

# The Ohmsett Gazette

Leonardo, New Jersey

Train with oil. Test with oil.

Spring/Summer 1998

## Spill School Now in Session

A recently forged relationship with the National Spill School at Texas A&M University helps make Ohmsett a premier training site for spill response personnel.

The National Spill School is recognized as the leading specialist in hazardous material spill training. In 1997, instructors with the National Spill School teamed up with Ohmsett to conduct training sessions at the facility.

Ohmsett has scheduled two training sessions with Texas A&M for the summer of 1998, and can book more for public and private sector personnel.

Another notable development—part of Ohmsett’s recent refurbishment effort—is the addition of a 30-seat classroom with an array of audiovisual equipment

Students can receive classroom training and review and critique their videotaped performance on equipment in the tank.

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## Ohmsett Refurbishments Enhance Facility’s Capabilities



Love that clean water! Ohmsett’s tank, ready to go

Newly refurbished and filled with 2.6 million gallons of sparkling, clear water, the tank at Ohmsett, the National Oil Spill Response Test Facility, was ready for the 1997 testing season.

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

The Ohmsett facility is located on Sandy Hook Bay in Leonardo, New Jersey. Ohmsett has been operated and maintained by MAR Incorporated under contract to the U.S. Minerals Management Service (MMS), Department of the Interior since 1992.

Ohmsett is available to both the public and private sector for evaluation of oil

response equipment such as booms, skimmers, temporary storage devices, dispersants and for research in remote sensing, oil characteristics, and controlled oil burns.

“The unique testing facilities at Ohmsett are essential if we hope to develop the technology and procedures required to effectively respond to future oil spills,” says Joseph Mullin, MMS Program Manager for Oil Spill Response Research.

“In the event of an oil spill, do we really want to rely on equipment and techniques that have not been properly tested?”

Ohmsett’s concrete tank measures 667 feet long and 65 feet wide, with a water depth of eight feet. Conditions simulating actual spill situations can be created with

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# Building a Better Boom

## Universities Test Results of Innovative Oil Boom Research

**B**esides educating students, research is what universities do best—and besides training, testing is what Ohmsett does best. When professors from three universities—University of New Hampshire, University of Miami, and University of Rhode Island—wanted to validate the results of their research, they came to Ohmsett to test.

**I**n June 1997, and again in August, **Dr. M. Robinson Swift from the University of New Hampshire tested a rapid current oil boom.** Dr. Swift is heading a Coast Guard and Minerals Management Service funded effort at UNH to develop a production prototype oil barrier effective in rapid current.

Dr. Swift's first year of research resulted in development of a model of a new submergence plane boom. The second year entailed designing, constructing and testing a full-scale prototype.

The goal of the third year of research was to refine the submergence plane boom design for commercial manufacture and application. In June, two prototypes were towed and evaluated with oil in Ohmsett's tank.

"The primary advantage of testing at Ohmsett is that real oils can be used," says Dr. Swift. "Another important characteristic is the size of the tank, which allows us to test full-size prototypes."

Dr. Swift returned to Ohmsett in August to test the more promising of the two prototypes.

"Ohmsett testing confirmed our general design approach, gave us a quantitative basis for choosing between two design alternatives, and enabled us to optimize design parameters," says Dr. Swift.

"The full-width flexible barrier retained 98% of Sundex oil at two knots. This has encouraged continued development of a commercial prototype."

Dr. Swift will be testing an improved prototype for final evaluation at Ohmsett in the summer of 1998.



The University of Miami's entrainment inhibitor system

**A**lso in June 1997, **Dr. K. Vincent Wong, from the University of Miami, tested an oil boom entrainment inhibitor system.** Dr. Wong tested at Ohmsett to determine whether his entrainment inhibitor system would increase the speed at which a boom could be towed before entrainment occurred.

**"I was impressed by the efficiency of the Ohmsett crew."**

Ohmsett's underwater cameras were put to good use recording the action and showed the entrainment inhibitor system did well in calm water conditions.

"The entrainment inhibitor system was successful in allowing us to increase the tow speed and maintain oil recovery efficiency," says Phil Coyne, Test Engineer.

"In calm water conditions, adding the entrainment inhibitor system to the boom allowed us to increase the tow speed 62.5% to a maximum of 1.3 knots."

