

# The *Ohmsett Gazette*

Leonardo, New Jersey

Train with oil. Test with oil.

Fall/Winter 2000

## Dispersant Testing Now a Reality

**A**fter months of examination, researchers have determined that testing with dispersants is feasible at Ohmsett.

A dispersant is a substance that breaks oil down into small droplets when applied to a spill, allowing it to naturally biodegrade in the water column.

The advantages of testing dispersants and dispersant application devices in the Ohmsett test basin, over sea trials and lab tests, were clear from the start.

Variables like wave height cannot be controlled in sea trials, but are easily controlled in the Ohmsett test basin.... and the cost of testing in the Ohmsett basin is significantly lower.

Lab tests, though useful, also have their limitations. They can identify the main parameters that govern dispersion, but are poor simulations of the scale and mixing processes that occur at sea.

Research into using the Ohmsett test basin for dispersant testing began last year with laboratory tests conducted by SL Ross Environmental Research, Ltd., of Ottawa, Canada.

The next step was to develop a standard

*Continued on page 5*

## What's Inside

Burns ..... page 2

Coast Guard tests in fast water .... page 4

Navy evaluates skimmers ..... page 5

News Briefs ..... page 6

Where we're going ..... page 7

## Putting the *Spill* in Spill School



Responders recover spilled oil around the USS Detroit at the NWS Earle pier

**I**n September 2000, four students from La Texas A & M Corpus Christi National Spill Control School oil spill management class trained at Ohmsett in the afternoon—and put their knowledge to work at a real spill that evening just a few miles from the classroom door.

Ohmsett is located at Naval Weapons Station Earle on Sandy Hook Bay, New Jersey. On the afternoon of September 14, the Mary L. MacCalister, a tugboat, struck the USS Detroit, a Navy refueling vessel, while escorting her into Earle.

The accident cracked the Detroit's fuel tank, releasing 30,000 gallons of marine diesel into the bay.

Navy oil spill response personnel Chief King Davis, and Petty Officers Michael

*Continued on page 3*



Students enact a spill scenario

# Anybody Got a Light?

## Navy, PCCI, Conduct Fire Resistant Boom and Boom Blanket Tests

**P**CCI, sponsored by the U.S. Navy, tested new fire resistant boom blankets in August of 2000.

This was the second time the Navy tested fireboom and blankets with fire in the Ohmsett test basin. The Navy was first to use Ohmsett's propane burning system when it was installed in 1998.

Researchers tested each boom blanket with propane-fueled flames in waves.

The Navy based their tests on American Society for Testing and Materials (ASTM) protocol, and also tailored each test to what they wanted to learn about each piece of equipment, varying the testing time periods.

The boom and blanket system was tensioned to realistic towing forces over the propane bubbler.

PCCI also evaluated standard fireboom positioned in a "U" shape around and close to the burning area.

This setup simulated actual contact with the fire, and tested the fireboom's and blanket's tolerance to heat at close proximity.



Burning fireboom in the test basin



Closeup of burning fireboom



Ohmsett crew deploying fireboom



Rigging the fireboom

## Minerals Management Service Funds Fireboom Tests

**I**n an October 2000 test funded by the U.S. Minerals Management Service, SL Ross Environmental Research, Ltd., of Canada evaluated two previously untested firebooms in the Ohmsett test basin.

These evaluations will help in preparing a new ASTM standard guide for in-situ burning.

Oil spill contingency plans now include in-situ burning as a spill response for blow-outs and pipeline releases—and regulators are faced with new challenges.

Much of the response equipment for in-situ burns has not been evaluated under conditions produced by actual fire. This means that a fireboom's survivability and effectiveness can be questionable.

The advantages of testing equipment in fire with Ohmsett's underwater propane bubbling system are clear—literally. The system produces no soot, so no permit is required to operate it.

The air-injected propane system has been



Fireboom being evaluated in waves

carefully designed to simulate the actual temperatures and thermal insult received by a fireboom during a real in-situ burn.

