

Summary Notes
Pacific States/British Columbia Oil Spill Task Force
R&D Project Workgroup
Conference Call 12/16/2009

PARTICIPATING: Dianne Munson, Alaska Department of Environmental Conservation; Laurie Boyle, British Columbia Ministry of Environment; Myola Martinez, Washington Department of Ecology; Don Petit, Oregon Department of Environmental Quality; Judd Muskat and Joy Lavin-Jones, California Department of Fish and Game, Office of Spill Prevention and Response; Joe Mullin, U.S. Minerals Management Service; Kurt Hansen, U.S. Coast Guard; Steve Lehman and Ruth Yender, NOAA; Dr. Bruce Hollebhone, Environment Canada; Dr. Nancy Kinner, Coastal Response Research Center; Jean Cameron, Pacific States/British Columbia Oil Spill Task Force

DISCUSSION:

- Jean Cameron welcomed everyone to the call, and reviewed the R&D Project goal as stated in the 2009-2010 Annual Work Plan adopted by the Task Force agencies: [To improve our \(member agencies'\) knowledge of current oil spill research and development projects, to provide input regarding projects of value to our Member Agencies, and to facilitate use of Best Available Technologies](#)
- After introductions, participants provided information regarding the categories of oil spill research which their agencies/organizations are currently conducting, as follows:
 - Don Pettit of the Oregon Department of Environmental Quality (DEQ) reported that Oregon is developing a prototype Incident Response Information System that includes GIS layers of information useful to responders, including aerial imagery, topographic maps and NOAA Navigation Charts for the entire state. The system is delivered in ARC reader format. The system is currently being tested by State On-Scene Coordinators and After-Hours Duty Officers and will be expanded to include multiple versions to serve government agencies such as county emergency management and the Oregon Public Health Department.
 - Dianne Munson of the Alaska Department of Environmental Conservation (DEC) reported that DEC has been working with BP and Conoco Phillips according to the Charter for Development of the Alaskan North Slope.¹ Current projects include testing a new type of Crucial disk skimmer in Arctic and broken ice sea conditions, support for a cooperative project led by MMS, SINTEF² and the University of Idaho focused on airborne, ground-penetrating radar to find oil in/under ice, and updates to guidelines for treatment of oil in tundra. The Charter Arctic spill response R&D program ends in 2010. The following project reports are currently available on the Charter website: (<http://dec.alaska.gov/spar/ipp/nscharter.htm>):

¹ The Charter signed on December 2, 1999 is an agreement between the State of Alaska, BP Exploration (Alaska) Inc., and ARCO (now ConocoPhillips). The Charter Agreement led to State of Alaska support of a merger between BP and ARCO. The Charter is the first antitrust agreement in the U.S. to include environmental provisions. The Alaska Department of Environmental Conservation (DEC) is charged with managing and overseeing those environmental provisions, which include Arctic spill response research and development.

² SINTEF is an independent research organization in Scandinavia with offices located around the world, including Houston, Texas.

- Beaufort Sea Current Study - Estimates of Oil Spill Dispersion Extent in the Nearshore Beaufort Sea Based on In-Situ Oceanographic Measurements
- Mechanical Recovery Systems for Ice-Infested Waters - Examination of Technologies for the Alaska Beaufort Sea
- 2006 Svalbard Experimental Spill to Study Spill Detection and Oil Behavior in Ice - Including Ground-Penetrating Radar Studies
- North Slope Nearshore and Offshore Breakup Study – Literature Search and Analysis of Conditions and Dates
- Dianne provided a link to the SINTEF/Joint Industry Program (JIP) Oil in Ice Project (See: <http://www.sintef.no/Projectweb/JIP-Oil-In-Ice/>) as well as the following PDF files:

