susan Cunneff Chemical Technician
 David Knapp Oil Transfer Technician
 Mark Wrong Video Specialist
 Ryan Leaman Oil Recovery Technician
 Joyce Rosenberg Administrator

Forecast 2000

Coming Tests and Trainings

U.S. Coast Guard

- VOSS training (3 sessions)
- High current skimmer test

U.S. Navy

- Training

S.L. Ross

- Oil dispersant study
- Emulsion breaker study

Texas A & M

- Training (2 sessions)

University of New Hampshire

- Bay Defender evaluation
- Modified V-Sweep evaluation

IMTECH Research

- Imbiber beads evaluation

Minerals Management Service and State of Alaska Sponsor Decant Test

Minerals Management Service and the State of Alaska Department of Environmental Conservation funded a November 1998 test. The test was conducted by S.L. Ross Environmental Research and MAR, Inc. to determine the best time to decant collected water from an oil skimmer's storage tanks.

Free water is often recovered along with spilled oil during skimming operations. The addition of water to the storage tank dramatically reduces the available storage area in the tank.

Skimming operations stop when the tank is full, reducing the efficiency of the skimming operation.

The goal of the study was to collect data to predict the best time during the skimming process to decant water from the storage tanks back into the boomed spill area.

During the test, a constant oil slick thickness was maintained. The volumes and recovery rates of the oil (or emulsion) and water were recorded as the storage container was filled. When the storage container was full, the water was decanted, the volumes of oil and water recorded, and skimming resumed.



The decanted water and oil are mixed prior to sampling

Pocket Boom Tested at Ohmsett



Pocket Boom in waves

In a July, 1998 study funded by multiple sponsors, the Pocket Boom was tested in the Ohmsett tank. The Pocket Boom, a fireboom, is an SL Ross Environmental Research redesign of the Dome Boom, which was tested at Ohmsett in July of 1996.

The Pocket Boom was evaluated for its ability to contain and collect oil, and its ability to maintain integrity in waves.

The boom forms a pocket at the apex of the containment area, hence the name.

The test followed the proposed ASTM testing protocol for oil containment performance and sea keeping ability for firebooms.

Ohmsett technical staff generated three types of wave conditions in the tank and performed tow tests with the tank's moveable bridge.

Ohmsett Instrumental in Developing ASTM Testing Protocol

Until recently, oil containment booms tested in a controlled environment have not been tested under an industry-wide accepted testing protocol—such a protocol does not exist. It has become clear that a standard is necessary.

The American Society for Testing and Materials (ASTM) is an organization that develops voluntary standards to which various products, from baby cribs to pumps and motors, may be held.

In April 1998, Ohmsett program manager William Schmidt and Ohmsett engineers David DeVitis and Phillip Coyne presented the need for a standard to the ASTM F-20.11 oil boom subcommittee. The ASTM F20 Committee on Hazardous Substances and Oil

Spill Response oversees over fifty standards, including specifications for response equipment design. It was agreed there was a need.

In October 1998, DeVitis and Christine Burk of MAR, Inc. presented the Ohmsett facility testing protocol to the F20.11 subcommittee for review. After gathering comments from subcommittee members, Ohmsett staff revised their existing protocol to develop a draft ASTM testing protocol.

Schmidt, DeVitis, Burk, and Ohmsett technical writer Kathleen Nolan will present the draft ASTM standard for further subcommittee comments in February 1999.

The ASTM F20 committee is scheduled to vote on the finalized version of the testing protocol draft in the Spring of 2000.

U.S. Coast Guard Evaluates Vessel's Oil Transfer System

Usually, the equipment comes to the Ohmsett test tank. But this time, in a unique February 1998 test on board the U.S. Coast Guard buoy tender JUNIPER, the Ohmsett crew brought their expertise—and the oil—to the equipment.

The JUNIPER is equipped with a spilled oil recovery system. The ship's built-in separation and transfer system had never been tested using oil.

LCDR Chris Doane, Chief, Pollution Response Systems Team, USCGHQ, has had previous experience testing various systems at Ohmsett. Ohmsett looked like the right place for the JUNIPER test.

