ALEUTIANS SUBAREA CONTINGENCY PLAN

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BACKGROUND: PART ONE – SUPPORT INFORMATION

A. SUBAREA PLAN

This Subarea Contingency Plan (SCP) supplements the Alaska Federal/State Preparedness Plan for Response to Oil and Hazardous Substance Discharges/Releases (the Unified Plan). The SCP in conjunction with the Unified Plan describes the strategy for a coordinated federal, state and local response to a discharge or substantial threat of discharge of oil or a release of a hazardous substance from a vessel, offshore or onshore facility, or vehicle operating within the boundaries of the Aleutians Subarea. For its planning process, the federal government has designated the entire state of Alaska as a planning "region" and the western half of the state as a planning "area." The State of Alaska has divided the state into ten planning regions of which one is the Aleutians Region. As part of the Unified Plan, this SCP addresses this Aleutians Region or, to avoid confusion with federal terms, Subarea.

The SCP shall be used as a framework for response mechanisms and as a pre-incident guide to identify weaknesses and to evaluate shortfalls in the response structure before an incident. The plan also offers parameters for vessel and facility response plans under the Oil Pollution Act of 1990. Any review for consistency between government and industry plans should address the recognition of economically and environmentally sensitive areas and the related protection strategies, as well as a look at the response personnel and equipment (quantity and type) available within the area (including federal, state, and local government and industry) in comparison to probable need during a response.

B. SUBAREA DESCRIPTION

The Aleutians Subarea encompasses the boundaries of the Aleutians East Borough, the Pribilof Islands, and the Aleutians West Coastal Resource Service Area, including adjacent shorelines and state waters, and having as its seaward boundary a line drawn in such a manner that each point on the line is 200 nautical miles from which the territorial sea is measured. As the figure indicates, the Aleutians Subarea includes the southern portion of the Alaska Peninsula as well as the Aleutian archipelago. The major islands in the region include Unimak, Unalaska, Umnak, Atka, Adak, Attu, and the Pribilof Islands of St. George and St. Paul. Figure E-1 depicts this area.

The region includes two Local Emergency Planning Districts (LEPD): the Aleutians East Borough LEPD and the Aleutian and Pribilof Islands LEPD. The population is distributed among predominantly isolated coastal communities. Major communities include the cities of Unalaska, Sand Point, and St. Paul. Industrial activity is limited to seafood processing, although Unalaska is a major port for freight into the region and a waypoint for freight shipments to Asia.

The region's maritime climate is comparatively mild with regard to general Alaskan temperatures; however, the islands are often fog-shrouded and frequently struck by storms. The weather in the region is the result of the interaction between major weather systems that move northward across the Gulf of Alaska or eastward across the Bering Sea and the land topography. The Aleutian Islands and the Alaska Peninsula are characterized by rugged and fjord-like coastlines rising to volcanic mountainous areas up to 9000 feet in elevation.

The natural habitats of the Aleutians Subarea support extensive fish and wildlife populations that are extremely important to the social, economic, and cultural welfare of local residents. Offshore areas support a highly productive marine ecosystem, rich with intertidal, benthic, and pelagic plant and animal life that, in turn, provides nourishment for extensive populations of marine and anadromous finfish, shellfish, seabirds, and marine mammals. Rocky shorelines and cliffs provide pupping/haul-out areas for seals and sea lions and nesting areas for seabirds.

Commercial fishing and fish processing are the economic mainstays in the region. There are approximately 400 fishing vessels operating in the Aleutian Island chain. Unalaska/Dutch Harbor has developed as a seafood supply and processing center with some port development. Unalaska is consistently the top U.S. port in volume of fish and shellfish landings; in 2005, commercial fishermen unloaded 887.6 million pounds of fish and shellfish, worth $166 million.

Dutch Harbor is also used temporarily as an offshore oil/gas staging area for Bering Sea offshore exploration. There is some potential for offshore oil and gas development in the North Aleutian Basin. Most travel within the region is by plane (scheduled and charter) or private boat. The Alaska Marine Highway System also services King Cove, Sand Point, Dutch Harbor, Cold Bay (scheduled stops), and False Pass (whistle stops).

In the Aleutians, Unalaska/Dutch Harbor serves as the major regional hub for the distribution of noncrude oils to the Aleutian villages, southern Bering Sea, and the offshore fishing fleet. Service in the southern part of the area is year round, but becomes ice dependent during late October to breakup. Unimak Pass and False Pass also witness heavy traffic both for transport servicing villages to the north and the Aleutian chain and for foreign-vessel transport between North America and the Far East.

Deliveries of noncrude oils into the Aleutians are from the south (Puget Sound primarily) or from upper Cook Inlet. Noncrude oil originating from upper Cook Inlet and West Coast ports also passes through the area en route to the Far East, and transport in the reverse direction is also true.

A portion of the Great Circle Route, a major international shipping route, is located within the Aleutians subarea. An estimated 3,000-3,500 vessels, approximately 30-40 of them tank ships, transit through Unimak Pass each year. Approximately 65 bulk chemical tank vessels over 400 gross tons transit the area annually. Chemical cargos include ammonia, urea, liquefied natural gas, herbicides and pesticides, and chlorine. Foreign-flagged vessels transiting through this area may or may not have a federal tank or non-tank vessel response plan and Western Alaska geographic specific appendix, depending on whether they make US ports of call.

The following information gives an overview of wind, tide and current conditions in the Bering Sea. Much of the available data is general in nature and should be supplemented by area-specific updates and information from local residents. In addition, if the user obtains a current edition of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) tide current tables for the Pacific Coast of North America, it will be possible to predict the times of ebb and flood tides for several points within the Bering Sea.

Current Data: The primary flow of water into the Bering Sea comes through Unimak Pass, originating from the Alaskan Coastal Current on the southern side of the Aleutian Islands. Typically, this northern current flows to the northeast into Bristol Bay in the direction of the prevailing wind. A current of 3.5 knots through Unimak Pass is common; currents exceeding 7 knots can also occur. At times, the north

Aleutian coastal current will undergo a reversal in direction due to changes in the large scale and mesoscale wind direction.

Tidal Currents: Although tidally-induced currents are factors in determining net surface currents, tidal currents are not usually important in long-distance transport since they are oscillatory in nature. Wind and freshwater runoff are variables which must be taken into account when estimating spill trajectories. In some cases, tidal current will be counteracted by these variables and will not be the deciding factor in spill transport.

Ice: In the Bering Sea, the sea ice generally begins as fast ice formation along the shores of the Seward and Chukhotsk peninsulas in October. In November, as the cold weather continues and the waters in the open portions of the Bering Sea cool, the pack ice begins its seasonal southward formation. An estimated 97% of the ice in the Bering Sea is formed within the Bering Sea; very little is transported south from the Arctic Ocean through the Bering Strait. During periods of increasing ice and prevailing northerly winds, the ice moves southward with the wind before melting at its southern limit. During periods of southerly winds, ice coverage generally decreases in the Bering Sea, causing a wide variation in ice cover from month to month.

