

ALASKA REGIONAL RESPONSE TEAM

Meeting Summary

**0845–1700 Wednesday May 16, 2018
Juneau Federal Building, Room 541-A
Juneau, Alaska**

Note: Links in this document are no longer valid. All presentations are provided below in this document.

Sign-in sheets can be viewed [here](#).

A copy of the agenda is available [here](#).

Copies of the presentations and handouts are available on the Alaska Regional Response Team website, under ARRT Meetings at <https://alaskarrt.org>

Safety Briefing, Introductions, Opening Remarks

Mr. Marc Randolph, the U.S. Coast Guard (USCG) Alaska Regional Response Team (ARRT) coordinator, welcomed the meeting attendees and conducted introductions. The ARRT co-chairs—Mr. Mark Everett, (USCG); Mr. Calvin Terada, U.S. Environmental Protection Agency (EPA); and Ms. Kristin Ryan, Alaska Department of Environmental Conservation (ADEC)—welcomed all attendees to the meeting and offered opening remarks.

RADM Opening Comments

Rear Admiral Matt Bell, new district commander at USCG District 17, introduced himself, welcomed the ARRT meeting attendees, and provided some opening comments.

Review of Actions Since Last Meeting and Biennial Work Plan

Mr. Everett and Marc Randolph, USCG ARRT Coordinator, provided a review of the ARRT's actions and activities since the last meeting, held in Anchorage, Alaska, in January 2018. Of note, the ARRT coordinators completed and tri-chairs signed the Alaska Unified Plan administrative update; the Oil Spill Response Institute provided funding and issued a contract regarding Food Safety Policy; and the ARRT co-chairs offered comments on the draft Regional Contingency Plan. A list of the major events can be found [here](#).

Working Group, Subcommittee, and Task Force Reports

Science and Technology Committee

Ms. Catherine Berg, National Oceanic and Atmospheric Administration Scientific Support Coordinator, provided an update on the Science and Technology Committee (STC). Multiple STC members were involved in the Shuyak response. The Food Safety Work Group, led by Sara Fletcher of Nuka Research, is leading the work group. The initial Food Safety Work Group teleconference will be June 11, 2018; any

ARRT members are welcome to participate. The purpose of the meeting is to clarify agency roles and responsibilities.

CAPT White asked on behalf of Mr. Alba Brice with Calista Corporation whom to contact regarding concerns about Fukushima radiation and food safety. CDR Matt Hobbie will communicate and coordinate with Mr. Brice to provide him the information he needs.

Wildlife Protection Committee

Dr. Philip Johnson, U.S. Department of the Interior (DOI) Regional Environmental Officer and chair of the Wildlife Protection Committee, reported that the committee reconstituted this year and has members representing the DOI, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Alaska Department of Fish and Game, EPA, USCG, industry, and tribal organizations.

Two meetings have been held, and a third is scheduled for early June. The committee identified a number of necessary updates to the current Wildlife Protection Guidelines, but these updates will be pending the activation of the new Regional and Area Contingency Plans. They discussed how to make the guidance documents more responder-friendly and how the Wildlife Protection Guidelines will be incorporated into the Area Contingency Plans.

Cultural Resource Protection Committee

Dr. Johnson and Dr. Richard Vanderhoek, Alaska State Historic Preservation Office, are leading the committee and plan to activate it in fall 2018. They are working to determine how to update the membership and provide training to potential historic properties specialists, including agency staff and contractors. At present, in the event of a large incident, there is a potential shortage of available and qualified historic properties specialists. The resource agencies may be able to provide staff until cultural resource contractor support is available, including staff from outside of Alaska.

ARRT Coordinator Reports

Fall ARRT Meeting and Outreach Strategy

Mr. Knowles presented to members the change in date and location of the fall 2018 ARRT meeting from mid-October in Utqiagvik to Anchorage at a time that coincides with the inaugural Alaska Inland and Arctic and Western Alaska Area Committees meetings, anticipated in late October or early November. He also noted that the ARRT leadership agreed to keep future meetings in the on-scene coordinator (OSC) hub cities (Anchorage, Fairbanks, Valdez, and Juneau).

Discussion of Regional Response Team (RRT) Job Aid and the Incident-Specific RRT

Mr. Knowles reviewed and described the existing response planning framework: the standing RRT vs. the incident-specific RRT. He reminded the members of the RRT Job Aid tool. He emphasized that the standing RRT is a planning, policy, and coordinating body, whereas the incident-specific RRT supports the OSC and coordinates issues not handled by the Unified Command. Most commonly, the incident-specific RRT advises on the use of countermeasures and assists the OSC in mobilizing agency resources. A copy of his presentation is available [here](#).

Area Contingency Plan / Regional Contingency Plan Task Force Update

Mr. Knowles, Mr. Randolph, and Shannon Miller, ADEC ARRT Coordinator, presented on the status of the development of the Regional Contingency Plan and four ACPs. A copy of their presentation is available [here](#).

General Discussion Topics and Special Presentations

State-of-the-Science for Dispersant Use in Arctic Waters

Dr. Nancy Kinner made a presentation on the state-of-the-science for dispersants in arctic waters. This presentation was in part prepared to address lessons learned from recent exercises that identified the need to develop a summary of the state of dispersant science and to develop outreach and educational materials explaining dispersant science to be included with public information provided in the event of a decision to use dispersants. A copy of her presentation is available [here](#).

Comments:

- CDR Matt Hobbie recommended that this information also needs to be provided to the Area Committees, in advance of an incident.
- CDR Jereme Altendorf recommended that an easily understood “info-graphic, tweet, and soundbyte” communications package, including “mini-videos” needs to be developed to stay ahead of public misinformation in the event of a large incident. Dr. Kinner noted that SeaGrant has already developed many infographics on dispersants.
- Rhonda Kaetzel, with the Department of Health and Human Services, recommended that the ARRT or National Response Team consider working with science writers who can distill hard science to simplified language “soft science.”
- Ms. Kaetzel also noted a separate critical need for improved tribal interactions and information sharing to address the more intensive connection to the land and its resources experienced by native communities and people.

Harvest Alaska (Hilcorp)

Mr. Glenn Faulkner made a presentation on Harvest Alaska (a Hilcorp subsidiary) and their assets in Cook Inlet, in particular the company’s proposed changes to the Cook Inlet Pipeline system, with an objective to get rid of the Drift River facility and Christy Lee marine terminal and extend the Cook Inlet Pipeline (CIPL) across Cook Inlet to the Nikiski refinery. This would eliminate tanker traffic (cost and risk), eliminate drift river storage, lower costs, and reduce impacts from volcanic activity. The extension of the CIPL would use the “CIGGS-A” gas pipeline to transport oil, estimated to be complete by mid-September 2018.

Comments & Questions:

- Ms. Berg asked the age of the existing gas line that is planned to become an oil-transit pipeline. Mr. Faulkner’s response: The pipeline was constructed in the late 1960s and rated for gas pressure. It is a proven pipeline and tested and run with smart tools.

- Mr. Everett asked if the existing memoranda of understanding/agreement are adequate to address Cook Inlet. Mr. Terada stated that the pipeline is permitted by PHMSA and under USCG jurisdiction for response.
- Ms. Ryan stated that the State is still working to determine its role in permitting the plan.

On-Scene Coordinator Reports

U.S. Coast Guard Southeast Captain of the Port (COTP) Zone

CAPT Steve White, USCG Sector Juneau Federal On-Scene Coordinator (FOSC), gave a presentation on recent USCG activity in Southeast Alaska. He highlighted the response to release from the M/V Lumberman in Juneau, Alaska. This led to a discussion of derelict and semi-derelict vessels, and what happens when harbor masters evict boats for failure to pay and then the boat ends up being abandoned and risk becoming a source of an oil spill or damaging other vessels or structure. He also provided a summary of the planned Echo Cove Geographic Response Strategy (GRS) boom deployment field test. A copy of his presentation is available [here](#).

