

Summary Notes
Pacific States/British Columbia Oil Spill Task Force
Oil Spill R&D Project Workgroup
Conference Call 12/5/2011

PARTICIPATING:

- Judd Muskat (WORKGROUP CHAIR), Ellen Faurot-Daniels and Joy Lavin-Jones, California Department of Fish and Game, Office of Spill Prevention and Response
- Kurt Hansen, U.S. Coast Guard R&D Center
- Dr. Carl Brown, Environment Canada
- Dr. Amy Merten, NOAA
- CDR Eric Miller, Interagency Coordinating Committee on Oil Pollution Research
- Dr. Buzz Martin, Director of R&D and Scientific Support, Oil Spill Prevention & Response, the Texas General Land Office
- Chuck Katz, Space and Naval Warfare Systems Center Pacific
- Dianne Munson and Matt Odum, Alaska Department of Environmental Conservation
- Sonja Larson, Washington Department of Ecology
- Don Pettit, Oregon Department of Environmental Quality
- Jean Cameron, Pacific States/British Columbia Oil Spill Task Force

DISCUSSION:

- Jean Cameron thanked everyone for participating and reviewed the “history” of this project; this is the third year that state and federal representatives have joined the call to share information on their oil spill research and development projects.
- After the roll call, Judd Muskat, Project Chair, led the call participants in reviewing the oil spill research and development projects which their agencies/organizations either have underway or are planning, as follows:

Kurt Hansen, P.E., U.S. Coast Guard Research and Development Center

- Mr. Hansen provided the following project updates, noting that funding for FY12 has not yet been finalized, so these projects are currently operating on FY 2011 funds.
 - **Recovery of Submerged Oil:** Tests using prototype systems were conducted at OHMSETT during November 2012. Two types of sand and three types of oil with viscosities ranging from about 50,000-400,000 cSt were set on the bottom in 8-foot by 20-foot trays. All three systems recovered oil but also gathered a large amount of water and sand. The remotely operated vehicle (ROV) system had some stability problems and only recovered small amounts of oil. The manned submersible system mounted a fixture with a recovery arm, camera, lights and laser fluorometer system to simulate the sub. The input suction head was modified as the test progressed resulting in smaller amounts of water but still a large amount. The last system based on a submerged crawler also recovered a large amount of water. As expected, a strong pump is needed to move the viscous oil, but better control is needed to reduce the amount of water and bottom material collected.
 - **Response to Oil-in-Ice:** Planning is being finalized for an oil-in-ice experiment in the Mackinac Straits at the top of Lake Michigan the week of January 23, 2012. A CG Buoytender (WLB) has been assigned which will deploy a cold-weather version of the spilled oil recovery system (SORS) that removes the containment boom and storage bladder and adds a new Helix brush skimmer and on-deck storage. Configuration is based on work during Deepwater to mount four 100-barrel tanks on the WLB decks. Long-range plans include deployment in the Arctic. In addition, final contractors are being negotiated

to deploy a fire boom, other cold-weather skimmers and possibly an ROV. Additional work dependent upon funding and major industry JIP that is ongoing.

- **Detection and Collection of Oil in the Water Column:** A broad agency announcement was released last month for developing a sensor system to detect oil in the water column. Requirements were based on efforts during an Athos I (Delaware River, 2004) type of spill, combined with an attempt to add what was learned from the Deepwater Horizon spill. Proposals are due 15 December. Expect a two-year effort for sensors followed by a two year effort for mitigation, depending upon funding.

More information is available at:

<https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=ac6d339ca5e82b52a25f8f19b310e6fd&cvview=0>

Dr. Carl Brown, Manager, Emergencies Science and Technology Section, Environment Canada