C. AREA OF RESPONSIBILITY

This subarea contingency plan covers the region outlined above in Subpart A. The U.S. Coast Guard Captain of the Port (COTP) for Western Alaska is the pre-designated FOSC for the Coastal Zone which encompasses all navigable waters seaward of the mean high tide line and an area of shoreline 1,000 yards inland of the coastline. The Environmental Protection Agency is the pre-designated FOSC for the Inland Zone which encompasses all lands, rivers, streams, and drainages inland of the 1000-yard wide band which parallels the Alaskan coastline. These zones are clearly defined in the **Unified Plan**. On the other hand, spills may occur in locations that do not fall under federal jurisdiction and there will be no FOSC in these instances.

The State of Alaska places jurisdiction of spill response for the Aleutians Subarea under the Central Alaska Response Team (CART) of the Department of Environmental Conservation (DEC). The SOSC for the CART is the pre-designated SOSC for the entire Aleutians Subarea.

Memoranda of Understanding/Agreement (MOU/MOA) between the USCG/USEPA and the USEPA/State of Alaska further delineate the OSC responsibilities. **Annex K of the Unified Plan** includes copies of these MOUs/MOAs.

D. REGIONAL STAKEHOLDER COMMITTEE

A Regional Stakeholder Committee (RSC) will normally be activated for significant incidents. The RSC was previously referred to as the Multi-Agency Coordination Committee (MAC). Unlike the MAC defined in the ICS of the National Incident Management System, the RSC for a spill response does not play a direct role in setting incident priorities or allocating resources. The RSC can advise the Unified Command (under the guidance of the Community Liaison Officer) and provide comments and recommendations on incident priorities, objectives and action plans.

Figure E-5 provides the general location of the RSC in relation to the Unified Command organizational structure. Additionally, the suggested/potential membership of the RSC is provided in Figure E-5. Membership on the RSC is dependent upon the location of the incident and the interests or jurisdiction of the affected communities, landowners, and special interest groups. Government agencies will not normally use the RSC to provide input to the Unified Command. Federal agency personnel will participate within the ICS structure under the leadership of the FOSC; state personnel will do so under the guidance of the SOSC. During an incident in which no FOSC is taking part, federal agencies with jurisdictional responsibilities for resources at risk could participate as a member of the RSC, thus retaining a channel for input on containment, oversight, and cleanup. The preferred approach is to include these agencies as part of the overall ICS structure.

As indicated above, the RSC is not directly involved in tactical operations, though some of its members may be. The RSC's role is to convey to the Unified Command information relating to the authority, concerns and expertise of its members. RSC members recommend to the Unified Command overall objectives and priorities and review the Incident Action Plans developed by the Unified Command.

RSC activities will be coordinated by the Community Liaison Officer. RSC discussions will be documented, and recommendations or dissenting opinions expressed outside of the RSC meetings with the Unified Command will be communicated to the Unified Command through the Liaison Officer. The RSC will be chaired initially by the Community Liaison Officer. After convening, the RSC will then elect its own chair.

E. SUBAREA COMMITTEE

The primary role of the Subarea Committee is to act as a preparedness and planning body for the subarea. The primary membership of the Subarea Committee is composed of the pre-designated Federal On-Scene Coordinators (EPA and USCG) for the subarea and the pre-designated State On-Scene Coordinator from the Alaska Department of Environmental Conservation. Depending upon the event or the issues to be addressed, a representative from the Aleutians East Borough or local or tribal government representatives may also serve on the Aleutians Subarea Committee. Each member is empowered by their own agency to make decisions on behalf of their organization and to commit the organization to carrying out roles and responsibilities as described in this plan and the **Unified Plan**.

1. Subarea Committee Members

The Aleutians Subarea Committee is comprised of representatives from the following federal, state and local agencies:

- U.S. Coast Guard, COTP Western Alaska
- U.S. Environmental Protection Agency
- Alaska Department of Environmental Conservation
- Borough or local government when applicable

The Aleutians Subarea Committee also seeks advice and expertise concerning environmental and economic issues from international, federal, state and local agencies and private industries, such as the following:

- Local borough, city and tribal governments
- Federally-recognized tribes

- Regional/local businesses
- Local Emergency Planning Committees
- Alaska Department of Fish and Game
- Alaska Department of Natural Resources
- Alaska Department of Military and Veteran Affairs
- National Marine Fisheries Service
- National Oceanic and Atmospheric Administration
- U.S. Department of the Interior-Office of Environmental Policy and Compliance
    - U.S. Fish and Wildlife Service
    - National Park Service
    - Bureau of Land Management
- U.S. Forest Service

2. Subarea Work Groups

The Subarea Committee seeks to solicit advice, guidance or expertise from all appropriate sources and establish work groups as necessary to accomplish the preparedness and planning tasks. The Subarea Committee selects the work group members and provides general direction and guidance for the work groups. In addition to federal, state and local agency representatives, work group participants may include facility owners/operators, shipping company representatives, cleanup contractors, emergency response officials, marine pilot associations, academia, environmental groups, consultants, response organizations and representatives from any applicable regional citizens' advisory councils.

The Aleutians Subarea Committee has formed the following work groups:

The Sensitive Areas Work Group is chaired by the Department of Interior-Office of Environmental Policy and Compliance representative. This work group coordinates the preparation of the necessary information for each separate subarea and ensures that the information is submitted in a common format. Participation by local community staff is vital to acquire local input and validate existing information. The Aleutians subarea-specific sensitive areas information has been prepared and incorporated into the Sensitive Areas section of this plan.

The Logistics Work Group is co-chaired by representatives from the USCG, the EPA, and the ADEC. This work group is responsible for preparing the Resources Section of this plan.

The Operations Work Group is co-chaired by representatives from the USCG, the ADEC and the EPA. This work group is responsible for scenario development and the refinement/expansion of the Emergency Notification Lists located in the Response Section of this plan.