U.S. Coast Guard Prince William Sound COTP Zone

CDR Michael Franklin, FOSC for Marine Safety Unit Valdez, reviewed the spills and responses in Prince William Sound since January 2018. He highlighted the release at the Valdez Marine Terminal release from a loading arm and a fuel truck spill from rollover in Valdez. He also spoke on the transition from Crowley to Edison Chouest Offshore for tanker escort services. A copy of his presentation is available [here](#).

U.S. Coast Guard Western Alaska COTP Zone

CDR James Binniker, USCG Sector Anchorage FOSC, reviewed the recent responses and lessons learned in Western Alaska. He highlighted the Port William Shuyak Island response (February 26 to April 30, 2018). He spoke on a number of difficulties and lessons learned. He noted that although this incident was only 40 miles from Kodiak, there was no local infrastructure to support the response, and everything needed for the response and crew support had to be brought in. This added to the expense of the response, which totaled \$9 million. Mr. Everett requested that Sector Anchorage provide a copy of the incident after action report. A discussion followed of whether an inventory should be prepared to identify similarly vulnerable structures, at risk of a collapse and resulting oil spill. Mr. Vinnie Catalano (Cook Inlet Regional Citizens Advisory Council; RCAC) recommended that the Shorezone aerial imagery could be used to identify shore-side structures. Mr. Gary Sonnenberg (U.S. Forest Service; USFS) noted that the USFS has been working on responses to canneries on Forest Service land. A separate discussion focused a question from Ms. Berg on whether the ARRT needed to be consulted before or after testing a surface washing detergent if that tactic had been utilized. Through this discussion, a recommendation was made that the ARRT develop a checklist or tool to guide the decision-making and approval process.

CDR Binniker also noted that USCG will conduct the Arctic Guardian Oil Spill Seminar and Equipment Deployment exercise in July 2018 and participate in the Mutual Aid Drill/PREP Exercise in August 2018. A copy of his presentation is available [here](#).

U.S. Environmental Protection Agency

Mr. Bob Whittier, EPA FOOSC, presented on the EPA's recent response and preparedness activities. The EPA is preparing for a large asbestos removal at Miller Salvage Yard in Fairbanks (June 2018) and an oil spill response course in Nome (August 13 to 17, 2018). The EPA will be assisting with the DOI's Inland Oil Spill course in September 2018. He also noted that Andeavor Oil will be testing the new GRSs developed for the inland zone on the Kenai Peninsula.

Alaska Department of Environmental Conservation

Mr. Graham Wood reviewed the major responses, including a response in Savoonga, Alaska, to a 22,000-gallon release due to a tank overfill and a truck rollover response at the Kenai Lake near Cooper Landing, Alaska. He also highlighted the Pirate Cove GRS test deployment and planned GRS test at Echo Cove near Juneau.

Public Comments

No meeting attendees requested to offer public comments.

Concluding Comments and Remarks

Representatives of the ARRT member agencies and the OSCs offered closing comments and remarks, and the meeting adjourned at 1630. The Marine Exchange invited ARRT members and meeting attendees to an open house at their facility following the meeting.

Upcoming Meetings

- ARRT Meeting: October or November, date TBD, ARRT Meeting in Anchorage, Alaska
- Task Force/Committee Meetings:
 - **Food Safety Task Force** Food Safety Work Group teleconference will be June 11, 2018
 - **Cultural Protection Committee** will schedule a meeting for fall 2018.

Follow-up Subjects and Assignment of Tasks

(Assigned party in bold)

- Develop a decision-making tool for the use of surface-washing agents. (unassigned)
-

Participant Summary:

Member Agencies Attendance

Member Agency	Present	Not Present
Alaska Department of Environmental Conservation	●	
Department of Agriculture	●	
Department of Commerce	●	
Department of Defense	●	
Department of Energy	●	
Department of Health and Human Services	●	
Department of the Interior	●	
Department of Justice	●	
Department of Labor		●
Department of State		●
Department of Transportation	●	
Environmental Protection Agency	●	
Federal Emergency Management Agency		●
General Services Agency		●
U.S. Coast Guard	●	

Non-member Organizations in Attendance

Alaska Chadux Corporation
Calista Native Corporation
Coastal Response Research Center, University of New Hampshire
Cook Inlet RCAC
Crowley Fuels
Department of Commerce, National Weather Service
Hilcorp Alaska
Marine Exchange
Nana Corporation
Nuka Research
Prince William Sound RCAC
SEAPRO
U.S. Department of Interior, Bureau of Safety and Environmental Enforcement
U.S. Department of Justice, Bureau of Alcohol, Tobacco and Firearms

Since Last Meeting (31 Jan 2018)

- AUP admin update
- ARRT content in EPA newsletter
- Issued 2018-2019 BWP
- Finished ESA Compliance Report
- Submitted Annual Report to NRT
- Briefed NRT Chair
- Food Safety Policy contract
- NRT member meetings
- Commented on draft RCP
- Letter to ARRT agencies
- NRT NEC ESA work group



ALASKA REGIONAL RESPONSE TEAM

Member Responsibilities

Nick Knowles

Alaska Emergency Response Planner

USEPA, Region X



Alaska Regional Response Team



FEMA



USDA



GSA



National Response System Laws and Plans

FEDERAL STATUTES
NATIONAL RESPONSE FRAMEWORK

CERCLA/OPA

Stafford Act

NCP ← 2 NATIONAL PLANS → *NRF*

NRT & 13 RRTs

FEMA/RISC/SERC

Area Committees

LEPC's

FOSC/SOSC

Local/State
Responders



Hierarchy of Plans

National Contingency Plan

Regional Contingency Plan

Coastal Area Contingency Plan

Inland Area Contingency Plan

OSRP/
ODPCP

FRP-
Offshore

FRP-
Onshore

FRP-
Pipeline

FRP-
Mobile
(Rail and
Truck)

Vessel
Response
Plan

ODPCP

FRP-
Inland/
Onshore

FRP-
Pipeline

FRP-
Mobile
(Rail and
Truck)

FRP-
Offshore
(certain
types)

13 Response Planning Regions



The Standing RRT

Products

- Dispersant/ISB Policy
- Notification Protocols
- Wildlife Protection Guidelines
- Shoreline Countermeasure Manuals
- Spill response technology guidance.



The Incident-Specific RRT



Incident Specific RRT

- Supporting State and Federal On-Scene Coordinators
- Monitoring the Response
- Coordinating on issues not dealt with by the UC/IMT
- Providing advice on the use of chemical countermeasures
- Assisting the OSC in mobilizing agency resources



QUESTIONS?

National Response Team Website: www.nrt.org

ARRT website: <http://alaskarrt.org>

Nick Knowles

Alaska Emergency Response Planner

USEPA

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ALASKA AREA PLANNING INITIATIVE

