

Pacific States/BC Oil Spill Task Force

Research and Development Workgroup

SUMMARY NOTES

January 28, 2015 Annual Conference Call

PARTICIPANTS:

Carl Brown – Environment Canada

Curtis Martin – HI Department of Health

Lori Medley - BSEE

Amy Merten – NOAA

Ellen Faurot-Daniels – CA Department of Fish and Wildlife - OSPR

Judd Muskat – CA Department of Fish and Wildlife - OSPR

Nancy Kinner – Center for Spills in the Environment/ Coastal Response Research Center

Sonja Larsen – Washington Department of Ecology

Sarah Brace – Pacific States/B.C. Oil Spill Task Force

Don Pettit – OR Department of Environmental Quality (unable to join call but sent notes)

Kurt Hansen – USCG R&D Center (unable to join call but sent PPT)

ROUND TABLE UPDATES

Lori Medley -- BSEE

New webpage server – old links likely won't work soon. Make note to check older links.

Ohmsett will be drained/down for maintenance May – Aug 2015. Potential NOAA/EPA/FWS 'critters' test after refill (whale baleen).

During FY 2014 BSEE's Oil Spill Response Research program completed 15 previously funded projects, funded new 30 new projects with approximately \$14M, and had 16 on-going projects carried forward into the new year. Our emphasis was on Arctic oil spill response preparedness, dispersant effectiveness, and remote sensing of crude oil on the surface of the water and in the water column. We established a Peer Review Process that will be implemented throughout BSEE in FY 2015. In an effort to provide wider dissemination of our research results we were able to conduct a first-ever special session during the annual Clean Gulf Conference dedicated to BSEE-funded research.

BSEE-conducted Cold Water Dispersant Effectiveness Comparison at Ohmsett (#1016). Final report will be peer reviewed before posted on website. Results will be presented at Interspill.

- Nalco - Corexit EC9500A

- Total Fluides - Finasol OSR 52
- US Polychemical - Dispersit SPC 1000
- ZI Chemical – ZI 400

First FY 2015 BAA posted on FBO.gov. White papers are due February 9. Topics: Innovative Methods to Remove Surface Oil under Arctic Conditions; Decanting Recovered Oil at Sea; Quantifying In-Situ Burn Efficiency; Innovative New Uses of Chemical Herders to Enhance Oil Spill Mitigation Efforts; Developing an Innovative Dispersant Spray Drift Model; Determining the Effect of Various Deep-Ocean Conditions on Dispersant Effectiveness; and, Evaluating Dispersant Effectiveness of Subsea Applications in Ocean Brine Pools

Exploring options for an Arctic Prize Challenge

- Potential topic - Recovery of oil in spring melt ponds
- Potential tests at CRREL Nov/Dec 2016

FY 2014 Completed Projects

637 Validation of the Two Models Developed to Predict the Window of Opportunity for Dispersant Use in the Gulf of Mexico

685 Operational Chemical Dispersant Research at Ohmsett - Effectiveness of Typical Aircraft Spray Dosages on OCS Crude Oils

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

#1002 Acoustic Assessment of Subsea Chemical Dispersant Efficacy

#1003 Subsea Chemical Dispersant Research

#1004 Responding to Oil Spills in Arctic Environments

#1005 Rapidly Deployable Thermal Hydrate Preventer for Subsea Oil Spill Mitigation

1006 Development of a Real-time Monitoring Protocol for Assessing VOC Impacts on Response and Cleanup Workers' Safety During Dispersant Operations

#1007 Burning Behavior of Oil in Ice Channels

1010 Comparison of Physical and Chemical Characteristics of In-Situ Burn Residue and other Environmental Oil Samples Collected during the Deepwater Horizon Spill Response – pending peer review

#1012 Efficient Atomization and Combustion of Emulsified Crude Oil

#1015 North Slope Coastal Imagery Initiative

#1017 Literature Synthesis of Oil Properties and Their Impact on Spill Response Options