Figure E-1: THE ALEUTIANS SUBAREA

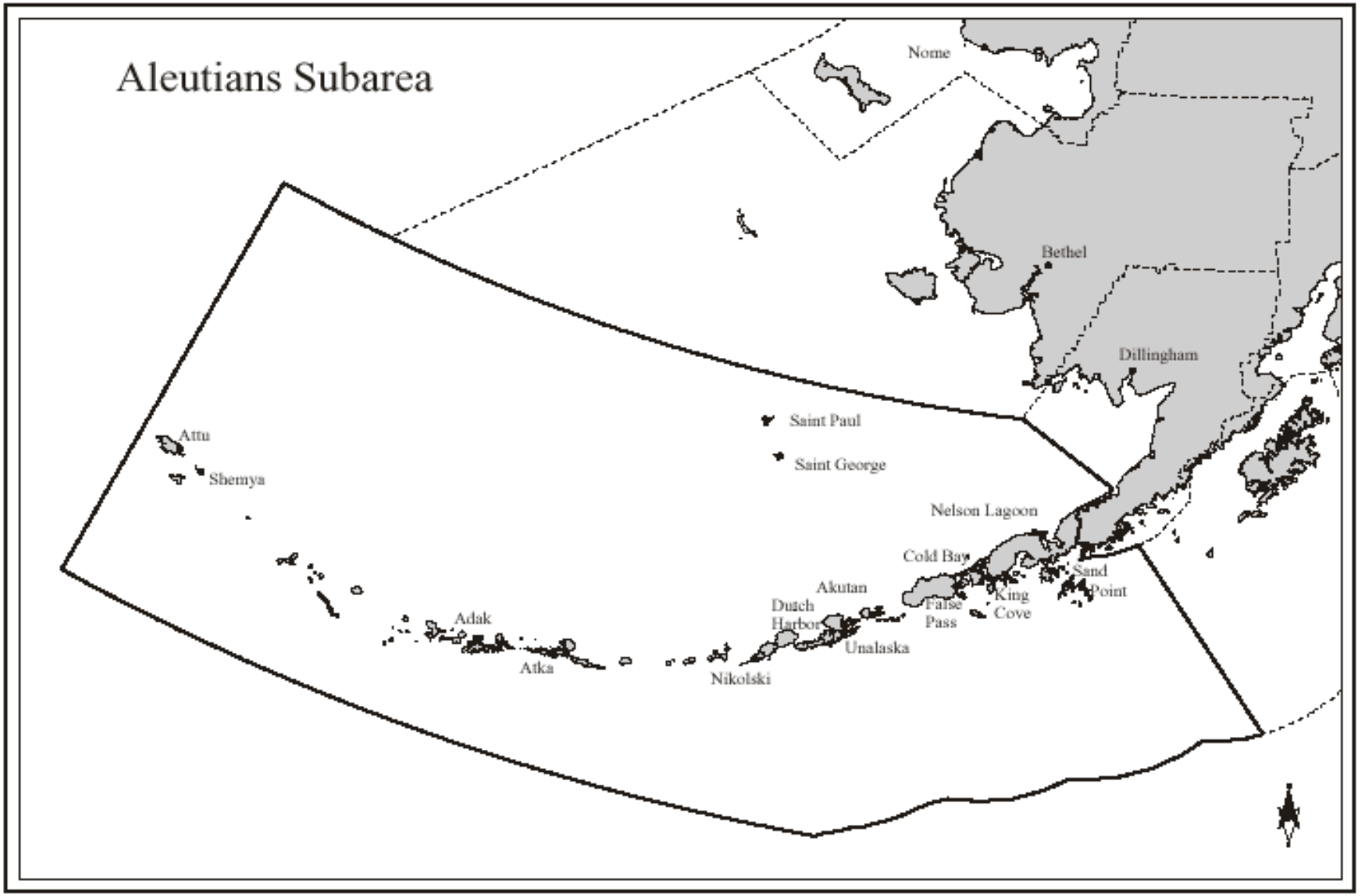
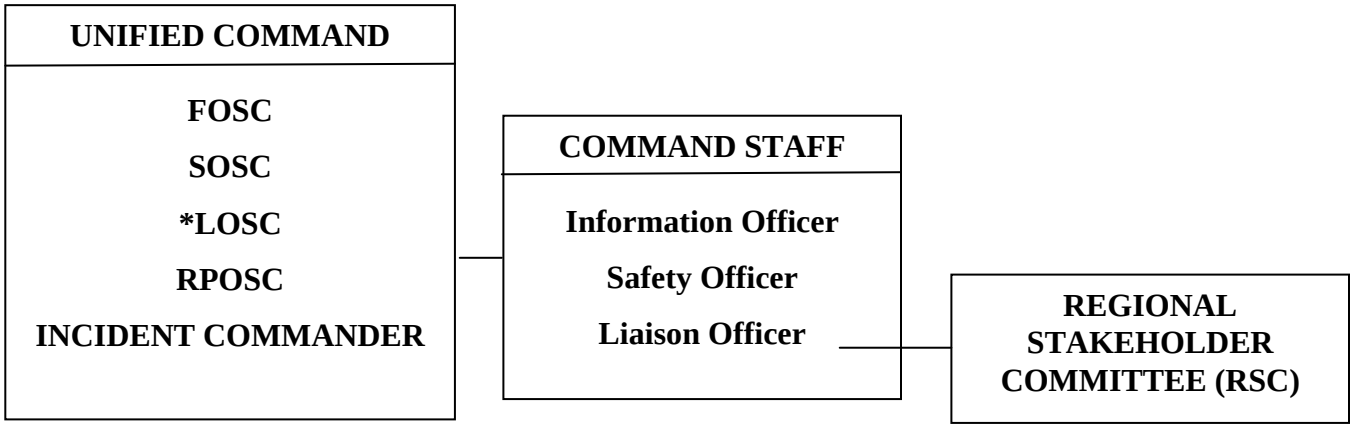


Figure E-2:

ALEUTIANS SUBAREA
REGIONAL STAKEHOLDER COMMITTEE



Suggested Membership:

- Representatives or Community Emergency Coordinators from affected communities. These may include:
  - Adak
  - Akutan
  - Atka
  - Cold Bay
  - False Pass
  - King Cove
  - Nelson Lagoon
  - Nikolski
  - Sand Point
  - St. George
  - St. Paul
  - Shemya
  - Unalaska/Dutch Harbor

- Federal/state/local or private landowners and leaseholders (e.g., National Parks Service, Alaska Dept. of Natural Resources)

- Native corporations, organizations and communities

- Special interest groups affected by the incident

* The Local On-Scene Coordinator is part of the Unified Command and the Incident Commander during an incident as long as there is an immediate threat to life, health and safety.

BACKGROUND: PART TWO – RESPONSE POLICY & STRATEGIES

The strategy for responding to a specific spill or hazmat incident depends upon numerous factors. The strategy can change as the situation changes. As a general rule, the strategies listed below should be used as a guide in developing an effective response. Consider all factors that may affect the particular situation and revise/modify/expand these priorities as the situation dictates. The Response Section of this plan contains some specific information on response procedures and ramp-up timelines. Additional information can be found in **the Unified Plan**.

The Aleutians Geographic Response Strategies (GRS's), Potential Places of Refuge (PPOR), Spill Tactics for Alaska Responders (STAR) Manual and Alaska Chadux Corporation technical manual provide specific tactics, strategies, and the resources necessary to support a given strategy. The GRS, PPOR, and strategies for protection of seafood processing facilities are included in separate sections of this plan.

A. FEDERAL RESPONSE ACTION PRIORITIES/STRATEGIES

The following priorities and response activities are general guidelines for responding to a pollution incident within the COTP Western Alaska zone.

For all incidents, safety of victims, responders, and the public must be given the highest priority. Responders shall not be sent into the affected area without first determining the potential hazards present and taking adequate precautions to protect personnel. Other FOSC priorities will include protecting the safety of the vessel or facility and its cargo and minimizing environmental impacts.

The general pattern of response is as follows:

1. Control the source of the discharge
2. Limit the spread of the pollution
3. Mitigate the effects of the pollution. Mitigation may include recovering oil from the water and affected lands using physical or mechanical means such as sorbents and skimmers. The use of dispersants, chemicals, or in situ burning may mitigate pollution damage more effectively than physical or mechanical means. Refer to the Unified Plan, Annex F, "Chemical and Other Countermeasures," for guidance pertaining to the use of in situ burning and dispersants.

The OSC must recognize that each habitat possesses unique qualities; different cleanup techniques may be required to accomplish the goals of removing as much pollutant as possible while minimizing any environmental damage from the cleanup technique. If shoreline contamination is expected, the OSC should ask the following questions to determine whether cleanup is an appropriate response:

1. Will cleanup activities cause more damage than leaving the oil to natural recovery or dissipation?
2. Will cleanup activities severely disrupt colonies of birds, marine mammals, or other wildlife?
3. Does the oil have a relatively low toxicity?
4. Is it expected that storms or seasonal erosion cycles will remove the oil from the shoreline?
5. Does the oil degrade rapidly or slowly?
6. Does the shoreline have a high energy level?
7. Is the oil present on the surface of the substrate and likely to remain there rather than being incorporated into sediments or buried by seasonal cycles?
8. Is it likely the oil will migrate to adjacent shoreline or near-shore areas?

