REPORT TO CONGRESS

INTERNATIONAL, PRIVATE-SECTOR
TUG-OF-OPPORTUNITY SYSTEM
FOR
THE WATERS OF THE OLYMPIC COAST
NATIONAL MARINE SANCTUARY AND THE
STRAIT OF JUAN DE FUCA

EXECUTIVE SUMMARY

BACKGROUND

The Alaska Power Administration Asset Sale and Termination Act, P.L. 104-58, was signed into law by the President on November 28, 1995.

Title IV of the Act requires the Coast Guard to submit a plan to Congress on the most cost-effective means of implementing an international, private-sector tug of opportunity system (ITOS) for vessels in distress operating within the Olympic Coast National Marine Sanctuary and the Strait of Juan de Fuca.

The Presidential determination of April 28, 1996, directed the Coast Guard to assist the private sector efforts to improve marine safety. Accordingly, in the Department of Transportation Action Plan, the Coast Guard was directed to develop its ITOS Plan by December 31, 1996 and offer its assistance as needed to the private-sector efforts to develop an ITOS plan.

The Department of Transportation Action Plan required an interim report to the Secretary of Transportation to address the status of the ITOS plan, including marine safety criteria (performance requirements) and a preliminary evaluation of any private-sector ITOS program. The interim report provided a geographic description with environmental sensitivities, performance and documentation requirements and the status of the ITOS plan.

The enclosed report provides information regarding the following: (1)documentation requirements as prepared by the U.S. Coast Guard for use in developing an ITOS, (2) performance requirements for crew qualifications, tug performance capabilities and response time, (3) discussion of the geophysical area under consideration and, identification of current vessel control provisions which enhance marine safety, (4) a discussion of Canadian involvement, (5) the ITOS plan provided by industry, (6) an evaluation of the private sector ITOS plan and (7) a discussion of additional measures available for consideration by subsequent risk assessment as complementary or necessary to the ITOS proposed in order to ensure marine environmental safety.

DOCUMENTATION REQUIREMENTS

Documentation requirements identify the needed provisions to ensure a fully thought out and documented plan. These include

organizational and operational structure, technology, issues, fiscal administration, legal requirements, and integration with other organizations. These requirements were subject to a public meeting held on October 17, 1996.

MARINE SAFETY REQUIREMENTS

The performance requirements provide a description of the area, calling fleet, and risk survey based upon existing studies in the region. These requirements address tug capabilities, response times and crew qualifications. These requirements were subject to a public meeting on October 17, 1996. The performance criteria may be revised based on the results of an ongoing review of weather and current conditions by NOAA and the Coast Guard.

GEOPHYSICAL

The geophysical section addresses three topics: (1) climate, (2) geographic, and (3)potential incident area vs. vessel needs.

CRUDE OIL SUPPLY

In 1972, the crude oil requirement of Puget Sound refineries was approximately 347,500 barrels per day with Trans Mountain Pipeline supplying 80% and foreign imports the remaining 20%. In 1977, the Trans-Alaska pipeline changed that. By 1990, 99% of the requirement, of the Puget Sound refineries was satisfied with Alaska North Slope (ANS) crude oil by 282 tanker transits.

1995 marked a decline in the ANS production while the demand for ANS crude oil at the West Coast refineries is steadily increasing. The Washington State Energy Office predicts that by the year 2000, oil from Alaska will comprise only 60 percent of the state's supplies, to 45 percent by 2005 and to less than 25 percent by 2020. The oil industry disagrees, due to Washington State's proximity to Valdez, Alaska. The State of Alaska forecasts that its known crude oil reserves will run out early in the next millennium. Regardless, Washington State's refineries have identified other sources of supply.

One such source is Canadian, Trans Mountain Pipeline, the original principal supply for the north Puget Sound refineries. Trans Mountain has recently expanded capacity. Deliveries to Washington State have increased from 6,000 barrels per day in 1990 to 124,000 barrels per day in January of 1996. According to Trans Mountain, this is below pipeline capacity of 180,000 barrels per day. Further, Trans Mountain argues it could easily increase to 200,000 barrels per day. Such expanding pipeline

supply should reduce tanker traffic and the risk of marine oil spills.

