



ALASKA MARITIME
PREVENTION & RESPONSE
NETWORK

**ALTERNATIVE PLANNING CRITERIA
FOR TANK VESSELS
OPERATING IN WESTERN ALASKA
(WAK-APC-T-2018)**

**BASED ON ALTERNATIVE PLANNING CRITERIA
33 CFR 155 SUBPART D
&
APPLICABLE U.S. COAST GUARD GUIDANCE**

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INTRODUCTION

This document is submitted in accordance with 33 CFR §155.1065(f). The document outlines the Alaska Maritime Prevention & Response Network's (Network) oil spill response Alternative Planning Criteria (APC) program for tank vessels (TV) operating in the Western Alaska Captain of the Port (COTP) Zone as defined in 33 CFR § 3.85-15 (hereafter referred to as the Zone). The Zone encompasses U.S. waters in the North Pacific Ocean, Bering Sea, Chukchi Sea, and Beaufort Sea, excluding the waters of Cook Inlet and their approaches where existing oil spill removal capabilities meet the Coast Guard regulatory requirements as depicted in Figure 1.



Figure 1: Western Alaska & Prince William Sound COTP Zones

the national planning criteria (NPC) for response time outlined in 33 CFR 155 Subpart D within the Zone are “inappropriate.”

In 2011, the Network, a maritime non-profit organization, was established to manage an APC program for Western Alaska. The Network's original tank vessel APC was accepted by the U.S. Coast Guard on May 15, 2012 for the Western Alaska COTP Zone. The approval of this APC was valid until December 31, 2015. On September 1, 2015, the U.S. Coast Guard extended the Network's tank vessel APC until December 31, 2017. Then on September 15, 2017 the U.S. Coast Guard extended the Network's TV APC to June 30, 2018.

This updated APC program (retitled WAK-APC-T-2018) continues to: 1) provide best management practices for tank vessels operating in Alaska; 2) enhance risk mitigation strategies; and 3) deliver response measures and planning equivalent to meet the requirements of 33 CFR 155 Subpart D.

DOCUMENTS AFFECTED

This document supersedes and replaces the Alaska Maritime Prevention & Response Network's “Western Alaska Alternative Planning Criteria (WAK-APC-T) Resubmission November 2012” Amended February 2013 and April 2013.

TABLE OF CONTENTS

Introduction	2
Documents Affected	2
Record of Changes	3
Table of Contents	4
Appendices	4
Conditions of Acceptance	7
Overview	8
Network TV APC Program At-A-Glance	12
Typical Vessel Traffic in the Zone	14
Great Circle Route Transits	14
Western Alaska Lightering	14
Transit To/From Cook Inlet.....	15
Winter Vessel Operations	15
Operating Environment.....	15
APC Standard of Review: Regulatory & Policy	16
Reason(s) and supporting information for the alternative planning criteria	16
Identification of regulations necessitating the alternative planning criteria request.....	17
Regulations Necessitating APC Request	17
Response Time Gap – Time-On-Scene Model	17
Proposals for alternative procedures, methods, or equipment standards, where applicable, to provide for an equivalent level of planning, response, or pollution mitigation strategies & Prevention and mitigation strategies that ensure low risk of spills and adequate response measures as a result of the alternative.....	20
Bowtie Risk Analysis Model	20
Summary of “Alternatives”.....	21
Environmental and economic impact assessments of the effects	24
Economic Assessment	24
Environmental Conditions	25
Environmental Assessment.....	26
Undesirable Consequences	27
Research & Development	28
Annual Report	28
Summary	28
Appendix A: Tank Vessel Type Characteristics & Planning Requirements	A-1
Network Tank Vessel Type Characteristics.....	A-2
Tank Vessel Planning Requirements	A-4
Planning Assumptions	A-4
Operating Environment.....	A-5
Area Vessel Intends to Operate.....	A-5
Assessment.....	A-6
Response Equipment Requirements	A-6
Response Time Requirements.....	A-6

Analysis.....	A-7
Largest Lightering Oil Tanker	A-8
Largest Transiting Oil Tanker.....	A-12
Largest Oil Tanker (Enrolled).....	A-16
Appendix B: 15+ VRP Response Resource Categories	B-1
Qualified Individual (QI)	B-2
Spill Management Team (SMT)	B-3
Aerial Tracking (AT)	B-3
Logistics Support and Sustainment.....	B-5
On-Water Recovery: AMPD, MMPD & WCD.....	B-5
Shoreline Protection.....	B-10
Shoreline Cleanup.....	B-10
Dispersants	B-11
Salvage: Assess & Survey, Stabilization, Special Operations and Marine Firefighting	B-12
Training.....	B-13
Exercise.....	B-14
Maintenance.....	B-15
Appendix C: Response Capabilities	C-1
Response Capabilities General Overview.....	C-2
PRAC & NTVCC Implications	C-4
Immediate Access to Response Resources	C-5
Chadux Response Model	C-6
OSRO Capabilities.....	C-7
Response Resources Gap Analysis	C-8
Response Resource Requirements	C-9
Boom.....	C-9
Skimming Capacity.....	C-10
Temporary Storage Capacity	C-12
Response Time Gap Analysis	C-13
Western Alaska Captain of the Port Zone: Response Time Capabilities.....	C-14
Western Alaska COTP Zone: Additional Response Mobilization	C-15
Offshore Response Resources.....	C-15
OSRV & OSRB	C-15
Emergency Towing – Tug of Opportunity Program.....	C-16
Vessel of Opportunity Program	C-16
Barge of Opportunity Program	C-21
Additional Response Resources.....	C-21
Non-Floating Oil Classification.....	C-21
Wildlife Protection and Rehabilitation	C-21
Aerial Operations	C-22
Dispersants	C-23
In Situ Burning.....	C-24
Other Commercial Sources Identified	C-24

Response Agreement with other OSROs and Regional Operators	C-24
Cascade Plan	C-24
Exhibit 1 to Appendix E – Chadux Response Hubs and Summary of Equipment	C-27
Western Alaska COTP Zone.....	C-27
Prince William Sound COTP Zone.....	C-30
Exhibit 2 to Appendix E – Additional Response Mobilization	C-31
Western Alaska COTP Zone.....	C-31
Prince William Sound COTP Zone.....	C-32
Exhibit 3 to Appendix E – T&T Marine Equipment Available.....	C-33
Appendix D: Risk Mitigation Measures	D-1
24/7 Monitoring	D-2
Routing Measures	D-4
Deviation Process.....	D-5
Vessel of Concern Process.....	D-5
Emergency Response Assist	D-6
Compliance Notifications	D-7
Para Sea Arrestor (PSA)	D-7
Emergency Vessel Attachment & Towing System (EVATST TM)	D-8
Appendix E: Response Scenarios	E-1
Assumptions.....	E-2
Prevention Scenario Objectives	E-4
Scenario #1 (Prevention) – Northwest of Unimak Pass.....	E-5
Scenario #2 (Prevention) – North of Atka Island	E-10
Response Scenario Objectives	E-15
Scenario #3 (Response) – Port Clarence.....	E-16
Scenario #4 (Response) – Offshore South of Adak.....	E-38
Appendix F: Network APC Build-out Plan.....	F-1
First 5 Years (2013-2017): Build-out Achievements.....	F-2
Initial 5-Year TV APC Work Plan Established 2012	F-2
Risk Mitigation	F-3
Response Capabilities	F-6
Other Strategic Partnerships	F-7
Industry Education and Awareness.....	F-8
Research & Development	F-8
Awards Received	F-9
Next Five Years (2018-2022): Build-out Plan.....	F-10
5-Year TV APC Work Plan.....	F-10
Build-out Challenges	F-13
Appendix G: AK-APC-TV-2018 Operating Procedures for Tank Vessels	G-1
Record of Changes.....	G-2
WAK-APC-T Operating Procedures for Tank Vessels	G-3
Additional Port Call / Lightering Risk Reduction Measures	G-7

CONDITIONS OF ACCEPTANCE

CG-MER POLICY LETTER

The following items are addressed to facilitate timely U.S. Coast Guard review per *MER Policy Letter 01-17: Alternative Planning Criteria National Guidelines for Vessel Response Plans* dated October 12, 2017

1. Vessel Details. See Appendix A
2. Geographic Areas. This document and Appendices A, G, H,
3. Alternatives. This document and Appendices B, C, D, E & G
4. Identification of Required Response Resources. See Appendices B, C & E
5. Build-Out Plan. See Appendix F
6. Economic Assessment. This document
7. Environmental Assessment. This document
8. Equipment Inspections. This document and Appendix B
9. Personnel Training. This document and Appendix B
10. Exercises. This document and Appendix B
11. Period of Acceptance. Cover Letter

D17 POLICY LETTER

The following items are addressed to facilitate timely U.S. Coast Guard review per *District Seventeen Interim Guidance for Alternative Planning Criteria (APC) Submission* of November 16, 2017.