- Noting that many current projects are ongoing from prior years, Dr. Brown provided the following summary of Environment Canada's Oil Spill R&D activities and priorities for 2011 and 2012:
 - A **database of oil and chemical properties**, which includes oils from the Gulf of Mexico, Alaska, California, and Canada. Biofuels as well as products from the oil sands, including Alberta oil sands bitumen and synthetic crudes have also been added to the Environment Canada database; see: http://www.etc-te.ec.gc.ca/databases/OilProperties/oil_prop_e.html
 - A project focusing on distinguishing and quantifying petrogenic and biogenic hydrocarbons in contaminated and background soils (2008-2012) funded by the **Program of Energy Research and Development (PERD)**; this information is useful for both spill response and site cleanup applications.
 - The **Alberta Upstream Petroleum Research Fund (AUPRF)** project is focused on standardization of an analytical method to distinguish petrogenic and biogenic inputs in contaminated and background soils (2011-2012).
 - An **oil sands project** focuses on chemical fingerprinting of tailings seepage and investigating bioactive substances associated with oil sands production (2011-2014); this includes a fingerprinting analysis of oil sands bitumen, water and soil/sediment samples in the region impacted by oil sands industries.
 - Environment Canada is conducting a collaborative project with the Coastal Response Research Center (UNH/NOAA) to study the **fate and behavior of submerged oil**.
 - Their project at **Lake Wabamun** continues; it is an ongoing follow up to large freshwater spill of heavy fuel oil and pole-treating oil.
 - His section is also working on a number of **collaborative projects**, including:
 - a project with Queen's University and Fisheries and Oceans Canada regarding identification and bioavailability of toxic components in heavy oils;
 - a project with Waterloo University focusing on fingerprinting of oil hydrocarbons and other organic compounds in phytoremediated oil-impacted soil samples; and
 - a project with Canadian Wildlife Service, Environment Canada focused on development of an analytical method for the determination of PAHs in wild bird eggs in Alberta's oil sands region.
 - **Other PERD projects** involve the Advanced Fuels and Transportation Emissions Program (AFTER) and Environment Canada's Renewable Fuels Strategy (RFS) projects in order to:
 - develop chemical fingerprinting methods for biofuel source identification;
 - test mechanical response methods for biofuel spills;
 - evaluate the eco-toxicity of biofuels in soil; and
 - identify biofuel degradation products.
 - Two other **Renewable Fuels Strategy (RFS)** projects focus on:
 - biodiesel: Environmental Emergency Planning and Management; and
 - chemical compatibility of biofuels with response equipment.
- Dr. Brown explained that Canadian regulations have changed, restricting "adding deleterious substances to water" unless net environmental benefit can be shown. Environment Canada's Emergencies Science and Technology Section is participating in an interdepartmental **Spill Treating Agents (STAs)** working group to

determine a path forward for establishing authority to approve STAs for use in Canadian waters in circumstances where net environmental benefit may be achieved. In this regard, they are:

- updating a guidance document on the appropriate use of Spill Treating Agents (STAs) including chemical dispersants;
 - studying and evaluating commercially available oil solidifier products, especially for use in contained environments;
 - developing an updated test for Surface Washing Agents (SWA) to evaluate the effectiveness of SWA products, as well as to assess the potential for other types of STA to affect the behavior of treated oil, e.g. bioremediation agents that also contain surfactants which consequently have the secondary effect of mobilizing treated oil.
- Dr. Brown's group is **collaborating with BSEE** (formerly BOEMRE/MMS) to perform oil properties analysis on 12 new oils from geographically diverse sources, including the Gulf of Mexico and Canada. This is the database expansion component of a broader effort to validate two models to predict the "Window of Opportunity" for dispersant use in the Gulf of Mexico.
 - Research and development projects focused on **fingerprinting** include:
 - developing a fingerprinting analysis and characterization of hydrocarbons in marine sediments (information on this project was published in the Journal of Environmental Forensics);
 - developing a fast oil fingerprinting analysis using commercial solid phase extraction (SPE) techniques coupled with GC-MS analysis (information on this project was published in the Journal of Analytical Methods);
 - developing an analytical method using a programmable temperature vaporization-large volume injection (PTV-LVI) system coupled to gas chromatography-mass spectrometry (GC-MS) for oil fingerprinting analysis; and
 - method development for fingerprinting oil and petroleum products using a fluorescence spectroscopy technique.
 - Environment Canada's Emergencies Science and Technology Section participates in **Oil Spill Identification Round Robin testing** among International laboratories.
 - They are also working on **Classification of Arctic Shorelines** using satellite-based imagery in combination with high resolution video (S. Laforest, J. Duffe).
 - They are hoping to revisit the site of **the Baffin Island Oil Spill (BIOS) Project** after 30 years to evaluate the long-term fate and effects of spilled oil on an Arctic shoreline.
 - Regarding the Database of Oil and Chemical properties, Judd Muskat noted that the petroleum chemistry lab is working with the USGS on merging their data; Judd will send the contact information to Carl.

Dr. Amy Merten, Chief, Spatial Data Branch, NOAA Office of Response and Restoration/Assessment and Restoration Division

- Dr. Merten thanked Don Pettit for suggesting the Standardized Oil Spill Response Mapping project on last year's conference call, and noted that the Task Force supported an initial Spatial Data conference call in January. That led to a short course at the International Oil Spill Conference in May, followed by a meeting facilitated by Mr. Pettit at Oregon DEQ on May 27. Participants discussed the need for and possible means of achieving standardization of cartographic display of data associated with area contingency planning and incident specific mapping on a national/regional/state level, and for leveraging the results of this work to reduce duplication of effort and the work necessary for data sharing during incidents. The main outcome was to divide the group in to three work groups:
 - The **GIS Data Standardization Workgroup** led by George Graettinger of NOAA. NOAA OR&R has been leading a working group of states (CA, OR, LA, FL, and ME), federal agencies (EPA, NOAA, USCG) and the private sector (Shell) to identify key Area Contingency Plan (ACP) and Geographic Response Plan (GRP) datasets to be developed as a standard for response incidents. The intent is that these standard data should be available prior to any response to facilitate efficient support at the time of an