Researchers can easily see boom behavior during testing, and can instantly turn off the propane, thus the fire, to examine

the boom at any stage of the test.

The October tests were part of an ongoing project to evaluate firebooms. This project is now complete, and all fireboom prototypes and commercially available firebooms have been evaluated.

## Why Texas A & M Conducts Spill Control Courses at Ohmsett

Instructors from Texas A&M Corpus Christi National Spill Control School regularly conduct courses at the Ohmsett facility.

In June 2000, they trained U.S. Minerals Management Service personnel with oil spill management responsibilities. In September 2000, U.S. Navy and U.S. Coast Guard oil spill response personnel took the course.

These courses, like all the classes taught at Ohmsett, help spill response managers more efficiently plan for and respond to a spill.

The training relationship between Ohmsett and Texas A&M grew out of the Oil Pollution Act of 1990.

OPA '90 ensured long term use of Texas A&M Corpus Christi National Spill Control School to improve the industry's and government's spill response capabilities through training.

Also under OPA '90 provisions, MMS directed Ohmsett's long term use as an oil spill technology research, training, and testing facility .

Recognizing their shared goals, Ohmsett and Texas A&M teamed up to conduct National Spill School at Ohmsett. The first National Spill School session was held at Ohmsett in 1997, and many sessions have been conducted since then.

The U.S. Coast Guard has also chosen Ohmsett as its preferred training site for specialized OSRT, lightering, and "boot camp" training with oil.

## Spill School

*Continued from page 1*

Croslis, Joseph Arch and Randolph Insley, finished their training that afternoon and were launched into the real world of oil spills when they were called to assist with the cleanup.

The four Navy officers were part of a class that included U.S. Coast Guard spill response personnel.

"The (Detroit) spill was on the eve of the last day of class," said Croslis. "The ironic thing is that the last day of class we did a mock scenario of a spill (taking place) in the same area as the actual spill."

Davis, Croslis, Arch, and Insley worked all night at the Detroit spill in Sandy Hook Bay. Croslis assisted onshore, helping to coordinate boat movements and recover oil into shore based trucks.

"The training I received from the Ohmsett course was very beneficial," said Croslis. "I could watch the Coast Guard Officer in Charge and understand what she was doing and also (I knew) what to expect next."

Arch was assigned first to help deploy boom and contain oil around the Earle pier,

then to deploy from a skimmer. Arch observed National Spill School lessons in action.

"I did notice that what I had learned was, in effect, actually happening at the spill site," said Arch. "...a command post was set up where everything was being coordinated in an orderly fashion."

The Detroit spill was the first major spill either Croslis or Arch have assisted with.

"The Coast Guard, Navy, and civilian contractors did an outstanding job protecting ...sensitive areas," said Croslis.

"Overall, it was a very smooth operation, cleanup went well, and I honestly believe that the training I received was an asset to the smooth operation," said Croslis.

Students probably won't have a real spill to practice on at the next Spill School session. But, a new concept for the training classes includes a close brush with reality—field exercises in Sandy Hook Bay.

Students will deploy boom, run a skimmer, and clean the shoreline in the realistic bay setting, applying what they have learned in the Ohmsett classroom and test basin.

Close enough to the real thing, for now.

## Train With The Experts!

*Texas A&M Corpus Christi's National Spill Control School*  
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- Confined space entry training
- End-of-session spill scenario



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email [nscs@tamucc.edu](mailto:nscs@tamucc.edu)

## Ohmsett Waves Make Real Emulsions

**A**lthough researchers have learned much about emulsion formation from lab tests, little is known about the emulsification process at sea.

A series of tests conducted by Environment Canada at Ohmsett addressed this issue.

Phase I of testing took place in July 2000, followed by Phase II in November 2000.

Environment Canada researchers Pat Lambert and Ben Fieldhouse created emulsions in the test basin with mid-scale waves and

took samples of the emulsions for lab study.