1. Vessel characteristics. See Appendix A
2. Vessel Operations. This document and Appendix A
3. Analysis of response resources. This document and Appendices A, B, C, D & E
4. Contracts or other approved means. This document and Appendices B and C.
5. Statements of non-availability of response resources. This document and Appendix B
6. Oil Spill Removal Organizations (OSROs) and Cooperatives (Co-Ops). This document and Appendices B, C & E
7. Resource(s) of Opportunity (ROO). This document and Appendices B, C & E
8. Notification of equipment non-availability. See Appendix C

OVERVIEW

33 CFR 155 Subpart D – *Tank Vessel Response Plans*, established requirements for oil spill response plans for vessels that are constructed or adapted to carry, or that carries, oil in bulk as cargo or oil cargo residue per calling on a U. S. port per 33 CFR §155.1015. The planning criteria in this Subpart are intended for use in vessel response plan development and the identification of resources necessary to respond to the oil spill scenarios prescribed during the planning process. Pursuant to Subpart D, the specific criteria for tank vessel response resources and their arrival times are planning criteria based on a set of assumptions that may or may not exist during an actual oil spill incident.

Per 33 CFR §155.1065(f), the Network is requesting its APC be accepted for the response time element for response resources prescribed in 33 CFR §155.1050(k) and 33 CFR Part 155 Appendix B for the entire Zone. Due to the vastness of the Zone and lack of infrastructure, the national planning criteria (NPC) for response time outlined in 33 CFR 155 Subpart D within the Zone are inappropriate. The Network’s supporting Oil Spill Removal Organization (OSRO) meets all the other elements per 33 CFR 155 Subpart D and 33 CFR Part 155 Appendix B for oil spill response and has identified commercial sources to reach the planning volumes above its response capabilities per 33 CFR §155.1050(p).

As an APC Administrator, vessels enrolled with the Network’s TV APC are in compliance with 33 CFR 155 Subpart D. The Network TV APC does not shift or assume responsibility of a vessel master, the owner/operator, or applicable government agency (e.g., U.S. Coast Guard COTP, Alaska Department of Environmental Conservation) from requiring the activation of a vessel response plan. In other words, the Network does NOT manage or activate a vessel owner/operator’s vessel response plan, nor does the Network manage and coordinate response operations. The Network assures that response resources are available per 33 CFR Subpart D should a vessel response plan be activated by the vessel owner/operator, their Qualified Individual (QI), and/or the U.S. Coast Guard for use during an oil spill incident.

The Network was created by Alaskans working in the maritime industry who share a common goal of reducing risks to the Alaskan environment while meeting federal vessel response plan (VRP) compliance requirements. The Network’s WAK-APC-T-2018 (hereafter TV APC) provides regulatory compliance for tank vessels operating in or transiting through the Zone using a combination of proven and demonstrated innovative risk mitigation protocols and unparalleled response capabilities positioned throughout the Zone to mitigate the response time gap.

The Network is the administrator of the only U.S. Coast Guard-approved TV APC program that covers the entire Zone. The Network supports a diverse and complex maritime industry, including over 450 maritime companies around the globe operating vessels in or transiting through the Zone. Over the past 20 years, the Network’s support organizations have demonstrated success in facilitating regulatory compliance for oil spill response and prevention regulations. The Network has designed, in close coordination with the U.S. Coast Guard and stakeholders, and implemented the most extensive, cost-effective, and resource-capable alternative spill response and risk reduction system, which meets federal environmental protection and response regulations. Our

coverage area encompasses approximately 1.5 million square miles of the most remote and extreme waters in the nation.

The Network has made significant investments to close the oil spill response resource and response time gaps as mandated in 33 CFR 155 Subpart D and per U.S. Coast Guard guidance promulgated in multiple Marine Safety Information Bulletins and policies^{1, 2, 3, 4, 5} and outlined in the U.S. Coast Guard’s brief to the maritime industry on March 18, 2014.⁶

Appendix F provides a detailed list of investments made by the Network in accomplishing its build-out plan over the past five years. These investments have subsequently allowed the Network’s supporting OSRO to build additional capabilities to close **all** response resource gaps per the **caps** outlined in Appendix B to CFR Part 155 associated with boom, recovery capacity, and temporary storage in responding to a tank vessel incident in the Zone. These response resources are entered into the U.S. Coast Guard Response Resource Inventory (RRI), which is administered and validated by the U.S. National Strike Force Coordination Center (NSFCC), the District Response Advisory Team (DRAT), and the U.S. Coast Guard Sector personnel.

The Network’s supporting OSRO **meets and exceeds** the caps outlined in Table 6, Appendix B to 323 Part 155 with all their available response resources *in-region* to respond to an incident within the Zone. While our analysis shows there are capacity gaps in the planning volumes for on-water recovery and subsequently temporary storage as outlined in Appendix B for tank vessels enrolled with the Network, the Network’s supporting OSRO has identified commercial sources per 33 CFR §155.1050(p) to reach the calculated planning volumes, to the extent the equipment is available.

The only VRP compliance gap remaining for tank vessel companies enrolled with the Network TV APC program are associated with planning standard response times per 33 CFR §155.1050(g) and 33 CFR Part 155 Appendix B Table 2.

“**Prevention Focused – Response Ready**” is the Network’s ethos. Driving down risk of an oil pollution incident, and thus preventing it, is understandably on par with response capabilities in the eyes of responsible TV VRP plan holders. This is particularly true in remote areas where NPC requirements are inappropriate and unattainable due to lack of infrastructure and population centers, and the immense size of the Zone with the large distances involved. As such, the Network’s TV APC program stresses risk mitigation measures in balance with response capabilities.

¹ CG-MER Marine Safety Information Bulletin 01-15 dated August 21, 2015. *Review of Alternative Planning Criteria for Alaska.*

² COTP Western Alaska Marine Safety Information Bulletin 01-15 dated January 13, 2015. *Non-tank Vessel Response Plan Enforcement Change for Ships Transiting Western Alaska.*

³ COTP Western Alaska Marine Safety Information Bulletin 03-14 dated April 28, 2014. *Nontank Vessel Alternative Planning Criteria (APC) Requirements for Western Alaska.*

⁴ CG-MER Policy Letter 01-17: Alternative Planning Criteria National Guidelines For Vessel Response Plans dated October 12, 2017.

⁵ District Seventeen Interim Guidance for Alternative Planning Criteria (APC) Submission of November 16, 2017.

⁶ Joint brief provided by USCG District Seventeenth and COTP Western Alaska at the *Alternative Planning Criteria Forum* to the maritime industry on March 18, 2014.

As published in the Aleutian Islands Risk Assessment “*Recommending an Optimal Response System for the Aleutian Islands: Summary Report*” dated February 2015:

“... the Advisory Panel and Management Team applied two key principles to their consideration of a wide-range of potential risk reduction options on the table at the time: (1) prevention takes priority over response, and (2) all measures should be realistic and practical (Wolniakowski et al 2011).”⁷

OPA-90 regulations were developed almost 30 years ago, based largely on mechanical recovery technology that has been relatively unchanged in the last 40 years. Since that time, new technology has emerged to track and monitor vessels’ compliance with risk mitigating measures, to communicate rapidly with vessels in distress to render assistance, and to swiftly mobilize response assets. These new technologies are equally (if not more) effective in remote regions, making a hybrid system of risk mitigation and response capabilities the most practical system for meeting oil spill pollution prevention and response regulations in the Zone.

The Network’s well-developed and demonstrated TV APC program addresses three critical components of an effective oil spill risk mitigation and response strategy to mitigate the response time gap – Information, Time, and Capabilities (as depicted in Figure 2).