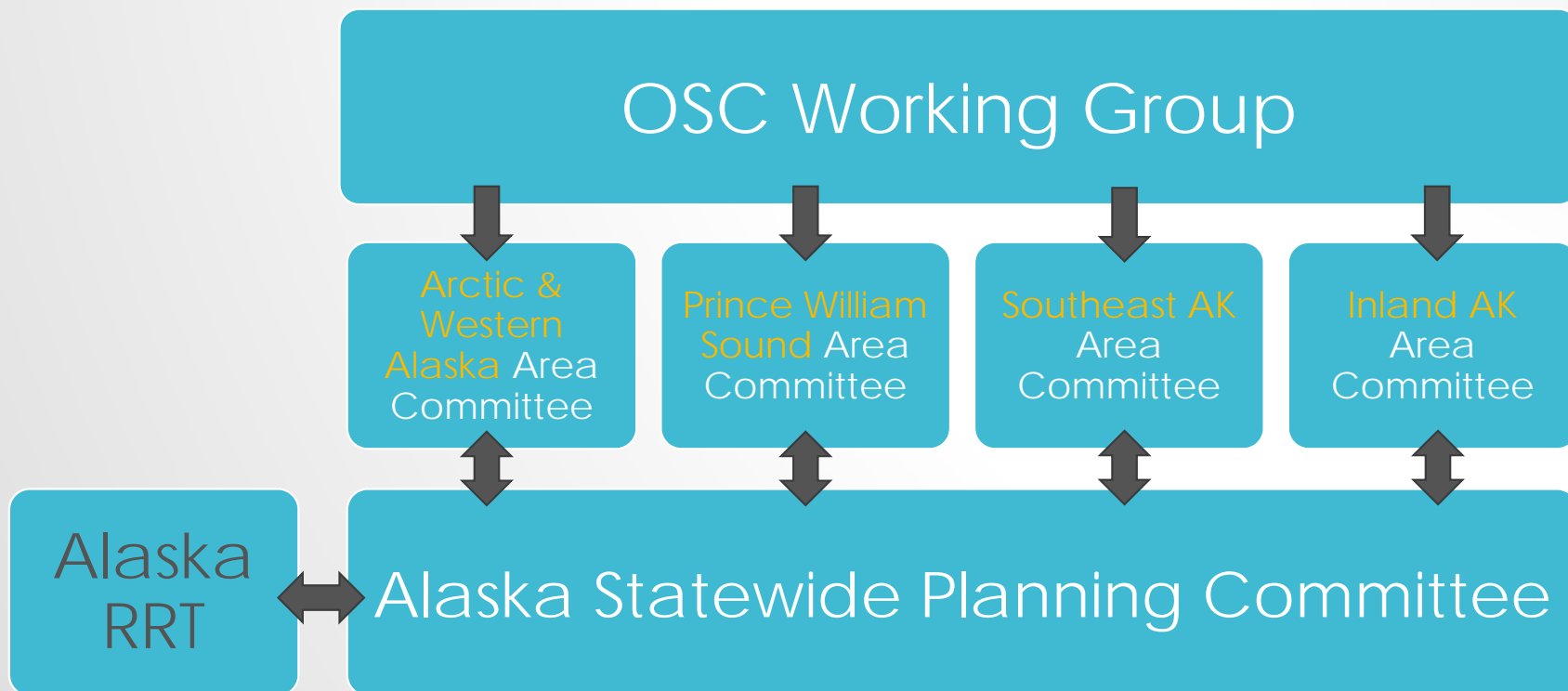
Alaska Area Planning Transition Team Brief

AREA PLANNING TRANSITION UPDATE

- Since last meeting
 - Drafted RCP and provided to ARRT Members
 - Continued work to complete drafts of Arctic & Western AK (AWAK-AC) and AK Inland (AKI-AC) ACP's
 - Began initial outreach to potential Area Committee Members



END STATE: ALASKA AREA PLANNING FRAMEWORK



END STATE:
AREA PLANNING FRAMEWORK NCP COMPLIANT



THE ALASKA REGIONAL CONTINGENCY PLAN



- Follows the Format of the NCP, as per Federal Regulation
- Statewide Guidance To Planners, not Responders
- Statewide Policy to Ensure Consistency Across ACP's
- Guidance for Notification and Consultation W/Stakeholders
- Guidance on the Use of Chemical Countermeasures

AREA PLANNING TRANSITION: MAJOR MILESTONE TIMELINE

July 2018

- Solicit comments on draft RCP and ACP's

September 30,
2018:

- Initial RCP/4-ACPs Signed
- Plan ownership transferred to Area Committees

October 2018

- Inaugural joint meetings of AWAAC and AKIAC, ICW ARRT Meeting, all in Anchorage

August 2018

- Consolidate comments and deliver completed draft ACP's to Area Committees w/recommendations for incorporating comments

30SEP19

- All AK Area Committees meetings scheduled

AREA COMMITTEE FORMATION REALITIES

- By CG Policy coastal Area Committees must:
 - Comply with NCP Area Planning requirements
 - Meet, at a minimum, twice per calendar year
- Temporary CG project specific staffing will allow simultaneous Area Plan reorganization and Area Committee formation
- Area Committees will receive Area Plans that will need significant work to increase usability
 - Area Contingency Plan and Committee management sustainability continues to challenge resource strapped agencies



QUESTIONS?

State of Alaska website:

http://dec.alaska.gov/spar/PPR/plans/regional_plan.htm

ARRT website

<http://alaskarrt.org>



State-of-the-Science for Dispersant Use in Arctic Waters: Overview and Communications Discussion

Nancy E. Kinner

May 16, 2018

Alaska Regional Response Team



Coastal Response Research Center

2014 SONS Executive Seminar

Coastal Response Research Center (CRRC)

- Partnership between NOAA's Office of Response and Restoration and the University of New Hampshire
- Since 2004
 - UNH co-director - Nancy Kinner
 - NOAA co-director - Ben Shorr

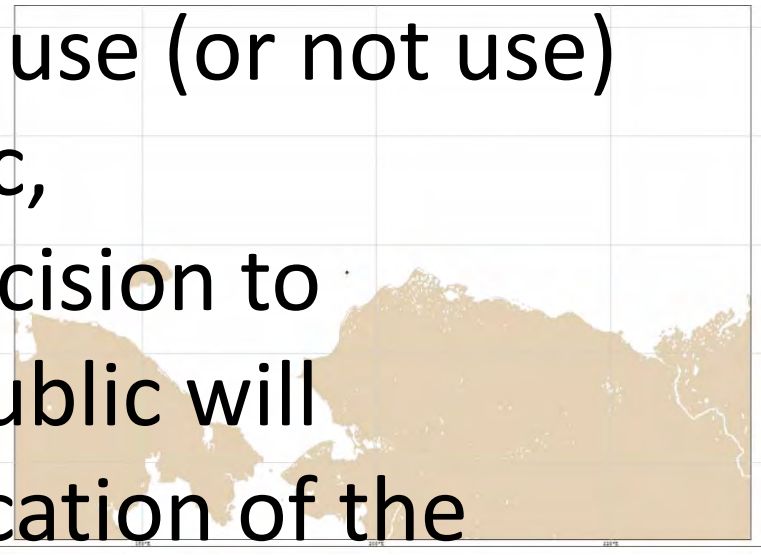


2013 SONS Senior Executive Seminar: Lesson Learned

2013 Late Summer Scenario

2014 Late Summer Scenario

If a decision is made to use (or not use) dispersants in the Arctic, communicating that decision to stakeholders and the public will require clear communication of the science contributing to that decision.



Corrective Action

- Develop Summary of the State of Dispersant Science
 - 1) What we know
 - 2) What we don't know
 - 3) Key issues of which senior leadership should be aware
- Provide Recommendations on Outreach and Educational Materials
- Collaborate with ongoing efforts in Alaska

Focus of Science Discussions

- Effectiveness and Efficacy
- Physical Transport and Chemical Behavior
- Degradation and Fate
- Toxicity and Sublethal Impacts
- Public Health and Food Safety

Steps in Process

- CRRC prepared database of dispersant related references published after 2007
 - LUMCOM database covers prior to that
- Convene week-long workshop in Jan 2015
 - 1 day devoted to each topic



Steps in Process

- All subsequent work on state-of-science documents done with conference calls
- 40+ hours per group
- Sent out for public input to 2,500+ entities
- Each group reviews public input and makes changes, as appropriate
- Final versions of documents on CRRC website
- NOAA ORR project leads will create a summary document for senior executives



Caveats

- Mostly focused on surface application
- Focus is U.S. Arctic waters
- Conditions considered:
 - Ice free water
 - Ice infested water
 - Full ice cover
- No operations evaluation
- Primarily Corexit 9500/9527 in U.S. and post-DWH research
- Literature through Dec 2015



ONLY HIGHLIGHTS OF 5 DOCUMENTS
DUE TO TIME CONSTRAINTS. SEE FULL
DOCUMENTS ON CRRC WEBSITE



ARRT WILL DISCUSS POTENTIAL MODES
OF **COMMUNICATING THIS**
INFORMATION TO STAKEHOLDERS
DURING SECOND HALF OF TODAY'S
SESSION



Efficacy and Effectiveness



Efficacy & Effectiveness

- Efficacy = how well dispersants work in ideal/controlled setting (e.g., laboratory trial)
- Effectiveness = how well dispersants work under “real-world” conditions



Knowns

- Factors that impact dispersant effectiveness:
 - Oil type
 - Oils have: different viscosities, weather differently
 - Emulsification
 - Mixing energy
 - Dispersant formulation
 - Dispersant : Oil Ratio (DOR)
 - Water's salinity
 - Potential for dilution (small shallow water body vs. open ocean)
 - Temperature



Efficacy & Effectiveness

- Knowns:
 - If an oil remains fluid in cold waters in the Arctic, it will likely be dispersible if it is dispersible in temperate waters.
 - Subsea dispersant effectiveness in Arctic is likely equivalent to effectiveness in other subsea regions with the same conditions at depth.