Merv Fingas, chief of the emergencies science division at Environment Canada, was present for Phase II testing.

The test basin at Ohmsett is the logical place to study emulsions formed by waves, and explore differences between naturally and artificially formed emulsions.

Environment Canada researchers plan to return to Ohmsett for Phase III and IV emulsion testing in July, August, and October of 2001.



**Researchers Lambert and Fieldhouse take emulsion samples.**

# Coast Guard Tests Fast Water Containment Technology

**T**he U.S. Coast Guard Research and Development Center is in pursuit of better technology to contain and clean up oil spills in fast currents.

In May through July, and again in October of 2000, the Coast Guard came to Ohmsett to evaluate various oil spill recovery systems.

Containing and recovering spilled oil in fast water present difficult logistical challenges.

In the past six years, 58% of oil spills—including a recent 500,000-gallon oil spill on the Mississippi river—have occurred in water moving at 1 to 6 knots. Water traffic shutdowns and significant environmental damage are the frequent, unfortunate result.

At Ohmsett, the Coast Guard R and D Center tested a variety of fast-water systems: a dynamic inclined plane skimmer, a series of diversion booms, a floating oil sorbent recovery system, flow diverters, and a rope mop skimmer.

## **JBF DIP 600 Modified and Tested**

The Coast Guard tests at Ohmsett began with modifications to the JBF DIP 600, a high-speed, in-line, dynamic inclined plane skimmer.

The JBF skimmer was first evaluated at Ohmsett in a Coast Guard funded test in 1997, then again in 1999.

In the fall of 1999, MAR, Inc. was awarded a contract to design a baffle plate for the skimmer to improve performance by preventing entrainment.

With modifications completed, the skimmer was evaluated once more in October 2000 in the Ohmsett test basin.

## **Fast Water Diversion Boom Analyzed**

In early June 2000, the Coast Guard, assisted by SL Ross Environmental Research, Ltd., tested fast water diversion booms.

Tests measured the loads imposed on a containment boom towed in a diversion configuration. The tests included two boom depths and three diversion angles.

Most of the tests were carried out in calm water conditions.

Based on the results of the tests, researchers were able to correlate tensile force developed in a boom versus the projected area of the submerged portion of the boom and the tow speed.

## **Computer Systems Corporation Flow Diverter Evaluated**

Later in June 2000, the Coast Guard put Computer Systems Corporation's flow diverter into the test basin.

CSC's flow diverter is a floating deflector comprised of a series of parallel wing-like hydrofoils.

Lift and drag forces on the hydrofoils cause the system to sustain a steady angle to the current. This changes the direction of the current and diverts oil to the shore.

Flow diverters show promise for effectively concentrating oil into rows for skimmer collection.

Researchers tested for the effectiveness of the paravane flow diverters in deflecting oil in shallow, as well as deep, water in currents up to 6.5 knots.

## **Sorbent Boom Tested**

In July 2000, the Coast Guard tested floating oil sorbent booms for buoyancy and absorption effectiveness.

The booms were modified versions of the "Sheen Devil", a product marketed by Mycelx Technologies to remove small amounts of oil and sheen from slow and stagnant water surfaces.

The sorbent boom was tested in calm and harbor chop wave conditions and towed at 1, 3, and 5 knots.

## **Rope Mop Skimming System Tested**

Also in July 2000, the Coast Guard tested a rope mop skimming system.

In a joint effort, Ro-Clean DESMI and Hyde Products, Inc. modified the submergence plane and rope mop system concept to create an effective fast-current surface skimming system.

The towable rope mop system was built to be light and ride over the waves like a catamaran.