- **Information:** Timely and accurate information is essential to confirm compliance with routing measures and detect potential incidents, and is a cornerstone of this TV APC. The 24/7 Network monitoring center is one of the most comprehensive near real-time, continuous vessel-monitoring systems in the world.

- **Time:** Early detection of a marine casualty or distress is critical in minimizing the loss of life, the consequences of an oil spill, and the loss of a vessel and its cargo. Knowing the exact location of the vessel combined with immediate notification of a problem or potential problem allows the vessel owner/operator the maximum amount of time to provide the required resources to correct the problem. The more time there is to address a developing situation, the more options there are to intervene and prevent a maritime incident from occurring, or limit the consequences of an incident that cannot be halted.



Figure 2: Information, Time & Capabilities Model

⁷ Nuka Research and Planning Group, LLC. Aleutian Islands Risk Assessment. *Recommending an Optimal Response*

System for the Aleutian Islands, Summary Report. February 2015.

http://aleutiansriskassessment.com/images/150313_AIRA_SummaryReport_vFINAL_lr.pdf

- Capabilities: The Network, working with its supporting OSRO, has comprehensive spill response and logistics capabilities unmatched in Western Alaska, using best available technology skimmers, protection and ocean boom, and response vessels. This equipment is staged in strategically located hubs throughout the Zone to mitigate the response time gap.

With this philosophy in mind, TV enrollees in the Network agree to comply with Operating Procedures established by the Network to reduce the risk of an incident. Enrollees are provided with a certificate as evidence of the enrollee’s compliance with applicable federal oil spill prevention and response regulations through participation in the Network’s TV APC as meeting the requirement “by contract or other approved means” per 33 CFR §155.1020.

This unique approach is warranted in Alaska where, in the eyes of industry and agencies, on-water oil spill recovery is more challenging and less effective than in any other maritime region of the United States. The Network’s TV APC, in conjunction with access to comprehensive *in-region* oil spill response removal capabilities and vessels/barges/tugs of opportunity programs, provides the practical suite of oil spill risk reduction measures above and beyond the existing requirements in the regulations. It further provides response capabilities that best achieve the environmental protection objectives of OPA-90 under the prevailing conditions in the Zone, meeting and surpassing U.S. Coast Guard requirements set out in APC guidance documents.^{8, 9, 10}

Rear Admiral Michael McAllister, USCG (D17 District Commander) echoed this approach during his remarks at the dedication ceremony for the Marine Exchange of Alaska’s new facility on September 13, 2017.¹¹

“... It wasn’t too long ago just about a year ago that the *Alaska Juris* started taking on water off of Adak and 46 crewmembers abandoned ship into life rafts and it was through the information provided by the Marine Exchange that we the Coast Guard was able to identify other ships in the immediate vicinity who made their way over and were able to rescue those folks out of those rafts. ... Recently it was reported that we had a cargo ship north of Unimak Island the *Laura Maersk*, which lost power. We actually got notified by the Marine Exchange... that they lost power ... that early notification allowed us to send tugs out and employ an emergency towing system to ensure that ship did not end up on the rocks. And our estimate of the time that we received that initial information was within 3 hours they would have been aground putting not only the people on board in distress but the cargo they were carrying including the fluid onboard. So you can see how this information that we receive is valuable to allow us to carry out those missions that impact safety. ... I sleep better at night knowing that this very effective safety net is in place.”

⁸ Federal Register / Vol. 78, No. 189 / Monday, September 30, 2013. Pages 60101 - 60114.

⁹CG-MER Policy Letter 01-17: Alternative Planning Criteria National Guidelines For Vessel Response Plans dated October 12, 2017.

¹⁰ Federal Register / Vol. 82, No. 198 / Monday, October 16, 2017. Pages 47976 – 47980.

¹¹ The Marine Exchange of Alaska operates the Network monitoring center in providing the prevention alternatives to attain equivalency for NPC:

NETWORK TV APC PROGRAM AT-A-GLANCE

- The Network is a nonprofit 501(c)(6) corporation. Its Board of Directors is comprised of active maritime industry executives seeking a cost-effective, sustainable, and fully capable solution to their compliance requirements found in 33 CFR 155 Subpart D in balance with their social responsibility to protect the environment.
- The Network's main office is located in Anchorage, Alaska. This allows the Network to work closely with U.S. Coast Guard Captain of the Port (COTP) Western Alaska, State of Alaska Department of Environmental Conservation, other federal, state, local and tribal agencies, non-government organizations, and our supporting OSRO.
- The Network serves a diverse and complex maritime industry with vessels operating in the Zone. With regards to tank vessel owners and operators, currently, the Network has over 30 tank VO/Os with a total of 300 tank vessels enrolled with the Network.
- Network participants are categorized into two tank vessel types – Oil and Oil/Chemical. The particulars regarding the vessel types, characteristics, and the national planning criteria requirements for vessels enrolled in the Network are located in **Appendix A**.
- The Network provides access to the largest *in-region* inventory of spill response equipment in strategically placed response hubs in 17 locations for rapid response to heavily trafficked areas and remote sites throughout the Zone to mitigate the response time gap. **Appendix C** provides details of the Network's supporting OSRO's capabilities.
- The Network's supporting U.S. Coast Guard classified OSRO – Alaska Chadux Corporation – has the most experienced and robust response capabilities *in-region*, and is the only U.S. Coast Guard approved and NSFCC RRI-rated OSRO for Worst Case Discharge (WCD) 1, 2 and 3 in all operating environments throughout the entire Zone.¹²
- The Network monitoring center, operated by the Marine Exchange of Alaska, delivers vessel tracking and monitoring by a 24/7 staffed watch, aiding vessel operators in complying with APC routing measures, early detection of operating anomalies, and notification to plan holders, Qualified Individuals (QI), Salvage & Marine Firefighting providers (SMFF), Network's supporting OSRO, and the U. S. Coast Guard when an incident or potential incident is detected. The detection of potential incidents early provides more time to address a developing situation, allowing for pre-incident mobilization of resources to intervene and prevent a maritime incident from occurring, or limit the consequences of an incident that cannot be halted by

¹² While this level of oil spill response readiness is unmatched in Western Alaska, the Network and its supporting OSRO recognize that this level of classification across all federal waters around Western Alaska does not factor in the infrastructure and distance limitations of this unique operating area. We believe that the classification is warranted in many areas where Chadux maintains equipment hubs. However, we recognize, despite the OSRO classification and inventory of strategically located response resources across 17 response hubs, Chadux is unable to meet the response time frames in many areas of Western Alaska due to lack of infrastructure and vast distances to logistically support oil spill response operations in this region of the U.S.

reducing the response time gap. **Appendix D** provides details of the Network monitoring center and risk mitigation protocols.

- The Network established risk reducing sailing routes and approved passes for safer transits along the Aleutian Islands in alignment with the International Maritime Organization’s (IMO) Areas to Be Avoided (ATBA) in the region of the Aleutian Islands Archipelago. These routing measures keep vessels further offshore, allowing more time to respond to an incident should a vessel become disable and adrift and posing a threat for an oil spill incident due to a grounding.
- The Network’s program reflects the concepts and consensus of the Aleutian Islands Risk Assessment regarding an optimal prevention and response system suited for vessels operating in the Zone.
- The Network enrollment agreements, as well as the OSRO response contracts, required by federal regulations conform to the guidelines of the International Group of P&I Underwriters and meet the requirement “by contract or other approved means” per 33 CFR §155.1020.
- As a nonprofit, vessel enrollment fees are invested back into the program to enhance risk mitigation and response capabilities. As a result, and consistent with the Network original TV APC submittal, the Network has financed a significant build-out of response and prevention capabilities in the past four years. **Appendix F** provides details on the Network’s past and future build-out plan.
- The Network supports the only Research and Development program among APC providers, enhancing risk mitigation and response capabilities by exploring the application of new technology and modeling software.
- The Network has teaming agreements with Salvage & Marine Firefighting providers, barge operators, and towing companies to assist with emergency towing, salvage, and emergency lightering response as part of its spill prevention and mitigation service package, which helps to mitigate the response time gap.
- **Appendix B** addresses the elements of the 15 VRP prescribed in the District Seventeen *Interim Guidance for Alternative Planning Criteria (APC) Submission* of November 16, 2017.
- **Appendix E** are hypothetical scenarios developed to demonstrate how the Network’s overall risk mitigation measure works in concert with its response capabilities to mitigate the response time gap.
- **Appendices G** is the operating instructions provided to vessel masters who vessels are enrolled in the Network. These operating procedures provide risk mitigation measures to the vessel master that allows the Network to detect potential incidents early to reduce the response time gap.