"Nothing really compares to the testing that can be accomplished at Ohmsett," he says. "To evaluate oil spill response equipment, you must test with oil. Ohmsett is the facility where you can test full-scale systems with oil."

The JUNIPER was docked about three miles from the Ohmsett facility at the end of the Naval Weapons Station Earle pier. The Ohmsett staff pumped oil from the Ohmsett facility storage tanks into a tank car and transported it to the ship via rail.

Once at the ship, oil was discharged from the tank car to the transfer pumps for testing. Data was collected using the JUNIPER's instrumentation and instruments installed by the Ohmsett crew.



Oil being transferred to the rail car



The JUNIPER docked at the pier

Boomer and Dr. Skimmer answer your questions...



Why is there a big push now to develop fire resistant boom technology?

--Dave R., Crown Point, Oregon

DR. SKIMMER: Until recently, burning was not considered a primary countermeasure for spills in coastal and offshore areas. Research, however, shows that emissions generated by a typical burn at sea is unlikely to pose health risks.

In some situations, burning oil at sea where it has spilled is the best way to clean it up. At-sea, or in-situ, burning is now being used in some areas of the ocean.

Spilled oil must be contained and thickened with fire resistant boom before it can be burned. Now that in-situ burning has been approved, researchers and manufacturers are experimenting with various methods to develop an effective fireboom.

BOOMER: Firebooms need to be tested in waves and flames to see what works and what doesn't. And, believe me, that fire gets hot—around 900 degrees centigrade. That's hot enough to roast any weinie.

Why is Minerals Management Service interested in oil spill technology research and development?

--Marcia P., Port Arthur, Texas

DR. SKIMMER: Oil companies lease offshore oil drilling rights from the U.S. Government. The Minerals Management Service regulates the process of removing oil offshore to ensure that the oil is removed in an environmentally sound manner.

BOOMER: If there's an oil spill, MMS wants to make sure it's cleaned up fast and good. So, MMS funds projects to find better spill clean-up know-how.

Does the water in the Ohmsett tank freeze over in the winter?

--Sheila M., Anchorage, Alaska

BOOMER: It does drop down to freezing sometimes. But, the guys won't let me go ice fishing when the tank starts to freeze. We turn on the wave generator and keep the water churning to break up the ice.

Propane Burn

Continued from page 1

Boom—were evaluated for fire resistance and cooling ability.

Tested were Oil Stop's Hydro Boom blanket, Environmental Marine's Fire Resistant Barrier Blanket, and American Marine's Hydro-Fire Boom.

The blankets were tested to the ASTM F-20 protocols for fire resistant booms. The test protocol calls for three one-hour burning periods in waves with two one-hour cool down periods in waves alone. The test cycle is ended early if the booms degrade substantially.



Joe Mullin of MMS and Ohmsett's Bill Schmidt view the burn



What is it?

E-mail us your answer with your name, company, address, and phone number.

Be one of 10 selected and **WIN** an official Ohmsett shirt and hat!

E-mail: Ohmsettnj@monmouth.com
Subject: What Is It Contest.

U.S. Coast Guard Tests Burned Fireboom



Burned fireboom tested with oil

Most response plans for burning of an oil spill at sea call for the use of a fire resistant boom.

In a September 1998 test, commercial firebooms that had survived burn tests at the U.S. Coast Guard Fire and Safety Test Detachment in Mobile, Alabama were shipped to Ohmsett for further testing. The Coast Guard sponsored the Ohmsett tests.

The firebooms were initially evaluated under ASTM-F20 protocols. The Ohmsett tests were conducted under the same test

protocol used in Mobile to ensure comparability of data. The booms were evaluated for oil containment performance.

Kurt Hansen, Project Manager at the U.S. Coast Guard Research and Development Center, says, "Initial results indicate that the booms' containment performance was the same as before being exposed to fire."

Results of the Ohmsett tests will be used by the ASTM F-20 committee for development of standards for fire resistant booms.