incident. A short list of approximately 20 ACP/GRP data layers have been identified by this group for focused development. Their current effort is focused on identifying the key minimum attributes required to make these data most effective for response support. Over the next two months existing attributes will be reviewed and modified as appropriate. These datasets and attributes will serve as the base layers for GIS based response support. These data will be further developed with standard symbology ensuring consistent presentation and meaning supporting standard products and timely decision making. The result of this working group along with the ICS and Symbology working groups will be provided to the USCG NRT for concurrence and broader promotion. Additional datasets have been identified representing infrastructure and environmental based elements. These datasets are proposed for inclusion, but are not currently being examined as required elements at this time. Additional state coordination is expected as they move forward. Coordination with the EPA Environmental Response Committee is also occurring at an informal level.

- The **GIS Symbolization Workgroup** led by Randy Imai of OSPR. Dr. Merten will inquire about this group's progress.
- The **GIS Data Management/Needed Changes to ICS** led by Jill Bodnar of NOAA. NOAA ORR has been working internally as well as with USCG and Genwest (NOAA's contractor) to outline potential Information Management Units or Sections in the ICS that would centralize the management of any data produced during a large incident. It includes sub-units such as:
 - Document Management Lead (IAP, ICS forms, STRs);
 - Data Management Lead (databases and spreadsheets of collected data);
 - Spatial Data Lead (GIS data and map development); and
 - Web Data Viewer Lead (used as COP if requested, uploading and management of data in web viewer).

Their next step is to share it with the larger (post-IOSC) group for input. They also need to discuss with FEMA and EPA their use of this new section. Contacts at USCG could help to push this up the ICS chain for tentative approval. There would need to be extensive training involved at the ICS level so that players are aware of new roles and data flow.

- Dr. Merten explained that the individual workgroups will be responsible for compiling and facilitating development of a product such as a white paper; one each to outline proposed standards, proposed data management organization and proposed changes to the ICS organization to facilitate mapping. The group generally agreed to aim for completion of these first products by December 2011. Although they did not meet that timeframe, there is a workshop regarding the future of Environmental Sensitivity Index Mapping scheduled for Mobile, AL during the week of March 20-22, 2012 which could also be a good opportunity (before or after) to gather these workgroups in order to discuss or finalize the white papers.
- She reported that NOAA and CA OSPR have developed a draft "SW **ERMA**" and have used it in the LA/LB PREP Drill (September 2011) and at the Chevron drill in the SFB Area (December 2011). Judd Muskat commented that ERMA is the best tool for data dissemination during an oil spill response; he observed that competing viewers were used in the Gulf, but none had the complete picture. California is committed to using ERMA and Area Contingency Plan (ACP) planning data sets are currently being uploaded.
- Dr. Merten also reported that the Arctic ERMA is partially finished and is part of a pilot study with the Arctic Council's EPPR working group. NOAA is working with Environment Canada on potentially holding a data workshop in July 2012 in Edmonton, Canada.
- NOAA also has a working ERMA in the Puget Sound (Pacific NW) and soon release a Pacific Islands ERMA. See: [ERMA Web Portal](#) as well as the following links:
 - <https://www.erma.unh.edu/southwest/erma.html> (Not Public/done yet)
 - <https://www.erma.unh.edu/northwest/erma.html>
 - <https://www.erma.unh.edu/arctic/erma.html> (not public/not done)
 - <https://www.erma.unh.edu/pacific/erma.html> (will be public in Jan 2012)

CDR Eric Miller, Executive Director, the Interagency Coordinating Committee on Oil Pollution Research (ICCOPR)

