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United States Coast Guard

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11 January 2018

MEMORANDUM

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From: Ms. Kirsten Trego
Executive Director, Interagency Coordinating Committee on Oil Pollution Research

Reply to: 202-372-2269
Attn of: Ms. Kirsten Trego

To: Members, Interagency Coordinating Committee on Oil Pollution Research (ICCOPR)

Subj: FY 2018 FIRST QUARTER ICCOPR MEETING MINUTES

1. General: ICCOPR held a meeting at U.S. Coast Guard's Headquarters in Washington, DC on December 13, 2017. Ms. Kirsten Trego called the meeting to order on December 13, 2017, at 9:07 am and it continued until 4:15 pm. The agenda can be found in Enclosure (1). Representatives of ICCOPR agencies that were in attendance or on the phone were:

CAPT Joseph Loring, ICCOPR Chair, U.S. Coast Guard (USCG)
Mr. Scott Lundgren, ICCOPR Vice Chair, National Oceanic and Atmospheric Administration (NOAA)
Ms. Kirsten Trego, ICCOPR Executive Director, USCG
CDR James Weaver, USCG
Mr. Kurt Hansen, USCG
Mr. Jim Fletcher, USCG
Ms. Karin Messenger, USCG
LT Becca Brooks, USCG
LCDR Stacey Crecy, USCG
Dr. Lisa DiPinto, NOAA
Mr. Dave Westerholm, NOAA
Ms. Erica Folio, Department of Energy (DOE)
Ms. Suzanne Chang, Bureau of Safety and Environmental Enforcement (BSEE)
Ms. Kristi McKinney, BSEE
Dr. Walter Johnson, Bureau of Ocean Energy Management (BOEM)
Dr. Jeff Ji, BOEM
Dr. Zhen Li, BOEM
Mr. Brian Zelenke, BOEM
Mr. Bob Smith, Department of Transportation (DOT) Pipeline & Hazardous Materials Safety Administration (PHMSA)
Mr. Dan Eldredge, Navy Supervisor of Salvage (SUPSALV)
Dr. Robyn Conmy, Environmental Protection Agency (EPA)
Ms. Vanessa Principe, EPA
Dr. Greg Wilson, EPA

Dr. John Kucklick, National Institute of Standards and Technology (NIST)
Mr. Nathan Lamie, U.S. Army Corps of Engineers (USACE)
Ms. Stacey Burger, CSRA

Guests:
Dr. Ken Lee, Fisheries and Oceans Canada (DFO)
Mr. Patrice Simon, DFO
Dr. Michel Boufadel, New Jersey Institute of Technology
Dr. Tim Nedwed, ExxonMobil
Mr. Daniel Will, Government Accountability Office (GAO)
Ms. Jessica Lewis, GAO
Ms. Amy Ward-Meier, GAO
Dr. Nancy Kinner, University of New Hampshire (UNH) Coastal Response Research Center (CRRC)

2. Welcome and ICCOPR Opening Remarks: The following opening remarks were made:

a. CAPT Joseph Loring (USCG)

- CAPT Loring welcomed participants to the Fiscal Year (FY) 2018 first quarter meeting.
- CAPT Loring thanked participants and guests from Canada, GAO and ExxonMobil for attending.
- CAPT Loring thanked ICCOPR members for all of their work on the Biennial Report. The intent was to portray to Congress the value of ICCOPR, and we succeeded. The report is a terrific product. If members are asked what ICCOPR does, CAPT Loring recommended referring them to the Biennial Report. The draft report is currently in internal Coast Guard review, and then will be submitted to DHS and further promulgation to Congress.
- USCG has a Letter of Intent with Norway to collaborate and share information on oil spill related topics. During an October 2017 teleconference between the Norwegian Coastal Administration and the USCG, participants discussed the desire to work with Norway on Research & Development (R&D), and have set up a workgroup which will discuss in early 2018 the path forward for collaboration.
- The Spill of National Significance (SONS) Executive Seminar will be held on March 22, 2018 at Joint Base Andrews. Historically, SONS has been a full-scale exercise and executive tabletop exercise (TTX). Last year was an EPA-led SONS with an inland focus on the Columbia River, and the few years prior, the focus was on the Arctic. The 2018 SONS will exercise three different scenarios, allowing participants to war-game what agencies will do and what resources and capabilities they will bring.
- There was an Emergency Prevention, Preparedness and Response Working Group (EPPR) meeting last week in Sweden. During this meeting, EPPR incorporated updates to the Marine Oil Spill Agreement.
- USCG will have some big personnel changes in the next six months. CAPT Loring stated that he will participate in one more ICCOPR quarterly meeting before moving to his next duty assignment at Sector Maryland-National Capital Region. Additionally, 2018 is the year that the Commandant changes, which will result in some other changes throughout the USCG.

b. Mr. Scott Lundgren (NOAA)
- Mr. Lundgren stated that he appreciates the great representation at this ICCOPR meeting, given the weather and network challenges. There are some great speakers and guests planned for this meeting. Having the opportunity to meet in person provides a real value and a great opportunity to share information.
- NOAA is starting to settle into the new Administration with new political appointees; it has been a great transition so far.