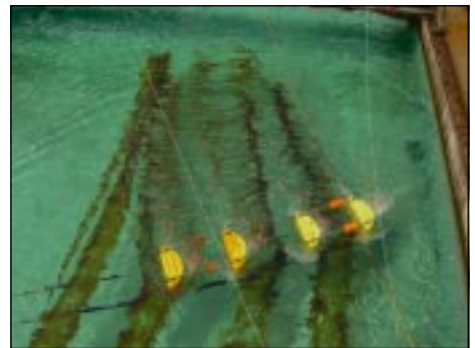
Based on a preliminary drive system evaluation, researchers determined the number of mops needed and rigged the system for the oil recovery tests.

Tow speeds and surface conditions were varied for the test series.

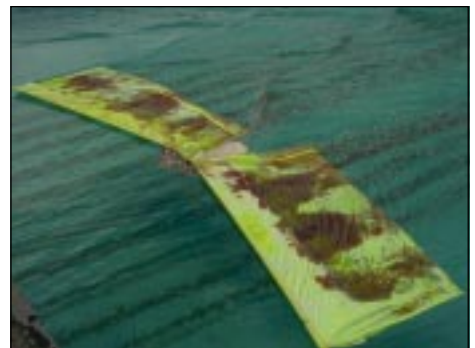
**The Ohmsett staff has finished gathering data from these tests, and the report will be available from the Coast Guard R and D Center.**



**Analysis of diversionary booming**



**A flow diverter deflecting oil**



**One of the modified sorbent booms**



**Rope mop skimmer recovering oil**

## Navy Comes for Skimmer Testing

**T**he Naval Facilities Engineering Service Center (NFESC) chose the Ohmsett facility as the place to conduct a two year study on skimmer performance and efficiency.

During the study, which will conclude in 2001, the NFESC hopes to evaluate a total of ten skimmers.

NFESC's Mark Foreman, who is supervising the study, said the NFESC chose Ohmsett for testing because "Ohmsett is a unique facility that allows full scale testing of skimming equipment with oil under controlled conditions that are similar to a real cleanup scenario."

The Navy will use the skimmer evaluation results to select future response equipment for naval shore facilities.

In May, and again in September 2000, the NFESC evaluated five skimmers, testing for their ability to recover low viscosity, lightweight oils in harbors, inland waters, and sounds.

The skimmers were tested at varying speeds and with different surface conditions.

Foreman said, "The skimmers that have been, and will be, selected for performance testing meet 'rapid response' skimmer requirements...size, weight, speed, draft, etc."

The NFESC tested the Kvichak/Marco Rapid Response Skimmer, the Willard/Action Petroleum Rapid Response Oil Skimmer, the Kepner Plastics Sea-Vac Heli-Skimmer System, the JBF-Slickbar DIP skimmer, and the SMAVE Standard 4 skimmer.

Researchers evaluated the skimmers for recovery efficiencies, throughput efficien-



**Two of the skimmers evaluated by the Naval Facilities Engineering Service Center**

cies, and recovery rates. Conditions in the Ohmsett test basin mimicked those seen during naval shore facility oil spill response operations.

All five skimmers were deployed in the Ohmsett test basin in full-scale design configuration.

A Navy report that includes observations and findings will be published one year after conclusion of the evaluations, according to Foreman.

## Dispersants

*Continued from page 1*

protocol for the testing of dispersants and dispersant application devices—a procedure similar to the Ohmsett test protocol for booms and skimmers—that would be accepted by the oil spill response community as the standard for realistic dispersant testing in the U.S.

The concept of the protocol tests was to obtain benchmark data on how closely dispersant tests conducted at Ohmsett could reproduce the effectiveness results of simi-

lar tests in the lab and in ocean trials.

In a report completed in March of 2000, SL Ross and Mar, Inc. reported that dispersant testing is feasible at Ohmsett.

MMS envisions that tests involving dispersants will be scheduled for the end of the testing season so that the time necessary to filter the tank water will not interfere with other tests.

See "Neat Sweep System Tested", this page, for more about the first dispersant application system test at Ohmsett.

## They Take Theirs "Neat" Neat Sweep System Tested

**S**piltec and Elastec American Marine tested their newly developed dispersant application system in the Ohmsett test basin in the Fall of 2000.