- CDR Miller explained that **ICCOPR** was created by OPA 90 and was very active during that decade. It has generated new interest in the wake of the Deepwater Horizon oil spill, although ICCOPR had already planned and held a series of public meetings even before that incident occurred.
- He reported that the Interagency Committee achieved an important goal identified in its last biennial report with the launch of its **new website** at www.iccopr.uscg.gov. The website has been an invaluable tool for communicating Interagency Committee activities to the public and other research partners. The website provides continued awareness about the broad array of oil pollution research projects, stakeholders and databases available, thereby supporting the Interagency Committee's outreach and coordination responsibilities. In addition, the website serves as a traffic hub that connects public visitor or Interagency Committee members to supporting documents or other research-related websites.
- ICCOPR submits a **report to Congress** every two years; the current report should be posted on the website by next month.
- CDR Miller explained that ICCOPR does not conduct original research itself, but provides a forum for coordination among federal agencies. At this time, the highest priority of the Interagency Committee is to complete the update of its **R&T Plan**, which serves as a strategic planning document for the Interagency Committee. The last R&T plan was approved by the National Academy of Sciences in 1997. The Interagency Committee continues to collect and review a number of documents and informational sources to update the plan. While it evaluates these sources, the Interagency Committee is organizing the funding and technical resources needed to complete the update for a final publication scheduled for early calendar year 2013.
- Similar to the after-effects of the *Exxon Valdez* oil spill, CDR Miller explained, the devastating 2010 **Deepwater Horizon oil spill** in the Gulf of Mexico is producing a staggering array of research initiatives, issues and discussions that will occupy public and private sectors for years to come. The Interagency Committee is closely monitoring the after-action reports being released about the accident in order to identify and prioritize new research needs. In addition, the Interagency Committee will continue to monitor, identify and help communicate interconnections between the numerous research projects being funded by industry, academia, and the government.
- With the establishment of its basic website, the Interagency Committee is exploring the feasibility of a greater information technology challenge – the development of a comprehensive **online oil pollution research library and informational database**. This online resource would potentially hold an archive of the thousands of published studies related to oil pollution research. In addition, the site would also host active data sharing services related to ongoing research initiatives. The Interagency Committee will be working with the National Response Team's Science and Technology Sub Committee (NRT S&T) to evolve this concept.
- CDR Miller observed that a number of research projects in the public and private sectors over the past few years have focused on Arctic and cold-weather response issues and impacts associated with oil spills. With the potential for increased shipping and exploration activities by a number of countries in this region, **Arctic research needs** are increasing. Member organizations of the Interagency Committee are addressing their own issues and responsibilities associated with activities in the Arctic. Consequently, the collective information and perspectives of the member organizations will help shape the Interagency Committee's understanding and communications related to cold weather research gaps. The Interagency Committee has discussed some of these issues with the U.S. Arctic Research Commission (USARC) and will continue to gather information from other venues, such as numerous subject workshops and meetings coordinated by NOAA and the Coastal Response Research Center (CRRP). In addition, the National Academy of Sciences briefed the Interagency Committee during its July 20, 2011 quarterly meeting on a proposed 18-month Arctic Oil Spill Study that has garnered financial support from several Interagency Committee member organizations. The Interagency Committee will closely look to see how all of this information should be used to inform the R&T Plan and its other initiatives.
- He noted that the Interagency Committee was originally commissioned with 13 members specifically listed by Section 7001(a) of OPA 90. The **Interagency Committee is updating its charter** and recognizes the need to

form new working groups and/or sub-committees to address emerging projects. As a part of the charter update, the Interagency Committee intends to establish a rotating Vice-Chair position among EPA, NOAA, and BSEE. Similarly, the Interagency Committee is examining the potential need for inviting new federal members who are significant stakeholders in oil pollution research to formally participate such as USARC and the United States Geological Survey (USGS). Finally, the Interagency Committee is interested in creating an industry advisory body to enhance its connectivity.

- To further its awareness and mutual communications on research needs, the Interagency Committee will ***continue to reach out to state research programs, industry, academia and non-government organizations.*** In the late summer of 2011, the Interagency Committee extended an invitation to meet with the current active R&D programs from Texas and Alaska. A similar invitation was extended to Louisiana which until recently maintained a robust research and development program.
- In closing, CDR Miller encouraged everyone to send information to ICCOPR regarding their research projects.

Dr. Buzz Martin, Director of R&D and Scientific Support, Oil Spill Prevention & Response, the Texas General Land Office