TYPICAL VESSEL TRAFFIC IN THE ZONE

The Network has evaluated maritime traffic in Alaska waters encompassed by the Zone to identify routing patterns, risk factors, and oil spill response options. Nearly one third of the approximately 130 annual tank vessel transits of Alaska waters where this TV APC applies are categorized as innocent passage with most of these sailings between Canadian and Far East ports. Figure 3 depicts tank vessel traffic routes usually witnessed annually.

Figure 3 depicts collectively where the tank vessels operate within the Zone that are enrolled in the Network's TV APC program. **Appendix A** provides details of where each vessel type intends to operate.

Approximately 40 to 50 vessels are subject to the tank vessel regulations that operate within the Zone, with most of these vessels transiting through the Aleutian Islands while engaged in trade between U. S. Pacific and Far East ports. The Network's traffic analysis has shown there are three classes of vessel activity in the Zone:

- Great Circle Route Transits
- Western Alaska Lightering
- Transits to Cook Inlet

GREAT CIRCLE ROUTE TRANSITS

There are around 20 to 30 tank vessels that transit between Far East ports and U. S. Pacific ports subject to the tank vessel regulations. The number of vessels subject to the TV regulations has remained consistent over the last few years. On average, over 60% of all tank vessels transiting the Zone along the Great Circle Route are subject to the regulations.

WESTERN ALASKA LIGHTERING

Annually, there are approximately 10 to 15 tank vessels that come into Western Alaska to provide fuel to the many remote communities through lightering operations with other tank vessels, tank barges, or facilities. These tank vessel lightering operations deliver millions of barrels of fuel along the coast of Western Alaska. There are more than 20 commonly used lightering locations that are closely monitored for compliance as depicted in Figure 4. These vessels have additional risk reduction measures that are followed, as identified in **Appendix G**.

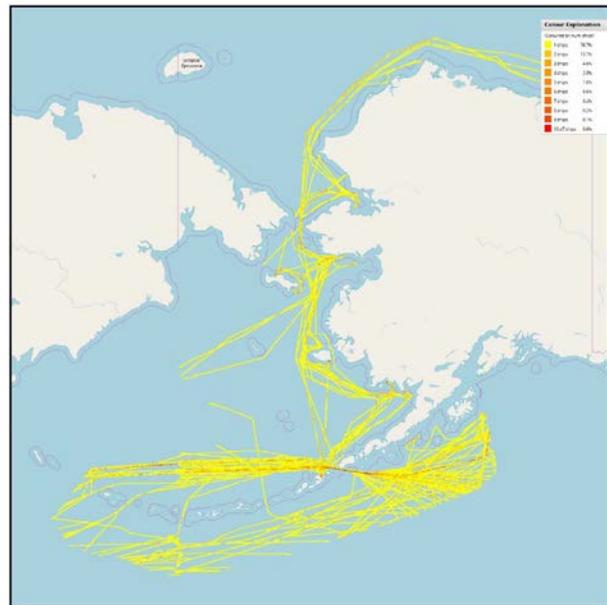


Figure 3: Typical vessel traffic routes

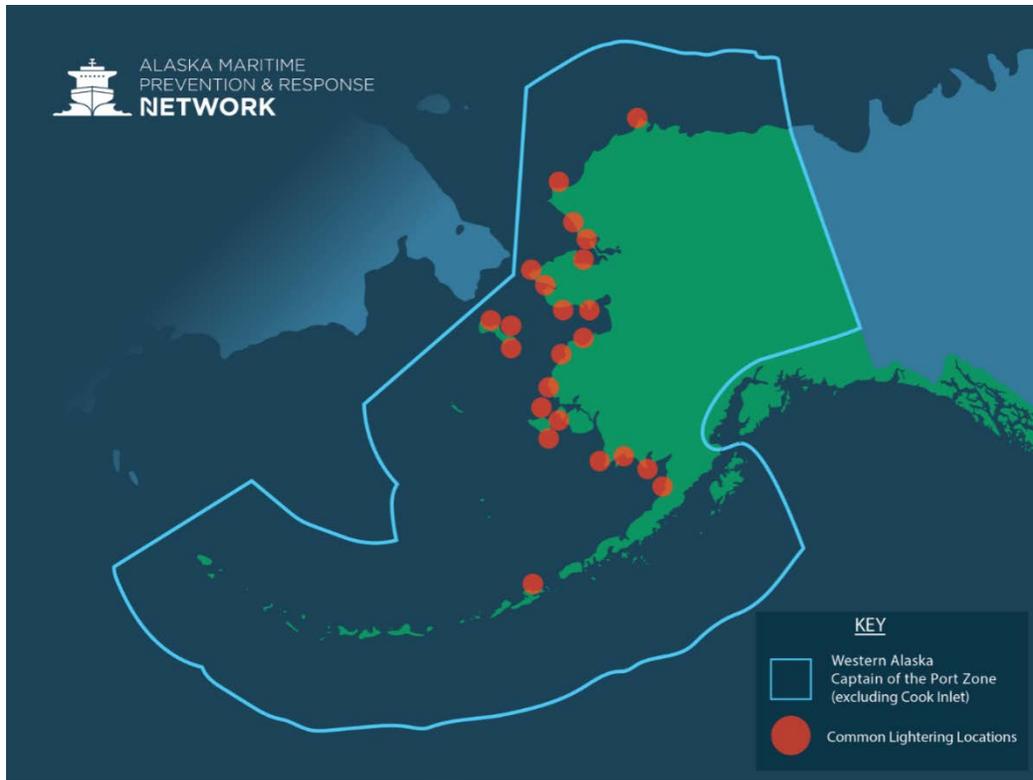


Figure 4: Common Western Alaska Lightering Locations

TRANSIT TO/FROM COOK INLET

In addition to tank vessels sailing to and from the Far East, many tank vessels also transit through the Zone while sailing to and from the Cook Inlet ports of Anchorage, Port MacKenzie and Nikiski.

WINTER VESSEL OPERATIONS

During the winter months, when sea ice is present in northern waters of the Western Alaska Captain of the Port Zone, very little TV traffic exists north of 60 degrees latitude from the months of November through May as depicted in Figure 5. Various support vessels supporting oil & gas exploration in Cook Inlet.

OPERATING ENVIRONMENT

The operating environment for the Network enrolled tanks vessels are: inland, nearshore, offshore, and open ocean.

There are no navigable rivers and canals within the Aleutian Archipelago, the Alaska Peninsula, Cook Inlet, and

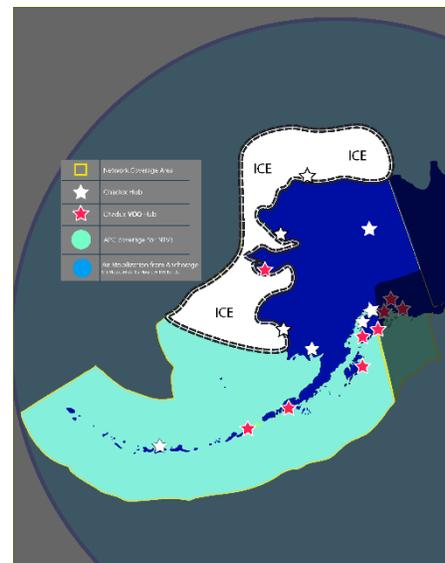


Figure 5: Vessel Winter Time Area of Operations

Prince William Sound – only bays, coves, and inlets for planning purposes that are categorized within the inland and nearshore operating environments.

APC STANDARD OF REVIEW: REGULATORY & POLICY

The TV response plan requirements found in 33 CFR 155 Subpart D anticipated that there would be areas in the country where strict compliance with the requirements of the regulation was simply “inappropriate.” The TV regulations per 33 CFR §155.1065 do not set forth specific criteria to be considered by the U.S. Coast Guard when a tank vessel APC program is submitted like those prescribed in 33 CFR §155.5067 (nontank vessel APC). As such, we chose to use the criteria in 33 CFR §155.5067 and CG-MER Policy Letter 01-17¹³ in articulating the justification and proposed alternatives for the Network’s APC TV.