**A**t the University of Rhode Island, **Dr. Stephan T. Grilli has developed a computer model to simulate the movement of oil and water against a conventional oil boom.** When Dr. Grilli wanted to compare his virtual scenario to the real world, he came to Ohmsett in August.

Dr. Grilli's aim was to obtain data for comparison to the computer model from actual tests using a boom in oil. Ohmsett supplied a 65-foot conventional boom towed at increasing speeds across an oil slick with the tank's moveable bridge.

"The results were better than anticipated," says Dr. Grilli. "The tests at Ohmsett confirmed what we expected. The results were comparable to lab tests. At Ohmsett we used much more oil—160 gallons as compared to 10 gallons in the lab test."

Dr. Grilli plans to return to Ohmsett in 1998 for further testing. "The info we gathered was useful," he says. "I was impressed by the efficiency of the Ohmsett crew."

"I don't know of any other place where you can test with oil on a full scale."

# Coast Guard Breaks the Speed Limit

## Evaluates High Speed Skimmers, Chooses Dynamic Inclined Plane

**W**hen the Coast Guard went shopping for a new high-speed skimmer last year, they heeded conventional wisdom to “try before you buy.”

Under consideration were four in-line high-speed skimmers from different manufacturers. The Coast Guard tested them all in Ohmsett’s tank in October 1996.

“Testing skimmers is a unique challenge,” says LCDR Chris Doane, Chief of the U.S. Coast Guard’s Pollution Response Systems Team. “We were looking for a system that would operate at speeds greater than three knots.”

Ohmsett’s moveable bridge system and wave making capabilities—the wavemaker can create waves as high as three feet—allowed the Coast Guard to tow the skimmers at the required speeds and sea states.

“The ability of a skimmer to recover oil cannot be fully evaluated based on a written proposal or by recovering water or popcorn,” says LCDR Doane. “The only

way to really evaluate a skimmer’s ability to recover oil is to test with oil; Ohmsett provides us the ability to do full-scale testing with oil.”

Initially, all four skimmers were able to recover at least half the oil when towed at three knots in calm waters and went on to the next step—to determine the maximum speed at which a skimmer could recover at least half the oil in calm waters and in waves.

**“There isn’t a time when you can’t take a system into Ohmsett’s tank and learn something about it.”**

Testing yielded plenty of accurate data on which the Coast Guard could base their purchase decision.

“The wide range of conditions

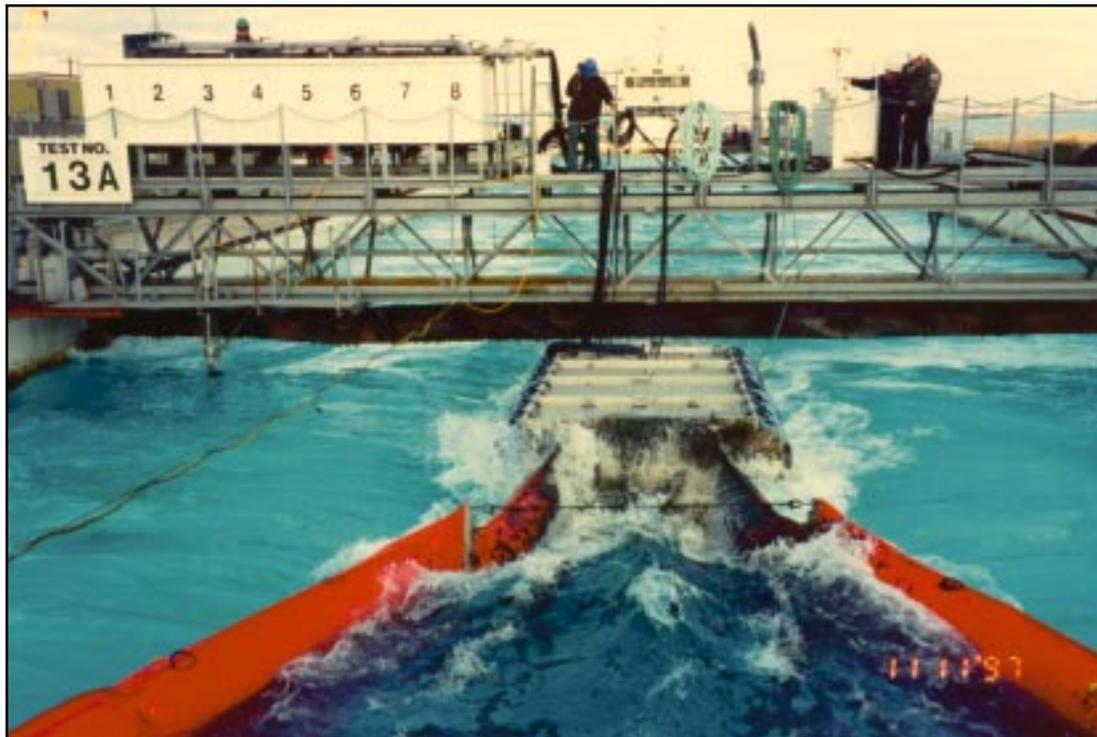
characterized the strengths and deficiencies of each system. The number of tests performed gave us confidence in the measured overall performance,” says David DeVitis, Ohmsett Test Director.