3. General Updates/Announcements:
- The proceedings of the National Academy of Sciences, Engineering, and Medicine (NAS) hosted "Preparing for a Rapid Response to Major Marine Oil Spills: A Workshop on Research Needs to Protect the Health and Well-being of Communities" has been published and is available at: http://nationalacademies.org/hmd/reports/2017/preparing-for-a-rapid-response-to-major-marine-oil-spills-proceedings-in-brief.aspx. A number of ICCOPR members participated in the workshop.
- The NAS Gulf Research Program (GRP) announced awards for six new projects totaling $10.8 million. All six projects involve research to develop new technologies, processes, or procedures that could result in improved understanding and management of systemic risk in offshore oil and gas operations. Awards can be found here: http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12072017
- The NAS GRP is sponsoring fast track grants for institutions that lost research capabilities due to Hurricanes Harvey or Irma to assist in reconstituting research capabilities. These grants are available until January 2nd.
- Applications for Gulf Research Fellowships have been announced. If your agency would like to host a fellow, you can apply online. There is no salary cost to the agency for the fellow, but each agency that hosts is responsible for the provisioning of a computer, desk space, etc. Additional information is available on the NAS website: http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12042017
- The results of the conference *Responding to Oil Spills: Nearshore & Beach Habitats* are available online on the Sea Grant in the Gulf of Mexico website at: https://gulfseagrant.org/responding-to-oil-spills-nearshore-beach-habitats/.
- EPA, NOAA and Watermapping Inc will be conducting a joint workshop, entitled "Recent Advances in Estimating and Measuring Oil Slick Thickness", at the Gulf of Mexico Oil Spill & Ecosystem Science (GoMOSES) Conference in New Orleans, LA, on February 5, 2018 from 1-5 pm. For more information on the workshop: http://www.cvent.com/events/2018-gulf-of-mexico-oil-spill-and-ecosystem-science-conference/custom-125-6ae61bf76b204d0392d48b8bf15ed1eb.aspx#6 The entire conference is scheduled for February 5-8, 2018.
    - Dr. Nedwed (ExxonMobil) noted that ExxonMobil has a technology that fits into that presentation.
    - The Marine Technology Society (MTS) is hosting the Underwater Intervention 2018 conference February 6-8, 2018 in New Orleans, LA. MTS and GoMOSES have coordinated to allow participants for both conferences to attend the February 5, 2018 workshops for either conference.

Action Items:

- Ms. Trego will provide the list of Gulf Research Program awards.
- Dr. Nedwed will coordinate with the EPA regarding the ExxonMobil technology that could support the presentation at GoMOSES.

4. Presentation 1 – The Multi-Partner Research Initiative for Oil Spill Research: Canada's Ocean Protection Plan (Enclosure 2): Dr. Ken Lee (Fisheries and Oceans Canada) provided an overview presentation of the Multi-Partner Research Initiative (MPRI) research program led by DFO to support oil spill preparedness.
   - This program is expected to be announced on Tuesday, December 19, 2017. It is one initiative under the Oceans Protection Plan (OPP) announced in November of 2016. The intent of MPRI is to leverage a network of world-leading collaborative research involving other government agencies.
   - There are seven key research priorities:
     - Impacts of oil in high-risk and poorly understood areas;
     - Oil fate, behaviour and impacts on aquatic species & ecosystems;
     - Ecological "baseline" profiling for at risk areas;
     - Field studies and long-term monitoring;
     - Development and validation of spill response technologies;
     - Development of decision support systems; and
     - Improvement of risk assessments and training.
   - OPP also includes the Alternative Response Measures (ARMS) Program that focused on research to support the regulatory approval and use of spill treating agents (including chemical oil dispersants), in situ burning, oil translocation and decanting of oil.
   - Academia and the Canadian National Research Council, which is similar to the National Science Foundation (NSF), have the objective to train highly qualified personnel, including graduate students for oil spill research as part of the MPRI initiative.
   - DFO is looking for groups like ICCOPR to leverage oil spill research, coordinate and collaborate.
   - Mr. Dan Eldredge (SUPSALV) asked how the priorities were identified.
     - Dr. Lee responded that the priorities developed so far have been in coordination with the Canada Association of Oil Producers and Pipeline Producers. Industry wanted to show that the development of priorities is transparent. Industry funded (through Royal Society of Canada), a scientific team to answer questions. To maintain transparency within the process, the report was not disclosed to industry until 24 hours prior to its release. A large team of scientific personnel developed the core report.
     - Dr. Lee stated that he has been meeting with fisheries and indigenous groups, regulators, scientific and technical reports and is looking for other stakeholders to identify their research priorities. Additional priorities can be added to the MPRI program.
   - The proposal for what research should be included in MPRI will be presented to the Steering Committee, who will make the final decision on what R&D will be approved and funded.