 Charter II.A.5
Projects 2000 to 2006

 SINTEF JIP Oil In Ice
Overview.pdf

 SINTEF JIP Oil in Ice
FEX 2009 Overview &

- Judd Muskat of the California Office of Spill Prevention and Response (OSPR) reported that OSPR continued a collaborative project with MMS and Dr. Jan Svejksky, Ocean Imaging Corporation, on use of multi-spectral and thermal cameras to gather aerial information on oil slicks. The information can feed location and slick thickness data into a website for guidance of spill response operations as well as volume estimations. Future R&D will focus on data transmittal via satellite-based communications, plus testing and validating the system under oceanographic and environmental conditions that were not experienced during initial development. More information is available at: <http://www.mms.gov/tarprojects/544/544AA.pdf>.
 - Judd also noted that the U.S. Coast Guard was giving OSPR their Probe for Oil Pollution Evidence in the Environment (POPEIE) buoys³, since they had decided not to use them. Dr. Hollebone noted that Environment Canada has been developing a cheaper version (\$10-\$100 each), similar to the Swedish model, since these tools are only good for one use.
 - OSPR's Scientific Study and Evaluation Program (SSEP) was authorized by the Lempert-Keene-Seastrand Act of 1990 (Section 8670.12) to investigate and evaluate new oil spill response and cleanup methods, potential adverse effects of oil spills, and natural resource damage assessment tools. Research categories include: Applied Spill Prevention and Response; Effects of Oil on Fish, Wildlife, Habitat, and Water Quality; Effects of spill response activities on fish, wildlife, habitat and water quality; Best Achievable Protection Strategies; Marine Oil Spill Wildlife Collection and Rehabilitation; Natural Resource Damage Assessment Technologies and Methods; and Techniques for Habitat and Species Restoration and Monitoring. Due to current funding shortfalls, there is no plan to solicit any new proposals for SSEP in 2009. Links to the 2009 SSEP Symposium and 2008 SSEP presentations follow:
 - [2009 SSEP Symposium Schedule](#)
 - [2008 SSEP Presentations](#)

³ The USCG District 11 won a Legacy Award in 2005 for development of POPEIE. See: http://www.oilspilltaskforce.org/awards_history.htm#2005_award4.

- Laurie Boyle of the British Columbia Ministry of Environment and Myola Martinez of the Washington Department of Ecology explained that their agencies had no current funding for oil spill R&D, but do monitor developments.
- Kurt A. Hansen of the U.S. Coast Guard Research & Development Center reported that his group awarded three contracts in November focused on detection and recovery of submerged oil. Testing is expected to take place in 2011. He provided the Workgroup with the June 2009 report below titled "Heavy Oil Detection (Prototypes) Final Report." This report describes the assessment of detection techniques using sonar, laser fluorometry, real-time mass spectrometry, and in-situ fluorometry to locate oil on the bottom of rivers, bays, lakes or the ocean. The report includes the results of various tests as well as recommendations for Federal On-scene Coordinators responding to spills of heavy oil. Kurt also noted that the R&D Center awarded three contracts in November focused on detection and recovery of submerged oil; testing is expected to take place in 2011.



RDC Submerged Oil
Detection Report Jun

- The USCG R&D Center is also ramping up research efforts regarding oil in ice, especially in the Great Lakes. A workshop on this topic is possible.
 - In addition, the USCG R&D Center is working with SINTEF on their oil and ice project, which has a budget of \$22 million for 5 to 10 years. It will follow-up on previous efforts and will extrapolate lab work to field work, with a particular focus on remote sensing, plus chemical and mechanical recovery techniques. For more information on the SINTEF project, see: <http://www.sintef.no/Projectweb/JIP-Oil-In-Ice/>. For more information on the USCG R&D Center, see: <http://www.uscg.mil/hq/cg9/rdc/pollution.asp> <<http://www.uscg.mil/hq/cg9/rdc/pollution.asp>> .
- Dr. Bruce Hollebhone, representing the Science and Technology Branch of Environment Canada, reported that the Branch is:
 - updating their guidelines on spill treating agents;
 - researching oil solidifier products, especially in contained environments;
 - collaborating with MMS on chemical analyses of ten new oils from the Gulf of Mexico (see MMS project link below);
 - working with the Coastal Response Research Center to research the behaviors of sunken oil;
 - looking for ways to distinguish oil in contaminated soil from background TPH levels;
 - working with Fisheries and Oceans Canada to research the toxicity of heavy and sinking oils to larval fish;
 - developing chemical fingerprints for Alberta oils;
 - researching biofuels and biodiesels to develop chemical fingerprints for source identification and to determine degradation rates; they're also researching chronic exposure of aquatic species during the aging process of biodiesels, and testing the efficacy of various mechanical response techniques with biofuels (such as sorbents and skimmers) in various water temperatures; and
 - Modeling the human health impacts of spills.

For more information, see:
<http://www.ec.gc.ca/scitech/default.asp?lang=En&n=AC4418A5-1>.