REASON(S) AND SUPPORTING INFORMATION FOR THE ALTERNATIVE PLANNING CRITERIA

The immense size and space of the Zone, coupled with lack of infrastructure prevents vessel owners and operators from meeting response time planning requirements outlined in 33 CFR §155.1050(g) and Appendix B 7.2.3 to 33 CFR Part 155. Most of the Zone is either remote, inaccessible, or both. Compliance with NPC (as it is outlined in federal regulation) is “inappropriate” in many regions within the Zone.

Figure 6 shows the size of Alaska compared to the Continental U.S. For TVs to fully comply with the national planning criteria in 33 CFR 155 Subpart D in the Zone, procuring and staging required oil spill removal equipment in Western Alaska would exceed what is required and available for the entire West Coast of the U. S. This is not appropriate, practical, or economically feasible. Additionally, the infrastructure does not exist for staging and deploying oil spill removal equipment, support vessels, and personnel that are required to meet the NPC response time.



Figure 6: Alaska compared to the Continental U.S.

¹³ CG-MER Policy Letter 01-17: Alternative Planning Criteria National Guidelines for Vessel Response Plans. Dated October 12, 2017.

IDENTIFICATION OF REGULATIONS NECESSITATING THE ALTERNATIVE PLANNING CRITERIA REQUEST

Regulations Necessitating APC Request

This TV APC is based on not being able to meet the response time outlined in 33 CFR §155.1050(g) and Appendix B 7.2.3 to 33 CFR Part 155. It is not appropriate, practical, or economically feasible to commence spill recovery operations within 24 hours in portions of the Zone.

The North Pacific, Bering Sea, Chukchi Sea, and Beaufort Sea are large and exposed bodies of waters with rugged coastlines, harsh weather, and extreme operating conditions. These areas are sparsely populated and under-developed with little (if any) infrastructure; it is impractical and cost prohibitive to provide NPC coverage in much of the region. Without APC, it would be impossible for vessel operators to meet the federal spill response time planning standards in many regions within the Zone.

Response Time Gap – Time-On-Scene Model

To understand the response time gap to meet the requirements of 33 CFR §155.1050(g), it is important to understand how long it will take for oil spill response equipment and personnel to reach any potential spill location for planning purposes by the Network's supporting OSRO. This information is sometimes represented as concentric circles around a response hub, where a circle represents the time it will take for a response vessel to transit the distance from the hub to the circle. However, this method does not consider the time to mobilize the response vessel and the equipment to the response vessel, or the time required for the vessel to deviate around land masses in the waters surrounding the response hub.

Nuka Research and Planning Group, LLC (Nuka Research) was commissioned by the Alaska Maritime Prevention & Response Network (Network) to develop a Time-On-Scene (TOS) model to estimate the time required to deliver response equipment and personnel to any location on the water or shoreline within the Zone to depict the response time gap. The TOS model uses the following inputs:

- Mobilization time required to move and load required equipment/personnel on board a suitable marine vessel at each of 16 response hubs along the coast;
- Time to position a vessel to transport the personnel and equipment; and
- Speed of the response vessel at each hub.

The TOS model then calculates the shortest time required to transit from any response hub to any marine waters or shoreline in the Zone. The model considers realistic vessel routing around land masses in these calculations.

Method

The TOS model contains a geo-spatial representation of the Zone via a gridded space and a 1:250,000 scale digital shoreline map. Each grid cell is five (5) nautical miles on each side covering a total area of 25 square nautical miles. The model calculates the shortest time for equipment and personnel delivery to center of each cell. Cells are color coded by binning the time for delivery into the following five categories:

1. Zero to 24 hours
2. Greater than 24 hours to 48 hours
3. Greater than 48 hours to 72 hours
4. Greater than 72 hours to 96 hours
5. Greater than 96 hours.

The TOS model considers the response vessel start location at each of the following 16 coastal hubs:

- Adak
- Bethel
- Cordova
- Dillingham
- Homer
- King Cover (Cold Bay)
- Kodiak
- Kotzebue
- Nikiski
- Nome
- Prudhoe Bay
- Seward
- Unalaska
- Utqiagvik
- Valdez
- Whittier

Various vessel routes from each hub are mapped into the model to ensure realistic vessel paths that deviate around land masses. The distance of the vessel path from each hub to each cell is calculated. The time required to reach any cell is the length of the vessel path from any hub divided by the speed assigned to the vessel from that hub, plus the time required to mobilize the appropriate response equipment, vessels, and personnel to the hub. The TOS model then selects the shortest time from each of the 16 coastal hubs as the time associated with that cell.

The mobilization (Mob) times and speeds associated with this model are planning standards¹⁴ specified by the Network supporting OSRO based on experience in responding to incidents within the Zone for the past 25 years. Mobilization time accounts for the following events after notification:

1. Acquire a suitable response vessel and crew.
2. Fuel and supply the response vessel if necessary.
3. Move the response vessel to the loading dock at the hub.
4. If air transportation of response equipment is required:

¹⁴ 33 CFR 155.1010 reads in part "... The specific criteria for response resources and their arrival times are not performance standards. They are planning criteria based upon a set of assumptions that may not exist during an actual oil spill incident."

- Acquire a transport aircraft with crew;
 - Move response equipment from a central warehouse in Anchorage to the airport and load it aboard the transport aircraft;
 - Fly the equipment (and responders if necessary) to the response hub; and
 - Unload the response equipment from the aircraft, transport it to the response vessel, and load it aboard.
5. If ground transportation of response equipment is required:
- Acquire a transport truck with crew;
 - Move the truck to the Anchorage warehouse and load the necessary response equipment aboard;
 - Drive the equipment (and responders is necessary) to the response hub; and
 - Unload the response equipment from the aircraft, transport it to the response vessel, and load it aboard.
6. Conduct initial incident and safety briefing necessary prior to response vessel departure.

These times and speeds do not consider any delays or slowdowns due to weather, sea state, or sea ice.

Results

Figure 7 depicts the response time gap by illustrating the estimated oil spill equipment delivery time within the Zone by the Network's supporting OSRO.

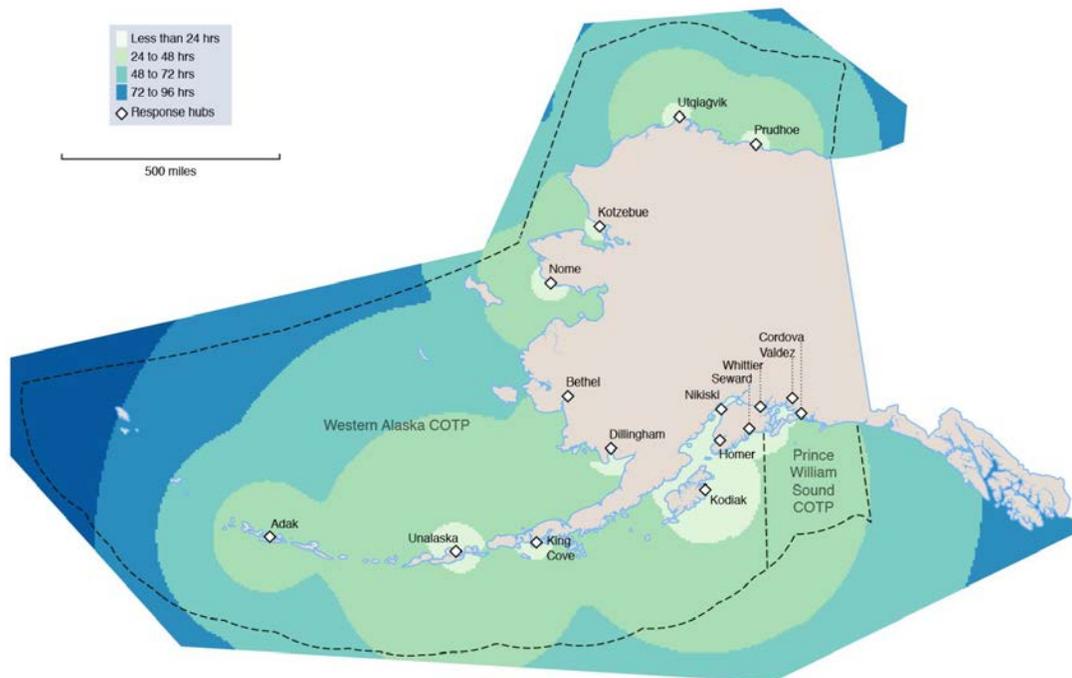


Figure 7: Western Alaska Response time capability gap

PROPOSALS FOR ALTERNATIVE PROCEDURES, METHODS, OR EQUIPMENT STANDARDS, INCLUDING PREVENTION AND MITIGATION STRATEGIES THAT ENSURE LOW RISK OF SPILLS AND ADEQUATE RESPONSE MEASURES AS A RESULT OF THE ALTERNATIVE

The unique characteristics of the Zone make the response time element of the national planning criteria “inappropriate” in this region. As such, the Network’s balanced approach of developing equivalents consisting of risk mitigation measures and response capabilities is paramount in maintaining a practical, reasonable, and sustainable alternative compliance system. The Network’s program is built on the premise that risk mitigation and response capabilities should be approached holistically within the intent of the Oil Pollution Act of 1990 (OPA-90).