- Mr. Lundgren complimented Canada for looking for ways to coordinate with experts around the world. He noted that NOAA is eager to be a participant in this initiative. Mr. Lundgren asked if there is funding put aside to develop the proposals.
  - Dr. Lee stated that under OPP there are a number of research programs. The MPRI is focused on bringing together international partners. Within that $1.5 billion, Canada is trying to incorporate the entire identification of R&D through execution.
  - Field trials are an important part of execution of an R&D program, and provide the opportunity to train. When research is done at an operational scale in the field, Fisheries and Oceans Canada includes the Canadian Coast Guard, as it provides a training opportunity, and if something goes wrong, the Canadian Coast Guard is onsite to do the cleanup. Field trials are also extended to the regional oil spill response organizations which use the opportunity to train local firefighters and other first responders.
- Dr. Brian Zelenke (BOEM) asked if there is a report that provides the status of the work that has been done, similar to the ICCOPR Biennial Report.
  - Dr. Lee responded that a summary report does not exist, but it would be incredibly useful and timely. He further noted that this is something that Canada should develop.
  - MPRI is the first program to include all Federal agencies. This has not been done in Canada.
  - The previous ICCOPR Biennial reports are available on the website; the FY16-17 report draft is in routing, and awaiting approvals before it is released. Once approved, it will also be on the website.
  - Ms. Trego noted that the research that is highlighted in the Biennial Report (listed in Appendix A) is in the process of being added to the ICCOPR website and should be completed shortly. However, the website is a work in progress and not all updates have been included yet. If a link to specific research was provided by the ICCOPR member agency, it has been included on the ICCOPR website. Anticipate future projects will be added to the website as soon as practicable, and not await the Biennial Report reporting.
- Dr. Nedwed stated that Canada is already recognized as a global leader in oil spill response. He further noted that the workshop is a great idea, but suggested to include the research coordinators from around the world, which allows them the opportunity to describe the projects under their purview. Additionally, it allows for cross-pollination of ideas. This is being done with the Advisory Committee that includes NOAA, EPA, etc.
- The fiscal year (FY) ends March 31, 2018, and the goal is to have the programs in a package ready for FY18 (starting April 1, 2018), and then bring together the research coordinators. The next step would be to identify the key players and programs to fund and bring those scientific coordinators and experts together to develop a proposal to be funded.
- Dr. Nedwed asked if Dr. Lee thought that there would be multiple field tests and when it was anticipated they would happen.
  - Dr. Lee stated that this program will include field trials, with the intent to leverage industry. He noted that he does not anticipate trials in the first year, but would like to conduct as many field trials as possible later in the project. It was estimated that field trials can potentially be expected by 2020.

  - DFO and the Canadian Coast Guard are in agreement and looking forward to the conduct of field trials. The field trials would also include industry.
  - Prior to field trials being planned, approval would be needed from Environmental Climate Change Canada and the approval of the Minister.
- Dr. Zhen Li (BOEM) asked how DFO plans to incorporate international partnerships.
  - DFO has identified some research priorities and are looking to identify any additional priorities, this includes the key players (i.e., NOAA, EPA, U.S. universities, etc.), develop the program, and then provide the grants and contributions. Dr. Lee noted that the program will not include competition, but will focus on fostering relationships with scientists with good reputations. DFO will have to justify who is being funded and show their capabilities.
  - The intent is to leverage ongoing and existing work.
- Dr. Lee spoke to Chuck Wilson at the Gulf Research Initiative (GoMRI), and GoMRI would like to collaborate and have the opportunity to test in the field.
- DFO provided support during Deepwater Horizon at the invite of the U.S., and Canada assumes that if there is a spill, Canada can call on the U.S. to assist, if needed.
- Ms. Kristi McKinney (BSEE) noted that a lot of the priorities mentioned are in the BSEE strategic plan. BSEE is interested in field testing and conducting research during a "spill of opportunity", and would be interested in collaborating and aligning priorities, however, BSEE may not need funding to collaborate.
  - Dr. Lee stated that this program will be a great opportunity to build a relationship with BSEE.
- Mr. David Westerholm (NOAA) asked if Dr. Lee's presentation is available to be shared with ICCOPR members for internal use (not for distribution).
  - Dr. Lee said that it can be shared; however, he asked that members keep it close hold until after December 19th when the Minister announces the program.
- Dr. Robyn Conmy (EPA) thanked Dr. Lee for coming and talking to ICCOPR today. She highlighted that the work that ICCOPR members do is aligned with MPRI. She further noted that it would be good to leverage and collaborate on some of the ICCOPR member agency projects with the MPRI program. Dr. Conmy stated that the ICCOPR Research & Technology (R&T) Plan sets forward a good precedent for how this collaboration can happen. She anticipates a good interaction between ICCOPR and the MPRI Steering Committee.

Action Item:

- Dr. Lee will send his presentation to Ms. Trego for distribution with ICCOPR members.

5. Presentation 2 – Herding Agents Enable *In-Situ* Burn (ISB) in Ice and Open Water: Dr. Tim Nedwed provided an overview presentation on this R&D (Enclosure 3).

- A lot of this research has been done in Canada. Herders were developed by the Naval Research Lab (NRL) in the 1970s. In the early 2000s, ExxonMobil came up with the idea of using herders to enhance in-situ burning (ISB), and have been studying herders since 2002/2003. Research has also been done by BSEE associated with this technology.
  - Research was done by the Minerals Management Service (MMS), in the beginning and prior to the formation of BSEE and BOEM.