- Dr. Martin R&D reviewed the following projects funded for fiscal years 2012 – 2013:
 - ***Redesign of the Original TABS Type I Buoy Based on Lessons Learned from the TABS Responder Buoy Project*** (Dr. Norman Guinasso, Texas A&M University, Geochemical and Environmental Research Group): using lessons learned from the design and fabrication of the TABS Responder Buoy (FY2010-FY2011), this project will redesign the original TABS Type I buoy, giving it updated electronics, software and greater sensor capability. The original TABS Type I buoy could only measure near surface currents and water temperature. Taking advantage of newer, smaller sensor technology, the new TABS I will be capable of measuring near surface currents and current profiles to 40m, waves, near surface salinity and water temperature, barometric pressure, air temperature, wind speed and wind direction as well as GPS location. The coastal buoy will have a small solar tower to support sufficient solar panels to maintain the buoy at sea for extended periods, similar to the existing TABS I buoys. The tower will provide a platform on which the meteorological and telemetry systems will be mounted along with a radar reflector and night flashing light. The buoy will be made as small as possible to allow easy handling and transportation, but large enough to withstand strong storms and hurricanes in the Gulf of Mexico. The hull will be designed to provide the greatest amount of reserve buoyancy possible while maintaining transportability and a slope follower shape.
 - ***Determination of Reference Intervals of Plasma Osmolality, Electrolytes, Venous Blood Gases and Lactate in Select Species of Gulf Coast Birds to Guide Fluid Therapy during Oil Spill Response*** (Dr. Jill Heatley, Texas A&M University, College of Veterinary Medicine): Fluid Therapy is the cornerstone of restoring avian health in oil spill response. Knowledge of electrolytes, plasma osmolality, venous blood gases and plasma enzymes guide emergency treatment in other species such as humans and dogs, but these analytes remain poorly investigated in birds, especially the seabird species commonly affected by oil spill events along the gulf coast. Best achievable diagnosis and care is currently based solely on information obtained from two tests: determination of packed cell volume and total solids concentration. While these tests are relatively fast and inexpensive, they give very limited information for diagnosis and treatment of birds. Veterinarians and rehabilitators are hampered by lack of reference ranges to determine blood abnormalities during oil spill response as well as a lack of knowledge of appropriate fluids for treatment. This study proposes to close that gap in knowledge for select common species along the Gulf Coast that are likely to be affected by oil spills. Multiple analytes in birds can now be determined from as little as 0.2 mls of blood within 2 minutes using point of care analyzers. Reference intervals will be determined for these analytes, the effect and interference of blood hemolysis on these analytes will be characterized and derangement of these analytes will be investigated in real time oil spill response events using point of care analyzers. Reference species will be the Yellow-crowned night heron, the brown pelican, the mottled duck, the black bellied whistling duck and the northern gannet. Future studies will use additional species. Dr.

Martin noted that Dr. Michael Ziccardi, Director of California's Oiled Wildlife Care Network, is collaborating on this project.

- ***Improving Hydrodynamic Predictions of Surface Currents Near the Texas Coast Used for Rapid Oil Spill Response*** (Dr. Robert Hetland, Texas A&M University, Department of Oceanography): this project builds on a previous TGLO-funded research and development project in which a new higher-resolution hydrodynamic model focusing on shelf circulation was designed and tested. This team proposes to test the newly developed hydrodynamic model configuration within the real-time framework of the existing TABS Modeling Effort and use this model to better understand mixed current regimes, when both up- and down-coast currents are present simultaneously along the Texas coast. They will test a newly developed Ensemble Kalman Filter (EnKF) application for the old TGLO TABS Modeling Effort grid (that includes the entire Gulf) to provide better error statistics for the General NOAA Operational Modeling Environment (GNOME). The EnKF algorithm will assimilate real-time Texas Automated Buoy System data in the Gulf model and is likely to significantly improve the model's forecasting skill. Preliminary results have shown that the data assimilation scheme is very effective and prediction errors are considerably reduced after only one assimilation cycle. This suggests that the scheme will be very effective at assimilating data and providing accurate short-term forecasts, even when wind force conditions rapidly change.
- ***Evaluating Hydrodynamic Uncertainty in Oil Spill Modeling*** (Dr. Ben Hodges, University of Texas, Center for Research in Water Resources): this project develops a method to provide automatic sequencing of multiple hydrodynamic models and provides for automated analysis of model forecast uncertainty. The modeling approach extends the prior work of Advanced Oil Spill Nowcast/Forecast for Texas Bays and Estuaries, supported under TGLO's Oil Spill Research and Development program. The hypothesis underlying the proposed work is that analysis of hydrodynamic model error in old forecasts (i.e. forecast that have been superseded by real-time) can be used to predict the near-term error for new forecasts. Our goal is to provide a continuously updated series of forecast models from prior times with different time spans that predict the present real-time. The difference between these old forecasts and observed data is used to quantify model error. This error is used to estimate how uncertainty evolves over time for new forecasts and hence the forecast time horizon over which the forecast is believable. The key to success of the proposed project is an automated sequencing of hydrodynamic models that enables 12 models to be simultaneously running on a single multi-processor workstation.
- ***Biological Inventory of the Central Texas Coast*** (Dr. Clay Green, Texas State University, Dept. of Biology): this project will provide: (1) an update to the inventory of faunal species used in the TGLO Oil Spill Planning and Response environmental database; and (2) a gap analysis to identify areas of the middle third of the Texas Coast that are lacking in biological data relevant to oil spill planning and response. Gaps in biological information identified by this project may guide future R&D efforts in acquiring new biological data for mapping sensitive habitats.
- ***Shoreline Type Mapping of the Central Texas Coast*** (Dr. Jim Gibeaut, Texas A&M University at Corpus Christi, Harte Research Institute): this project will provide up-to-date shoreline type classifications in the Environmental Sensitivity Index (ESI) ranking system for the middle third of the Texas coast. It will update and improve the accuracy and resolution (10 m) of the ESI shoreline data in the current Texas General Land Office Oil Spill Planning and Response Atlas. The shoreline developed for this work may also be used for shoreline change analysis. The new low-altitude oblique photography and video acquired for this project will allow shoreline inspections for a variety of coastal management purposes.
- ***Assessing the Ecological Efficacy of Select Wetland Restoration Approaches in the Northwestern Gulf of Mexico*** (Dr. Anna Armitage, Texas A&M University at Galveston, Dept. of Marine Biology): since 2008, the objective for this project has been to evaluate the effectiveness of landscape engineering (which includes sediment/solid sources, hydrology and vegetation establishment) to generate the predicted restoration of marsh functionality in a restored wetland in the Lower Neches