Feasibility Study To Examine Use of Ohmsett Tank for Dispersant Tests

In a Minerals Management Service proposed funded study, SL Ross will determine the feasibility of using the Ohmsett test tank for dispersant testing. The tank is not currently being used in that capacity.

A dispersant is a chemical that breaks oil down into small droplets. Dispersants, combined with wind and wave action, allow spilled oil to biodegrade more rapidly.

The Ohmsett tank has potential for dispersant testing. The tank environment closely simulates ocean conditions. Waves and oil volume can be controlled while the dispersant spreads through the water as in a real ocean oil spill situation.

The feasibility tests will determine whether the addition of dispersants to the tank will negatively affect the water quality. Another issue to be examined is whether the tank's filtration system can process dispersants.

Researchers will examine dispersant testing in the tank if it appears water clarity is not affected in initial lab tests.

If the current filtration system does not adequately remove dispersed oil, the study will look into designing an effective filtration system.

The possibility of containing the dispersants in a segregated section of the tank will be researched if no filtration system works.

Texas A & M and Coast Guard Conduct Trainings

Trainers from Texas A&M University came to Ohmsett in June 1998 to conduct a week-long training for oil spill personnel from Minerals Management Service. Students received training in the tank and in Ohmsett's classroom, with video documentation of their performance.

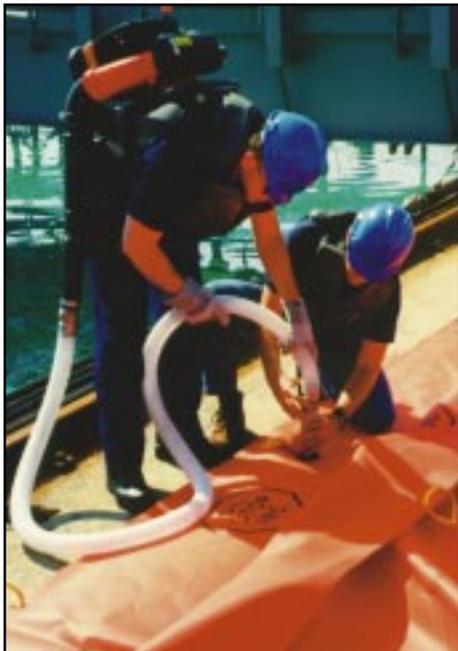
The training included an eight-hour OSHA refresher course. Upon completion of the five day course, students received a certificate from Texas A & M University National Spill Control School.

Personnel from the U.S. Coast Guard also came to Ohmsett in April and in September 1998 for training on the USCG's Vessel of Opportunity Skimming System. The training session emphasized practical hands-on use of the VOSS in realistic conditions in the Ohmsett tank.

Ohmsett provided all training materials, protective clothing and eye and head gear.

Classroom training took place in Ohmsett's modern classroom facilities.

Lectures included discussion on personal protective equipment, heat and cold stress, air monitoring equipment, respiratory protection, work zones and decontamination.



Students practice inflating a boom.



Hands-on training in the tank

A forty-hour Hazardous Material Incident Response Operations Course for First Responders was included in the training.

The training finished up with a debriefing and video viewing of the students' achievements.



Train With The Experts!

Texas A&M Corpus Christi's National Spill Control School
Leading specialists in hazardous material spill training

- Hands-on training in the Ohmsett tank
 - Classroom training and review of videotaped student performance
 - 40-Hour HAZMAT training certificate included
 - Five-day sessions planned for spring and fall 1999
- Sign up now! Call Dr. Steve Barnes (512) 980-3333

Catch us at the following conferences

| | |
|----------------------|---|
| February 15-18, 1999 | ASTM F-20, Hazardous Substances and Oil Spill Response Tucson, Arizona |
| March 8-10, 1999 | International Oil Spill Conference Seattle, Washington |
| May 3-6, 1999 | Offshore Technology Conference Houston, Texas |
| June 2-4, 1999 | Arctic and Marine Oil Spill Program Calgary, Alberta, Canada |
| November 8-11, 1999 | Clean Gulf Biloxi, Mississippi |

Three Sorbents and a Boom

Companies Test their Products

The Ohmsett tank saw tests of sorbents and a sorbent boom in the Spring and in the Fall of 1998.