CANADIAN INVOLVMENT

The Coast Guard met with the Canadian Government at the national level on May 15, 1996, October 18, 1996, and November 26, 1996, and monthly at the local level. The Canadian Coast Guard (CCG) and Transport Canada (Marine Safety) have assisted in the facilitation of an American-Canadian industry working group to develop an industry proposal pursuant to Title IV of the Act and the Administration's direction. The CCG and Transport Canada on behalf of the government of Canada have provided information where appropriate to assist in the preparation of this report.

PRIVATE SECTOR TUG OF OPPORTUNITY SYSTEM PLAN GROUP

A self-initiated marine industry group voluntarily formed to address the President's Directive for private-sector efforts to improve vessel safety. The group is comprised of representatives from United States and Canadian industry.

In a letter to the Coast Guard, the industry group expressed a desire to develop a tug of opportunity system with existing marine resources. The group organized itself into sub-groups around the core concepts identified in the documentation requirements. Industry working groups developed plan requirements on such issues as organizational and operational structure, communications and technology, and fiscal administration. The Coast Guard provided industry a series of briefs on systems, technology, documentation, and marine safety requirements.

The industry group prepared and submitted a plan to the U.S. Coast Guard postmarked October 15, 1996. In addition, the industry group provided additional information on tug resources to assist in evaluating the ITOS plan. This plan addresses technology and information aspects (e.g. hardware and software computer needs, communication requirements, tracking equipment needs)of a private sector international tug of opportunity system.

EVALUATION OF THE PRIVATE-SECTOR TUG-OF-OPPORTUNITY SYSTEM PLAN

The U.S. Coast Guard reviewed the plan and found it to provide an adequate basis for implementing the proposed system. This plan was subject to a Public Meeting held on November 26, 1996. The ITOS plan will have a positive effect on the level of marine

environmental safety in the Puget Sound area by virtue of systematically organizing tug resources in the area. Additional testing and enhancements are needed before the U.S. Coast Guard can determine this plan fully meets the documentation and marine safety requirements of this report.

The ITOS plan outlines a system designed to increase the level of maritime safety in the Pacific Northwest by coordinating the response of tugs of opportunity to disabled vessels in the Strait of Juan de Fuca and off the Washington coast. The plan provides a basis for system implementation and for a determination that the proposed system will have a positive impact on marine environmental safety.

The plan concisely captures the needed information in the following areas: communicating with and tracking of tugs of opportunity, improving current practices used to respond to disabled vessels, and creating a central data base to potential tugs of opportunity.

The plan could be improved in the following areas: defining procedures for assigning tugs, defining areas and sub areas for ITOS coverage, defining adequate coverage requirements relating to tug capability and response time, expanding the description of training requirements and plans, and defining system performance criteria.

We believe the plan meets the marine safety criteria for coverage zones 1 and 2, and 5-7 based upon average transits of tugs through these zones. Available transit data for coverage zones 3 and 4 does not demonstrate viable response time capability at this time in those areas.

The industry provided ITOS plan represents a capable effort at developing a tug of opportunity system. While the ITOS will enhance marine environment safety in the Puget Sound area, some areas of the plan have shortfalls when compared to the marine safety criteria. These are: (1) training (i.e., clarify objectives); (2) tug performance data (i.e., some data lacking); and (3) tug dispersion information (i.e., some data incomplete). However, with implementation of the ITOS and placement of transponders on the participating tug fleet, tug information quickly will be available. Other information on tug performance is being collected and should not be difficult to obtain. Training will be an ongoing discussion as we work with the implementation plan. We have concluded the ITOS is a viable, well constructed addition to the current Puget Sound area marine

safety regime, and that its further definition will only be possible with implementation.

ADDITIONAL HAZARDS

The final requirement under the Action Plan is a separate assessment of the overall marine safety regime within Puget Sound area waters and possible additional measures; if indicated, to enhance the level of safety. This effort was underway as of early December 1996. This report contains possible additional measures for responding to vessels in distress in coverage areas 3 and 4, where it appears that the ITOS is unlikely to meet the marine safety criteria.