- Dr. Nancy Kinner of the Coastal Response Research Center (CRRRC) explained that the Center is a partnership between NOAA's Office of Response and Restoration (ORR) and the University of New Hampshire; their focus is on translating oil spill R&D into actual practice. She is the University of New Hampshire Co-Director and Amy Merten is the NOAA Co-Director. Dr. Kinner then noted the following CRRRC projects:
 - A project addressing the human dimension and social disruptions caused by spills; CRRRC is working to develop planning tools for Area Committees which will help them focus on this aspect of spills by identifying key human dimension factors for their region.
 - A guidance document on dispersant-use decision-making and dispersant impacts on aquatic biota is being developed.
 - CRRRC is working with NOAA to improve predictive models for the location of submerged oil plumes.
 - CRRRC is working with SINTEF and the Universities of Rhode Island and Alaska, Fairbanks to research oil behavior and biodegradation in ice. It is clear that the Arctic environment is not only complex, but also varies daily, weekly, monthly, and annually. Thus, pollution response capability will need to be resilient.
 - CRRRC is sponsoring a workshop in Anchorage (April 20-22, 2010) to begin a dialogue on conducting NRDA in the Arctic environment, and how to document baseline data when the climate is changing. As with all their workshops, data/research needs will be identified, a report will be produced, and a work group will be formed.
 - Sixty people attended a workshop that CRRRC sponsored on "Response to Liquid Asphalt Releases in Aquatic Environments" in October 2009; the workshop agenda, presentations, and links to resources are available on the CRRRC website. They identified information gaps and needs. A summary of the workshop is available on their website.
 - There is information on the CRRRC website about ERMA (Environmental Response Management Application), which will be showcased at the 2010 Spill of National Significance (SONS) exercise.
 - The Center sponsors a number of working groups; these focus on modeling, dispersants, submerged oil, toxicity, liquid asphalt and ephemeral data. Information is on the CRRRC website.
 - In March 2009, the CRRRC hosted an Oil Spill Research Needs Workshop for the oil spill community. This workshop updated the R&D plan developed during a November 2003 workshop also hosted by CRRRC. Details on the workshop and the plan are on the CRRRC website.
 - The CRRRC website is <http://www.crrc.unh.edu/>.
- Joe Mullin of the Engineering and Research Branch of the U.S. Minerals Management Service referenced current oil spill response research (OSRR) projects, including:
 - *Employing Chemical Herders to Improve Oil Spill Response Operations* (Ian Buist, S.L. Ross Environmental Research, Ltd); the objective of this project is to extend the research on herders in pack ice conditions, in open water, and in salt marshes. See <http://www.mms.gov/tarprojects/617.htm>.
 - *Response Option Calculator (ROC)* (Dean Dale, Genwest Systems, Inc); this project will standardize and unify the three NOAA Spill Tools and combine them

with weathering algorithms to better estimate oil recovery/treatment during exercises and actual oil spill events. See:

<http://www.mms.gov/tarprojects/625.htm>.

- *Literature Review on Chemical Treating Agents in Fresh and Brackish Water* (Randy Belore, S.L. Ross Environmental Research, Ltd); the objective of this research project is to conduct a comprehensive literature review and technical evaluation on the use of on chemical treating agents in fresh water (0% salinity) and brackish water (10-15% salinity). See: <http://www.mms.gov/tarprojects/635.htm>.
- *Characteristics, Behavior and Response Effectiveness of Spilled Dielectric Insulating Oil in the Marine Environment* (Dr. Edward Overton, Louisiana State University); wind projects on the U.S. Outer Continental Shelf could consist of wind turbine generators connected to a centralized electrical service platform (ESP). The ESP could contain approximately 40,000 gallons of dielectric insulating oil and approximately 2,000 gallons of assorted oil-based fluids (diesel fuel, lubricating oils, etc.) stored on site for facility maintenance. In addition, each wind turbine could have several hundred gallons of lubricating fluid. The dielectric insulating fluid used in the ESP is typically a mineral oil, but vegetable based oils (soybean oil) may also be used. To provide a comprehensive analysis of the possible fate and effects of spilled dielectric insulating oil, LSU and MMS will conduct a collaborative project to provide a detailed literature review and scientific information on the characteristics, weathering behavior, and window of opportunity for using short-term response options for removal of spilled dielectric fluids in the marine environment. See: <http://www.mms.gov/tarprojects/636.htm>.
- *Validation of the Two Models Developed to Predict the Window of Opportunity for Dispersant Use in the Gulf of Mexico* (Dr. Ali Khelifa, Environment Canada); this project aims to validate and improve the two existing models used to predict the window of opportunity for successful chemical dispersant use in the Gulf of Mexico, and will introduce ten new crude oils from the Gulf for which physical and chemical properties will be measured. The project will also evaluate the sensitivity of the models to water temperature, wind speed and the oil viscosity in order to include effects of these parameters in the models. See: <http://www.mms.gov/tarprojects/637.htm>.
- *Chemical Dispersant Research at Ohmsett: Phase 2* (Mr. Randy Belore/Dr. Ken Trudel, S.L. Ross Environmental Research, Ltd); this project addresses the question of whether dispersant applied in very low doses (1:1000 to 1:200) disperses a small fraction of an otherwise dispersible oil or whether it is ineffective until a minimum threshold concentration of dispersant in the oil is achieved, possibly through repeated spray passes. The answer has significant ramifications for operational decisions in dispersant application on thick oil slicks. This project involves small-scale tests, large-scale Ohmsett testing, data analysis, and a technical report. The project will be conducted in conjunction with another dispersant project titled *Validation of Small-Scale Laboratory Test Dispersant Effectiveness Ranking*. See: <http://www.mms.gov/tarprojects/638.htm>.
- *Research on Improving Methods for Recovering Residues from In Situ Burning of Marine Oil Spills* (Steve Potter and Ian Buist, S.L. Ross Environmental Research Ltd.); the objective of this project is to develop methods for recovering both buoyant non-buoyant ISB residues, including those attached to sorbent agents. The project will include experiments at the SL Ross laboratory in Ottawa, ON, at the Fire Training Facility at Prudhoe Bay, AK, and at the Ohmsett facility. See: <http://www.mms.gov/tarprojects/647.htm>.

