



Arctic Facilities and Infrastructure Environmental Change Risk Index (ERI)

29 September 2021, via Zoom (link below)

(Updated 9/28/2021)

Introduction

Failure of bulk oil and other infrastructure has the potential to cause significant environmental harm and disrupt the socioeconomic stability and cultural wellbeing of U.S. Arctic residents, especially in remote locations where mitigation may be delayed or further complicated by extreme environmental conditions. As the Arctic is exposed to the impacts of climate change, infrastructure once protected by shore-fast ice and/or securely anchored in permafrost are now exposed to an increasingly dynamic and adverse environment. Evidenced by records of bulk oil infrastructure failure over the past decade in the Arctic, the propensity for future failure appears to have been exacerbated as infrastructure remains operational beyond engineered life times and as environmental conditions surpass the regime for which the infrastructure was designed.

The US Coast Guard is one of many state and federal authorities responsible for the regulation of bulk oil facilities in the US (under 33 CFR 154). This project responds to the concerns expressed by U.S. Coast Guard (USCG) District 17 over the environmental changes that impact their operational goals and regulatory responsibilities related to 33 CFR 154. USCG D17 has requested that ADAC assemble an interdisciplinary team and conduct an assessment grounded in the pragmatics of the USCG operational environment and develop an environmental risk index for 33 CFR 154-regulated facilities in western and northern Alaska. The study draws experts from a range of disciplines and utilizes a collaborative set of workshops, focused working groups, exchanges with members of past and ongoing studies that are related, and expert and community meetings to solicit expert opinion, synthesize data, and develop an appropriate “Arctic facilities and infrastructure environmental change” risk index. It is envisaged that D17 will utilize this risk index within an array of other information to optimize their operational environment and decision making.

This project has three prime deliverables – i) a baseline knowledge product, ii) an environmental risk index focused on 33 CFR 154 and the operational environment of D17, and iii) a series of products that will enhance the operationalization of the ERI within the D17 operational environment. This workshop is the first workshop associated with this project and will contribute primarily to the first and second deliverables listed above.

Conference Summary

This conference will take place virtually on September 29, 2021. The purpose of this virtual event is to bring together subject matter experts and USCG operators to establish a baseline understanding of risk factors associated with 33 CFR 154. Conference organizers will facilitate an overview of associated topics and frame discussions from the perspective of USCG operational personnel and inspectors.



The event will be guided by the following questions:

- What is the USCG regulatory and operational environment upon which this project is anchored?
- How is this project being orchestrated and what are the target products?
- What environmental phenomenon, and/or structural engineering, and other factors are associated with infrastructural degradation or inspection failure?
- How are environmental phenomenon associated with infrastructure degradation or inspection failure changing?
- How adept are past and present engineering and inspection practices suited to the changing environment?
- What other factors and mindsets need to be incorporated within the development of the ERI?

Objectives and Outcomes

The principal outcome of the project will be a comprehensive assessment and public document on the approaches to, and solutions for, improving risk mitigation and operational decision-making for USCG facilities inspections and response operations. The long-term goal is to establish a credible and useable framework for categorizing Arctic infrastructure and facility status and calculating risk of future failure based on the various erosion, permafrost, and facilities engineering conditions that routinely occur in the Arctic. If such a risk framework can be available for use by government entities such as USCG, it will likely be useful, along with other decision making factors, in deciding the scheduling the frequency of facilities inspections, and identifying the most at-risk locations.

To that end, this workshop is geared toward producing the following

1. An attendee co-developed list of the key parameters related to risk factors impacting 33 CFR 154.
2. A ranked list of key parameters, from most to least impactful, and by category, of those environmental and physical factors attendees are primarily concerned with addressing

Online Connecting and Coordinating Instruction

For connecting by computer or zoom app:

<https://alaska.zoom.us/j/84795043875?pwd=RTZQSjVFci9CUU13SkdlVnBtc21Ldz09>

Meeting ID: 847 9504 3875

Passcode: 080424

To connect by phone:

+12532158782,,84795043875# US (Tacoma)

+13462487799,,84795043875# US (Houston)