Whether the response is conducted by a Responsible Party or the federal government, the FOSC is responsible for determining removal completeness and authorizing termination of operations. When uncertain, the FOSC may seek the advice of the ARRT. Generally, removal of an oil discharge is complete when:

1. There is no longer any detectable oil present on the water, adjoining shorelines, or places where it is likely to reach the water.
2. Further removal operations would cause more environmental harm than the oil to be removed.
3. Cleanup measures would pose a hazard to responders, or would be excessively costly in view of their insignificant contribution to minimizing a threat to the public health or welfare, or the environment; and
4. Activities required to repair unavoidable damage resulting from removal actions have been performed.

B. STATE OF ALASKA RESPONSE PRIORITIES

1. **Safety:** Ensure the safety of persons involved, responding, or exposed to the immediate effects of the incident.
2. **Public Health:** Ensure protection of public health and welfare from the direct or indirect effects of contamination of drinking water, air, and food.
3. **Environment:** Ensure protection of the environment, natural and cultural resources, and biota from the direct or indirect effects of contamination.
4. **Cleanup:** Ensure adequate containment, control, cleanup and disposal by the responsible party or supplement or take over when cleanup is inadequate.
5. **Restoration:** Ensure assessment of contamination and damage and restoration of property, natural resources and the environment.
6. **Cost Recovery:** Ensure recovery of costs and penalties to the Response Fund for response, containment, removal, remedial actions, or damage.

BACKGROUND: PART THREE - SUBAREA SPILL HISTORY & OIL FATE

A. NAVIGABLE WATERS SPILL HISTORY

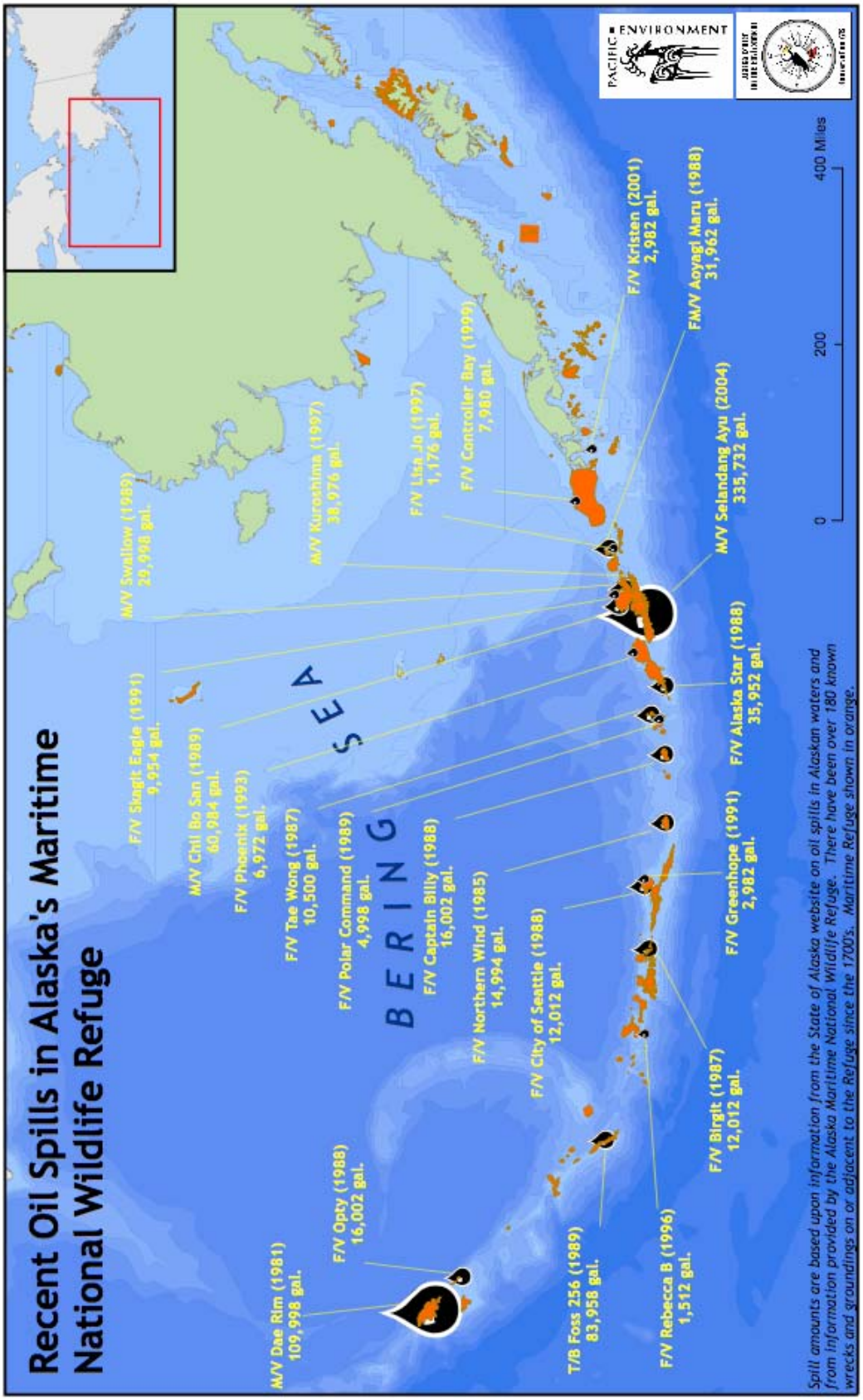
The following spill history was obtained from the Alaska Department of Environmental Conservation and U.S. Coast Guard records. This partial listing includes only the more significant spills or hazardous material releases, plus several potentially severe incidents. This partial and abbreviated spill history is provided to give an overall view of the vast array of facility and transportation-related accidents that can occur.

The Aleutians Subarea is transited by a wide variety of fishing vessels, tankships (light refined products) and tank barges (light refined products), foreign and domestic freight vessels (persistent heavy fuel oil and light refined products), and military vessels (heavy and light refined products). Dutch Harbor is the major refueling/resupply port in the region, making the possibility of a spill high.