- *Open Water Multispectral Aerial Sensor Oil Spill Thickness Mapping In Arctic and High Sediment Load Conditions* (Dr. Jan Svejksky, Ocean Imaging Corporation). This builds on the project that MMS and OSPR have been cooperating on (see OSPR notes above). The existing system was developed and operationally tested under temperate sea and atmospheric conditions with reasonable water clarity. Now there is a need for system testing under extreme conditions, such as in the Arctic. There is also a need for the testing of simplified, self contained multispectral system configurations. See: <http://www.mms.gov/tarprojects/658.htm>
- *Detecting Oil On and Under Sea Ice Using Ground Penetrating Radar: Development of a New Airborne System* (David Dickins, DF Dickins Associates, LLC and Dr. John Bradford, Boise State University); this project focuses on hardware development that will produce two prototype, higher-powered Ground Penetrating Radar (GPR) systems that can be tested in Arctic field environments using commonly available light helicopters. The goal is to significantly expand the practical operating window for oil detection on and under sea ice with GPR to cover a wider range of sea ice and climate conditions. See: <http://www.mms.gov/tarprojects/659.htm>.
- *Combining Mineral Fines with Chemical Dispersants to Disperse Oil in Low Temperature and Low Mixing Energy Environments* (Dr. Ken Lee, Fisheries and Oceans Canada, Mr. Francois Merlin, Centre of Documentation, Research and Experimentation on Accidental Water Pollution, Dr. Lionel Camus); the program aims to study the applicability of combining a dispersant and common fine mineral application to treat oil slicks in low energy regimes that are typical in cold water and the Arctic. The hypothesis is that this combined treatment process would enhance the stability of the oil dispersion and to reduce its toxicity. The fine minerals considered in this study are readily available at oil field sites since they are common components used in the formulation of drilling mud mixtures. See: <http://www.mms.gov/tarprojects/662.htm>.
- *Heavy Oil Dispersion Research* (Randy Belore and Dr. Ken Trudel, S.L. Ross Environmental Research Ltd); this project will continue research and development on the use of chemical dispersants, specifically on heavy oil dispersion. See: <http://www.mms.gov/tarprojects/663.htm>.
- Mr. Mullin also provided the Workgroup with a document listing ten recently completed MMS OSRR projects that includes the final report citations and film clips (as applicable). (I'll provide this as a PDF file on our website with these notes). A complete listing of all MMS funded research projects (oil spill research as well as safety and engineering research projects) can be found on our website at www.mms.gov/tarphome.
- He also noted that MMS has developed a comprehensive summary report of the Arctic oil spill response research projects and their accomplishments. The report, entitled: "Arctic Oil Spill Response Research and Development Program: A Decade of Achievement" is available to be downloaded at: <http://www.mms.gov/tarprojectcategories/ArcticOilSpillResponseResearch.htm>. Steve Lehmann,
- Ruth Yender, Scientific Support Coordinator, the Northwest and Oceania, NOAA Emergency Response Division reported that NOAA's recent work focused on product development, especially on developing predictive models using 3-D.
 - NOAA is also working on electronic technology for collection and delivery of SCAT data.

- She also noted ERMA (Environmental Response Management Application), a program that NOAA has developed in cooperation with the Coastal Response Research Center, which is being used in the Caribbean and New England.