Product Services Marketing Group used the Ohmsett tank to test "Oil Gator" in May 1998. The sorbent is designed to sink after absorbing oil on the water surface.

Stones were placed in the bottom of the test tank to verify that Oil Gator would not stick to rocks after sinking.

Confining the sorbent to a testing area within the Ohmsett tank was a unique challenge. Ohmsett staff installed a clear vinyl liner through which the sinking sorbent could be video-taped.

PSMG also tested Cell-U-Sorb, a sorbent designed to float indefinitely.

Also tested in May was the High Extension Sorbent Boom, a boom made up of sheets of thin film.

In a one day test, circles of the HESB were rigged in the Ohmsett tank for evaluation in calm water and waves. Later, the boom was strung in front of the tank's "beaches" to test shoreline protection capabilities.

In October, Spilled Recovery Systems tested "FibreSorb." A rectangular boomed testing area in the tank isolated the sorbent with the spilled oil on the water surface.

When FibreSorb appeared to have absorbed all the oil, the sorbent was removed and the time elapsed was recorded.

The Ohmsett Gazette is published by Ohmsett--The National Oil Spill Response Test Facility--to update our readers on activities at the facility. For more information, call: (732) 866-7183.

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University of New Hampshire Returns with Bay Defender



UNH's oil barrier in the Ohmsett tank

In July 1998, Dr. M. Robinson Swift of UNH tested a modification of Bay Defender, the rapid current oil barrier UNH tested at Ohmsett during the summer of 1997.

The project is a Coast Guard and Minerals Management Service funded effort to develop a production prototype oil barrier effective in rapid current.

The present modified Bay Defender evolved from preliminary 2-dimensional flume studies at UNH and two performance tests at Ohmsett that resulted in a redesign.

During the 1998 testing sequence, the modified boom was tested in waves at speeds starting at two knots.

"The tests indicated how volume rate of flow through the system might be modified," says Dr. Swift.

UNH has submitted proposals for continued development of the Bay Defender and, according to Dr. Swift, "plans for testing the next generation at Ohmsett have been included."

UNH Also Tests Modified Nofi V-Sweep Boom

In August of 1998, University of New Hampshire's Dr. Swift tested a Nofi V-Sweep boom modified by UNH in the Ohmsett tank.

The modified Nofi V-Sweep Ocean Boom was developed in a Coast Guard funded project from the UNH fast current oil recovery technology. NOFI V-Sweep booms

are included in the Coast Guard's oil response inventory. The Coast Guard contracted with UNH to modify their V-Sweep barrier for a full ocean fast speed recovery.

"The Nofi V-Sweep contained oil well. We are now working on the use of hydrofoils to hold down the system's nose cone at high speeds," Dr. Swift says.

University of Rhode Island Back At Ohmsett

The University of Rhode Island returned to Ohmsett in May of 1998 to continue testing a computer model developed by Dr. Stefan Grilli. The model is designed to simulate the movement of oil and water against a conventional oil boom.

In August of 1997, Dr. Grilli used a 65-foot conventional boom at Ohmsett to obtain real world data to which he could compare the results of the computer model.

The 1998 test duplicated the conditions

of the 1997 tests and gave URI additional large-scale test information.

"The Ohmsett facility's set-up and execution of the tests allowed us to perform more experiments, which increased the amount of experimental data collected," says Todd Fake, Graduate Research Assistant for the project.

"The more data we can collect, the better job we can do calibrating the model."

New at Ohmsett

Testing, evaluation
and burning of
fireboom



Segregated
testing area



Testing and evaluation
of fast current oil
containment barriers



Hands-on training with
oil spill equipment.



For more information about testing or training at Ohmsett, call

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Check out our web page @ <http://www.ohmsett.com>

Test with oil

Train with oil

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