



Oil Spill Response Research for Alaska Outer Continental Shelf Oil and Gas Activities

Alaska Oil Spill Technology Symposium
March 6 - 7, 2014

Overview



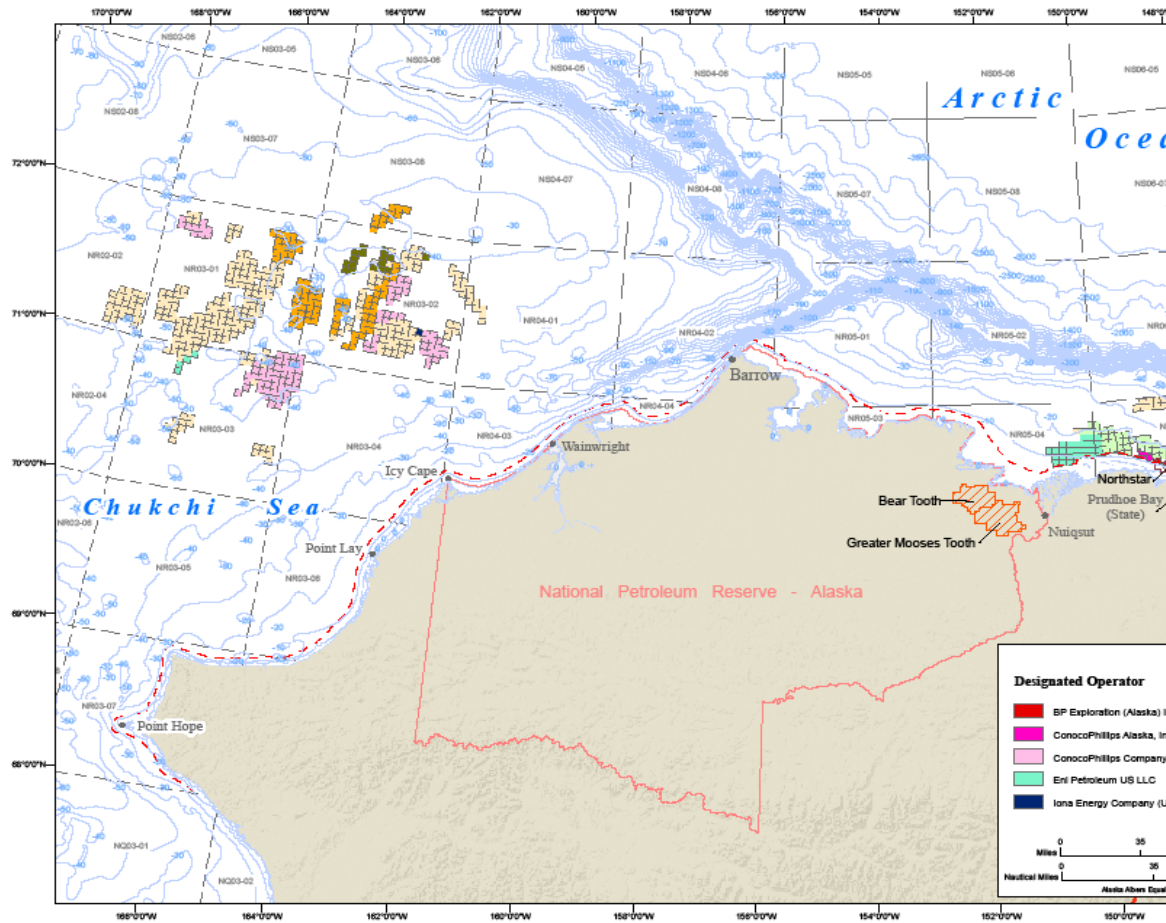
- BSEE Mission and Responsibilities
 - Office of Offshore Regulatory Programs
 - Environmental Enforcement Division
 - Oil Spill Response Division
- Oil Spill Response Research
 - Website
 - Current Research Projects

Mission



BSEE works to promote safety, protect the environment, and conserve resources offshore through vigorous regulatory oversight and enforcement.

Exploration Areas



Office of Offshore Regulatory Programs



- Manages rules, standards, and compliance programs governing oil, gas, and mineral operations on the Outer Continental Shelf (OCS). ORP is responsible for:
 - OCS regulations and the associated policy documents
 - Safety management programs
 - Safety and pollution prevention research
 - Technology assessments
 - Inspection and enforcement policies
 - Accident investigation practices
 - Development and execution of the agency's technical training program
 - Coordinates BSEE operational and safety programs with the U.S. Coast Guard, other Federal and State agencies, industry groups, and international regulatory partners.