To close the response time gap depicted in Figures 7, the Network uses a proven suite of *alternatives* as outlined in the following two sections, combining risk mitigation protocols and pre-positioned response capabilities.

Bowtie Risk Analysis Model

In developing the *alternatives* for the Network’s TV APC program, we conducted a risk assessment on a major hazard – in our case a major oil spill incident. This is a common practice in

both the private and public sectors, using one of many types of risk analysis methodologies. We used the Bowtie Risk Analysis Model, which is a common model used in industry.

Its purpose is to define and analyze the potential events that could pose a threat to people, the environment, and an organization. Understanding these exposure areas allow the organization to subsequently identify program gaps and develop ways and means to prevent or reduce the risk exposure or mitigate its consequences should the event occur. It starts with a major risk event, such as an oil spill. The left side addresses barriers to put in place to prevent the major event; the right-side outlines response capabilities to mitigate the damage should the event occur.

The Network identified that the response time required to meet NPC is not practicable in the remote regions of the Zone. Using the Bowtie model, we identified “*alternatives*” to help prevent an oil spill incident from occurring, and protocols and capabilities to reduce the response time gap to mitigate the consequences of an oil spill should one occur.

The risk mitigation protocols on the left side summarize the *alternatives* established by the Network to mitigate an incident from occurring and close the response time gap. **Appendix D** provides details of the risk mitigation measures used by the Network to buy time and provide early notification to pre-mobilize response resources prior to an incident should one occur to close the response time gap.

The right side of the Bowtie analysis summarizes the response capability *alternatives* to close the response time gaps. **Appendix C** provides details of the Network’s supporting OSRO’s capabilities to response to an oil spill developed over the past 25 years in responding to oil spills in the remote regions for the Zone.

Summary of “*Alternatives*”

The *alternatives* to close the response time gap are a combination of a proven suite of risk mitigation measures, response resource capabilities, and partnerships, such as:

Controls & Barriers

- Comprehensive tracking and monitoring system to detect an incident early for pre-incident mobilization to close response time gaps, e.g., extensive AIS terrestrial and satellite system, 24/7 staffed monitoring center, latest on tracking & monitoring software technology incorporating “watchdog” alarms;
- Vessel routing measures that keeps TVs at a safer distance offshore, allowing for more time to respond in the event of an incident;
- Multiple backup systems to ensure the monitoring center remains fully operational 24/7 to detect anomalies early that could lead to a potential oil spill incident for pre-incident mobilization;
- Sea-arrestor system intended to slow the drift of a disable vessel, allowing more time to mobilize assets; and,

- Emergency Vessel Attachment & Towing System (EVATS™) to place a disabled vessel in tow under arduous weather conditions to prevent an oil spill incident.
- Vessel operating procedures for notification and routing measures; and for tankers involved in lightering operations – prescribed response equipment they must have on board in the event of an incident.

Response & Recovery

- Response capabilities tailored for the harsh Alaska operating environment for rapid and maximum recovery of spilled oil, such as the Large Vessel Booming Package, Ocean Buster, Wildlife Rehabilitation, and trained personnel skilled in working in the remote regions;
- Supporting OSRO with response resource capabilities in significant excess of the minimum required to make up recovery time upon arrival on scene;
- Distributed response equipment staged at 17 different sites throughout the Zone to allow for timely mobilization to mitigate the consequences by reducing the distance for equipment to reach an incident, thereby reducing the time gap;
- Pre-packaged response equipment tailored for rapid mobilization aboard small aircraft or local vessels to remote regions within the Zone to arrive in a timely and effectual manner, such as the Western Alaska Rapid Response Packages;
- Equipment resources and access to resources of opportunity exceed the planning standard response capability Caps prescribed in Table 6, Appendix B to 33 CFR Part 155 and 33 CFR §155.1050(p) for vessels that Chadux covers due to the vast investments it has made over the past several years (e.g., boom, ERDC, and TSC). This allows Chadux to overcome the initial resource gaps caused by time and distance.
- Multiple partnerships to leverage response resources and logistics capabilities located throughout the Zone to rapidly mobilize equipment and responders to close the time – distance gap, e.g. teaming agreements with other OSROs and SMFF providers;
- Robust and effectual vessel/barge/tug of opportunity program to support and sustain response operations, and reduce and / or eliminate the response time gap; and
- Supporting OSRO is also certified as a State of Alaska Primary Response Action Contractor and TV Cleanup Contactor, providing additional level of regulatory oversight to ensure they can effectively operate and mobilize response resources in a timely fashion throughout the Zone.

Network TV APC

Summary of Alternatives

- Non-Compliant with Regulations
- Lack of Maritime Domain Awareness
- Failure to Alert Responders of an Incident or Potential Incident

Hazard

Control and Barriers “Alternative”

Minimize likelihood

Incident (Oil Spill)

Response and Recovery “Alternatives”

Mitigate consequences

Consequences

- Pollution
- Damage to the Environment, Wildlife & Infrastructure
- Injuries to Responders
- Tarnished Reputation
- Maritime Transportation System Disruption
- Economic Loss

CONTROL AND BARRIERS:

- 24/7 Crewed, Real-Time Vessel Monitoring Center
- State of the Art Satellite & Terrestrial AIS Data Feeds & software
- Largest network of terrestrial AIS sites in Alaska
- Vessel Routing Measures, Geo-Fencing & Watch Dog Alarms
- “Vessel of Concern” Protocols
- Vessel “Deviation” Protocols
- CRM Database of Vessels Particulars
- Monitoring Center Watchstander Training
- Monitoring Center Watch Manual of Operations & Protocols
- Redundant, backup vessel tracking system
- Monitoring Center Continuity of Operations Plan (COOP)
- Access to historical vessel traffic and event data
- Vessel Special Operating Procedures
- Lightering Plan approval for lighting TVs
- Carry prescriber response equipment for TVs involved in lightering operations
- Extensive database of contact information for:

RESPONSE AND RECOVERY:

- USCG Certified OSRO – WCD1, 2 & 3 in all operating environments across WAK & PWS
- OSRO holds significant more response capability than the minimum required to make up time upon arrival on scene
- 17 Response Hubs throughout WAK & PWS; open ocean response equipment in 5 hubs
- Overcapacity of boom, EDRC, and TSC
- VOO Program (46 vessels in 8 hubs)
- BOO Program (31 barges with associated tugs and response equipment)
- Large Vessel Booming Packages
- Western Alaska Rapid Response Packages
- AK State Primary Response Actions Contractor
- AK State NTV Cleanup Contractor
- Drills & Exercises (Planned & Unannounced) per NPREP & State requirements
- Responder Training
- OSRO & NTVCC Inspection & Verification Program
- Wildlife Protection & Rehabilitation Plan
- Logistics Mobilization Plan
- Agreements with other OSROs to access additional response capabilities, if needed
- Teaming Agreements with skilled partners (e.g., response labor, SMFF providers & wildlife specialists)
- Strategic alliances & agreements to mobilize additional response resources, if needed, such as dispersants, in situ burning & biological agents
- Partnerships with company facility personnel from over 140 tank farms across AK to leverage these resources in the response time gap

ENVIRONMENTAL AND ECONOMIC IMPACT ASSESSMENTS OF THE EFFECTS

Economic Assessment

Figure 8 shows where 22 fully dedicated response hubs with vessels, personnel and other equipment would need to be established (in many cases where no infrastructure exists) to meet the NPC requirements associated with 33 CFR Part 155 Subpart D.