#1018 Dispersant Effectiveness Literature Synthesis

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

FY 2014 New Awards

- Mitigation of Oil in the Water Column - #1033 USCG RDC
- Development for Temporary Oil Spill Storage and Recovery in Alaskan Arctic using Petrogel Technology - #1034 Penn State
- Improved In-Situ Burning for Offshore Use - #1035 USCG RDC
- Burning of Crude Oil in Ice Cavities - II #1036 WPI
- Development of “Smart” Skimming Technologies - #1037 Alion
- Biodegradation and Toxicity Following Dispersant Usage in a Cold, Stratified, Deep Sea Setting - #1038 PNNL
- Oil Leak Detections with a Combined Fluorescence Polarization Instrument and a Wide Band MultiBeam Sonar - #1039 EIC Labs and Norbit
- Distributed Chemical Sensing for Sub-surface Oil Spill Sensing - #1040 U of Houston
- HC-Sentinel: An AUV Glider for High Endurance Subsea Hydrocarbon Detection - #1041 WHOI
- Technology Readiness Level (TRL) Definitions for Oil Spill Response Technologies and Equipment - #1042 ARA
- Development of Scientifically-Based Planning Standards and Test Methods to Predict Effectiveness and Usage Rates for Surface and Subsea Dispersant Use in Various Types of Environmental Conditions - #1043 LSU
- Solidifying the Scientific Capabilities of Ohmsett – Effect of Ambient Chemical Levels - #1044 NJIT
- Solidifying the Scientific Capabilities of Ohmsett – Wave Hydrodynamics - #1045 NJIT
- Leveraging Offshore Hydrocarbon Risk Assessment Models and Datasets to Support the Evaluation and Ranking of Worst Case Discharge Scenarios - #1046 NETL
- Effectiveness of Dispersants in Frazil or Slush Ice - #1047 SL Ross

- Developing a Capabilities-Based Framework for Designing and Evaluating Oil Spill Response Exercises - #1048 GWU
- A Novel Experimental Approach to Enhance Burning of Oil-Water Emulsions by Immersed Objects - #1049
- WPI Geo-Referencing Identification (GRID) Tag - #1050 URS
- Tagging of Oil Under Ice for Future Recovery - #1051 URS
- Enhanced Oil Recovery from Oil-Seawater Mixtures Through the Coupling of Magnetic Nanoparticles and Electrically Conducting Ultrafiltration Membranes - #1052 UC Riverside
- Development of Universal Submersible Skimmer Delivery System - #1053 Alion
- Development of Double Helix Oil/Water Separation Skimmer Technology - #1054 COTS
- Emergency Response Exercise Best Practices - #1055 PCCI
- Catalog OSRR Funded Research Recommendations and Key Findings - #1056 Nuka
- Development of a Planning Standards for In-Situ Burning Operations - #1057 SL Ross
- Remote Sensing Systems to Detect and Analyze Oil Spills on the US Outer Continental Shelf – A State of the Art Assessment - #1058 NRL
- Characterizing Wave-induced Mixing Energy in Ohmsett Wave Basin for Dispersant Effectiveness Testing - #1059 NRL
- Airborne Oil Spill Remote Sensing and Reporting – #1060 USCG RDC
- Development of a Low-Emission Spray Combustor for Emulsified Crude Oil - #1061 NRL
- ASTM F2709 Skimmer Testing at Ohmsett - #7007

Carl Brown, Environment Canada

- Proposed pipelines in Canada are a subject of media concern, as are recent increases in rail transportation of diluted bitumen and railbit to East and West coasts.
- New research funding to examine Dilbit products.
 - Phase 1: West Coast environment. Looking at product composition, properties, physical and chemical analysis, PAHs and biomarkers. Also fate and transport behavior, product weathering. Will these dilbit products be buoyant? Continue to do this work, looking at products that are currently being shipped across CAN and US.
- Shoreline helicopter and boat surveys in the Dixon and Grenville Channels in northwestern B.C. SCAT surveys, representative shoreline substrates, etc. Shoreline diluted bitumen response technology research underway.

Q: Are dispersants effective on dilbit?

A: Not effective so far.