Environmental Enforcement Division



- Monitors the environmental compliance of permits that BSEE issues to energy developers. EED ensures that companies meet the requirements established in the following laws:
 - National Environmental Policy Act
 - Outer Continental Shelf Lands Act
 - Federal Oil and Gas Royalty Management Act
 - Clean Air Act
 - Marine Mammal Protection Act
 - Clean Water Act
 - Oil Pollution Act
 - Endangered Species Act
 - National Historic Preservation Act

Oil Spill Response Division



- Responsible for carrying out BSEE authorities related to oil spill research, planning, preparedness, and response. Functions include:
 - Reviewing and approving oil spill response plans in both Federal and State waters
 - Funding and dissemination of oil spill response research
 - Supporting the National Response Team, Regional Response Teams, Area Committees, and the Interagency Coordinating Committee on Oil Pollution Research (ICOPR)
 - Providing subject matter expertise to the Federal On-Scene Coordinator during oil spills from regulated offshore facilities
 - Engaging with the international community to improve oil spill planning, preparedness, and response
 - Conducting government initiated unannounced exercises
 - Verifying spill response resources are at optimal performance levels
 - Manages the Ohmsett facility where full scale oil spill response testing, training, and research can take place with oil in a realistic simulated marine environment

OHMSETT

(The National Oil Spill Response Test Facility)



- 2.6 million gallon salt water tank
- Can be chilled to 28.5 F
- Ice can be added to the tank to simulate oil and ice interaction
- Researchers from 26 nations have used or visited Ohmsett for testing
- Full scale testing, training, research and development with oil





Research & Training

- ▶ Technology Assessment Programs
- ▶ Oil Spill Response Research
- ▶ Ohmsett
- ▶ International Collaboration
- ▶ Technical Forums
- ▶ [National Offshore Training Program](#)

Oil Spill Response Research (OSRR)



For more than 25 years, BSEE (and former organizations) have aggressively maintained a comprehensive, long-term research program dedicated to improving oil spill response options. The major focus of the program is to improve the methods and technologies used for oil spill detection, containment, treatment, recovery and cleanup. The OSRR program is a cooperative effort bringing together funding and expertise from research partners in government agencies, industry and the international community.

OSRD's Response Research Unit (RRU) manages the funding for numerous research projects chosen to meet selected major topics each year. White Papers and research proposals are solicited through a Broad Agency Announcement (BAA) that is published on the Federal Business Opportunities website at www.fbo.gov.



The RRU also manages the National Oil Spill Response Test Facility, located in Leonardo, New Jersey. Ohmsett is the largest outdoor saltwater wave/tow tank facility in North America. Ohmsett allows full scale oil spill response testing, training and research with oil in a realistic marine environment. For more information visit the [Ohmsett Website](#).

The Ohmsett Gazette (Spring/Summer 2013)

Click on the categories below to bring up more information on our efforts in the subject area	
Arctic Oil Spill Response	Behavior of Oil
Chemical Treating Agents	Command and Control
In Situ Burning of Oil	Mechanical Containment
Ohmsett	Remote Sensing
Master List of Oil Spill Response Research (OSRR) Projects	





OSRR Arctic Oil Spill Response Research

Mechanical Clean Up	
1026	Testing of Skimmer Hoses and Hose Couplings Under Simulated Arctic Conditions
1023	Development of Surrogate Ice Modules for Simulated Arctic Environment Testing at the National Oil Spill Response Research & Renewable Energy Test Facility (Ohmsett)
1019	Technological Assessment of Alaskan Arctic Oil Spill Response Temporary Oil Storage Options
1014	Ice Month – Evaluation of Oil Recovery Systems in Ice Conditions at Ohmsett
1004	Responding to Oil Spills in Arctic Environments Study
608	Methods to Reduce Lateral Noise Propagation from Seismic Exploration Vessels
586	Planning Support for an Experimental Oil Spill in Pack Ice
573	Oil Recovery with Novel Skimmer Surfaces under Cold Climate Conditions
538	Measurement and Control Underwater Noise from Oil Drilling and Production Operations
453	Production of a White Paper and Workshop Regarding a Full Scale Experimental Oil Release in the Earents Sea Marginal Ice Zone
353	The Use of Ice Booms for the Recovery of Oil Spills from Ice Infested Waters
310	Mechanical Oil Recovery in Ice Infested Waters (MORICE) - Phase II
297	Comprehensive Spill Response Tactics for the Alaska North Slope-Oil in Broken Ice Spill Response Scenarios
295	In Situ Clean up of Oiled Shorelines; Svalvard Shoreline Project
289	Re-Engineering of a Stainless Steel Fireproof Boom for Using in Conjunction with Conventional Fire Booms
159	Evaluation of Skimmers for Offshore and Ice-Infested Waters
121	Water Jet Barrier Containment of Oil in the Presence of Broken Ice
In Situ Burn	
1007	Burning Behavior of Oil in Ice Channels
452	Mid-Scale Tests to Determine the Limits to In-Situ-Burning in Broken Ice
288	Outdoor Wave Tank and Program of Mid-Scale In Situ Burn Testing in Alaska
Workshops	