- Herders are a surfactant and work as a "chemical boom" to thicken the oil slick. This is done without a boundary (i.e., no boom). It can be done in the middle of the ocean, and provides a way to perform an ISB without boom.
  - Herders thicken oil spills which enable ISB.
  - The concept will work under the right scenario, but at this time the "wrong scenario" has not been identified.
  - The conditions are known when ISB is likely to prove successful.
- Herding and ISB can soon be done from an aircraft or helicopter which allows the response to proceed based upon the speed of a helicopter or plane versus a vessel.
- Herders are sprayed on water around the perimeter of the slick; herders rapidly spread to form a thick burnable slick. Remaining surfactants are biodegradable.
- There are two herders available for use in the U.S.: Thickslick and OP40; they are both approved in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).
  - The approved herders have low toxicity.
  - It uses less chemicals to herd a slick than to disperse the same amount of oil using dispersants.
- Researchers have done several tests in labs to better understand herder; in addition, there have been some field tests on an ice sheet.
  - Research showed that herders would work better in ice, as the water moves less. The ice dampens the mixing energy.
  - The short window of opportunity associated with herders demonstrates why they stopped being used for mechanical recovery.
  - ISB is fast; the amount of time to burn a slick is minutes.
  - Researchers believe the thicker a slick, the better the case for ISB.
  - During field tests, researchers got over 90% burn efficiency.
- As part of this project, ExxonMobil built a large test ice basin in Fairbanks, Alaska to develop and test a helicopter delivery system. Also considered was the opportunity for a remote controlled helicopter.
  - The initial plan was to conduct the test in broken ice, but the ice melted before all of the field tests could be completed.
  - There was two weeks of testing and two successful field tests were completed.
  - The ideal situation is to have a helicopter a few hundred feet above the water. For the tests, the researchers wanted the herder nozzle to be close to the surface of the water/ice. The tests used a Heli torch to ignite the burn, and testing was somewhat inefficient because herding and ISB could not be completed in a single flight due to separate applicators for the herding agents and for the torch.
    - Better technology would be to have the herder delivery system include an ignition system. This requires further R&D and industry is looking to have a Heli torch ignition system combined with the herder delivery system, and is seeking U.S., Canadian, and industry partners.
  - A remote controlled helicopter was tested during this time also; the contractor had some technical problems with the system and could not do the type of testing that was desired.
- In 2016, ExxonMobil did offshore field testing in Norway, but were unable to use helicopter-based herder testing. This test was boat-based herder testing.

  - The plan was to use garden sprayers to drop the herder, but when planning the test, it was not understood how challenging it would be for the people on the boats to see where the slick was. The boat operators could not tell if they were in the slick or not, but were relying on the video feed from a helicopter to see where the slick was.
    - A lesson learned is that the boat driver needs to see a video feed of the location of the oil slick to avoid driving through it when releasing a herding agent.
- Herder technology is ready for boat-based application; ExxonMobil is planning to have this capability available for Oil Spill Removal Organizations (OSROs).
- It was asked if you can re-herd what is not burned during an ISB.
  - It would require the use of additional chemicals to capture the remaining oil (estimated to be about 10-20% of oil remaining after a burn).
- For large slicks that are herded, it can be assumed that an ISB will burn close to 90% of the slick.
- The herder to oil ratio is based on the perimeter distance; it is approximately 1 liter per kilometer. The ratio is approximately a 1 to 100 herder ratio or less, depending on the geometry of the slick.
- Mr. Eldredge asked if freshwater would inhibit the herders. Dr. Nedwed noted that herders work in freshwater and saltwater.
- Dr. Greg Wilson (EPA) asked if various types of oils were used for the tests.
  - Dr. Nedwed stated that there are some advantages to higher density and higher viscosity oils. It is best for a slick to be 3mm thick to conduct an ISB.
  - As part of the herders R&D, a lot of research was done on fluoro-based surfactants and silicone-based surfactants. Silicone-based were found to be better.
  - Thickslick is more biodegradable than the silicone-based surfactants.
- Residual chemistry was looked at on the oil after the burn, including fate of the herder and surfactants and air and water testing. The concentrations were found to be very low.
- Dr. Lee asked what the stability of the herder was.
  - Field tests showed that in quiet environments, there is no degradation of the herder. Mixing energy will disperse through the water. It was noted that in a quiet environment, you cannot keep a slick herded longer.
- Mr. Lundgren asked if there is a wave dampening effect on herders. Would there be a false positive for oil with sensing technologies that detect dampened capillary waves?
  - Dr. Nedwed stated that surfactants will provide a flat surface. If a herder is put on the water surface, it could give a false positive.
  - There was evidence that the herders reduced the size of the waves.
- Ms. McKinney asked if there is there a limit to how far the herders will herd the slick. Is there a maximum amount of barrels of oil to use herders on?
  - Dr. Nedwed stated that the surfactants have so much chemical energy, that they will herd the slick.
- Dr. Conmy asked if there is a water temperature effect on herders.
  - Dr. Nedwed noted that he has not seen an impact from temperature. Successful tests have been done at freezing or near freezing temperatures and in warm waters.
  - Thickslick has a solvent in it that will gel if it gets below freezing. The delivery system needs to keep the herder warm so it will not gel.

6. Presentation 3 – American Petroleum Institute's (API) Subsea Dispersant Research: Dr. Tim Nedwed (ExxonMobil) provided an overview presentation on this API R&D project (Enclosure 4).
   - Dr. Nedwed noted that ExxonMobil has been doing some R&D that he can brief in a future meeting related to new barriers that can be put on a blowout preventer. There are two different barriers, a subsea water injection or polymer.
     - Ms. Erica Folio (DOE) stated that DOE may be interested in learning more about this capability.
   - Dr. Nedwed noted that this R&D identified a new term Spill Impact Mitigation Analysis (SIMA), which replaces a Net Environmental Benefit Analysis (NEBA).
   - The efficacy shows that dispersants do reduce the droplet size.
   - Testing was done in Norway, approximately 1-2 tests per week for the duration of the study.
   - There is a 1 to 100 ratio for subsea dispersants; significantly less subsea dispersants need to be applied versus surface dispersants.
   - Dr. Nedwed noted that testing was done on live oil with dissolved gas and associated gas, which is similar to the gas that comes out of a well. Most other spills are dead oil, where the dissolved and associated gas are already removed.
     - The same droplet size was seen in live and dead oil.
   - API plans to conduct additional testing to confirm if the model scales are accurate.