- Legislation before the government is to allow the use spill treating agents for spills from offshore production facilities under the appropriate conditions. Beyond offshore, then falls under the Canada Shipping Act.
- Phase 2 of the World Class Oil Spill Response Regime – Plan is to design and construct a flume tank, to allow for extended duration studies on oil. Currently study fresh oil and then weather it, then study it again. This Next Generation Environmental Simulator will allow us to study how it behaves over time under controlled conditions.
- Some work on Bakken crude, like the oil involved in the Lac Megantic incident. Trying to understand those oils better.
- Artic Oils – Continue to work with NOAA on Arctic oils. Physical and chemical properties analyses for 5 Arctic oils have been completed. Summaries will be available soon.
- **Royal Society of Canada’s Expert Panel on The Behaviour and Environmental Impacts of Crude Oil Released into Aqueous Environments, Calgary, Alberta on Feb 3-5.** Chaired by Dr. Kenneth Lee, CIRSO, Australia with panel members; Dr. Michel Boufadel, New Jersey Institute of Technology; Dr. Bing Chen, Memorial University; Dr. Julia Foght, University of Alberta; Dr. Peter Hodson, Queen’s University; and Dr. Albert Venosa, U.S. Environmental Protection Agency. <http://www.rsc-src.ca/en/expert-panels/rsc-reports/behaviour-and-environmental-impacts-crude-oil-released-into-aqueous>
- **38th Arctic and Marine Oil Spill Program (AMOP) Technical Seminar on Environmental Contamination and Response, British Columbia, June 2-4, 2015.** <http://www.ec.gc.ca/amop/default.asp?lang=En&n=4C627AD8-1>
- **January 12th EPA National Response Team (NRT) Webinar - Emerging Risks Responder Awareness Training: Bakken Crude Oil:**
The training was delivered as a live webinar on January 12, 2015 to planners and field responders from Federal, state, local, and tribal governments. Subject matter experts from the National Oceanic and Atmospheric Administration (Scientific Support Coordinator), U.S. Department of Transportation (Enforcement Officer), Transport Canada (Containment Specialist), Occupational Safety and Health Administration (Safety and Occupational Health Specialist), U.S. Environmental Protection Agency (Environmental Response Team and Federal On-Scene Coordinator) and Environment Canada (Field Work & Response Unit) delivered the training.
 - The NRT Training Subcommittee’s presentation: *Emerging Risks Responder Awareness Training: Bakken Crude Oil*, provides background information on Bakken crude oil production and transportation, as well as information on recent regulatory efforts to deal with Bakken crude oil transportation methods and route. Topics emphasize health and safety and include:
 - Where is Bakken oil coming from?
 - How is it being transported?

- Bakken chemistry
- Response issues
- Case studies from recent incidents

<http://www.nrt.org/production/NRT/NRTWeb.nsf/AllPagesByTitle/SP-EmergingRisksResponderAwarenessTrainingBakkenCrudeOil%282015%29?Opendocument>

Ellen Faurot-Daniels, CA OSPR

Not much new to report. Still don't have funding for research. Projects under way:

- Revision to ART elements of Best Achievable Technology and Best Achievable Protection report.
- Revising their state OSCA licensing regulations and related Guidance Document. Waiting to see EPA's subpart J revisions. Looking for where CA's standards need to remain compatible with EPA and/or where California's stronger standards still need to apply.
- All ART policies that are part of the RRT9 Regional Contingency Plans. EPA trying to get their Section 7 in place. Updates to the ART plans and job aids would go in or with the updated RCP.
- OSPR Program was funded into the inland realm – through new oil spill program funding. Contingency plan requirements now being developed for inland plan holders.
- Coming up: Planning the **Response Technology workshop Feb 23-26** in Alameda CA. Common operating picture and field course-tools breakout groups in addition to 3 days of plenary talks.

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=57894&inline=true>

Judd Muskat, CA OSPR

- Research funding is currently non-existent. But with new expanded inland program, hoping to see some research \$\$ available. New OSPR funding is coming from fee collected at refineries where oil is arriving. Doesn't matter how the oil gets there (rail, vessel or pipeline).
- GIS -- Working on southwest ERMA. Southwest ERMA specific to CA. A lot of time and effort spent populating SW ERMA with data from the three CA Area Contingency Plans (ACPs). SW ERMA is used as an internet accessible planning tool, for data dissemination and also as the Common Operating Picture of choice for oil spill response in California.
- Electronic SCAT application – paper form-driven SCAT is complex and hard to disseminate quickly. In CA, been using a proprietary application, have troubles keeping up with hardware/firmware updates. Working with NOAA and EPA to come up with a common SCAT application or at a minimum SCAT data collection

standardization for use in marine or inland response. “Collector” is an ESRI tool – assessing this one. Are also considering creating their own application for electronic field data capture particularly for SCAT. OSPR and Chevron recently put on the sixth bi-annual Technology Workshop for Oil Spill Response in Alameda, CA. Electronic SCAT and Common Operational Picture standardization were singled out for special sessions. All of the presentations will be posted on the OSPR web-page in the coming weeks. <https://www.wildlife.ca.gov/OSPR>.