The study was funded by Exxon-Mobil Corp.

This was the first test using dispersants ever to be conducted in the Ohmsett test basin.

The Neat Sweep is part of an oil concentration and dispersant application system that herds spilled oil via a broad, open-apex, U-boom configuration to a 10-foot wide dispersant application zone (DAZ.)

Dispersant (in this case, Corexit 9500) is applied "neat" (undiluted) to the dispersant application zone.

With this technique, dispersant can be applied in a single pass to oil encounter swaths of several hundred feet while limiting the actual application swath to 10 feet.

Al Allen, of Spiltec, liked being able to control test conditions in the Ohmsett test basin.

"The ability to control the wave conditions, towing speed and oil encounter rate allowed the developers of the Neat-Sweep to examine important hydrodynamic characteristics," he said.

Allen was pleased with the results of the tests at Ohmsett.

"Based on the results of these tests," he said, "the developers of Neat Sweep feel that the DAZ system is an effective way to apply dispersants "neat" while enhancing the chemical's efficiency, and controlling the amount of dispersant used."



**Neat Sweep injects Corexit 9500**

# News Briefs

## Coast Guard Returns for More Training With Oil

The U.S. Coast Guard has chosen Ohmsett as its preferred training site.

In May and August 2000, Coast Guard instructors conducted a five-day "Boot Camp" training at Ohmsett for incoming personnel. In September 2000, the Coast Guard conducted "Oil Spill Recovery Equipment Operator Training" and "Lightering" for USCG National Strike Force personnel.

The training programs, which are based on the NSF qualification requirements, provide both classroom training and experience in actual oil spill recovery and viscous oil transfer.

The Coast Guard has conducted their boot camp training at Ohmsett for several years, and added the lightering component in 1999.

## Ohmsett Mentors High Tech Student

The Ohmsett facility has been asked to participate in the Monmouth County, New Jersey, High Tech High School mentorship program.

The High Tech High School is a selective advanced technical high school for students bound for engineering, science, or computer related careers.

Starting in January, student Frank Arban will receive high school credit, and get some experience in a technological setting, under the supervision of Ohmsett staff.

Arban will help out at Ohmsett two mornings a week, doing such tasks as running the cameras, working in the lab, and programming computers.

Ohmsett will also continue to host facility tours and provide technical advice to high school students.

## New Staff Join the Ohmsett Team

A new test director/engineer, three new environmental technicians, and two part-time instructors have joined the staff at the Ohmsett facility

The increase in staffing is to accommodate Ohmsett's growing testing and training schedule.

## Engineer/test director Alan Guarino

graduated from Fairleigh Dickinson University in Madison, New Jersey, and worked most recently for the New Jersey Department of Environmental Protection as an air compliance and enforcement engineer.

**Environmental technician Michael Pezzino** comes to Ohmsett with nine years of experience in the oil industry. He worked for Mobil Oil Corporation maintaining and repairing pumps and hydraulic systems.

**Robert McKnight, environmental technician**, formerly worked at Asbury Syrup, Paper and Gas, where he was responsible for repairing and maintaining the manufacturing equipment.

**Environmental technician Robert Stewart** has over ten years of experience in spill response and hazardous materials handling. He worked previously for Capoano Contractors as an equipment operator.

**Instructors Thomas Walker and Al Kreiling**, who will help teach the Coast Guard specialized training courses at Ohmsett, bring with them a wealth of Coast Guard experience.

**Walker** has had 20 years experience in the Coast Guard Marine Safety Program, most recently as Chief, Port Operations at the Coast Guard Marine Safety Office in New Haven, Connecticut.

**Kreiling** has over 22 years Coast Guard experience. He most recently served aboard the Coast Guard cutter Elm as buoy deck and SORS supervisor, and previous to that he worked at the National Strike Force Coordination Center.