Efficacy & Effectiveness

- Uncertainties:
 - The environment, oil and water systems are very complex, so applying general rules about dispersibility to the Arctic must be done carefully.
 - Ice is a big complicating factor
 - Dispersibility of higher viscosity oils



Mixing Energy

- Knowns:
 - Ice-infested waters: ice dampens surface waves energy, slowing dispersion kinetics
 - Propeller wash from ships can help



Mixing Energy

- Uncertainties:
 - Limited studies of surface mixing energy for some ice conditions
 - Effectiveness of oil dispersion not fully characterized with highly ice-infested waters



Limitations to the Understanding of Dispersant Effectiveness

- Uncertainties:
 - Poorly studied topics:
 - Effects of low salinity and hyper-saline water
 - Behavior of oils with viscosities >2000 cP
 - Dispersants other than Corexit
 - Impacts of gas at high subsea pressure



Detection & Monitoring of Effectiveness

- No standard dispersant effectiveness monitoring protocols for ice-infested waters
- Existing quantitative assessment techniques for measuring overall effectiveness have lots of uncertainty



Physical Transport & Chemical Behavior



Physical Transport & Chemical Behavior

- Knowns: Droplet size/formation
 - Key point: dispersants do not change oil or its constituents chemically
 - Dispersants help reduce droplet size = stay in water column longer
- Uncertainties: Droplet size/formation
 - No models of near surface droplet size distribution for naturally vs. chemically dispersed oil in ice infested waters
 - Turbulence regimes under ice are not well understood - droplet rise



Physical Transport & Chemical Behavior

- Knowns: Transport
 - Capacity of ice to pool non-dispersed oil increases with under-ice roughness
- Uncertainties:
 - Pooling capacity and transport under ice difficult to predict
 - Transport of surface oil in water with intermediate ice coverage is uncertain



Physical Transport & Chemical Behavior

- Knowns: Oil in Ice
 - Experimental field releases have increased understanding of behavior of oil-in-ice
 - Spreading (movement of oil within ice field) is constrained by ice
 - Oil in pack ice will move with the ice unless pack ice is at low concentrations
 - Then may move independently of ice
 - Secondary release of oil entrapped in ice occurs at site where ice melts



Physical Transport & Chemical Behavior

- Uncertainties: Oil in Ice
 - Uncertain how oil is transported when 3/10ths to 8/10ths ice cover
 - Uncertain if oil dispersant mixtures trapped in ice will be dispersed when ice is melted



Physical Transport & Chemical Behavior

- Knowns: Oil Weathering
 - Bulk properties of oil frozen into first year ice are much the same as when oil first encapsulated
 - Field trials show weathering in Arctic is slow; dispersant window as long as 7 days



Physical Transport & Chemical Behavior

- Uncertainties:
 - Limited field data - causes uncertainties
 - Degree of water-in-oil emulsification, volatilization, dissolution
 - Limited empirical data to develop improved predictive models of dispersed oil droplet sizes, dissolution, OMA formation, water-in-oil emulsification for oil spills in ice
 - Modeling movement of oil through brine channels
 - Modeling of oil movement under ice
 - Modeling with higher concentrations of ice



Physical Transport & Chemical Behavior

- Knowns: Subsea Release
 - In shallow waters, force of rising gas from blowout could break ice
- Uncertainties: Subsea Release
 - Effect of gas bubbles from subsea spill and hydrate formation on oil droplet size formation
 - In shallow release, uncertain if oil-water plume will melt ice



Degradation & Fate



Fate of Dispersants Alone

- Knowns:
 - Dispersant components have different half lives in the environment
 - Affected by environmental conditions
 - Anionic surfactants (e.g., DOSS) biodegrade under aerobic conditions and more slowly anaerobically
 - Most studies are surfactants alone, not dispersant mixtures



Fate of Dispersants Alone

- Uncertainties:
 - Because dispersants vary in composition, degradation and fate are not well known
 - Do other sources of surfactants (non-oil spill related) exist in the Arctic?
 - Effect of sunlight, low temperatures, and natural organic matter on dispersant decay/degradation not well understood



Marine Snow

- Knowns:
 - Normal aggregation of marine bacteria, phytoplankton, zooplankton that naturally accumulates particles and sinks to bottom
 - Oil becomes incorporated in marine snow
 - Found evidence after DWH of major MOSSFA layer on bottom
 - Sediment cores from IXTOC well blowout spill in GOM (1979) show MS event



Marine Snow

- Uncertainties:
 - How does dispersant use affect marine snow formation in Arctic?



Biodegradation of Oil

- Knowns:
 - Hydrocarbon degrading microbes found in Arctic waters
 - McFarlin et al. (2014) Arctic near-shore waters crude oil biodegradation at -1°C
 - Microbes degrade dissolved oil constituents and also at oil-water interface



Biodegradation of Oil

- Uncertainties:
 - What actually happens in the field?
 - Few studies
 - Most based on lab not field



Oil Biodegradation Pathways

- Knowns:
 - Oil constituents degrade at different rates
 - Arctic biodegradation pathways follow typical pattern observed in temperate waters
 - Lab studies show no change in biodegradation sequence with dispersants present
- Uncertainties:
 - Is biodegradation sequence in anaerobic marine environment consistent?



Factors Affecting Biodegradation

- Knowns:
 - Nutrients and trace metal availability important in oil biodegradation rates
 - Lab studies suggest oil biodegradation can become nutrient limited
 - At low oil concentration (dispersed oil), there should be sufficient micronutrients
 - Bioavailability, solubility and physical properties affect observed biodegradation rates



Factors Affecting Biodegradation

- Uncertainties:
 - Importance of psychrophiles and psychrotrophs in Arctic oil biodegradation
 - Biodegradation rates in ice uncertain
 - Effect of oil mineral aggregates on biodegradation in Arctic



Effect of Chemical Dispersants on Oil Biodegradation

- Lots of papers published on this topic, some not scientifically sound and some not representative of environmental conditions
 - Examples:
 - Nominal initial oil concentration (not actually measured)
 - Dispersant concentrations very high >1,000 ppm



Effect of Chemical Dispersants on Oil Biodegradation

- Knowns:
 - 10 μm oil droplets degrade faster than 30 μm oil droplets (Brakstad et al., 2015)
 - Dispersants increase oil-water interfacial area, thus increasing biodegradation of oil droplets vs. slick
 - Chemical dispersion most frequently increased oil biodegradation rates vs. physically dispersed oil



Effect of Chemical Dispersants on Oil Biodegradation

- Caveats to Chemically Dispersed Oil Biodegradation Findings:
 - Often studies used proxy for biodegradation (e.g., increase bacterial numbers)
 - Need multiple lines of evidence (e.g., oil decreases, TEA decreases)
 - Lots of factors vary (e.g., temperature, concentration of oil, dispersant vs. particulate, dispersant type, DOR)



Effect of Chemical Dispersants on Oil Biodegradation

- Uncertainties:
 - Impacts of droplet size
 - Impact of dispersants/dispersion on microbial activity
 - Degrading short-term vs. long-term release and adaptation
 - Lack of realistic field conditions