Nancy Kinner, Center for Spills in the Environment/Coastal Research Center, UNH

- Arctic SONS included a directive for the development of a workshop series on the “State of Science of Dispersants and Dispersed Oil” particularly in the use in Arctic. Not only in Arctic circle but Bearing Strait and Aleutian Islands. Gary Shigenaka and Doug Helton NOAA are co-leads on this effort. This dispersant project has several parts:
 1. **Literature search and database** – This effort covers June 2008 to present. The LUMCON Database already exists containing papers and literature from 1960-2008.) This new database with 450+ papers will be available.
 2. **State of the Science** -- Prince William Sound, Cook Inlet RCAC and others selected participants who were scientists. 5 days talking about dispersants in AK: there are a series of statements with supporting literature.
 3. **Period of public input on results** – CRC is in the process of writing up the two parts of this effort. There will be 2 public sessions to get input. One will be a meeting at GOMEX and one will be a webinar. Questions that folks will be asked: Have we missed anything? (literature, findings, etc.)
 4. **Workshop with Communications** experts to talk about how the findings on the state of the science should be communicated to do the public and stakeholders. Thinking about types of materials needed to communicate the statements. Not actually creating the material to share, but rather how to share.
- Workshop on Environment Disaster Data Management (EDDM). Foster collaboration between collectors and users of data (<http://crrc.unh.edu/workshops/EDDM>). ID best practices for data storage and retrieval. Workshop of 45 or so folks. Report itself is in review and will be released Workgroups will be developed to focus on key issues that were raised:
 - Data reliability
 - Consistency
 - Accessibility and more.
 - Outreach on planning
 - Training

- Background data mining
 - Open data policy
- Dispersant in Submerged oil working group -- Minutes are on the website. <http://crrc.unh.edu/dispersants-working-group>
- Oil Observing Tools – Another workshop. Goals are to ID new developments in oil emerging technologies (merits and drawbacks). June/July time frame
- **NOAA CAMEO**: Aug 2015 Chemical safety and security. Holding a workshop.
- **OIL SPILL FORUM at UNH** in October 2014: Funded by UNH. All videos are on line. Whole bunch of folks talking about issues with spills and things we've learned from DWH and other spills. Two topics highlighted:
 - Interactions with media with agencies during environmental disasters
 - Policy and Politics
 Link to the meeting details: <http://crrc.unh.edu/image/unh-oil-spill-response-forum>
- Two initiatives
 - 5th year anniversary of Deepwater -- PEW and CRRC: Discussion of what constraints media and responders are under. How could we better facilitate communication between those two groups during a disaster. Taking place at PEW in D.C. on **April 20**.
 - Congress Panel on Policy and Politics: Outreach to congressional staff. Semi-Annual environment event for staffers, around the time of the Deepwater Anniversary. Taking place in D.C on **April 21**.
- Continue oil spill research – studying Alberta bitumen
- Tuzzy Talks, Alaska On-Line library Program, Barrow AK. Characteristics of crude oil, intro to toxicology. Link to them on Nancy's website. Since 2013. <http://crrc.unh.edu/outreach>
- Nancy was approached by the state of FL (CRRC has MOU with FL Institute of Oceanography) to help them with a drill. As a result, there was a meeting that the State of FL set up and was attended by NOAA, state, academics, etc. CFC will be facilitating this 2-1/2 day meeting. Focusing on oil spill response in FL waters.
 - 95,000 gal of diesel spill last year. Tug sitting on the bottom of 20,000ft of the ocean. Oil did not get to the beach.
- To get on Nancy's listserv, send Nancy your name and email address: Nancy nancy.kinner@unh.edu