Date	Incident
5 March 1981	M/V DAE RIM, Attu Island 110,000 gallons of number 2 fuel oil
8 December 1986	F/V Jamie Lynn, St. Paul Island 3,000 gallons of diesel
10 December 1986	Aleutians Islands National Wildlife Refuge, Adak Island 27,000 gallons of JP-5
9 February 1987	F/V FUKUYOSHI MARU #86, Bering Sea between Unalaska and Pribilof Is. Major fire, potential 66,000 gallons of diesel; 1,500 gallons of lube oil
20 March 1987	F/V ALL ALASKAN, St. Paul Island Potential 140,000 gallons of diesel
11 May 1987	Tank Vessel, North of Unimak Pass 2,674 gallons of diesel released in the water
3 November 1988	F/V CITY OF SEATTLE, Crescent Bay, Atka Island 10,000-12,000 gallons of gasoline
3 December 1988	F/V OPTY, Shemya Island 16,000 gallons of diesel, 1,000 gallons of hydraulic oil, 400 gallons of lube oil
10 December 1988	M/V AOYAGI MARU, Lost Harbor, Akun Island, Alaska Potential 78,000 gallons of Bunker C and 3,250 gallons of lube oil, 32,000 gallons of diesel released

26 December 1988	Tank Barge 283, East of Shumagin Islands, Alaska 2,041,662 gallons of diesel released into the water
17 January 1989	Tank Barge FOSS 256, Amchitcka Island 84,000 gallons of diesel
20 February 1989	M/V YARD ARM KNOT, St. Paul Island 3,500 gallons diesel, with potential release of 97,000 gallons of diesel
15 October 1989	F/V POLAR COMMAND, Islands of Four Mountains Several thousand gallons of diesel, with potential release of 30,000 gallons of diesel, 600 gallons of lube oil, and 150 gallons of hydraulic fluid
2 February 1990	F/V PAVLOF, St. Paul Island Small amounts of hydraulic fluid released in the water
22 April 1991	M/V PRINCE WILLIAM SOUND, Dutch Harbor Near spill, release potential of 135,000 gallons of diesel, plus oxy/acetylene/ammonia bottles
13 August 1991	F/V GREENHOPE, Atka Island 3,000 gallons of diesel pumped overboard to maintain stability
23 August 1991	M/V SEA JADE, Dutch Harbor Near spill, release potential of 276,500 gallons of IFO and 45,435 gallons of diesel
4 September 1991	F/V JUSTIN TIME, Cold Bay 250 gallons of diesel and 5 gallons of hydraulic fluid released
2 October 1991	M/V HYUNDAI #12, Shumagin Islands Near spill, release potential of 174,300 gallons of IFO-180 and 21,000 gallons of diesel
9 July 1995	ADAK NAVAL AIR STATION JP5 SPILL, Adak Island 500 gallons of aviation fuel released on land, some entered water
22 July 1995	F/V NORTHERN WIND, Nazan Bay near Seguam Island and Atka Vessel grounding, 15,000 gallons of diesel released
10 August 1995	AKUTAN FISH OIL SPILL, Akutan Bay 1000 gallons of fish oil
15 October 1995	F/V OLYMPIC, Dutch Harbor 150 gallons of diesel released at Delta Western fuel dock
5 September 1996	ARCTIC ENTERPRISE, Dutch Harbor, Beaver Inlet 1,500 pounds of anhydrous ammonia released

24 October 1996	F/V REBECCA B, Tanaga Island 1,500 gallons of diesel released (grounding)
12 October 1996	M/V STORFJORD, Dutch Harbor (on board vessel) 4,000 pounds of anhydrous ammonia (overfill)
26 November 1997	M/V KUROSHIMA, Summer Bay, Unalaska 39,000 gallons of bunker fuel released into bay and connecting lake (grounding)
8 May 1999	F/V CONTROLLER BAY, Unimak Island 8,000 gallons of diesel released (grounding)
11 May 2001	F/V KRISTEN, Cold Bay 3,000 gallons of diesel released
26 August 2003	F/V Decade, King Cove 3,000 gallons of diesel fuel
8 December 2004	M/V Selendang Ayu IFO 380 (321,052 gallons) and Diesel (14,680 gallons)
13 January 2005	TARBALLS MYSTERY SPILL, Attu 1,520 gallons of Bunker fuel
23 February 2006	F/V NORTHERN DAWN, Volcano Bay 1,000 gallons of diesel released
10 February 2007	F/V ILLUSION, Makushin Bay 1,000 gallons of diesel released
18 March 2007	F/V EXODUS EXPLORER, Kuluk Bay-Gannet Rocks 3,000 gallons of diesel released (grounding)
23 March 2008	F/V ALASKA RANGER, 145,000 gallons of diesel released (sinking)


Recent Oil Spills in Alaska's Maritime National Wildlife Refuge
BERING SEA
M/V Dae Rim (1981) 109,998 gal.
F/V Opty (1988) 16,002 gal.
T/B Foss 256 (1989) 83,958 gal.
F/V Rebecca B (1996) 1,512 gal.
F/V Birgit (1987) 12,012 gal.
F/V Greenhope (1991) 2,982 gal.
F/V Alaska Star (1988) 35,952 gal.
M/V Selandang Ayu (2004) 335,732 gal.
F/M/V Aoyagi Maru (1988) 31,962 gal.
F/V Kristen (2001) 2,982 gal.
F/V Controller Bay (1999) 7,980 gal.
F/V Lisa Jo (1997) 1,176 gal.
M/V Kuroshima (1997) 38,976 gal.
M/V Swallow (1989) 29,998 gal.
F/V Skagit Eagle (1991) 9,954 gal.
M/V Chil Bo San (1989) 60,984 gal.
F/V Phoenix (1993) 6,972 gal.
F/V Tae Wong (1987) 10,500 gal.
F/V Polar Command (1989) 4,998 gal.
F/V Captain Billy (1988) 16,002 gal.
F/V Northern Wind (1985) 14,994 gal.
F/V City of Seattle (1988) 12,012 gal.
0
200
400 Miles
PACIFIC ENVIRONMENT
Spill amounts are based upon information from the State of Alaska website on oil spills in Alaskan waters and from information provided by the Alaska Maritime National Wildlife Refuge. There have been over 180 known wrecks and groundings on or adjacent to the Refuge since the 1700's. Maritime Refuge shown in orange.

B. INLAND SPILL HISTORY

Date	Incident
15 July 1995	TRIDENT SEAFOODS CANNERY, Akutan 10,000 gallons of diesel released (tank failure)
24 August 1995	EARECKSON AIR FORCE BASE, Shemya Island 495 gallons of aviation fuel
6 October 1995	ADAK JP5 TANK RUPTURE, Adak Island 500 gallons of aviation fuel
3 December 1995	TRIDENT SEAFOODS, St Paul Island 1,500 pounds of anhydrous ammonia released due to line failure
18 May 1996	ILIULIUK GREEN PAINT SPILL, Iliuliuk Creek 55 gallons of unknown substance released into creek
2 July 1996	EARECKSON AIR FORCE BASE, Shemya Day Tank overfill, 4,000 gallons of diesel released
2 August 1996	PETER PAN SEAFOODS, King Cove 400 gallons of diesel
10 January 1998	THERMAL TREATMENT FACILITY, Dutch Harbor 3,675 gallons of diesel released (human error)
12 March 1998	ADAK ELEMENTARY SCHOOL, Adak 3,400 gallons of aviation fuel (valve failure)
13 April 1998	CG STATION ATTU TANK FARM, Attu 4,800 gallons of gasoline released (equipment failure)
24 February 1999	SAINT PAUL ISLAND, CITY TANK FARM, St Paul Island 1,500 gallons of diesel released (overfill)
29 April 2000	IVANOF BAY POWER PLANT, Ivanof Bay 1,529 gallons of diesel released (sabotage/vandalism)
3 May 2000	ADAK SEAFOODS, Adak 2,000 gallons of Freon (dichlorodifluoromethane) released
10 September 2000	PETER PAN SEAFOODS, False Pass 1,000 gallons of diesel released (valve failure)
26 August 2003	PETER PAN SEAFOODS, King Cove 150 lbs chlorine gas

26 December 2004	NIKOLSKI TANK FARM, Nikolski 5,000 gallons of diesel released (corrosion)
28 June 2006	USCG C-130 AIRCRAFT SPILL, Saint Paul Island 1,000 gallons of aviation fuel released
3 February 2007	DUTCH HARBOR AIRPORT, Dutch Harbor 1,000 gallons of diesel released (equipment failure)
15 February 2007	OLD ROCK QUARRY, Sand Point 8,776 gallons of used oil (all types) released
22 December 2007	UNISEA INC., Dutch Harbor 18,007 pounds of anhydrous ammonia released

Specific Spill Data Analysis for the Aleutians Subarea:
http://www.dec.state.ak.us/spar/perp/ai_risk/10Yr_Subareas_AleutiansOnly.pdf

8 Page Insert

C. OIL FATE AND GENERAL RISK ASSESSMENT

1. Fate of Spilled Oil

Natural processes that may act to reduce the severity of an oil spill or accelerate the decomposition of spilled oil are always at work in the aquatic environment. These natural processes include weathering, evaporation, oxidation, biodegradation, and emulsification.