**Ultimately, it was the JBF Dynamic Inclined Plane skimmer that best met the Coast Guard’s criteria.**

The Coast Guard recommended some design changes to the JBF DIP to more closely meet specifications, and in October



**Joe Mullin, MMS Program Manager and LCDR Chris Doane, all smiles after a successful testing series**



**JBF’s Dynamic Inclined Plane skimming through the waves**

1997 brought the improved skimmer back to Ohmsett for further testing.

The JBF skimmer was put through the same paces as before and again performed to the Coast Guard’s satisfaction.

LCDR Chris Doane was pleased with the results.

“Coming back with a winning system, we were able to assess that the system we selected was useable,” he says.

“There isn’t a time when you can’t take a system into Ohmsett’s tank and learn something about it.”

## Ohmsett Refurbishment

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the wave generating system and a wave dampening artificial beach.

Moveable bridges can tow equipment at speeds up to 6.5 knots. Customers and technicians can view tests from the bridges or from the control tower above the tank, while state-of-the-art data collection and video systems record test results.

Private companies and universities such as the Massachusetts Institute of Technology have used Ohmsett on a reimbursable basis over the past few years.

Government agencies have also used the facility, including the U.S. Coast Guard, the U.S. Navy, the Environmental Protection Agency, and the Canadian Coast Guard.

"Ohmsett has proven to be a very effective tool in our equipment acquisition process," says LCDR Chris Doane, Chief of the U.S. Coast Guard's Pollution Response Systems Team.

LCDR Doane's team has tested various spill response equipment at Ohmsett, including four high speed skimmers in 1996.

"Ohmsett was an invaluable asset in making our selection," says LCDR Doane. "I'm not aware of any other facility where this level of testing can be done."

**Now Ohmsett's capacity to provide a unique service is enhanced by ongoing renovations at the facility.**

The test tank was drained for sandblasting and resealing with epoxy paint. Draining the tank also offered an opportunity to evaluate and repair the tank's extensive valve system.

A new chlorinator to prevent algae growth keeps the water clear. An additional oil recycling system to separate oil from water after a test will be installed in the Spring of 1998.

A newly purchased digital camera allows testing photographs to be taken and immediately e-mailed to the customer if he or she cannot be present for the test.

LCDR Doane was in his Washington office waiting for confirmation that the skimmer he wanted evaluated at Ohmsett had been delivered and was ready for

testing. He received confirmation via his computer.

**"The unique testing facilities at Ohmsett are essential if we hope to develop the technology and procedures required to effectively respond to future oil spills,"**

"I had a picture pop up on my computer screen . . . there was the skimmer in the tank," recalls LCDR Doane. "No doubt about it, Ohmsett was ready to test."

A new underwater camera with zoom, pan, and tilt capabilities will augment Ohmsett's data collection system. The underwater camera gives a complete view of what goes on beneath the water during testing.

Incidentally, the Ohmsett staff is also benefitting from the renovations. When the cold, damp air blows in off Sandy Hook Bay in the winter, the main control room and offices will be insulated, new heating and air-conditioning system installed, and all the old, drafty, leaking windows replaced.

Also in the works is the installation of new drop ceilings, cubicles, carpeting, and furniture. And, to top it all off—a fresh coat of paint.