ADDENDUM

An addendum to this report will be submitted by July 15, 1997, to address the following: (1) resolution of outstanding documentation requirements on legal and contractual issues, operational issues and fiscal administration; (2) review of the marine safety criteria based upon the further review of weather and current conditions; (3) further address of Canadian concerns; and, (4) operational validation of ITOS based on tug performance data obtained as the ITOS is implemented. TABLE OF CONTENTS

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HISTORY AND BACKGROUND

I. OVERVIEW

This report covers history and background, geographic area of interest, vessel casualty history, commercial vessel traffic activity, tug resources, marine safety regime, vessel routing measures, vessel safety and spill prevention measures, vessel traffic services, tug of opportunity system plan evaluation criteria, the private sector tug of opportunity system plan and evaluation of that plan, as well as, Canadian, Native American and U.S. public involvement in this issue.

II. HISTORY AND BACKGROUND

The Alaska Power Administration Asset Sale and Termination Act, P.L. 104-58, was signed into law by the President on November 28, 1995.

Title IV of the Act requires the Coast Guard to submit, within 15 months of enactment of the Act, a plan to Congress on the most cost-effective means of implementing an international, private-sector tug of opportunity system for vessels in distress operating within the Olympic Coast National Marine Sanctuary or the Strait of Juan de Fuca. Title IV also requires the Coast Guard to coordinate with the Canadian Government and U.S. and Canadian maritime industries. However, it should be noted that formal U.S./Canada consultations are required in the event any legislation is considered by either State that could or will have an effect on the other State, in the waters covered by the 1979 Cooperative Vessel Traffic Services (CVTS) agreement. Furthermore, Title IV requires the U.S. Coast Guard to provide access to Vessel Traffic System imagery and transponder information by the nonprofit maritime organization operating the tug-of-opportunity system, if needed to identify and deploy vessels for emergency response.

The Administration provided clarification and tasking for the Coast Guard which are discussed in this section.

Prior to authorizing crude oil exports allowed under the Act, the Administration conducted an interagency review of the impact of lifting the ban on environmental, economic, and energy issues in the State of Washington. The review determined a rising interest within the State of Washington about the increasing volume of vessel traffic projected to occur as a result of factors other than the shipment of Alaska North Slope crude but no increase in risk to the state posed by Alaska North Slope shipments.

Highlighting questions about current vessel safety procedures and resources for the State of Washington, the President, on April 28, 1996, in authorizing export of Alaska North Slope crude oil under powers of the Act, modified the tasking to the Coast Guard. The Presidential determination of April 28, 1996, also directed the Coast Guard to work with the private sector in the development of a private sector international tug of opportunity system.

The President directed the Coast Guard to provide a status report on the plan for a private-sector vessel assistance system in advance of the Congressional reporting requirement under the statute. An interim report was prepared by the U.S. Coast Guard and submitted to the Secretary of Transportation in accordance with this Presidential direction.

In the Department of Transportation action plan, the Coast Guard was directed to offer its assistance as needed to the private-sector efforts to develop an international tug of opportunity system plan.

The Department's action plan established an accelerated deadline for the Coast Guard's report. The Secretary was directed to conduct a more general review of all vessel safety and environmental protection measures in the region. In addition, the Department's action plan expanded the details to be addressed in the documentation requirements and performance requirements to ensure a comprehensive evaluation of any proposed system.

Title IV of the act requires this report to Congress which includes an evaluation of the ITOS plan. This report also provides the basis upon which the ITOS plan was reviewed.

CHAPTER III.

AREA OF INTEREST

III. AREA OF INTEREST

A. GEOGRAPHY

The area of interest for the international tug-of-opportunity system is comprised of the waters of the Olympic Coast National Marine Sanctuary, the Strait of Juan de Fuca and, the Vancouver Island coast bordering on the Straits and consisting of the Pacific Rim National Park; various environmentally sensitive marine areas; the Pacific Biological Station in Bamfield, and a number of Native communities and lands. See **Figure 1, appendix F**.