## University of Miami Back to Test Prototype

University of Miami researcher Dr. K. Vincent Wong returned to Ohmsett in August, and again in December 2000, to evaluate a working concept of an oil ramp boom. He previously tested an oil entrainment inhibitor in 1997.

The ramp boom model is for use in relatively fast currents. The design is based on an inclined ramp-type boom concept.

The University of Miami submitted a draft report in January 2001, which will be finalized after review by MMS.

## UNH Returns



## University of New Hampshire's high-speed boom

**The University of New Hampshire returned to Ohmsett** for the fourth time in three years in an ongoing effort to develop a flexible skimming system.

The UNH system is based on the submergence plane concept, and uses a hydrofoil to keep the submergence plane from rising due to planing forces. The submergence plane forces the oil downward to enter a containment region where the oil is recovered by a skimmer.

"This system is a little different from the previous flexible barriers," said Dr. M. Robinson Swift, professor of mechanical engineering, who heads the project. "The forward assembly is rigidly framed, and it's designed to go alongside a buoy tender, rather than being anchored."

"Since it's essentially a VOSS system, we were concerned about top tow speed apart from oil collection," said Dr. Swift.

"This was tested successfully (for stability) at Ohmsett at a carriage speed of 6.5 knots," said Dr. Swift. "We tested a half scale model, so this speed actually corresponds to a ...full size speed of 9.2 knots."

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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# The year 2001 marks the 25th year since Ohmsett was built. Where we've been...

- 1974 The Ohmsett facility is constructed by the EPA at NWS Earle.
- 1988 Operations are suspended due to lack of funding.
- 1989 The U.S. Navy acquires the facility.
- 1990 OPA '90 mandates the use of Ohmsett. MMS refurbishes the facility.
- 1992 MAR, Inc. begins operating Ohmsett for Minerals Management Service.
- 1994 Ohmsett use is expanded for a broad spectrum of testing.
- 1995 Ohmsett use grows to 80 test days this year.
- 1996 MAR, Inc. is chosen to operate the facility for the second time.
- 1997 The test basin undergoes a major refurbishment.
- 1998 Firsts: propane burns, training begins. Ohmsett use grows to 114 test days this year.
- 2000 More firsts: actual dispersant testing, emulsion formation. Ohmsett use expands to 131 test days this year, the maximum to date.



Ohmsett program manager Bill Schmidt, left, with MMS contracting officer Lisa Goins-Bernsten, and MMS technical representative Jim Lane

## ... and where we're going

### We'll be at these conferences in 2001

**International Oil Spill Conference**  
 March 26-30, 2001  
 Tampa, FL

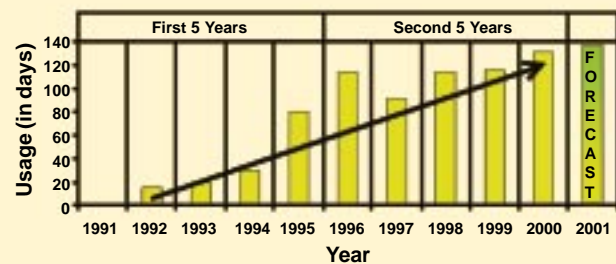
**Arctic and Marine Oil Spill Program**  
 June 13-15, 2001  
 Edmonton, Alberta, Canada

**Clean Gulf**  
 October 23-25, 2001  
 Mobile, AL



Bill Schmidt reveals his Viking ancestry at a conference in Stavanger, Norway.

### Ohmsett's Test Basin Usage



### Upcoming Tests & Training

#### U.S. Coast Guard

- Oil spill response training
- Boot Camp and lightering course

#### Minerals Management Service

- Temporary storage device and decant studies

#### U.S. Navy

- Skimmer evaluations
- Oil sensor evaluation

#### Texas A&M

- Oil spill response training

#### Environment Canada

- Emulsion formation studies



Ohmsett training gets a thumbs-up!

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# ***Ohmsett: the National Oil Spill Response Test Facility***



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