*For information on tours of the Ohmsett facility, call (732) 866-7183*

## Boomer and Dr. Skimmer answer your questions...



Entrainment is when friction between the water and the oil causes the oil droplets to be torn off and pulled under the boom.

So, we have to go slowly to be sure too much of the oil doesn't escape under the boom.

### **Boomer:**

But, trying to steer a boat going that slow is kind of difficult. That's why these college guys are trying to come up with a boom we can tow at faster speeds.

**W**hat is the biggest piece of oil spill equipment you've tested at Ohmsett?

- James C., Newmarket, NH

### **Boomer:**

The biggest thing we've tested at Ohmsett so far was this fifty-ton monster of an oil skimmer—forty feet long, twenty-six feet wide and ten feet high. The thing was so huge, our on-site cranes couldn't lift it. We had to get special cranes to come in to get it in and out of the tank.

**W**hy do boats towing boom have to travel so slowly collecting oil? Why can't they go faster?

-Christine R., Wayland, MA

### **Dr. Skimmer:**

Research conducted in the late 1960's showed that entrainment occurs when boom is towed at speeds greater than 3/4 of a knot.

**W**hat is an oil emulsion?

- Langley G., Bainbridge Island, WA

### **Dr. Skimmer:**

When some oils are left on the water in waves, they can mix with the water to form a larger volume of contaminated oil. That's called an emulsion.

Some stable oil-in-water emulsions can contain as much as 80% water with viscosities hundreds of times greater than the original spilled oil. Some crude oil emulsions I've seen have viscosities as high as 100,000 CentiStoke.

### **Boomer:**

That old saying "oil and water don't mix" just isn't true. Oil and water can mix into something like mayonnaise—but I sure wouldn't want it on my bologna sandwich! Some equipment can't pump emulsions without something really scary happening. That's called a mess.

## Spill School

*Continued from page 1*

Companies and agencies can also configure a training session to their own specific needs, using their own equipment. Strictly hands-on training sessions are also available without the classroom portions taught by Texas A&M.

**The Coast Guard was first to take advantage of the opportunity to train with Texas A&M** in July of 1997. Crew from buoy tenders WILLOW, JUNIPER, and KUKUI, and members of the Atlantic Strike Team trained to operate the USCG Vessel of Opportunity Skimming System (VOSS).

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

A valuable feature at Ohmsett is a half-hull that can be placed in the tank. The VOSS was placed alongside the hull as it would be in actual use, and the crew practiced recovering oil under conditions close to the real thing.

**The Coast Guard returned in September 1997**, when members of the Coast Guard Spill Response Strike Team came for practice training. The aim this time was to increase proficiency in use of a fence boom and weir skimmer.

The recovered oil was collected and measured at each test and, by the end of the week, students had a clear picture of how their performance had improved.

“They know how to use their equipment already,” says Phil Coyne, Ohmsett Test Engineer. “But they wanted to become more proficient at recovering oil. They wanted to practice.”



Coast Guard crew inflating the boom...



...and operating the VOSS controls from the half hull.

“You can’t rehearse with oil in the ocean. You can use popcorn and other biodegradable substitutes, but oil is a fluid and popcorn is a solid body and it behaves differently from oil.”

**“We plan to make spill training at Ohmsett part of our schedule.”**

**Also in September 1997, the Navy put a belt skimmer in Ohmsett’s tank to train the Navy crew** charged with responding to oil spills in Sandy Hook Bay, New Jersey.

After a half day of classroom training, the crew practiced rigging their equipment in the tank—and the next day began practice runs recovering oil.

LT Chris Chadwick, NWS Earle Port Officer says, “Ohmsett is the only place I know of where you can train with oil. You can train all you want using substitutes, but there is no substitute for real spill experience.”

LT Chadwick plans to send another group of Navy spill personnel to Ohmsett for two weeks—and maybe more—in 1998. “The Navy has such a high turnover in personnel, you need to train constantly,” he says. “We plan to make spill training at Ohmsett part of our schedule.”

*For information on booking a training session date at Ohmsett, call (732) 866-7183*

**Sign up now for hazardous materials training at Ohmsett with Texas A&M Corpus Christi’s National Spill Control School!**

### ***Learn and see!***

- the effects of recovering oil in current and waves
- how to pick up more oil
- hands-on hazardous material training

Two 5 day classes planned, starting  
June 8, 1998  
September 28, 1998

Call Dr. Steve Barnes  
(512) 980-3333

# PTC Enterprises Tests New Sorbent

**W**hen PTC Enterprises prepared to introduce MEGASorbent—a biodegradable sorbent material to soak up oil in marine environments—they wanted to be sure they were launching a product that really worked.