Wildlife Management Area. This project will continue monitoring the restored site development and perform experiments to investigate the mechanisms that drive the observed patterns. Partners on this project include Chevron, TPWD and LSU. This group will be continue and expand this project in the following ways. The continuing objective is to evaluate the efficacy of the landscape engineering, which includes sediment/solid sources, hydrology and vegetation establishment, to generate the predicted restoration of marsh functionality. Since development of restored marsh structure and functions typically occurs over a time span of five years or more, this group will continue their monitoring of restored site development for an additional two years in order to encompass a five-year recovery period. In the current proposal, the objectives are to:

- broaden the scope and applicability of their findings by expanding their monitoring program to include additional restoration sites (including some beneficial uses sites) and other reference areas;
- quantify the secondary production (higher trophic levels) in restored marshes in order to assess the critical ecosystem function of nursery support;
- evaluate the timeline of restoration and provide practical recommendations for the restoration of ecosystem functions; and
- perform experiments to investigate the mechanisms that drive the patterns observed in their monitoring program.

Chuck Katz, Head, Environmental Analysis and Compliance Section, Environmental Services Branch, Space and Naval Warfare Systems Center Pacific

- Mr. Katz explained that **the Environmental Services Branch** is a small group that works for the U.S. Navy.
- They have worked with NOAA over the past two years, **combining CH3D with GNOME**, to improve modeling accuracy for bays and harbors, each of which has unique tidal and water PH features. Once these linkages were complete, model predictions were compared using measured or synthetic (analytical, empirical) data. Then the predicted oil trajectories using NOAA and Navy inventory field data and accuracy of those predictions was documented. While weak, currents in Pearl Harbor persist and produce drift currents which tend to transport oil slicks in a steady state manner. Field observations have confirmed and validated such drift phenomenon. Such long-term drift of oil slicks can only be simulated by the linked model, which is a significant improvement over the existing model.
- Once this merger of predictive capabilities was completed, Mr. Katz explained, project personnel selected two Navy harbors to be used for the demonstration of the merged model: Pearl Harbor, HI and San Diego Bay, CA. These harbors were selected based on multiple factors including traffic volume, accumulated knowledge about the site and accessibility of both the site and relevant site data.
- The integrated CH3D/GNOME modeling system was transitioned to NOAA's ERD team to help them better predict oil spill trajectory. The same modeling system for simulation of spill scenarios for 2011 has been delivered to Ms. Cynthia Pang, a NOSC at NAVFAC-HI. Simulation for scenarios for the entire year of 2012 is in process.
- Capabilities gained through this project include:
 - the Navy will have a model that simulates oil slick trajectories in Navy harbors with improved prediction accuracy;
 - with NOAA being one of the first responders to an oil spill, the Navy will be able to work with NOAA using a better modeling system;
 - NOSCs will be able to have a better modeling system that can be used for both pre-planning (forecast) and clean-up (hindcast) for oil spill events; and
 - the Navy's oil spill management may more effectively and efficiently prepare and deploy spill recovery and clean-up equipment with the use of the predictive models.

Dianne Munson and Matt Odum, Alaska Department of Environmental Conservation (ADEC)

- Ms. Munson reported that ADEC sponsored a **Pipeline Leak Detection Technology Conference** September 13 and 14, 2011. The purpose of the conference was to look at potential advances in leak detection technologies including best practices for Alaska's pipelines. The Alaska Risk Assessment Study recommended looking at ways to reduce the time to detect leaks from pipelines (thus reducing environmental impact). Results from the conference should be available in January 2012 and will be posted on DEC's Industry Preparedness Website at: <http://www.dec.state.ak.us/spar/ipp/index.htm>
- She also explained that ADEC has been involved in an industry-led R&D process for the **Crucial Disk Skimmer** (also known as the Fuzzy Disk Skimmer). They have observed tank testing of the skimmer, which has now been manufactured in three different sizes. The purpose of the tank tests are to determine the skimmer throughput efficiencies and recovery rates. In the process of the tank testing, mechanical improvements have been made to the skimmer itself, including adding the fuzzy Oleophilic coating to the discs, improving the ability to scrape oil off of the discs and strengthening the shaft. The skimmer shows good promise and both Cook Inlet Spill Prevention and Response, Inc. (CISPRI) and Alaska Clean Seas (ACS) have purchased a number of them. Industry is considering the possibility of including the new skimmer into their contingency plans for Prince William Sound, Cook Inlet and the North Slope.
- Matt Odum explained that he serves as a "Scientific Support Coordinator" for ADEC. He noted that ADEC is designing a **Nearshore Recovery Task Force** of regulatory agencies, industry and OSROs for the NW Arctic; their current focus is on response in ice-free waters. The primary challenge is response in shallow water, which extends for miles offshore in that area. Remoteness and the lack of infrastructure are the other challenges; he predicted that a "barge-based" response infrastructure would eventually be put into place.