7. Presentation 4 – State-of-the Science for Dispersant Use in the Arctic: Dr. Nancy Kinner, UNH co-director of the joint UNH-NOAA Coastal Response Research Center, provided an overview presentation on this corrective action identified during SONS 2014.
   - This work is a compilation of many agencies and participants, including: Ms. Debbie Payton (retired), Mr. Scott Lundgren, and Mr. Doug Helton from NOAA, and Dr. Greg Wilson and Ms. Vanessa Principe from EPA.
   - This research was driven from the presentation that Mr. Dave Westerholm (NOAA) gave at SONS 2014. The key corrective action was to develop a report on the State-of-the-Science of dispersants and dispersed oil in the Arctic.
     - This corrective action has been worked from late 2013 (in preparation for the SONS 2014 exercise) through the present.
   - The intent of the research is to develop a primary research document focusing on the Arctic, and determine what is known definitively on the state of science for the Arctic. The intent changed to identify uncertainties remaining, and the needed outreach based on the state-of-the-science, including how that outreach might occur.
   - The thought was that this would involve two workshops, with the focus on:
     - Efficacy and Effectiveness
     - Physical Transport and Chemical Behavior
     - Degradation and Fate
     - Toxicity and Sub-lethal Impacts
     - Public Health and Food Security
   - The organizing committee is representative of a wide range of Federal agencies, including: USCG, USCG District 17, NOAA, U.S. Geological Survey (USGS), U.S. Department of the Interior (DOI), U.S. DOI-Alaska, and Alaska Clean Seas.

- The request was for a "definitive evaluation of the state of science of dispersants and dispersed oil" and "a clear delineation of the associated uncertainties that remain." The committee realized that consensus was not a goal, and decided that instead of the workshops, as planned, the committee would have five separate one-day workshops, one per topic.
  - Each group met for 10 hours to develop 3-5 succinct points describing what is known about the assigned topic, and 3-5 bullet points that highlight the major uncertainties about the assigned topic.
- To view the documents, go to the CRC website: https://crrc.unh.edu/dispersant_science.
  - This site includes a database of research that can be searched for a variety of related research topics. There is a database for each of the five topical areas.
  - Three topics had a detailed document developed by the panel and submitted for "public input."
    - The website has these documents and the final version.
  - Each document was e-mailed to 3,000 individuals, including participants from the UNH and Alaska databases.
    - UNH received some very long and detailed responses to the request for input.
      - Efficacy and Effectiveness – 12 e-mails.
      - Physical Transport and Chemical Behavior – 12 e-mails.
      - Degradation and Fate – 7 e-mails.
      - Toxicity and Sub-lethal Impacts – 9 e-mails.
      - Public Health and Food Security – comments pending.
  - Once comments were received, they were provided to the panel to review and discuss. On average, each group required about 40 hours of conference-call discussions to distill the knowns and unknowns into compact bullets.
- Dr. Kinner created an overview of the three topics that have been completed, which is available for ICCOPR members and provides a high-level view of what is contained within each document.
- The work is close to completion on the last two topics.
- The literature end date is December 31, 2015.
- Mr. Lundgren thanked all of the volunteers who have helped with this initiative. The level of engagement of multiple scientists working together to identify the knowns and uncertainties has been a healthy thing to work through. Mr. Lundgren encouraged ICCOPR members to dig into the documents.
- Dr. Lee asked if the knowledge gaps have been reported.
  - Dr. Kinner noted that the knowledge gaps have been captured and reported to ICCOPR. She further noted that the CRRC takes its direction from NOAA relative to further research or follow-on work.
  - A recent example of use of the documented uncertainties was the direct incorporation of the uncertainties at an Arctic Domain Awareness Center workshop held for the purpose of advancing and documenting their R&D needs.

8. Member Research & Development (R&D) Updates

a. USCG (Enclosure 5)

- Mr. Kurt Hansen (USCG) is retiring in February 2018, and Alex Balsley will be taking over Mr. Hansen's portfolio.