The company had tested MEGASorbent in the lab, but wanted a third party evaluation of the sorbent in a large-scale controlled environment. In September 1997, PTC Enterprises came to Ohmsett for testing.

“A proof of application by third party evaluation documents you against future liabilities,” says Jim Impero, Acting President of PTC Enterprises.

“Documentation costs you money. Ohmsett made it affordable for a small company that’s really watching the bottom line to come test.”

Testing at Ohmsett offered a measure of precision and a range of documentation not found in most field-testing situations.

**“You can be much more scientific at Ohmsett. You can be a laboratory on a field scale and this is what new product development really needs.”**

“If there is an area with a small spill, regulatory agencies will allow you to use your material and document how it works, but that’s not an application where you can document everything,” says Jim Impero.

“You can be much more scientific at Ohmsett than with a field experiment. You can be a laboratory on a field scale and this is what new product development really needs.”

The evaluation of MEGASorbent was carried out on a variety of oil slicks in calm water and wave conditions.

Says Jim Impero, “You can say anything about the product, but you have to back it

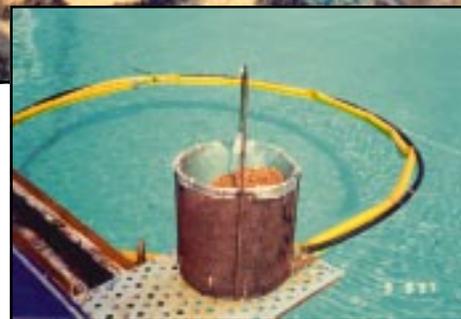


**MEGASorbent in action...**

up. Honestly, you have to tell the truth. The product has to do what you say it does.”

Does MEGASorbent do what they say it does? According to Phil Coyne, Ohmsett Test Engineer, “MEGASorbent turned out to have the potential to be an effective sorbent in a spill situation. The fresh MEGASorbent held almost 100 percent of the oil it contacted.”

PTC Enterprises plans to return to Ohmsett in the spring of 1998 with an eye to expanding MEGASorbent’s application possibilities.



**...and the results**

For this next phase of testing, the company will use a boat, modified with a blower mechanism, to distribute MEGASorbent over a spill and retrieve the oil-soaked sorbent.

## Catch us at the following conferences

March 24-26, 1998	ASTM F-20, Hazardous Substances and Oil Spill Response Memphis, TN
May 4-7, 1998	Offshore Technology Conference Houston, TX
June 10-12, 1998	Arctic and Marine Oil Spill Program Edmonton, Alberta, Canada
October 5-7, 1998	Remote Sensing for Marine and Coastal Environments San Diego, CA
October 12-14, 1998	Clean Gulf Biloxi, MS

# NEWS BRIEFS

## Ohmsett Test Engineer on ASTM Task Force to Develop Boom Testing Standard

Phil Coyne, Ohmsett Test Engineer, presented the need to establish a boom testing standard at an October, 1997 American Standard for Testing and Materials committee meeting.

Currently, the ASTM does not have a standard boom testing protocol in place.

The presentation to the ASTM Hazardous Materials committee included boom testing methods used at Ohmsett.

The committee formed a task force to develop a standard, headed by Phil Coyne and Steve Potter of S.L. Ross, a Canadian environmental consulting firm. The task force expects to present a boom testing protocol to the ASTM committee in March, 1998 in Memphis, Tennessee.

## Navy Tests Multi-Spectral Fluorescence Oil Spill Sensor

The U.S. Navy tested their Underwater Multichannel Fluorometer System (UMFS) in Ohmsett's tank in August, 1997.

The Navy designed the UMFS for long-term continuous use to detect spills from marine facilities, vessels, or leaks from pipelines. The sensor finds dissolved and floating oil or chemicals in the water using ultraviolet light.

The UMFS was tested on a variety of oil slicks in both calm and wave conditions. The Navy used the test data to evaluate the sensor's effectiveness.