In Western Alaska, the cost of compliance with oil spill regulations currently is borne by the estimated 2,000 TV vessels and 40 tank vessels (TV), with foreign-flag vessels comprising about 90 percent of the total number of vessels affected.¹⁵ The Aleutian Islands Risk Assessment estimated the cost for full compliances along only the Aleutian Islands was \$30.5 – 36.9 million in capital costs plus \$37.7 to 41.8 million in annual operating costs. These cost estimates do not consider the cost to build, operate, and maintain the infrastructure to support full compliance, such as housing, transportation facilities (air, water & land), power, water, sanitation, fuel storage, etc. If you include all the remote regions of Western Alaska in this total calculus (e.g., Kodiak, Alaska Peninsula, Aleutian Islands, Bering Sea, Northwest Arctic, North Slope), the aggregate life-cycle cost to the federal, state, local and tribal governments, and the private sector could be in the hundreds of millions (if not billions) of dollars to meet NPC.

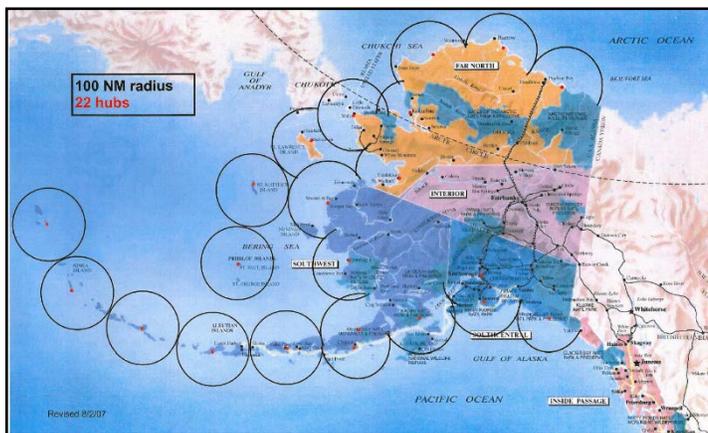


Figure 8: Western Alaska Response Hubs needed to meet NPC

Combine this with a limited number of vessels subject to these regulations that might pay for additional resources make it economically unfeasible to meet NPC response time requirements throughout the entire zone under current regulations. Simply stated - the public and private sectors do not have the resources to meet the pollution response infrastructure requirements within the entire Zone to meet and sustain NPC response time requirement.

¹⁵ In 2014, 1,987 cargo and TVs transited the Western Alaska and Prince William Sound Captain of the Port Zones on non-innocent passage and were invoiced by the sole APC provider during this year (Network). In 2015, 1,968 cargo and TVs transited the Western Alaska and Prince William Sound Captain of the Port Zones on non-innocent passage and were invoiced by the two major APC providers. The average annual number of vessels paying into APC programs averaged 1,977 in years 2014 and 2015.

Environmental Conditions

The Aleutian Island Risk Assessment determined the response “weather” gap for open water mechanical recovery is 72 percent, meaning, at best, only 28 percent¹⁶ of the time, on average, will mechanical recovery methods be an option to deploy within the Aleutian Archipelago due to prevailing extreme weather and seasonal conditions – factoring in visibility, wind, sea state, temperature, ice conditions and other physical or environmental parameters.¹⁷ Further, numerous studies show mechanical recovery rate in ideal weather conditions average from 5-20%.^{18, 19, 20, 21} This would mean the mechanical recovery operations would be able to effectively recover only 1-6% of oil in open water in Western Alaska under ideal weather and seasonal conditions and within an effective timeframe. It is worth pointing out that even when “calm” weather exists in Western Alaska, it rarely lasts long enough to deploy, actively engage, and support large offshore response resources.

In virtually all the maritime casualties over the past 30 years, additional open water oil spill response capability would not have mitigated the environmental impacts. Examination of past maritime casualties and oil spills in Western Alaska occurring outside protected waters are ship groundings resulting in oil impacting the shore within a matter of hours [see Figure 9 for significant oil spills in the Aleutian Islands].

Response efforts in the Zone are more about protective booming of critical habitats and beach cleanup. The studies referenced reinforce the knowledge of Alaska’s experienced oil spill response professionals that recovery of oil in the open water environment is not realistic. The most effective spill response operations using mechanical recovery historically are conducted in the near shore, on shore, and in protected waters.

¹⁶ Nuka Research and Planning Group, LLC. (2014b). *Impact of Environmental Conditions on Vessel Incident Response in the Aleutian Islands: A Response Gap Analysis*. Aleutian Islands Risk Assessment Phase B. [http://aleutiansriskassessment.com/files/140205AIRA_ResponseGapAnalysis_vFpress\(1\).pdf](http://aleutiansriskassessment.com/files/140205AIRA_ResponseGapAnalysis_vFpress(1).pdf)

¹⁷ Nuka Research & Planning Group, LLC. *Impact of Environmental Conditions on Vessel Incident Response in the Aleutian Islands: A Response Gap Analysis*. January 2014. Report to the Aleutian Islands Risk Assessment Advisory Panel & Management Team.

¹⁸ The Pew Charitable Trust (September 2013). *Fact Sheet: Oil Spill Response*. <http://www.pewtrusts.org/en/research-and-analysis/fact-sheets/0001/01/01/oil-spill-response>

¹⁹ Congressional Research Service (December 2010). *Deepwater Horizon Oil Spill: The Fate of the Oil*. <https://www.fas.org/sgp/crs/misc/R41531.pdf>

²⁰ Wolfe, et al. (December 1994). *The Fate of the Oil Spilled from the Exxon Valdez*. An article in *Environmental Science and Technology* (December 1994). https://www.researchgate.net/publication/225184051_The_Fate_of_the_Oil_Spilled_from_the_Exxon_Valdez

²¹ U.S. Department of the Interior, Minerals Management Services (2009). *Arctic Oil Spill Response Research and Development Program: A Decade of Achievement*. https://www.uscg.mil/iccopr/files/MMSArcticResearch_2009.pdf

The hard reality is that mechanical recovery of oil in the open waters in the waters of Alaska will be essentially a futile effort. Investing in large sums of money in offshore capabilities has little return on investment in the Alaska environment coupled with the unlikely chances of an oil spill happening offshore. Offshore recovery and resources are certainly needed within reason, but greater and more effective returns in protecting the environment are realized by developing practical response capabilities that can effectively operate in the Alaska marine environment versus blindly investing in ineffective capabilities to just comply with the letter of the regulations.

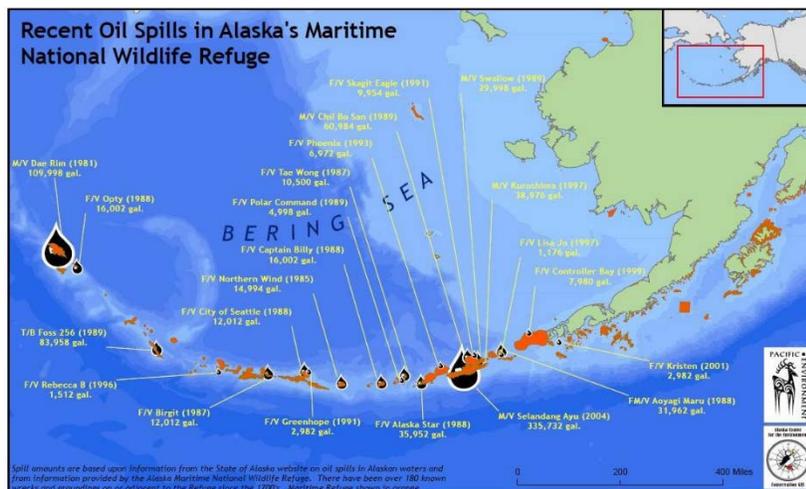


Figure 9: Oil Spills in Alaska's Maritime National Wildlife Refuge

Admiral Paul Zukunft, USCG, even acknowledged the futility of open water oil recovery during his remarks at the 7th *Symposium on the Impacts of an Ice-Diminishing Arctic on Naval and Maritime Operations* in July 2017 when he stated:

“We saw during Deepwater Horizon, whenever the seas are over 4 feet, our ability to mechanically remove oil was virtually impossible. ... Four-foot seas up there [in the Arctic] would probably be a pretty darned good day, so certainly environmental conditions weigh heavily in addition to just remoteness.”²²

Hence, the Network TV APC focus on risk mitigation in balance with having sufficient response resources is the practical approach to oil spill readiness for the vast and uninhabited coastline of Western Alaska.