Eco-Toxicity and Sublethal Impacts



Toxicity

- Coming soon... the final version of this document is not yet available



Toxicity

- Focuses on toxicity of oil and chemically dispersed oil
 - Not dispersants alone, Modern dispersant formulations
- Includes species that could be exposed to an oil spill in the Arctic marine environment
 - Species with exclusively Arctic distributions
 - Species with Arctic and sub-Arctic distributions



Exposure

- Knowns:
 - Oil is a complex mixture
 - Different constituents have different toxicity and mechanisms of action
 - Dispersants change how oil partitions in water
 - Dispersants have lower toxicity compared to oil



Exposure

- Uncertainties:
 - Oil constituent and degradation products that are not analyzed
 - Dispersant effect on dissolution rates and uptake
 - Role of oil droplets



Exposure in Arctic Conditions

- Knowns:
 - Sea ice creates different exposure pathways
 - Under-ice biological communities, food webs
 - Marine species tend to aggregate at interfaces where oil can collect
 - High spatial/temporal variability in physical and biological parameters in the Arctic
 - Arctic food chains are shorter and lipid-rich
 - Temperature impacts uptake and metabolism



Exposure in Arctic Conditions

- Uncertainties:
 - Effect of Arctic food chains on trophic transfer
 - Effects of changing climate
 - Effects of low temperatures



Toxicity of DDO to Birds

- Knowns:
 - Undispersed oil impacts birds at the sea surface
 - Dispersants and DDO can disrupt feather structure
 - High bird densities in the Arctic increase risks from oil spills
 - Dispersants, oil and dispersed oil are toxic to bird eggs



Toxicity of DDO to Birds

- Uncertainties:
 - Effect of environmentally relevant concentrations of dispersed oil on bird feathers
 - Sublethal and indirect impacts of DDO on birds



Toxicity of DDO to Marine Mammals

- Knowns:
 - Undispersed oil can impact MMs at the sea surface
 - Dispersants and DDO can disrupt fur structure
 - Polar bear natural history predisposes them to oil exposure
 - Inhalation of VOCs and aspiration of oil and DDO cause toxic effects (esp. for cetaceans)
 - Chronic/sublethal impacts on MMs include:
 - Endocrine and reproductive impacts
 - Lung disease
 - Carcinogenic potential



Toxicity of DDO to Marine Mammals

- Uncertainties:
 - Dispersant effect on exposure at air-water interface
 - Significance of ingestion exposure pathway
 - Specific impacts on Arctic MMs



Toxicity of DDO to Fish and Lower Trophic Levels

- Knowns:
 - No evidence of systematic difference between Arctic and non-Arctic species
 - Dispersants increase oil exposure, but do not change toxicity
 - Early life stages of fish are very sensitive to oil
 - Latent effects on survival
 - Life stage is determinant in toxic effects
 - Photoenhanced toxicity is significant



Toxicity of DDO to Fish and Lower Trophic Levels

- Uncertainties:
 - Sensitivities of other species and life stages
 - Magnitude of photo-toxic effect
 - Effect of low temperatures on exposure/toxicity
 - Possible delayed response in Arctic species
 - Susceptibility of species in Arctic habitats
 - Population-level impacts



Final Comments



Still to Come on Documents

- Public Health and Food Safety
 - Draft for Public Input will be released in June
 - Receive Public Input
 - Panel Reviews Input
 - Panel Finishes Document



Final Comments on Project

- Time marches on
 - This took a long time
 - It is hard to wade through these topics with a diverse group of experts
 - **Dispersant literature since Dec 31, 2015**



Final Comments on Project

- **Agreement possible** on the knowns vs. uncertainties among diverse group of scientists
 - **TAKES LOTS OF DISCUSSION!!!!**



Huge Thanks to the Panelists

**Their volunteer efforts,
patience and commitment
has been amazing!!!!**



Final Phase of State-of-Science of DDO in Arctic Project

- Communicating the state-of-science to the public & others
- Recommendations on how to communicate findings to broader audience/community
 - How to achieve this??
- Step 1: Today's ARRT meeting input
- Step 2: Meeting with Federal agencies (responders and PIOs) + AK DEC reps in DC
- Step 3: Another possible small meeting in AK??? (e.g., Sea Grant???)