Or dial by your location

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 669 900 6833 US (San Jose)

+1 301 715 8592 US (Washington DC)



+1 312 626 6799 US (Chicago)

+1 929 205 6099 US (New York)

Meeting ID: 847 9504 3875

Agenda & Details

September 29 / All times listed in Alaska Time – which is Eastern Time minus 4 hours

Ms. Kelsey Frazier, Research Associate, Arctic Domain Awareness Center (workshop host and facilitator)

0800: Welcome and Opening Remarks

Mr. Jeff Libby, Executive Director, Arctic Domain Awareness Center

Dr. Nettie LaBelle-Hamer, Interim Vice Chancellor for Research, University of Alaska Fairbanks and Research Director, Arctic Domain Awareness Center

Dr. Doug Causey, Principal Investigator, Arctic Domain Awareness Center

Commander Wes James, USCG HQ, Chief, International and Domestic Preparedness, Office of Marine Environmental Response Policy

MSTC Douglas Furman, Office of Port and Facility Compliance CG-FAC, US Coast Guard

0830: Project Background and Workshop Objectives

Dr. Craig Tweedie, University of Texas at El Paso, Texas

Dr. Tweedie will briefly cover the purpose and objectives of the ERI project and this two-day workshop. He will introduce participants to the specific needs and questions relevant to the workshop developed by the research team and establish the current state of the data available to researchers.

0850: Plenary 1: USCG Regulatory and Operational Environment

LCDR Jereme Altendorf, Arctic Emergency Management Specialist, USCG District 17, Sector Anchorage

What does the USCG regulatory environment look like? This session gives the broad overview on why a risk index is important to USCG inspections and operations and how it supports safety within Alaska.

0910: Plenary 2: USCG Operator Perspective

Chief Esther Rodd, Facilities Inspection Supervisor, USCG District 17, Sector Anchorage

What are the complexities USCG inspectors face? How would a risk index inform inspection activities? What processes do inspectors use now? This session addresses the perspective of the inspector and their viewpoint of risk and risk indices.

0930: Plenary 3: Case Studies/State of Alaska Perspective

Dr. Molly Grear, Pacific NW National Laboratories, WA



What can we learn from other incidents related to environmental risk? This session highlights the types of infrastructure failure witness in the Arctic, both in Alaska and beyond, which led to severe environmental impacts. Consideration is given to the mechanisms or practices that might have reduced the risk of failure.

0950: Plenary 4: Environmental Risks

Dr. Craig Tweedie, University of Texas at El Paso, Texas

How does the changing environment around bulk fuel facilities affect the infrastructure? Under the context of USCG inspections and operations, Dr. Tweedie will discuss the complex landscape of environmental related challenges and changes impacting bulk fuel facilities.

1010: Plenary 5: Engineering Risks

Dr. Matt Calhoun, University of Alaska Anchorage

How does the environment affect structures in the Arctic? To aid USCG inspectors in their field activities, this session will look at the affect the environment has on marine headers, piping, containment structures, and bulk fuel tanks and instrumentation. From field measurements to visual observations, Dr. Calhoun will highlight the range of challenges, and options to respond to those challenges, for the field inspector.

1030: Plenary 6: Alaskan Community Perspectives

Mr. Nagruk Harcharek, Ukpeaġvik Iñupiat Corporation (plenary host and participant)

Risk has many meanings depending on the context. This plenary session focuses on the economic and cultural risks a bulk fuel spill would generate in communities around Alaska with special consideration for those response resources that are in place and how communities can help ensure facilities are safe.

1050: Break

1100: Risk Factors and Group Discussion

This session is focused on identifying, based on prior plenary sessions, those risks attendees are most concerned about, how those risks fit into the broad landscape of risk, and ranking those risks in terms of potential environmental, engineering, and community impact.

1150: Final Comments from Project Advisors

Dr. Nancy Kinner, University of New Hampshire, NH

MSTC Douglas Furman, Office of Port and Facility Compliance CG-FAC, Headquarters (HQ) U.S. Coast Guard (USCG), Washington D.C.

1200: Adjourn