See:

[http://response.restoration.noaa.gov/topic_subtopic_entry.php?RECORD_KEY%28entry_subtopic_topic%29=entry_id,subtopic_id,topic_id&entry_id\(entry_subtopic_topic\)=789&subtopic_id\(entry_subtopic_topic\)=8&topic_id\(entry_subtopic_topic\)=1](http://response.restoration.noaa.gov/topic_subtopic_entry.php?RECORD_KEY%28entry_subtopic_topic%29=entry_id,subtopic_id,topic_id&entry_id(entry_subtopic_topic)=789&subtopic_id(entry_subtopic_topic)=8&topic_id(entry_subtopic_topic)=1).

- For more information on NOAA ERD tools for responders, see:
[http://response.restoration.noaa.gov/audience_catalog.php?RECORD_KEY%28audience_chosen%29=audience_id&audience_id\(audience_chosen\)=1](http://response.restoration.noaa.gov/audience_catalog.php?RECORD_KEY%28audience_chosen%29=audience_id&audience_id(audience_chosen)=1).

- Steve Lehmann, Scientific Support Coordinator, Northeast U.S., NOAA Emergency Response Division and National Response Team Science & Technology Committee Co-Chair reported that the Science and Technology Committee membership consists of U.S. federal agencies, but it has no funding. The focus is on information sharing and research coordination. Agencies and organizations listed in the Committee's 2008 Annual Report include the U.S. Coast Guard, MMS, EPA, NOAA's Office of Response and Restoration, OSHA, the Centers for Disease Control, the Department of Energy, FEMA, and the U.S. Navy; CRRC and the American Petroleum Institute are listed as ex-officio members.



NRT ST Annual Report 2008.pdf

- That 2008 report notes that subsequent annual reports “will examine redundancies and gaps in federal research.”
- Steve noted that plans are underway – and funding has been approved in the House – to set up a Response Research Database in 2010 that would allow anyone to enter research information.
- For information Committee publications, see:
<http://www.nrt.org/production/NRT/NRTWeb.nsf/PagesByLevelCat/Level3ScienceTechnologyPublications?Opendocument>
- Steve also clarified that the Interagency Coordinating Committee on Oil Pollution Research established in Section 7001 of OPA '90 was essentially the same group of agencies, although it also includes the National Institute of Standards and Technology, the U.S. Fish and Wildlife Service, MARAD and RSPA, the Army Core of Engineers, and NASA.
- The Interagency Committee also faces a lack of current funding. The U.S. Coast Guard chairs it and submits a biennial report to congress.



Draft_2009 Biennial ICCOPR report.pdf

- The Workgroup then discussed how to get more state involvement in oil spill R&D. Steve noted that the NRT's work should be communicated to states at the RRT levels, and conversely, that states' research needs should be communicated to the NRT through the RRTs. State representatives on the conference call did not feel that such a communication flow was occurring at this time.

- In response to the fact that few states have research funding, Judd Muskat and Joe Mullin noted that state agencies can provide staff support for cooperative projects. As Kurt noted, however, the research needs to have a potential benefit for the state in order to be approved for support, either with staff or funding.
- Joe Mullin and Steve Lehman both agreed on the need for new technologies to be field-tested during drills and responses so that everyone would become familiar and comfortable with them; this is an area where states could provide leadership. Steve labeled this the "Science of Opportunity." Jean recommended that the NRT Science and Technology Subcommittee take responsibility to develop and maintain a guideline listing new technologies which describes both their capabilities and recommended conditions for use. If such information, as well as technical support when necessary, were available, such field applications might be more probable.
- States also have basic technology needs including those focused on information flow during a response. In an email sent after the conference call, Don Petit of Oregon DEQ noted that Oregon has "a severe technology gap to overcome. We lack the information on resources to be protected as compared to the rest of the west coast (shoreline habitat and species mapping being foremost in my wish list) and have a long way to go in terms of developing the data system to support response. This was made dramatically evident during the OR-CA drill conducted last year in Crescent City/Brookings. We lacked mapping capability and the ability to share information with CA and NOAA GIS groups." He further stated that "mapping and information flow are critical to supporting SCAT, Cleanup, NRDA, and the planning process in general. These needs are more basic than some of the rocket science level work being done, but they are critical and are currently under emphasized."

PROJECT EVALUATION AND NEXT STEPS:

- The Workgroup members agreed that the conference call was valuable. Although two forums currently exist for U.S. federal agencies, neither the states nor Environment Canada are included.
- As for other persons to include, Dr. Kinner recommended invited Scott Pegau from Alaska's Oil Spill Recovery Institute. Workgroup members should send other suggestions to Jean Cameron.
- They also felt that twice/year was an adequate frequency for information exchange, since they can easily contact one another between calls, as needed. Jean Cameron will work with Judd and the Workgroup members to set the next meeting in June, 2010.