Call for Proposals



- BSEE has \$7M for research in FY 2014
- Annually issues at least one Broad Agency Announcement (BAA) to solicit project submissions
- BAA posted on Federal Business Opportunities website www.fbo.gov

BSEE Dispersant Research 2014

February 3-28



Cold Water Dispersant Effectiveness Comparison Testing at Ohmsett:

OSRD research staff will utilize the Ohmsett facility to conduct independent comparative performance testing of various dispersants. Traditionally, Corexit has been the dispersant of choice in the U.S. Due to litigation as a result of the Deepwater Horizon Spill in 2010, Nalco, the manufacturer of the Corexit family, has implemented strict controls over the sales and use of their product. This has prompted many OSROs to look at alternatives to Corexit EC9500A to replenish inventory used during the Deepwater Horizon Spill of 2010. Test parameters have been established to simulate arctic conditions and Alaskan crude oil will be used. Dispersants to be tested are: Corexit 9500, Finasol OSR 52, Dispersit SPC 1000 and ZI-400.



Oil Spill Detection and Mapping Under Arctic Sea Ice Using Autonomous Underwater Vehicles OSRR#1000



Woods Hole Oceanographic Institution

Objective: To evaluate and develop an AUV-based system for detection and mapping of oil in ice-infested waters from underneath the water and/or ice.

Progress: Initial AUV testing occurred in conjunction with a Coast Guard Strike Force exercise in the Great Lakes in February, 2013. The final test, initially planned for Barrow, AK has been moved to Prudhoe Bay and is now scheduled for April, 2014.



Estimated Completion Date: July 2014

Burning Behavior of Oil in Ice Channels

OSRR#1007



Worcester Polytechnic Institute

Objective: to enable assessment of the efficiency of in-situ burning of an oil spill in icy conditions and set a new experimental and modeling framework to explore burning of oil spills on ice, which will allow quantifying the efficiency of combustion as well as point of extinction for liquid fuel spills in icy conditions.



Complete.

Enhanced Oil Spill Detection Sensors in Low-light Environments – OSRR# 1013



US Army Research Development and Engineering Command (RDECOM)

Objective: to enhance the methods currently in place to detect oil in a marine environment. The methods currently in place are not conducive to oil spill recovery operations during periods of low light and rely heavily on time-delayed aerial remote sensing technologies, or visual observation. This project will leverage the knowledge and expertise of RDECOM's Night Vision and Electronic Sensors Directorate (NVESD) personnel to assist BSEE in the identification and documentation of existing capability gaps; identification and assessment of technology gaps; test and evaluate potential new or alternative hardware; and if necessary, support the design, development and demonstration of new technologies to meet identified needs.

Estimated Completion Date: June 2016



North Slope Coastal Imagery Initiative – OSRR # 1015



Moran Environmental Recovery, LLC

Objective: to develop a coastal imagery-based response tool that can be implemented on the North Slope of Alaska. The North Slope is a region of both onshore and offshore oil development and stretches 6,000 km (4,000 mi) from Cape Lisburne to the Canadian border. The provision of georeferenced, high resolution imagery will provide the Federal On scene Coordinator and Incident Command with the highest resolution imagery via an online delivery system. They will consolidate existing georeferenced video and photographic imagery of the North Slope shoreline and geotag the oblique imagery to high resolution satellite and orthophoto imagery. The imagery will be accessible online through a web portal or through other platforms (e.g., Environmental Response Management Application or ERMA). The contractor will to use open-source, high-resolution delivery systems for HD video (e.g., You Tube) and high-resolution photography (e.g., Flickr) linked to an open-source GIS (e.g., ArcGIS on-line).

Estimated Completion Date: January 2014



Technological Assessment of Alaskan Arctic Oil Spill Response Temporary Oil Storage Options – OSRR # 1019



PCCI, Inc.

Objective: To assess Alaskan arctic oil spill response temporary storage options.

Development of a set of Top Level Requirements (TLR) for temporary oil storage of recovered oil in the Alaskan Arctic.

Review of the current state of the art of technologies available for temporary storage.

Review of current oil storage capability in Arctic as required by regulation.

Estimated Completion Date: July 2014



Estimating an Oil Spill Response Gap for the U.S. Arctic Ocean – OSRR # 1022



Nuka Research & Planning Group, LLC

Objective: Conduct an oil spill response gap analysis for three areas in the U.S. Arctic Beaufort and Chukchi Seas. This analysis will quantify the frequency that oil spill response may not be feasible due to weather or environmental conditions. Conditions including wind, sea state, temperature, ice coverage, and visibility will be considered in the analysis. Response options including mechanical recovery, in situ burn, and use of dispersants will be included in the analysis. Limits of air reconnaissance will also be considered due to its importance in oil tracking.