- **Weathering** is a series of chemical and physical changes that cause spilled oil to break down and become heavier than water. Winds, waves, and currents may result in natural *dispersion*, breaking a slick into droplets which are then distributed throughout the water. These droplets may also result in the creation of a secondary slick or thin film on the surface of the water.

- **Evaporation** occurs when the lighter substances within the oil mixture become vapors and leave the surface of the water. This process leaves behind the heavier components of the oil, which may undergo further weathering or may sink to the ocean floor. For example, spills of lighter refined petroleum-based products such as kerosene and gasoline contain a high proportion of flammable components known as *light ends*. These may evaporate completely within a few hours, thereby reducing the toxic effects to the environment. Heavier oils leave a thicker, more viscous residue, which may have serious physical and chemical impacts on the environment. Wind, waves, and currents increase both evaporation and natural dispersion.

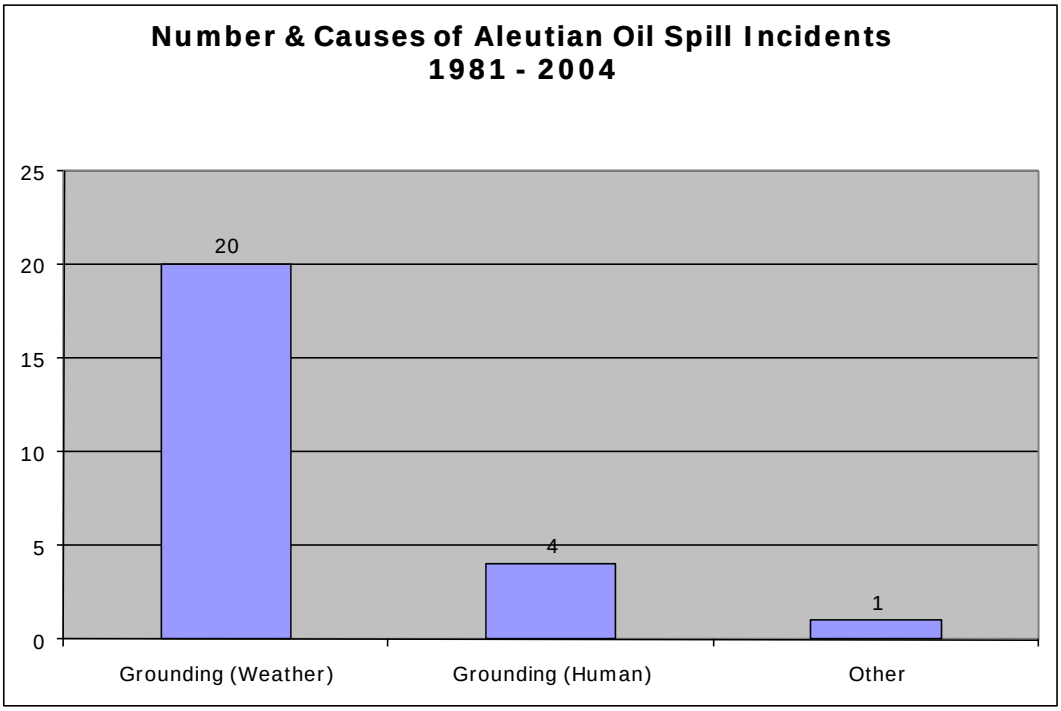
- **Oxidation** occurs when oil contacts the water and oxygen combines with the oil to produce water-soluble compounds. This process affects oil slicks mostly around their edges. Thick slicks may only partially oxidize, forming *tar balls*. These dense, sticky, black spheres may linger in the environment, and can collect in the sediments of slow moving streams or lakes or wash up on shorelines long after a spill.

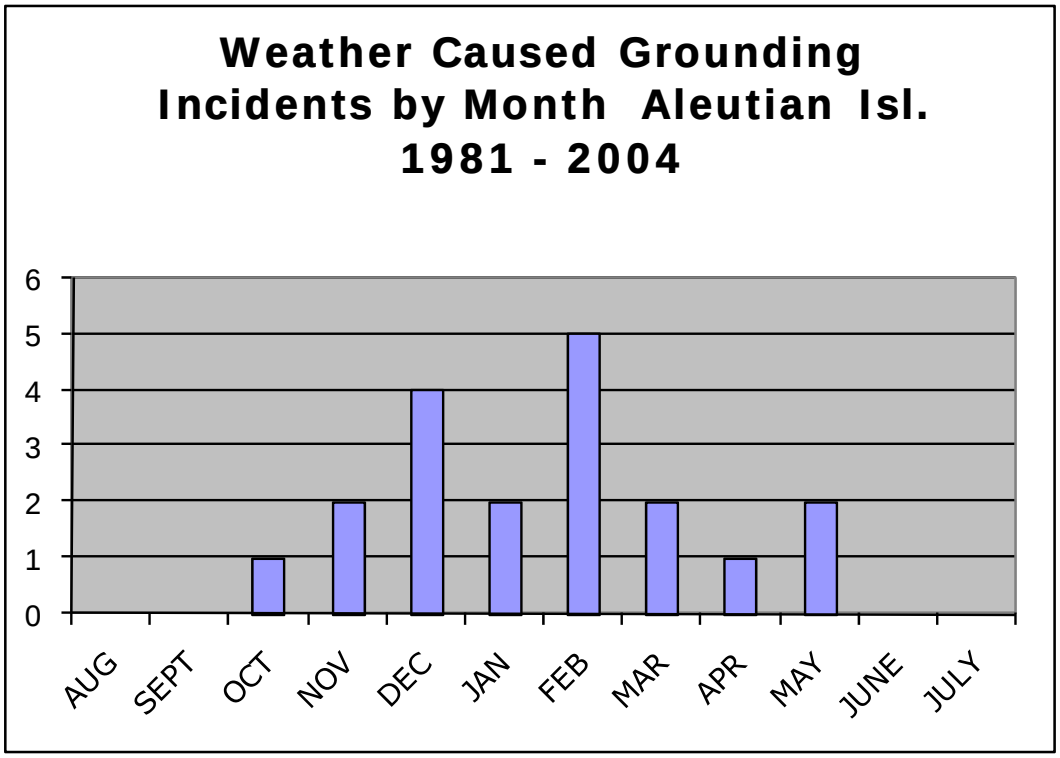
- **Biodegradation** occurs when micro-organisms such as bacteria feed on oil. A wide range of micro-organisms is required for a significant reduction of the oil. To sustain biodegradation, nutrients such as nitrogen and phosphorus are sometimes added to the water to encourage the micro-organisms to grow and reproduce. Biodegradation tends to work best in warm water environments.