## Meet the Ohmsett Staff

Bill Schmidt ..... Program Manager  
David DeVitis ..... Test Director  
Phillip Coyne ..... Test Engineer  
Rich Naples ..... Health & Safety Specialist  
Ed Fitzgerald ..... Q. A. Engineer  
Don Backer ..... Instrumentation Technician  
Susan Cunneff ..... Chemical Technician  
David Knapp ..... Oil Transfer Technician  
Mark Wrong ..... Video Specialist  
Joyce Rosenberg ..... Administrator

## Ohmsett Makes the New York Times!

The Sunday, December 28, 1997 New Jersey section of the New York Times featured an interview with Ohmsett Facility Program Manager, Bill Schmidt.

The article sports a photograph of the Ohmsett tank, and Bill Schmidt answers questions about Ohmsett's history, training at the facility, and spill response equipment.

## Johns Hopkins Grad Student Conducts Benzene Study

U.S. Coast Guard marine safety personnel responding to a spill of refined petroleum products face a number of dangers, including the inhalation of volatile organic chemicals evaporating from the spill in the first few hours. Some of these chemicals, such as benzene, are known carcinogens.

In order to determine whether protective full-face air purifying respirators should be worn by U.S. Coast Guard response personnel, Johns Hopkins University graduate student Coast Guard LT Emile Bernard came to the Ohmsett tank to conduct a test.

In August 1997, unleaded gasoline containing benzene was spilled in a contained area of the Ohmsett tank, while a portable gas chromatograph analyzed samples of the air collected above the spill.

Based on the results obtained under this set of test conditions, the levels of benzene at the simulated spill were insignificant, making protective gear unnecessary for benzene.

## Proposed Tests and Trainings for 1998

### U.S. Coast Guard

- VOSS training (2 sessions)
- JUNIPER pumping test

### U.S. Navy

- Training (3 sessions)
- Navy remote sensor evaluation

### Alaska Co-ops

- Skimmer testing evaluation

### S.L. Ross

- Boom tow force evaluation
- Skimmer performance with highly viscous oils
- Pumping recovered oil spill emulsions tests

### SRS Spill Recovery

- Sorbent material evaluation

### Product Services Marketing Group

- Oil Gator sorbent material evaluation

### Texas A & M

- Training (2 sessions)

### University of New Hampshire

- High speed vessel boom test
- High speed ocean boom evaluation
- High speed river boom evaluation

### University of Rhode Island

- Computer model validation

### Massachusetts Maritime Academy

- Training

For information on scheduling a test or training date, call (732) 866-7183

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.

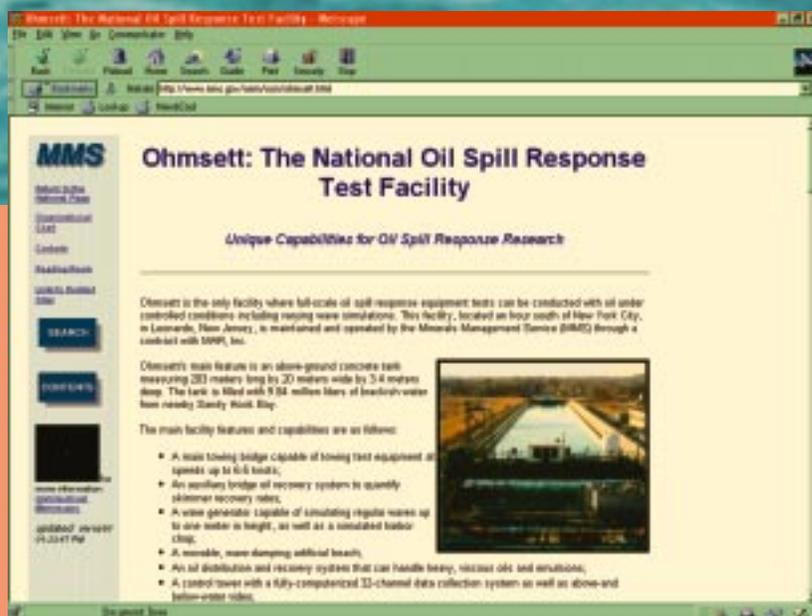
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Check out the Ohmsett Web page @  
<http://www.mms.gov/omm/osm/ohmsett.html>

Coming Soon  
<http://www.ohmsett.com>

*Test with oil*

*Train with oil*

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