Estimated Completion Date: September 2014



Development of Surrogate Ice Modules for Simulated Arctic Environment Testing at Ohmsett – OSRR #1023



PCCI, Inc.

Objective: To explore the feasibility of developing surrogate ice modules that could be used at Ohmsett to test oil spill response equipment in various, repeatable, simulated arctic conditions.

Estimated Completion Date:
September 2014



Testing of Skimmer Hoses and Hose Couplings Under Simulated Arctic Conditions – OSRR # 1026

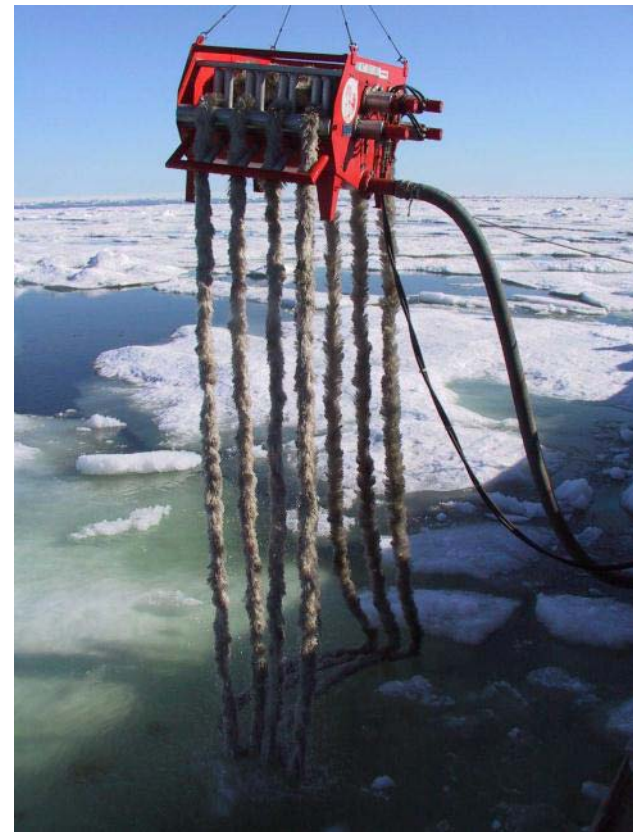


Cold Regions Research and Engineering Laboratory (CRREL)

Objective: to assess performance of standard skimmer hoses and hose couplings used during oil recovery operations when subjected to low temperatures found in the Arctic. Performance and life cycle testing will be conducted under two tasks..

- Task 1: Moving recovered oil/water/ice "product" through a hose using a diaphragm pump.
- Task 2: Evaluation of hose/hose coupling performance in a low temperature environment.

Estimated Completion Date: October 2014



Environmentally Benign Oil Simulants to Mimic the Behavior of Oil Droplets in the Ocean – OSRR # 1029



Environmental Protection Agency

Objective: to advance the understanding of spill responders and the scientific community on how submerged oil plumes and floating slicks are transported in aquatic environments.

Task 1: Fabricating environmentally benign, optically active particles that simulate oil droplets in the water column using synthesis techniques that are readily scalable from bench to industrial production,

Task 2: “Tuning” the oil simulant using innovative synthesis technique to allow flexibility in creating behaviors ranging from floating to sinking in the water column

Task 3: Detecting the oil simulant under dilute concentrations due to the high fluorescent signature of the oil simulant

Task 4: Verifying the oil simulant behavior using commercial off-the-shelf (COTS) response tools, such as fluorometers and particle size analyzers.



Estimated Completion Date: September 2014

Research to Support the Prediction of Effectiveness of Dispersant Use in the U.S. Beaufort and Chukchi Seas – OSRR# 1030



SL Ross

Objective: to provide information to support dispersant use decision making with respect to dispersant effectiveness under conditions likely to be encountered in the U.S. Beaufort and Chukchi Seas

Task 1. Identification of Typical Environmental Conditions in the U.S. Beaufort and Chukchi Seas that Affect Dispersant Effectiveness.

Task 2. Summarize Historical Dispersant Effectiveness Testing on Alaskan Oils and Identify Knowledge Gaps.

Task 3. Conduct Dispersant Effectiveness Tests to address Knowledge Gaps..

Task 4. Conduct Large Scale Ohmsett Dispersant Effectiveness Tests to Address Knowledge Gaps.

Estimated Completion Date: September 2014





[www.bsee.gov/Research-and-Training/Oil-Spill-Response-Research-\(OSRR\).aspx](http://www.bsee.gov/Research-and-Training/Oil-Spill-Response-Research-(OSRR).aspx)

Questions? – christy.bohl@bsee.gov