- Mr. Hansen provided an overview of the following projects:
  - Response to Oil in Ice.
  - Detection and Mitigation of Oil within the Water Column.
  - Improved In-Situ Burning for Offshore Use.
  - Oil Sands Products Response.
  - Oil Spill Response Emerging Technology Assessment.
  - Nearshore and Inland Evaluation of the Effective Recovery System Potential (ERSP) Calculator.
- The proposed projects for FY19: Program Review will be held February 21-22, 2018 at the Research and Development Center (RDC). It will include discussion of:
  - Recapitalization of USCG Spilled Oil Recovery System (SORS); and
  - In-Situ Monitoring in Remote Locations.
- Mr. Lundgren asked if USCG is looking at any other aspects of the vessel and facility response plan caps rule if the ERSP calculator is incorporated.
  - Mr. Lundgren noted that remote sensing has progressed substantially and the caps rule only specifies visual observation.
    - Mr. Hansen responded that this is not currently included, however, he will check in with Coast Guard's Office of Marine Environmental Response (CG-MER) to see if they would like to consider addressing this. In follow up, Mr. Hansen stated that the Coast Guard does not intend to address any aspect of that regulation at this time.

b. EPA
- Ms. Vanessa Principe noted that EPA has no new updates.

c. BSEE
- Mr. David Moore will be retiring effective December 29, 2017. There will be a retirement celebration on January 10, 2018 at the BSEE offices in Sterling, VA. Ms. McKinney will send information on the celebration to Ms. Trego for distribution to ICCOPR members.
- Mr. Eric Miller is currently the Chief of the Preparedness Verification Branch and will take over for Mr. Moore. There is no information on how or when Mr. Miller's position will be backfilled.
- The Research Branch Chief, Ms. Lori Medley, retired six months ago, and her position will be advertised within DOI and to Federal employees. It is anticipated that this announcement will be coming out within a few weeks on USA Jobs. Ms. McKinney will share the announcement with Ms. Trego to share with ICCOPR members.
- Ms. McKinney stated that she gave an extensive brief at the last ICCOPR meeting, and for the last few months, BSEE has just been conducting kick-off meetings to get the projects going.
- The research group met with API to try to be more collaborative with research efforts. BSEE is working on a method to fund projects with industry, including trying to identify a contracting mechanism, other than putting out a request for proposal (RFP).
- Information on FY18 projects have been sent to the BSEE internal Research Advisory Board. Updates should be available for the second quarterly meeting.

Action Items:

- Ms. McKinney will send information on the retirement celebration to Ms. Trego.
- Ms. McKinney will share the Research Branch Chief job announcement with Ms. Trego to share with ICCOPR members.

d. DOE

- Ms. Folio provided an update on two projects:
  - Hydraulic Fracturing Test Site in Permian Basin: Data analysis continues at this field observatory. The full core analysis has been completed. Results to date have found no impact to air or water from hydraulic fracturing. The performers and partners are beginning to consider a phase 2, which will focus more on enhanced oil recovery (EOR)
  - In August of 2017, the DOE Oil & Gas program embarked on a project with the Energy & Environmental Research Center (EERC), in partnership with Liberty Resources Management Company and the North Dakota Industrial Commission (NDIC) to conduct a feasibility and implementation study for the use of captured rich gas (associated gas) as an injection fluid for enhanced oil recovery operations in tight oil reservoirs of the Bakken petroleum system. This project will provide the necessary technical support and develop lessons learned to demonstrate how reinjecting captured rich gas (mixture of methane, ethane, and potentially other hydrocarbons) into a Bakken reservoir can be used for EOR, thereby increasing ultimate recovery of the resource and reducing greenhouse gas (GHG) emissions associated with flaring.

e. NOAA (Enclosure 6)

- Mr. Lundgren reported on staff changes (see slide). Additionally, Dr. Amy Merten was promoted internally to Northwest Assessment Division Chief.
- Mr. Lundgren recommends reviewing the Industry Technical Advisory Committee agenda and slides, available at: www.oilspillresponse.com/globalassets/news--media/events/itac/itac-timetable.pdf and www.oilspillresponse.com/external-links/itac-2017/.
- There is new literature regarding human health and dispersants. This includes papers from GuLF STUDY (Gulf Long-term Follow-up Study) (https://gulfstudy.nih.gov/en/index.html) and PNAS (http://www.pnas.org/).
  - Mr. Lundgren noted that this is an area that ICCOPR needs to discuss and think about/engage with health agencies that have not traditionally been part of dispersant planning.
    - Dr. Nedwed noted that the dispersant dosing was potentially under-dosed if it was total oil divided by total volume.
    - Dr. Wilson stated that there are varying perspectives and it opens up lines of discussion. While the paper highlights effects from subsea dispersant on the post-rise cut, the analysis is based on only one days' worth of mathematical modeling and far-field data.
    - There were various experts brought in to review the data and provide input to the report.

- Dr. Michel Boufadel (NJIT) stated that dispersants were put in a tank, and then researchers came back 24 hours later to test, and the dispersants had lost their effectiveness. The dispersants might not affect the average diameter, but they could consider exploring the droplet size distribution in the future.
- Dr. Wilson noted that depending upon the depth, the oil will weather.
- Dr. Boufadel noted the focus was total mass at scale of 10 kilometers.
- Dr. Nedwed stated that there is a benefit. The model was run at a conservative ratio, and still shows a benefit to the health and safety of workers.
- Dr. Wilson noted that there are Occupational Safety and Health Administration (OSHA) standards for 8 to10-hour exposures for certain chemicals, but understanding them to be applicable for a 40-hour work week. These standards do not account for personal protective equipment (PPE) or other protective measures being implemented. During a spill, PPE and/or other protective measures would likely be implemented, per requirements and as necessary.
- Dr. Nedwed noted that ExxonMobil wrote a paper and looked at exposure levels relative to VOCs, including what OSHA recommends.
- Mr. Lundgren will work with Ms. Trego offline to continue this discussion and move it forward with ICCOPR member input.