- **Emulsification** is a process that forms *emulsions* consisting of a mixture of small droplets of oil and water. Emulsions are formed by wave action, and greatly hamper weathering and cleanup processes. Two types of emulsions exist: water-in-oil and oil-in-water. Water-in-oil emulsions are frequently called "chocolate mousse," and they are formed when strong currents or wave action causes water to become trapped inside viscous oil. Chocolate mousse emulsions may linger in the environment for months or even years. Oil and water emulsions cause oil to sink and disappear from the surface, which give the false impression that it is gone and the threat to the environment has ended.

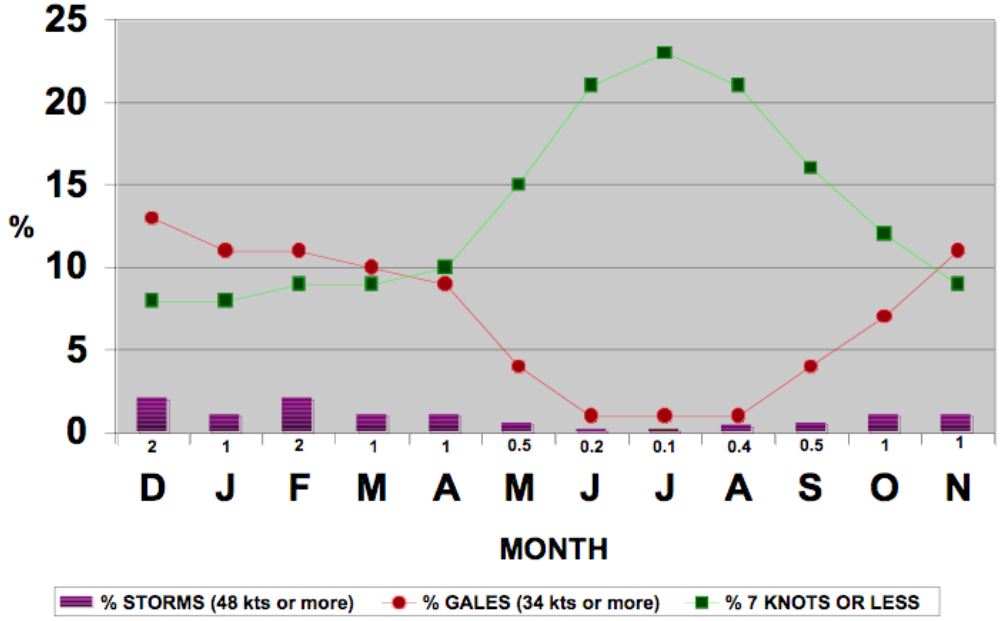
2. General Risk Assessment and Climatological Data

The following information (graphs and illustrations) were extracted from a NOAA provided at the National Academy of Science Aleutian Islands Oil Spill Risk Assessment Scoping meeting held in Anchorage on October 29-30, 2007.



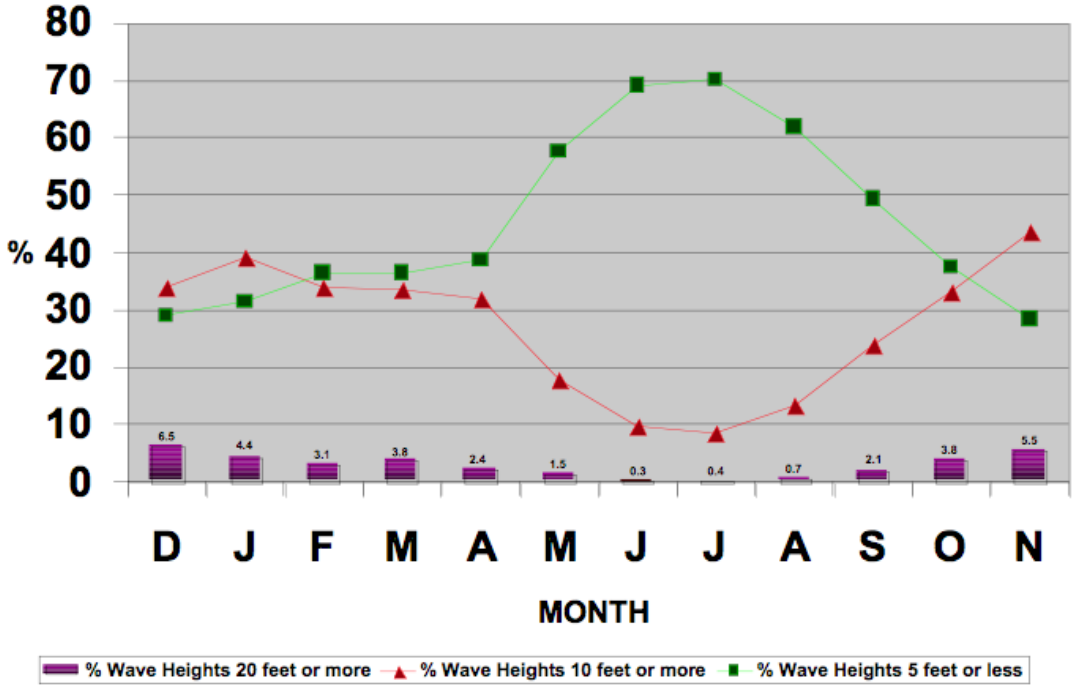


PERCENT FREQUENCY OF EXTREME WIND SPEEDS FOR THE SOUTHEAST BERING SEA



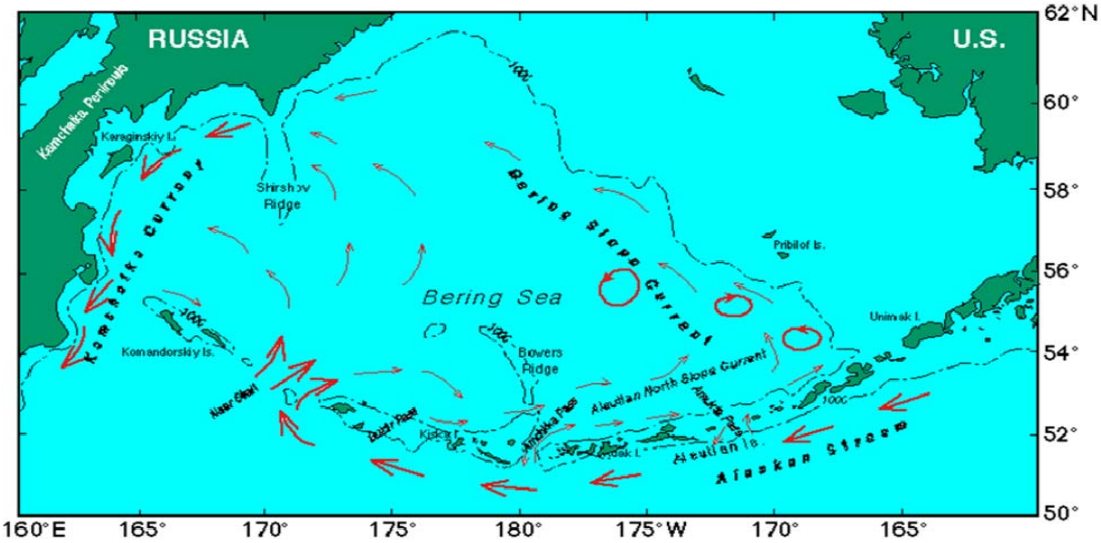
Source: Climatic Atlas of the Outer Continental Shelf Waters and Coastal Regions of Alaska, Vol. II, Bering Sea, 1988

