Ohmsett

Design, Fabrication, Installation and Performance of a Water Spray Wave Tank Containment System

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Key Takeaways

- The challenges of spill control testing in real world conditions
- The value of an iterative process in the improvement of testing capabilities and protocols, i.e., learning from the past
- Recognition of the contributions of the entire testing team

Topics

- Ohmsett Overview
- Dispersed Oil Recovery & Measurement
- Water Spray Wave Tank Containment System
- Future Improvements

Managed by U.S. Department of Interior's Bureau of Safety and Environmental Enforcement (BSEE) and operated through a contract with Applied Research Associates, Inc. since September 2018

Facility

Largest outdoor salt water test tank in North America

- 203 meters (667 feet) long
- 20 meters (65 feet) wide
- 2.4 meters (8 feet) deep
- 10 million liters (2.6M gallons)
- Wave capacity: ~1 meter (~3 feet)
- Open ocean salinity (32 -35 ppt)
- Computer controlled wave generator

Located in Leonardo, New Jersey

- One hour south of New York City
- Nearby airports:

  Newark (35 Miles)

  LaGuardia (64 Miles)

  JFK (60 Miles)

Dispersed Oil Recovery & Measurement

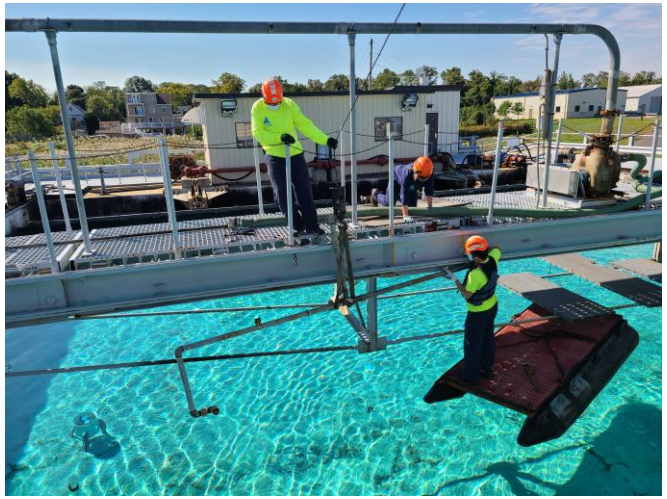
Limitations of recovering oil for analysis

- Test tank width is finite
- Oil tends to readily spread and move when uncontained
- Collecting oil once in contact with wall surfaces is challenging
- Ohmsett is an open air tank, subject to strong and fluctuating winds

Dispersed Oil Recovery & Measurement

Water Spray Containment System Development – Version 1

- Built by Ohmsett staff under BSEE-led Dispersant Effectiveness Protocol development
- Fire hose powered spray nozzles mounted to north and south bridges in fixed positions
- East and west spray nozzles held and directed in place by test staff
- Flat spray nozzle pressure is controlled by valve manifold for fine-tuning during testing



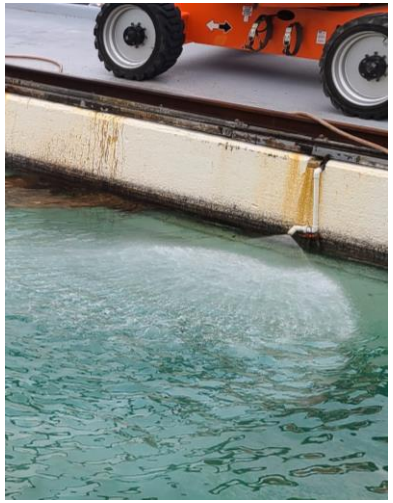
Dispersed Oil Recovery & Measurement

Water Spray Containment System Development – Version 2

- East and west spray nozzles affixed to rails

Water Spray Containment System Development – Version 3

- East and west spray nozzles redesigned and placed under rail scuppers
- Allows main bridge travel over the spray nozzles
- More readily adjusted to provide optimal height & angle



Dispersed Oil Recovery & Measurement

Water Spray Containment System Effectiveness

- Provides an area for test and observation free of boom or any other physical impediment
- Readily displaces oil from tank walls
- Demonstrated strong enough to counter wind forces
- Can maintain a given oil slick in a particular location for repeated impact by breaking waves
- Can provide access to more stable slick for recovery and sampling

Future Plans

Improvements and Further Use

- Modifications are being made to north and south bridges to provide stable pipe mounts
- Options are being investigated to better manipulate water flow
- Successful functionality has been demonstrated in the corralling of floating devices

Thank You

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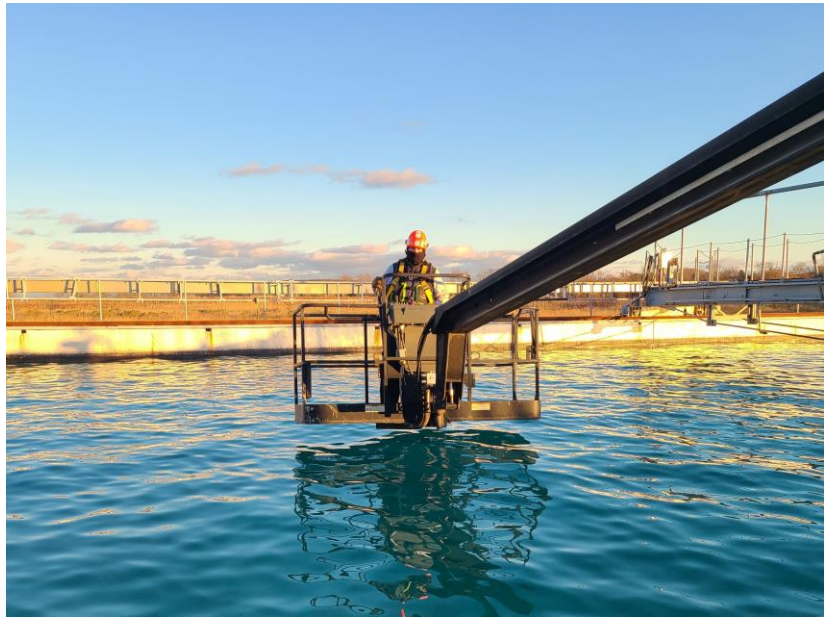

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