Sonja Larson, Washington Department of Ecology

- Ms. Larson explained that historically Washington has not had funding for oil spill research programs. However, a new law passed by the Legislature in 2011 requires Ecology to approve contingency plans based on Best Achievable Protection, which includes using **Best Achievable Technology**. They will review and update the regulatory standards every 5 years and develop a 5-year process for evaluating emerging technologies, staffing levels, standards for training and other operational methods to reach the Best Achievable Protection goals.
- Ecology is in the informal period of the rule development; a Rule Committee has been formed and their first meeting will be in January. The new law requires the rule update to be complete by December 2112. To this end, they are monitoring lessons learned from the Deepwater Horizon oil spill and conducting a broad research study on **aerial surveillance technology**, a capability requirement specified in the law. Ms. Larson requested that members of the R&D Workgroup share aerial surveillance research with herself and Mr. Keeney.
- The law funded a new position to write the rule and **focus on response technology**; with this funding the Spills Program created a team of two new hires: herself and Conor Keeney. Their contact information is:
 - Sonja Larson, Response Technology Specialist, Sonja.larson@ecy.wa.gov or 360.407.6682
 - Conor Keeney, Primary Response Contractor Coordinator, conor.keeney@ecy.wa.gov or 425.649.7063
- Regarding mapping capabilities, Ms. Larson reported that Ecology contracted to update their **GRP database** last year. The database update should be complete by January - February 2012. The benefits of this system will include:
 - Web-based interface so data can be entered by technicians working outside of Ecology. This will make GRP updates to shared waters, such as the Columbia River, more streamlined;
 - increased mapping functionality, e.g., it will be capable of supporting strategies for staging areas or boat launches; and
 - it greatly increases GRP development efficiencies.
- **Regarding Response Equipment Mapping**, they are using coordinates from the Western Regional Resource List (WRRRL) database equipment that can be visually depicted in GIS. Layers have been created for

contractors and resource types allowing Ecology users to simply turn on/off types of equipment or contractors. The WRRRL data is being merged with other Ecology databases to support more efficient equipment inspections. One of Ecology's performance measures is to visually inspect or observe deployment all response equipment over a six-year period.

- Ecology's long-range goal is to **use GIS to analyze equipment types and locations** for validating plan holders ability to meet the planning standards, instead of using spreadsheets and manual calculations. GIS data would allow Ecology Spill Responders to quickly pull up maps on mobile devices and identify equipment is staged closest to a spill location as well as ownership of that equipment. They also hope to create a web-based equipment map that allows other agencies and the public to view where equipment is located.
- **Other technology based initiatives** include:
 - requiring 24/7 tracking capability for workboats;
 - continuing to strengthen our tools so that resource tracking in ICS goes smoother; and
 - capturing more data about equipment regarding ETA vs. actual on-scene arrival, as well as analyzing equipment mobilized to a spill as far as trends/appropriateness/readiness. Based on this data they hope to improve their understanding of accurate mobilization and transit times.
- Ongoing work includes coordinating with contractors and users of the WRRRL to improve data quality and creating models and workflows to automate the processing of data.
- Regarding **BAT equipment demonstrations**, Ms. Larson reported that MSRC conducted a demonstration of the current buster technology over the summer. MSRC had concerns about operating the equipment and encountering debris during spills, but these concerns were allayed through this hands-on experience.
- Judd Muskat noted that California just completed a 5-year ACP update of GIS data; consistency was the primary challenge.
- Diane Munson noted that much of Alaska's response capability is driven by the BAT requirements in the contingency planning regulations. Judd noted that OSPR also drills the OSROs and this drives BAT as well.

Don Pettit, Oregon Department of Environmental Quality (ODEQ)

- Don expressed his appreciation to all those working on the GIS data and **symbol standardization project**. He reported that FEMA and the Department of Homeland Security are involved in a similar project, so efforts to coordination would be advisable.
- Regarding development of the **Oregon Incident Response Information System (IRIS)**, a web supported data platform, he noted that Oregon DEQ recently lost their primary GIS person due to budget cuts; they are currently training his replacement.
- The Oregon coast was recently video tapped for use in **ShoreZone Mapping**; the Oregon Department of Fish and Wildlife secured a grant to support this project. This information can be used to update the Geographic Response Plans for coastal shorelines and bays.
- Dr. Merten noted that NOAA will work with ODEQ in order to incorporate the ShoreZone information into the Pacific NW ERMA.