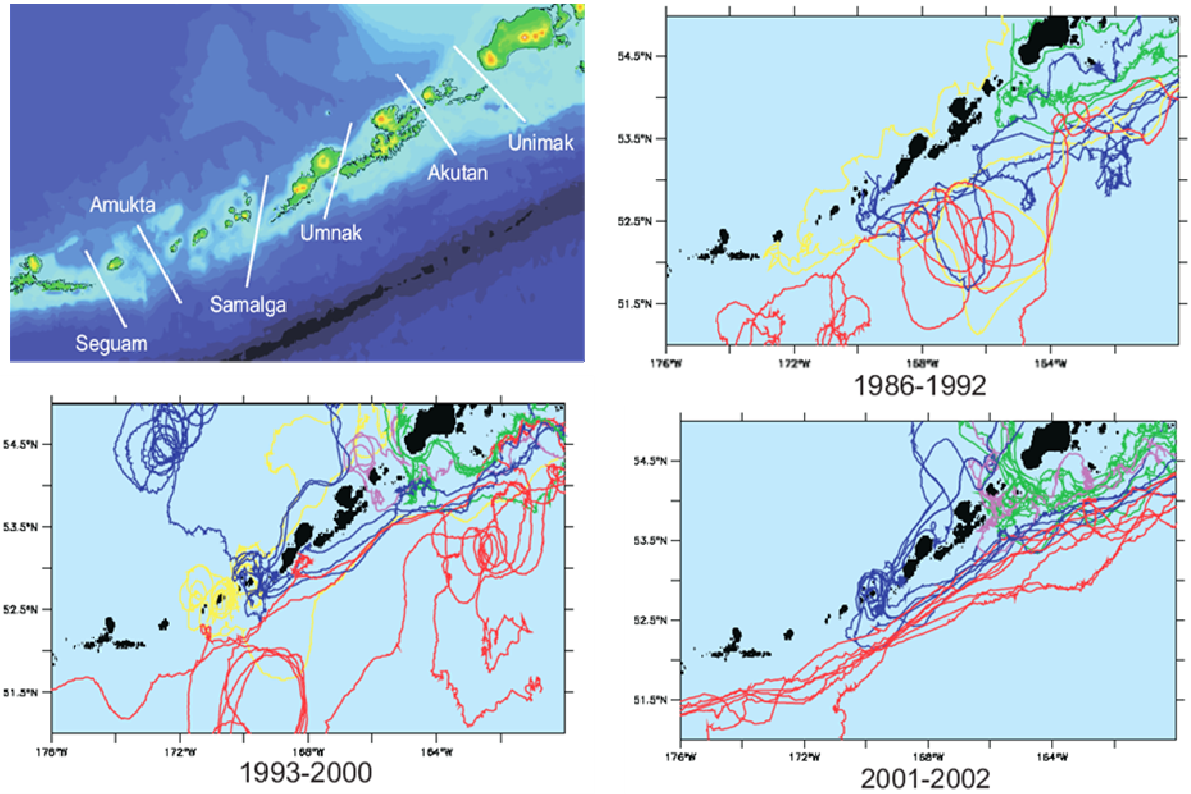
PERCENT FREQUENCY OF EXTREME WAVE HEIGHTS FOR THE SOUTHEAST BERING SEA



Source: Climatic Atlas of the Outer Continental Shelf Waters and Coastal Regions of Alaska, Vol. II, Bering Sea, 1988

General Circulation Through and Around the Aleutian Islands





Drifter Trajectories during 3 different time periods: over 17 years and 53 drifters, 60% went through either Unimak or Samalga Pass with another 26% bypassing the passes altogether.

BACKGROUND: PART FOUR - ABBREVIATIONS & ACRONYMS

ACP	Area Contingency Plan
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game, also as ADFG
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation & Public Facilities, also as ADOTPF
AFB	Air Force Base
ARRT	Alaska Regional Response Team
BBLS	Barrels
BLM	Bureau of Land Management
BOA	Basic Ordering Agreement
CART	Central Area Response Team (ADEC)
CCGD 17	Commander, Coast Guard District 17
COTP	Captain of the Port (USCG)
CTAG	Cultural Technical Advisory Group
DOD	Department of Defense
DOI	Department of the Interior
DRAT	District Response Advisory Team (USCG)
DRG	District Response Group (USCG)
EPA	Environmental Protection Agency, also as USEPA
ESI	(Alaskan) Environmental Sensitivity Index
ETS	Emergency Towing System
F/V	Fishing Vessel
FAA	Federal Aviation Administration
FOSC	Federal On-Scene Coordinator
GIS	Geographic Information System
GRS	Geographic Response Strategies
GSA	General Services Administration
HAZMAT	Hazardous Materials, also as HazMat
HAZWOPER	Hazardous Waste Operations and Emergency Response (a training program)
ICS	Incident Command System
IDLH	Immediate Danger to Life and Health
INMARSAT	International Maritime Satellite Organization
LEPC	Local Emergency Planning Committee
LEPD	Local Emergency Planning District
LNG	Liquefied Natural Gas
M/V	Motor Vessel
MLT	Municipal Lands Trustee Program
MOA	Memoranda of Agreement
MOU	Memoranda of Understanding
MSO	Marine Safety Office (USCG)
MSRC	Marine Spill Response Corp. (national industry cooperative)
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOTAMS	Notice to All Mariners; also, Notice to Airmen
NPDES	National Pollution Discharge Elimination System
NPFC	National Pollution Fund Center

NRC	National Response Center
NRT	National Response Team
NRDA	(Federal/State) Natural Resource Damage Assessment
NSF	National Strike Force
NSFCC	National Strike Force Coordinating Center
NWR	NOAA Weather Radio
OPA 90	Oil Pollution Act of 1990
OPCEN	Operations Center
OSC	On-Scene Coordinator
OSRO	Oil Spill Response Office
PIAT	Public Information Assist Team
PIO	Public Information Officer
POLREP	Pollution Report (USCG)
PPOR	Potential Places of Refuge
PPP	Seafood Processor Protection Plans
RCRA	Resource Conservation and Recovery Act of 1978
RP	Responsible Party
RRT	Regional Response Team
RSC	Regional Stakeholder Committee
SCBA	Self-Contained Breathing Apparatus
SCP	Subarea Contingency Plan
SHPO	State Historic Preservation Officer (ADNR)
SITREP	Situation Report (ADEC)
SONS	Spill of National Significance
SOSC	State-On Scene Coordinator
SSC	Scientific Support Coordinator (NOAA)
SUPSALV	U.S. Navy Superintendent of Salvage, also as NAVSUPSALV
T/V	Tank Vessel
USCG	United States Coast Guard
VIRS	Visual Information Response System
VTS	Vessel Traffic Separation System/Scheme