Thank You for Your Questions,
Suggestions and Comments

www.crrc.unh.edu



Alaska Regional Response Team

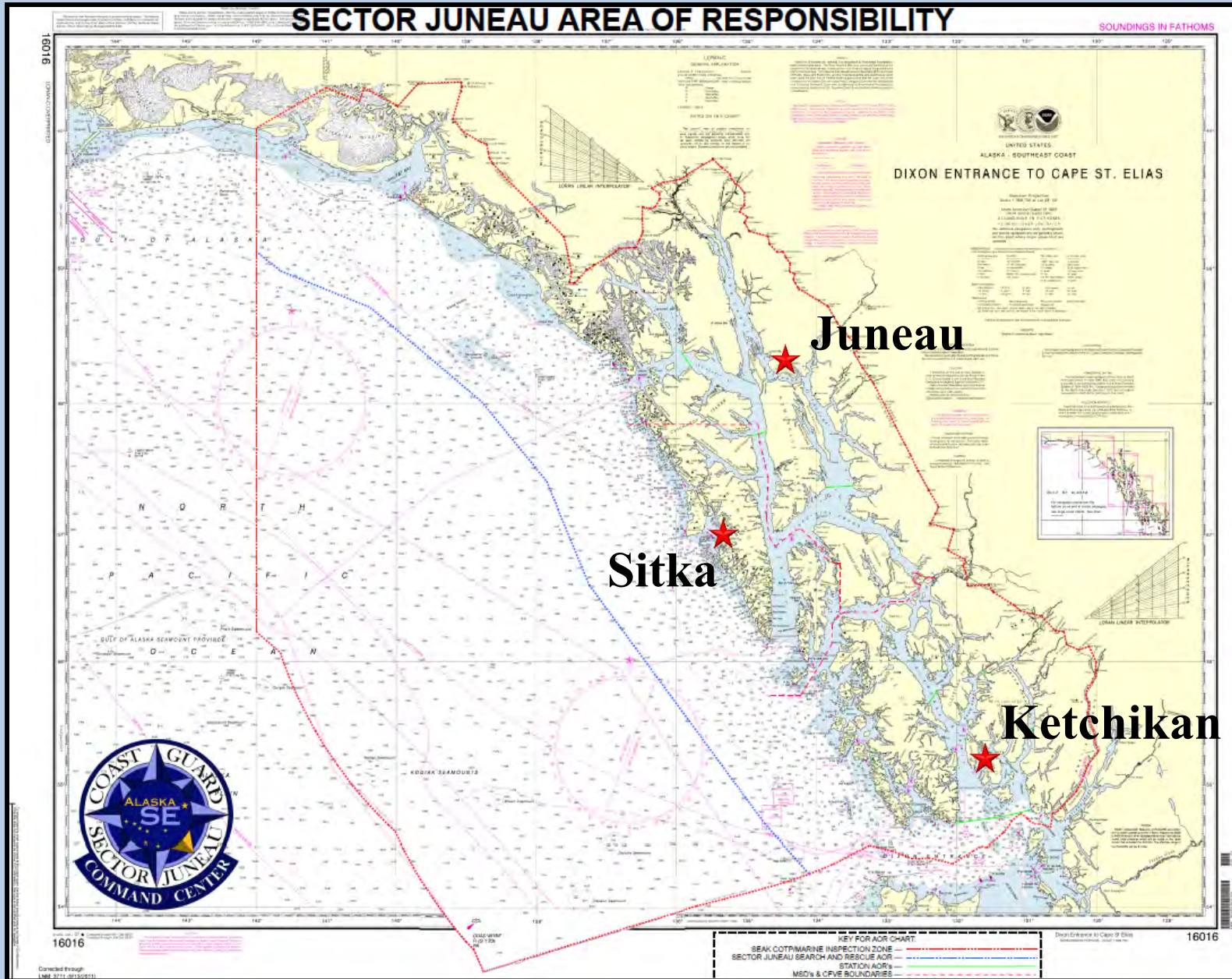
May 2018 Meeting



CAPT Steve White
U.S. Coast Guard
Captain of the Port, Southeast Alaska

SECTOR JUNEAU AREA OF RESPONSIBILITY

SOUNDINGS IN FATHOMS



Pollution Incident Numbers January - April 2018

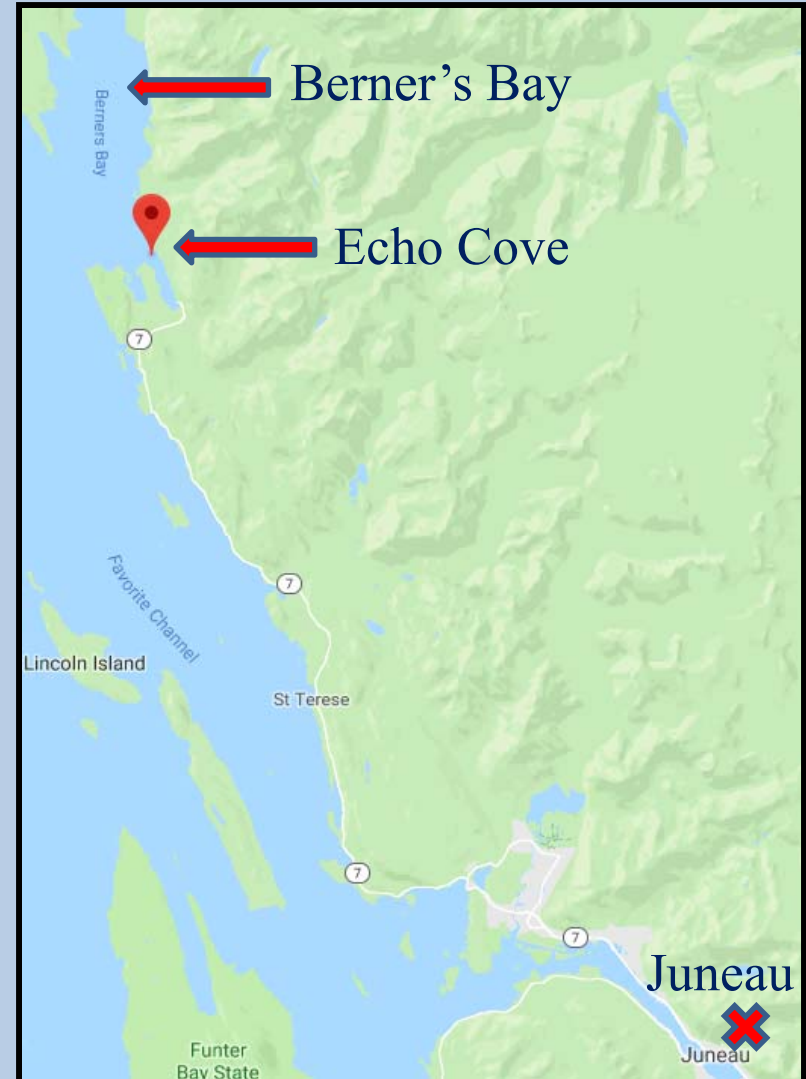
AOR	INCIDENTS	YTD	OSLTF ACCESSED	POTENTIAL GALLONS	ACTUAL GALLONS
Juneau	15	43	1	963	37
Ketchikan	18	26	1	2,469	50
Sitka	06	16	0	1,165	93
Total:	39	85	2	3,767	180

Summer 2018 Objective: Point Bridget / Echo Cove Geographic Response Strategy (GRS SE07-04) Boom Deployment Field Test

Purpose: Protect natural resources and recreational opportunities in/near Echo Cove by assessing potential alternatives to the existing booming strategy

Participating agencies/organizations include:

- USCG
- ADEC
- ADF&G
- Global Diving & Salvage, Inc.
- SEAPRO
- Echo Cove Ranch

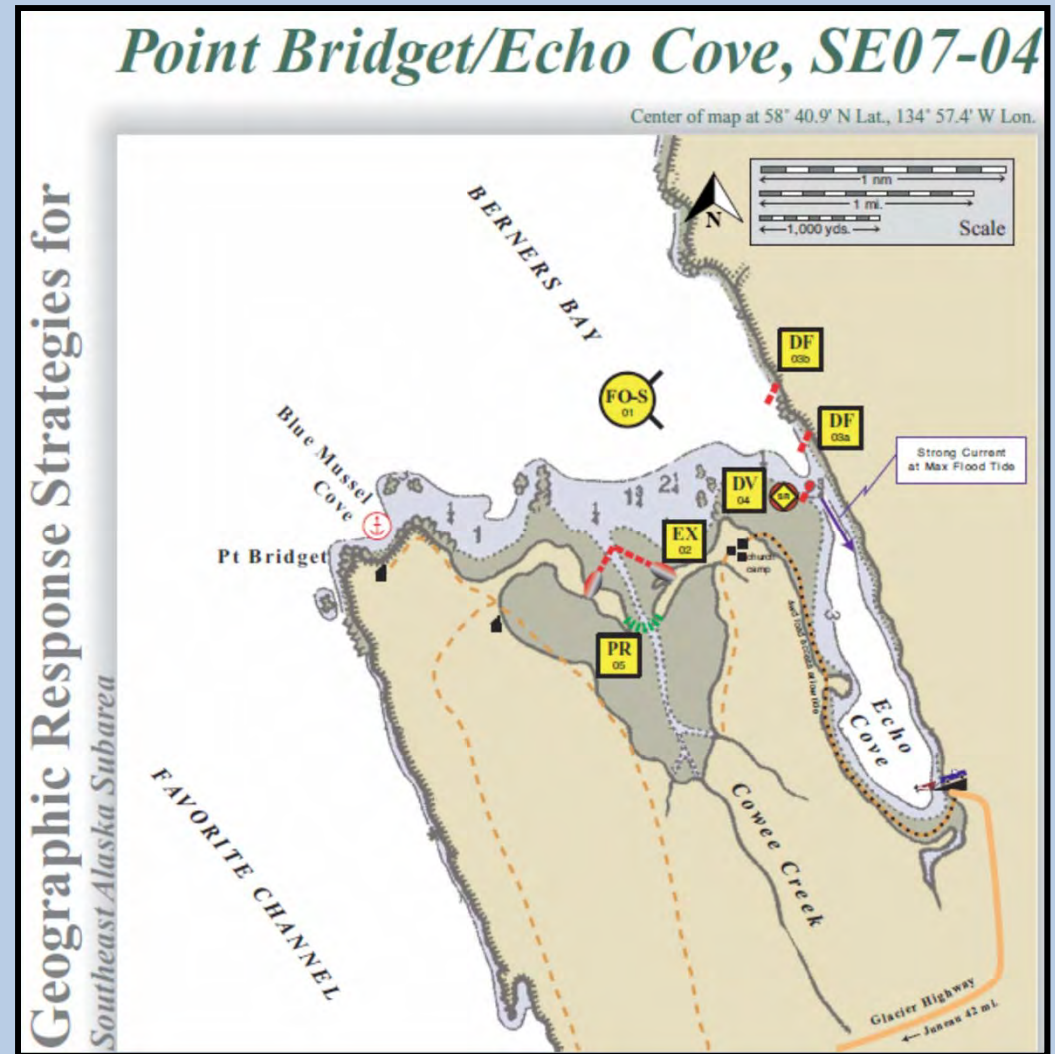


Point Bridget / Echo Cove GRS (SE07-04)