Sonja Larsen – WA Ecology

- WA does not have R&D funding. Best Achievable Technology and review. 3rd year of starting this process.
- WA is co hosting a **Best Achievable Protection Conference** with the USCG, May 20th and 21st of 2015 –for additional conference details or to RSVP

<http://www.ecy.wa.gov/programs/spills/preparedness/BAP.html>

- Marine and Rail or Transportation Study is complete details about the study
<http://www.ecy.wa.gov/programs/spills/OilMovement/2014MRstudy.html>
- Spills program has also been focusing on the development of inland GRPs to attempt to keep pace with new inland oil spill risks
<http://www.ecy.wa.gov/programs/spills/preparedness/GRP/index.html>
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Amy Merten - NOAA

- Environmental and Data Management -- ERMA, Data management, USA issues Huge effort for NOAA to post all ERMA on the Federally approved on an Amazon product. Streamlined and efficient for updates and management.
Amy focused on arctic issues and arctic ERMA. A stand-alone ERMA has come up. Used a stand-alone product in drills, where we don't conductivity. Take ERMA with you. Funded by BSEE.
- Study with UA Fairbanks – Robust 2-day deployment in Chukchi Sea tracing a plume Rhodamine dye over several days. 2 dye deployments; also tracked the surface plume and 3-D plume with gliders. 2nd deployment happened with a down-welling event. From data visualization, very interesting that two different deployments show two very different hydrographic dynamics a day apart, thus only viewing the surface footprint would give a false perspective of transport.
- NW ERMA:
 - Acquiring rail and pipeline info.
<https://erma.noaa.gov/northwest/erma.html#/view=358&x=-122.53222&y=47.92475&z=8&layers=1276+1284+7942+7502>
 - OR data: populating ERMA with Oregon data. Incorporating newer shorezone data into OR ERMA. NOAA has Shorezone in West Coast ERMA's.
- Unmanned aerial surveillance and underwater surveillance as well. From OR&R's Spatial Data Branch perspective, examining data management issues of managing video, photos, and other sensor streams. Each UAS has non-uniform formats –so working with vendors so that data stream can be incorporated with ease. Data reformatting needed, huge R&D need around data packaging and consolidation. [NOAA has been testing the "PUMA" –Small model airplane, lightweight and can be launched from a vessel.]
- Coast Guard funded MIT to develop an upload capability for SCAT to apply to whatever system we are using.
 - Developed for DWH, DIVER – Data integration visualization, exploration and reporting. Data warehouse to deal with all the data varieties (NRDA)

- Bringing data from different databases into one system, for querying, analysis and reporting. Developing DIVER for National application. Currently, have a beta-version.
- MOA with BSEE to digitize GRP information that's still sitting in a PDF format. Some states have done a nice job of digitizing their GRPs. Need this on a national scale. Will be in touch with this group as the project develops.
- EPA Region 2 – Hudson Bay inland to Great Lakes ERMA. Rail issues, pipeline issues focused. From CAN and Great Lakes.

Don Petit - Oregon DEQ (Shared post-call)

- Completed (in participation with USCG) Places of Refuge Data Sheets for several Oregon PORs to support decision making by IC
- Participated in several NW Area Committee and States/BC Task Force efforts –
 - Oil by Rail Task Force mapped the routes and destinations for crude oil transport in OR/WA/ID and the waterways potentially impacted
 - Shoreline Segmentation Task Force created a data schema for the segregation of coastal shorelines to support SCAT and other incident operations
- Initiated a project in participation with Portland State University to update all Resources at Risk and Incident Support data for Oregon through a grant from the state's GIS agency
- Initiated a project with the University of Washington to gather Oregon GRP Strategy data into a common platform
- Assisted NOAA and RPI, Inc. in the collection of natural resource data for Oregon to support update of the Coastal ESIs
- Oregon completed ShoreZone analysis for the Oregon coastline, bays, and tributaries (exclusive of the Columbia River)
- Notable Projects by others that will further Oregon's preparedness:
 - NOAA has begun incorporation of Oregon Response Data into its Pacific Northwest Environmental Response Management Application (ERMA)
 - Oregon Office of Emergency Management Table-Top Exercise on the coordination of response to large-scale oil spills from railways
- NOAA has completed a study of the Oregon and Washington ocean uses into its Pacific Regional Ocean Users Atlas effort