- Shoreline Cleanup Assessment Technique (SCAT).
  - SCAT For Tomorrow is an effort to evolve the SCAT data standard to use it as a community product and ensure that data can flow freely across multiple systems.
  - There was a SCAT workshop in Mobile, AL in January 2017; the workshop report is available at: www.crrc.unh.edu/SCAT.
- Upcoming trainings can be found at: http://response.restoration.noaa.gov/training-and-education. Trainings include:
  - Science of Spills (SOS); and
  - Science of Chemical Releases (SOCR) and Science of Coastal Natural Disasters (SCND).
- The Sea Grant Seminar: Offshore and Deep Sea Response will take place January 9, 2018. Participants can attend in-person or via live-streaming.

f. BOEM

- Dr. Walter Johnson (BOEM) reported that BOEM has been asked to prepare a national proposed offshore leasing schedule for 2020-2024 to replace the existing Five Year Plan.
  - The scoping of this was supposed to be announced this week, but was delayed until next week.
- The DOI Secretary announced that BSEE and BOEM may be merged.
- Due to budget uncertainty and ongoing commitments, BOEM has limited new R&D. BOEM will be requesting ideas for 2019 R&D in early 2018.
- The project on Statistical Analysis of Oil Spills that have occurred in Alaska will be going into the second phase during this fiscal year.

g. U.S. Navy

- Navy had nothing to report.

h. USACE
- USACE had nothing to report.

i. PHSMA
- Mr. Bob Smith (PHMSA) noted that PHSMA is hoping to have some new R&D awards in February and will have updates after those are awarded.

j. NIST
- Dr. Kucklick stated that work is currently ongoing for reference material which should be available for purchase this year. This will include alkaline and non-alkaline materials.
- The hydraulic flow back material project is in the R&D phase; the intent is to have this available as a reference material later this fiscal year.
- Specimen banking is continuing; NIST is archiving marine mammal samples from the lower 48 states and Alaska for a baseline as part of recovery monitoring efforts for marine mammals.

9. GAO Audit Question & Answer Session
- Ms. Jessica Lewis (GAO) stated that GAO appreciates the invite to this ICCOPR meeting and the chance to provide an understanding of the breadth of what ICCOPR members will be asked for during the audit.
- The request to follow-up on the 2011 review is from the Senate Energy Committee. There are three overarching research objectives:
  - What is the Federal role in overseeing the settlement funds (Exxon Valdez, Deepwater Horizon, etc.)?
  - What is the status of Federal research as it relates to oil spills in different climates and locations?
  - Has scientific research changed following those events?
- The two next steps will be in December 2017 and January 2018. One is a data request, regarding funding of research at agencies. GAO will send out request with a spreadsheet to each agency, to provide the following information on funding of research during the period of FY 2011-2017. It was noted that the more specific each agency can get, the better.
  - Total amount of funding for oil spill research spent, per FY;
  - Number of projects funded per FY;
  - Which of the ICCOPR Research Classes does the R&D fall under;
  - Is research done in collaboration with other agencies (if there is an "in-kind" donation, please note that);
  - If possible, note if R&D was completed in deep water or Arctic water; and
  - Delineate what the agency is paying for with the funding (i.e., salaries, tools, facilities, etc.).
- Dr. Jeff Ji (BOEM) asked if GAO can define what constitutes "oil spill research" with respect to this report in the request sent out to the ICCOPR agencies. For example, what if the R&D is something that describes a biological resource, but it is not a pure oil spill study, should it be included?

- Ms. Lewis noted that the ICCOPR members can define the term as they view it, and provide what the member agencies think is relevant using their definition. She noted that there may need to be some back and forth discussion in deciding what is relevant.
- ICCOPR members asked GAO to provide the baseline for information and caveats.
- It was agreed that it would be good to come to an agreed upon definition for "oil spill R&D."
- Ms. Lewis asked how hard it would be for ICCOPR agencies to add the first set of data from agencies' budget and what may already be considered oil spill research.
  - Dr. Lisa DiPinto noted that NOAA conducts a ton of basic biological research, which includes data and information to characterize biological densities. This information is used on oil spills, but it is not research that is directed to support oil spill response and assessment.
    - Ms. Lewis stated that ICCOPR agencies should err on the side to not include, unless it was something specifically used to support the assessment.
  - Dr. Wilson noted that this information is helpful on a response, and without it, the agencies would be challenged to evaluate potential ecological effects from the oil spill and the response options considered.
- Ms. Lewis asked if ICCOPR has a definition of what is oil spill R&D.
  - ICCOPR members stated they do.
  - Agreement was reached to use the ICCOPR definition of oil spill R&D for the GAO audit.

- It was asked if the previous Biennial Reports were shared with GAO as data, which were supplied previously. It was noted that the reports do not include funding amounts, but does include the R&D that was initiated, completed or ongoing.
  - GAO will take another look at the Biennial Reports.
  - Ms. Trego noted that the Biennial Reports starting in 2012 lists the R&D projects by Research Class. Previous reports did not use the framework that is currently used and accepted.
- Ms. Principe noted that the EPA dollar amount is from the Oil Spill Liability Trust Fund (OSLTF).
- Mr. Lundgren noted that NOAA does not get any OSLTF money for R&D.
- Dr. Johnson noted that BOEM does not use OSLTF for R&D. DOI has funding from trustee funds for R&D, and that is done separately for DOI. Dr. Johnson recommended that GAO send the request to DOI for the list of R&D that is funded through trustee funds.
  - It was acknowledged that GAO will need to coordinate across DOI for the data request. DOI has a GAO liaison.
- Dr. Ji noted that many of the BOEM projects will fall into the "partial" oil spill research category, and then it becomes a question of proportional representation. Some projects may be 5% applicable to oil spills, or others might be 50%, or more or less. It could look like all or hardly any funding is being spent on oil spill research.
- Ms. Suzanne Chang (BSEE) asked a question on behalf of Ms. Folio (DOE): Are the implications for deep water or Arctic water being considered as part of this? It relates to the question on oil spill applicability. Can GAO provide additional guidance?