Boom Deployment Field Test

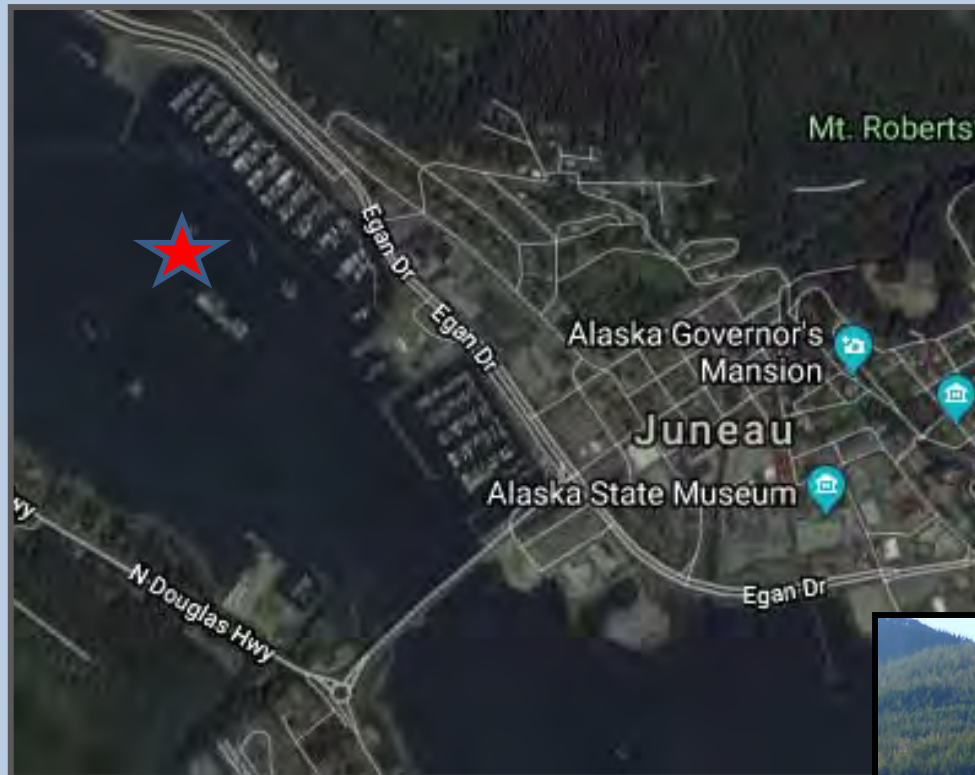
Operations: Participants will devise a viable alternate booming strategy, and field-test its ability to prevent oil from entering Echo Cove

- If successful, participants will propose revisions or supplemental content, for inclusion in the SEAK Subarea Contingency Plan
- Results and findings will be discussed during the September RRT meeting



M/V LUMBERMAN

Gastineau Channel, Juneau



M/V LUMBERMAN is a 107 foot, 192 GRT steel-hull towing vessel (out of service)

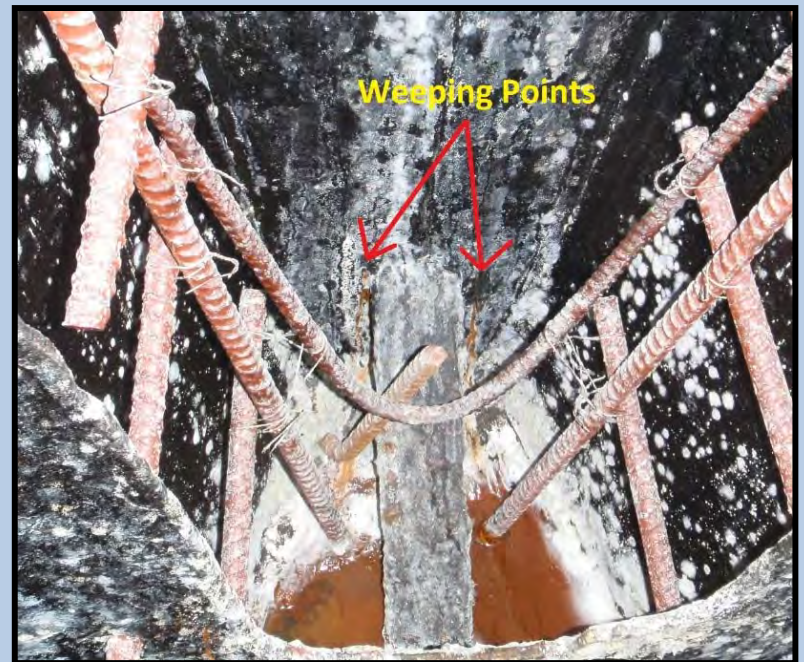
The vessel is anchored seaward of Aurora Harbor, north of the Douglas Bridge



M/V LUMBERMAN Pollution Mitigation 2017-2018

Based on M/V CHALLENGER operations in 2016, City & Borough of Juneau personnel approached Sector Juneau to consult on multiple LUMBERMAN concerns:

- Material condition of the vessel
- Pollution potential, including oily wastes and hazardous substances



M/V LUMBERMAN Pollution Mitigation 2017-2018

- In November, a team of boarding officers, a vessel inspector, and a pollution responder surveyed the vessel to assess integrity and pollution concerns
- The boarding team confirmed “substantial threat of pollution,” justifying use of the Oil Spill Liability Trust Fund for removal operations
- With the help of Global Diving and Salvage, Inc., pollutants were removed for disposal in January, 2018:
 - 830 gallons of fuel/oils
 - 2,863 pounds of hazardous materials and debris



M/V LUMBERMAN Pollution Mitigation 2017-2018

Participating Agencies

City and Borough of Juneau	<ul style="list-style-type: none">• Docks and Harbors• Juneau Police Department (JPD)
State of Alaska	<ul style="list-style-type: none">• Alaska Department of Environmental Conservation (ADEC)
US Coast Guard	<ul style="list-style-type: none">• Sector Juneau Response and Prevention Depts.• Station Juneau• District 17 (Alaska) Legal Department• National Pollution Funds Center
U.S. Department of Commerce	<ul style="list-style-type: none">• NOAA Scientific Support Coordinator• NOAA National Marine Fisheries Service

Home Heating Oil Tank Spill, Ketchikan January 2018

- A home heating oil tank discharged oil into a drainage ditch, causing a sheen in Herring Cove, the adjacent waterway
- IAW USCG instruction, the owner constructed 2 underflow dams in the ditch, allowing water to continue flowing to Herring Cove, while capturing oil *above* the dams with sorbents
- ADEC then oversaw contaminated soil sampling and removal



Tribal Engagement

- June 2018
 - CAPT White and Sector representatives will meet with the Metlakatla Indian Community Mayor
 - Sector Juneau will talk with Goldbelt Corporation members to request approval and invite them to participate in the Echo Cove GRS boom deployment
- August 2018: USCGC ELDERBERRY scheduled to provide on-water support for Douglas Indian Association's marine debris removal project, targeting large crab pots in Gastineau Channel

Contingency Planning

Subarea Meeting held May 15

- Pirate Cove, Sitka GRS
- Area Contingency Plan “Revitalization Initiative”
 - Area Committee formation
 - Area Plan draft in process
- PREP 2019 FSE C&O meeting July 24
 - FSE April 22-26, 2019

Other Activities – US Navy ARCTIC EDGE Exercise

U.S. Navy ARCTIC EDGE Exercise:

- The Navy conducted area and agency familiarization in Juneau in April, in preparation for a full scale minesweep exercise planned for 2019/2020
- This year's preparations included tours of USCG Station Juneau, and USCG Cutter JOHN MCCORMICK



US Navy ARCTIC EDGE Exercise



Questions & Comments



FOSC Prince William Sound May 16, 2018



CDR Michael. R. Franklin
CG Marine Safety Unit Valdez

FOSC Prince William Sound

January 2018 – May 2018 Incident Summary

- Total Incidents: 11 incidents
- Amount Discharged: 3165 gallons
- Total Potential: 11,000 gallons +
- OSLTF Supported: 00 incidents
- CERCLA Supported: 00 incidents

Significant Prince William Sound Responses Cont.

- On the 3rd of February the Valdez Marine Terminal discharged oil from a loading arm onto Berth 5. The oil eventually made its way to water via a through bolt within containment.
- RP Led response with USCG and ADEC oversight.
- Estimated oil spilled was 150 gallons to containment and 5 gallons to water.