Environmental Assessment

The pristine and productive waters of Western and Central Alaska are of critical national and regional importance to the U.S. and Alaska. As noted in the Bering Sea Vessel Traffic Risk Analysis:

“The Bering Sea is one of the most productive ecosystems in the world, including hundreds of species depending on Bering Sea habitat either seasonally or year-round (The National Academies, 1996). Subsistence uses of Bering Sea resources

²² Scott Waldam, Climatewire. *The U.S. Is Not Ready to Clean Up an Arctic Oil Spill*. Scientific American, E&E News Environment. July 19, 2017. https://www.scientificamerican.com/article/the-u-s-is-not-ready-to-clean-up-an-arctic-oil-spill/?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosgenerate&stream=top-stories

are critically important to thousands of people throughout the Bering Sea region. Marine species are particularly important to the human communities of the Bering Sea, including polar bears and other marine mammals, sea birds, fish, and shellfish. In 2014, five of the top 10 most valuable commercial fisheries in the U.S. were based in or near the Bering Sea. Any threat to fish or other animals and their habitat in the Bering Sea threatens both the food security of local communities and the significant fisheries that support U.S. and international markets.”²³

Understanding this, the Network’s TV APC is designed to confront the challenges of large distances and lack of infrastructure that characterize the Zone. As such, the primary environmental impact of this APC is the reduction of risk of oil spills caused by vessel groundings, coupled with robust *in-region* response resources configured for rapid mobilization within the Zone.

The cumulative effect of the Network’s APC *alternatives* of vessel tracking and monitoring, early notification, pre-identification of vessels of opportunity, emergency towing systems, and pre-positioned and pre-packaged response resources is to close the response time gap, resulting in fewer, less severe marine casualties in the Zone.

Leveraging relationships and experiences with local communities, as well as Alaska native organizations, the Network’s supporting OSRO incorporates the perspectives of residents to develop strategies to protect the environmental resources so many Alaskans rely on for economic and subsistence needs.

Undesirable Consequences

Compelling strict adherence to the national planning criteria without consideration of equivalent alternative planning criteria could lead to the undesired consequences of increased risk to vessels operating in the Zone, less response resources being available, negative impacts on U. S. trade, and increased costs to Alaskan communities.

Vessels transiting the Zone may be forced to decide between paying the disproportionately high costs for spill response caches in Alaska or sailing on more exposed and longer routes that increase fuel consumption and risk. Vessels might avoid the high cost of compliance by substituting U. S. port calls with foreign port calls, negatively impacting U.S. trade. For example, a containership loading containers in Singapore destined for Seattle and sailing through Alaska waters could opt to offload the cargo in Vancouver, British Columbia, avoiding U.S. Coast Guard regulations altogether and removing trade from the U.S. In this case, the route through Alaska waters and associated risks would be the same; however, the voyage would be considered Innocent Passage and U.S. regulations would not apply (nor the obligation to support response systems that are available). Fewer vessels contributing to equipment, resources and response will mean a higher price of compliance for the few who must comply with the regulations. Nontank vessels that cannot

²³ Nuka Research and Planning Group, LLC. *Bering Sea Vessel Traffic Risk Analysis*. December 2016.

avoid calling on Alaska ports will pass on the high cost of compliance to those remote Alaskan communities.²⁴

These unachievable, although foreseeable, financial and operational burdens support creation and adoption of equivalent APC tailored to Western and Central Alaska.

RESEARCH AND DEVELOPMENT

The Network has invested in multiple research and development (R&D) efforts to reduce the risk of marine casualties or more effectively respond to oil spills in the Zone, such as the Para Sea Arrestor (PSA) system and the Emergency Vessel Attachment & Towing System (EVATS™). **Appendix F** highlights the Network’s R&D projects.

ANNUAL REPORT

The Network will continue to provide an annual report to relevant federal and state government agencies, Alaska congressional members, enrolled vessel owners and operators, environmental conservation groups, relevant community leaders and Alaska Native organizations, and various other stakeholders. These reports provide information regarding the administration of the TV APC, data on vessel traffic trends and activities observed in the Zone, accomplishments to further reduce risk and close response time gaps, and future intentions to enhance risk reduction and response readiness in the Zone.



SUMMARY

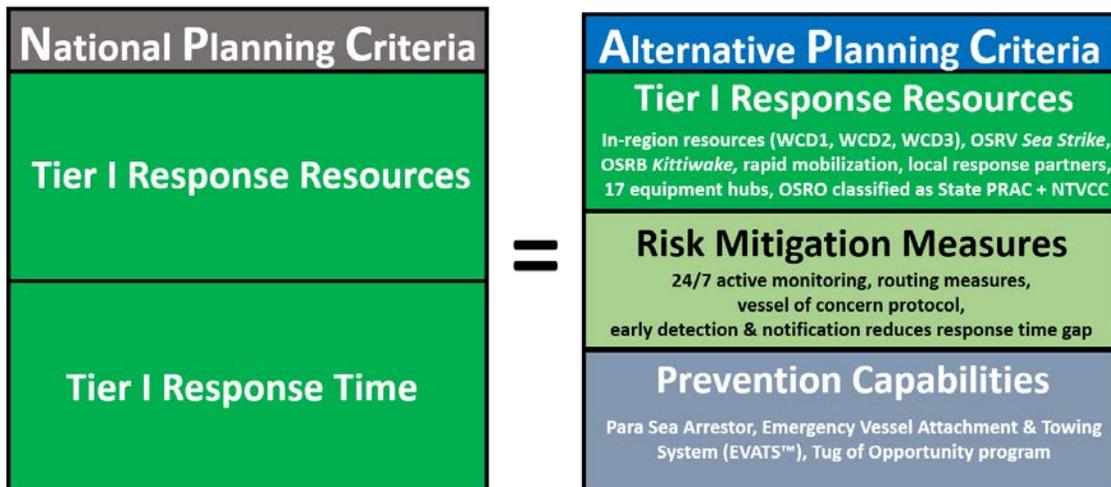
The Network has exceeded expectations in existing APC guidance and policy documents for the Western Alaska and Prince William Sound COTP Zones over the past several years. Continuation of the progress made by the Network in reducing risk and enhancing environmental protection through cooperation with stakeholders, government agencies, and strategic partners remains the priority for Network in its TV APC program.

²⁴ Stephen Colt, Ph.D., Professor Emeritus of Economics, University of Alaska and Professor of Economics, Alaska Pacific University. “*Potential Social and Economic Effects of USCG Guidelines Allowing Additional APC Providers to Care Out and Serve Low-Cost Subareas in the Western Alaska COTP Zone.*” September 18, 2016.

The goals of the Network’s TV APC remain:

- 1) Protecting Alaska’s pristine and vibrant marine ecosystem from oil spills;
- 2) Mitigating impacts to the marine environment, the marine transportation system, and the cultural, subsistence lifestyle of Alaska Natives due to an oil spill; and
- 3) Developing a practical, reasonable and sustainable alternative compliance system that reduces risk of oil pollution incidents while continually building and enhancing response readiness.

The Network’s TV APC applies *alternatives* to reduce the response time gap throughout the Zone by: strategically positioning significantly more response resources than required throughout the Zone, proactively monitoring vessels 24/7 for early detection of a potential incident; developing a vast network of partners and contractors experienced in mobilizing and responding to incidents throughout Alaska; and continuing to deliver on a build-out plan – all together provide an APC that reaches equivalency to NPC.



With these goals in mind, the Network TV APC remains unique in that it has consistently demonstrated through commitment and ingenuity, the technical, practical and real-time capability to reduce risk and enhance oil spill response readiness. As a leader in the APC industry, the Network is ensuring it complements an operator/owner’s vessel safety management, environmental protection, and regulatory compliance programs, and will continue to do so for the foreseeable future.