  - Ms. Lewis noted that GAO will need to give this some thought, but initial recommendation is to look at dedicated oil spill research funding (OSLTF or other oil spill program) and those that inform oil spill research (as ancillary).
- It was recommended that ICCOPR members look at the 2011 GAO Report, and try to be consistent with the information in that report for the response submitted to GAO.
- Mr. Eldredge noted that ICCOPR included USACE, so GAO may need to expand their request to include the additional ICCOPR member agency. He additionally noted that when developing the spreadsheet, GAO may want to have USCG be under the U.S. Department of Homeland Security (DHS) rather than DoD.
- ICCOPR members asked GAO to include an introduction on what is needed in the data request, including blocks or categories, and to populate a few sample rows to show how to complete the spreadsheet.
- Mr. Daniel Will (GAO) noted that the second request from GAO is a follow-up interview for mid-late January 2018, focused on coordination between ICCOPR members. He noted that during the first round of interviews, the questions were general. At this point, GAO is hoping for more specific questions for the next round; the questions will be the same for each agency. The questions are still being developed, but there are three buckets:
  - Agency research efforts.
    - How do you characterize the research your agency does (response, preparedness, etc.)?
    - How are priorities determined?
    - Who does the research?
  - Funding.
  - Interagency coordination efforts.
    - How do agencies interact with ICCOPR?
- Mr. Lundgren noted that the initial request included the Trustee Council and asked if that will be included in the second round of interviews.
  - Mr. Will noted that GAO has been digging into settlement funds and that line of questioning, recognizing that not all of it is related to the work of ICCOPR. GAO is trying to separate and delineate who is doing what. The January 2018 interviews will be ICCOPR and oil spill research focused; there will be a separate interview on questions about the settlement funds.
- The typical data call timeframe is approximately a one-month turnaround; ICCOPR members will have time to complete the data call once it is sent out.
- Mr. Lundgren asked if an informal copy of the request can be sent to Ms. Trego, to ensure ICCOPR members get the request and have the maximum time to respond. Ms. Lewis concurred.
- It was asked if the 2014-2015 Biennial Report is a full list or subset of projects.
  - It is a full list of all of the projects. It was stressed to look at projects, not publications. In the current report that is being routed (FY16-17), the appendix was downscaled to include only the titles, but the information is on the ICCOPR website.

Action Items:

- Ms. Trego will disseminate the 2011 GAO report to ICCOPR members.
- GAO will include instructions and examples with the data call, when it is sent.

- GAO will send an informal copy of the data call to Ms. Trego to share with ICCOPR members to ensure each agency has time to respond.

10. New Business

- Ms. Trego shared the new ICCOPR website (www.dco.uscg.mil/ICCOPR) with ICCOPR members. She noted that the website is still under development.
  - At the last meeting, it was recommended to include photos for ICCOPR members. Ms. Trego will put out a data call to ask for pictures for incorporation.
  - On the website, ICCOPR research is broken into research areas, and reported projects for 2016-2017 reporting period; if a link was provided to Ms. Trego, it has been included on the website.
  - As new projects come online and are reported in the quarterly meetings, they will be added to the website to help with future data calls and reports.
  - The research facilities section looks similar to what was on the previous website.
  - Ms. Trego welcomes any feedback and suggestions for improvement.
- Dr. Conmy had suggested having materials for handouts and Ms. Trego is in the process of developing a trifold and card. USCG graphic design personnel have been asked to assist. Once the draft is complete, it will be sent to ICCOPR members for review. The intent is to have this completed for distribution at GoMRI.
  - This is a handout for ICCOPR members to use and talks about the R&T Plan, Biennial Reports, and includes a link to the new ICCOPR website.
  - Ms. Principe noted that ICCOPR members had also talked about a handout for the Biennial Report. A one page "At a Glance" to highlight the report findings.
    - Ms. Trego noted that this can be developed, but not until the report is approved for dissemination.

Action Items:

- Ms. Trego will request photos from ICCOPR members for inclusion on the website.
- Ms. Trego will complete and disseminate the ICCOPR trifold and card.
- Ms. Trego and Ms. Principe will coordinate to develop the handout for the ICCOPR Biennial Report.

Closing Comments:

- The next meeting is scheduled for March 14, 2018 at NOAA Headquarters in Silver Spring.
- CAPT Loring thanked ICCOPR members for attending and for the great meeting.
- Mr. Lundgren echoed CAPT Loring's thanks to participants for attending and that it was a great meeting.

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Enclosures: (1) Meeting Agenda
(2) MPRI Brief
(3) Herding Agents Brief
(4) API Subsea Dispersants Brief
(5) USCG Update Brief
(6) NOAA Update Brief