Lessons Learned VMT Berth 5 Spill

- Block valve leak by coupled with a blockage of the loading arm drain line from ice/wax pressurized the loading arm line and created the spill.
- Extreme conditions with temperatures in the single digits and winds at near 30 MPH made for a bitter cold environment to perform clean up efforts in.
- Berth was not in use for days prior to incident. Inactivity in extreme cold conditions could have contributed to spill.

Significant Prince William Sound Responses Cont.

- On the 22nd of February a fuel truck from Big State Logistics had an accident at the terminus of Dayville Road where it intersects the Richardson Highway in Valdez. Estimated 3,000 gallons of Diesel fuel spilled. Total potential of 10,500 gallons.
- RP led response with USCG and ADEC oversight. The response involved excavation of contaminated snow and earth as well as defensive tactics being deployed to protect a nearby salmonid creek.
- Happened during the Arctic Eagle Ex and ANG worked with the RP to mitigate the discharge.



Lessons Learned from Big State Trucking Spill

- Ground water contamination can be enforceable if it affects a tributary to navigable waterways.
- Army National Guard Civil Support Team can assist an RP by digging exploratory holes to find the extent and direction of contamination flow.
- Army Core of Engineers require soil backfill permits, the type of which depends on the amount of backfill needed.
- Incineration facility in Fairbanks AK.

Marine Services Transition from Crowley to Edison Chouest Offshore

- ECO to take over tanker escort services in Prince William Sound July 2018.
- New fleet of general purpose and escort tugs and oil spill response barges. Two Escort Tugs, Two General Purpose Tugs and One Response Barge have already arrived in Valdez and begun training.
- USCG inspected and ABS classed with ABS Escort Towing Vessel notation.
- Regulatory guidance for escort towing vessels 33CFR168.
- Escort towing drills and crew training taking place February through June. As of 1 May ECO had complete 41 Tow / Tether exercises.

Prince William Sound Exercises

- Feb 20-27, 2018 (Valdez) **Arctic Eagle 2018 Exercise** —
 - Joint Alaska National Guard exercise with Hazardous Material component.
 - Established Unified Command with City of Valdez, ADEC, USCG.
 - National Strike Force personnel participated with National Guard Civil Support Teams (CST's) and Homeland Response Force (HRF) to identify and mitigate the effects of radiological debris and Toxic Industrial Chemical in the Port of Valdez.



Lessons Learned

- Specialized HAZMAT teams and mass decontamination capabilities are days away from Valdez
- Dry Decontamination is necessary for most hazards in cold weather
- Local On-Scene Coordinator or City Led EOC is critical to success
- National Guard units don't rely on ICS as heavily as USCG
- If intent is established, response would be led by FBI and FEMA
- CERCLA fund would be insufficient for large radiological incident
- Interoperability between the Civil Support Team and the National Strike Force.



Prince William Sound Subarea Committee

➤ Next Meeting:

➤ **June/July 2018 (TBD) – PWS Subarea - Cordova**

➤ Future projects

- Complete conversion to Area Contingency Plan (version 1.0)
- Designate Committee members and develop a basic charter for Prince William Sound Area Committee
- Begin PWS Area Plan Update (version 2.0)
- Continue GRS deployments and evaluation

Future Training & Exercises

- **Shoreline Cleanup and Assessment Training**
 - May 22-23, 2018 (Valdez) Alyeska Sponsored
- **2018 Valdez Marine Terminal Exercise – Alyeska/SERVS –**
 - August 29-30, 2018 (Valdez)
- **2018 PWS Shipper's Exercise – Crowley/SeaRiver**
 - October 9-11, 2018 TBD (Valdez)

QUESTIONS?



FOSC Western Alaska May 2018



CDR James Binniker
USCG Sector Anchorage

Pollution Incidents

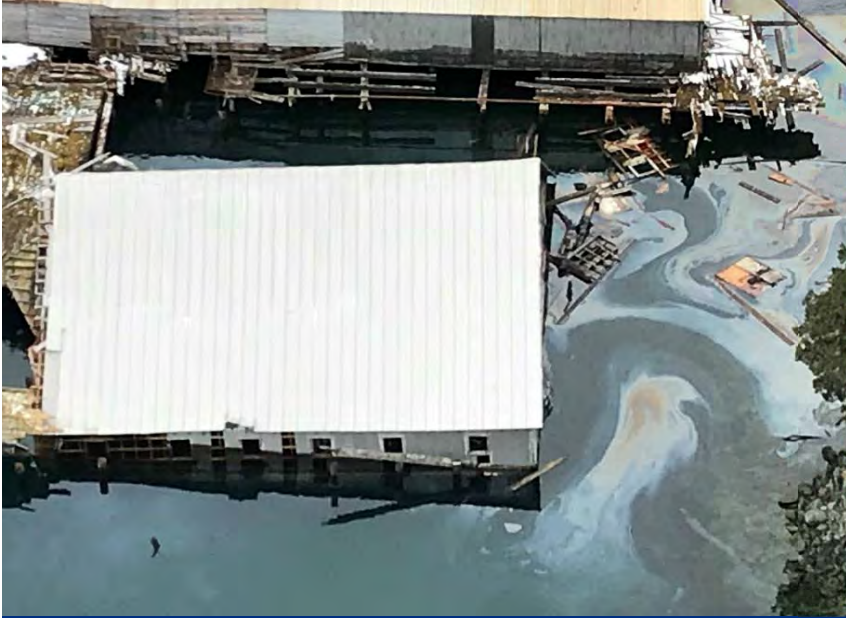
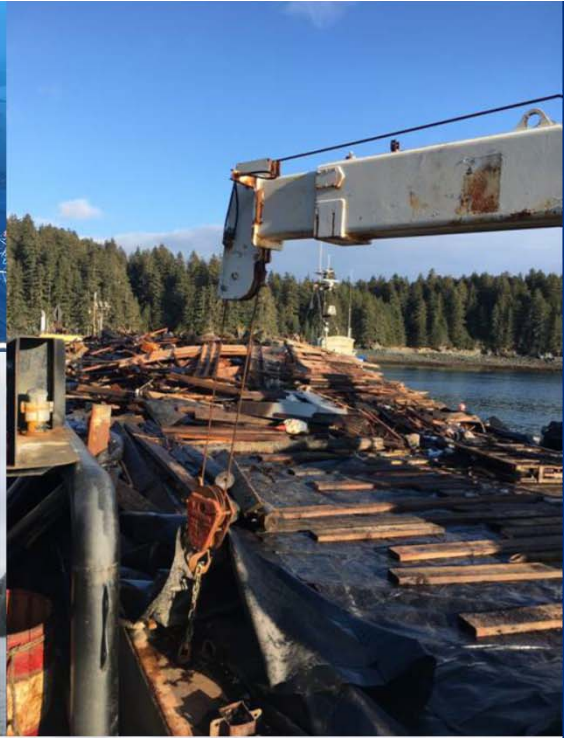
February 2018 – Present

AOR	INCIDENTS	POTENTIAL (Gallons*)	SPILLED (Gallons*)	OSLTF ACCESSED
SECTOR Anchorage	23	44033.5	11533.5	2
MSD Homer	4	202	52	0
MSD Kodiak	10	3042	3024	1
MSD Dutch Harbor	12	10	10	2
Total:	49	47287.5	14619.5	5

* figures are approximate

Port William Shuyak Island (26 February 2018 to 30 April 2018)





 U.S. COAST GUARD

Scammon Bay Discharge



Future Outreach / Exercises

- Arctic Guardian Oil Spill Seminar & Equip. Deployment – July 2018 (Bethel, AK)
- Mutual Aid Drill/PREP Exercise - August 2018



ExxonMobilTM

Future Outreach / Exercises

- Andeavor- Field deployment and IMT-August/November 2018 (Anchorage, AK)



Planning Activities/ Initiatives

Subarea Committee Update:

- Northwest Arctic

Area Planning Reorganization

Questions & Comments



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