Ellen Faurot-Daniels, Staff Environmental Scientist, Response Technology Support Unit, California Department of Fish and Game, Office of Spill Prevention and Response

- On the topic of response technologies, Ms. Faurot-Daniels reported that one **API Workgroup** is updating the process for reviewing technology proposals during a response.
- She also reviewed the **"The Future of Dispersant Use in Spill Response" workshop** sponsored by NOAA and the Coastal Response Research Center CRRC on September 20-22, 2011 in Mobile, Alabama as follows:
 - Seven workgroups were established to review white papers, identify information gaps and prioritize research. Eventually five to seven priority projects were identified.
 - The papers and workshop results will be posted in the web in mid-January.
 - Nancy Kinner of CRRC is seeking funding for the priority projects.

- Ms. Faurot-Daniels reported that CRRC is also hosting an “invitation-only” forum January 10-12, 2012 at Louisiana State University to encourage dialogue and coordinate **R&D activities regarding future oil spill response in the wake of the Deepwater Horizon**. As stated in the invitation email, the objectives of the forum are to:
 - review previous and on-going R&D being conducted by academic, governmental agencies and industry;
 - present newly funded projects so that everyone is aware of what types of research are being conducted; and
 - evaluate mechanisms for scientific exchange and coordination of oil spill response R&D efforts going forward.
- The invitation also states that “As defined for this forum, oil spill response R&D encompasses any of the following topics:
 - Physical, Chemical and Biological Fate and Transport
 - Biological Effects – Resources at Risk
 - Response Technologies
 - Oil Spill Modeling
 - Monitoring and Detection of Surface, Subsurface and Dispersed Oil
 - Human Dimensions and Risk Communication

Judd Muskat, Staff Environmental Scientist and GIS Coordinator, California Department of Fish and Game, Office of Spill Prevention and Response

- Mr. Muskat noted that the **Southwest ERMA** will be able to include live-feed HF radar for almost all of CA.
- He then reported on the **SS Montebello project**. This was a WWII era tanker sunk by a Japanese submarine; it was fully loaded when it sank and there was no evidence that the cargo had leaked, so OSPR has been working with the USCG and other federal and state agencies to determine whether there is of a threat of an oil spill from the Montebello. OSPR paid for a survey of the vessel by the Monterey Bay Aquarium Research Institute in order to get good images of vessel and surrounding sea floor. The sea floor was determined to be stable. The USCG decided to open the federal fund to conduct a comprehensive assessment project. They contracted with Global Diving and Salvage, which developed ROV-based tools to obtain video of vessel, clean the hull surface, and drill, take samples from the tanks and plug the drill hole. Based on this work, it was determined that there is no threat of oil spill from the Montebello.
- Ocean-Imaging developed an **oil spill mapping sensor**. It was used in the Gulf to map recoverable vs. non-recoverable oil. They did further testing at OHMSETT to focus on imaging emulsions. Algorithms are being developed to classify remote sensing images based on emulsified water content. They also did imaging of oils and oils treated with dispersants. This is done using a thermal camera, which showed that the oil signature disappeared immediately after it was dispersed. This may be a complimentary tool to use with the SMART protocols (which tests dispersant efficacy). The thermal camera could be used to take images immediately before and after dispersion to determine effectiveness.
- Mr. Muskat also noted that **Environmental Sensitivity Index** for the San Francisco region needs to be updated.
- He stated that he is hopeful that **OSPR’s R&D program** will be funded for FY 2012-2013.

Lori Medley, Bureau of Safety and Environmental Enforcement (BSEE) Oil Spill Research Program, Dept of Interior

- Although she was unable to join the call, Ms. Medley sent two links for the Workgroup’s information:
 - New link to **BSEE Oil Spill Response Research**: [http://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); and
 - The **master list of projects** is at <http://www.bsee.gov/Research-and-Training/Master-List-of-Oil-Spill-Response-Research.aspx>

- She also noted the **MarineCadastre** web site, which is a joint effort between NOAA and BOEMRE (now BOEM). It was initiated to support renewable energy development, but it may be of interest to this group: <http://www.marinecadastre.gov/default.aspx>.
- Finally, she sent this link to the **X Prize Foundation's** web site on the skimmer development process that was recently completed: <http://www.iprizecleanoceans.org/>.

Closing Remarks

- Judd noted that a number of connections had been made on the call that can support collaborative efforts in the future.
- Jean Cameron invited everyone to participate in the Clean Pacific Conference in Long Beach, CA on May 16-17, 2012.
- The Workgroup agreed that the conference call has value; they will convene again in December of 2012.