1. Olympic Coast National Marine Sanctuary.

The sanctuary lies off the coast of Washington State and includes a portion of the western end of the Strait of Juan de Fuca. It covers an area of approximately 3,300 square miles, extending from Neah Bay, Washington due north to the U.S./Canada international border, seaward to the 100 fathom curve, then south to a point due west of the mouth of the Copalis River, near Copalis Beach, Washington.[i] Olympic National Park, four Indian reservations (Makah, Quillayute, Hoh, Quinault), three National Wildlife Refuges, and a variety of other public and private lands border the sanctuary along the coastline. Roughly coincident with the sanctuary is an International Marine Organization (IMO) adopted Voluntary Area To Be Avoided (ATBA). This voluntary exclusion area applies only to tank barges or tank vessels laden with bulk liquid oil or hazardous materials. The ATBA runs roughly from the shoreward boundary of the sanctuary to 25 nautical miles offshore for the entire length of the sanctuary from Cape Flattery in the north to the Copalis River in the south.

2. Strait of Juan de Fuca.

The Strait of Juan de Fuca is a strait that separates the south coast of Vancouver Island, Canada, from the north coast of Washington state. It is the principal waterway by which international and interstate commerce moves to and from the Washington State ports of Port Angeles, Bellingham, Everett, Seattle, Tacoma, Olympia; the oil terminals at Anacortes and Ferndale; and the Canadian ports of Victoria, Vancouver and Roberts Bank. The Strait is approximately 80 miles long. From its mouth to Race Rocks, approximately 50 miles east, it averages 12 miles in width. From Race Rocks to Whidbey Island, its eastern boundary, approximately 30 miles east, the Strait widens to 16 miles. There are very few dangerous shoal areas, and the waters are generally deep, except near the shoreline.[ii] The depth of water in the traffic lanes regularly used by commercial oceangoing ships generally ranges from over 600 feet at the entrance of the Strait to 100 feet near the eastern end of the Strait.

B. METEOROLOGY AND OCEANOGRAPHY

1. Overview

The principal threat to the environment posed by a disabled vessel is that of an oil spill resulting from the vessel drifting aground. A disabled vessel could drift aground as a result of wind, current and wave forces. Model and full scale tests demonstrate that drift rates can vary significantly by vessel type, vessel size and vessel loading condition. The International Chamber of Shipping and the Oil Companies International Marine Forum, based on model tests of oil tankers and gas carriers of various sizes and loading conditions, reported drift speeds from a low of 1.5 kts to a high of 3.7 kts for Beaufort wind force 7, 28-33 kt, and associated waves, 13.5-19 ft.[iii] Model test tank results reported by the Canadian Coast Guard in a 1986 study found the rate of drift for a laden tanker ranged from 2.5-3 kts to 3.0-3.7 kts for a tanker in ballast under Beaufort force 7-8 wind.[iv] A wind drift factor of 3% of wind has been used by NOAA in other studies.[v] Since currents tend to run parallel to the shore along the Washington Coast and within the Strait, wind will be the more critical component of the vessel drift grounding problem. Besides the variation in the impact of the wind on specific vessel types, there is also significant variation between winter and summer winds. All of these variations must be understood to assess the potential for drift of a disabled vessel and the implications of drift for any response system. These seasonal trends do not take into account conditions such as passing weather systems where extreme weather may occur. It should be noted that the net results of the current flowing out of, and across the entrance to the Straits, is a move towards the Vancouver Island shore in this area. This area has experienced numerous groundings, and oiled beaches (as a result of the barge NESTUCCA spill off Greys Harbor on the Washington State, Pacific coast) due to this effect.

2. Coastal Circulation and Tidal Currents

Along the Washington Coast currents generally flow parallel to the coast. The summer months bring a southerly flow while a northerly flow is prevalent during the winter.[vi] **Figure 2, appendix F** depicts the general summer circulation and presents four major features: (1) a strong near-shore current along Vancouver Island; (2) the tidal flow at the entrance to the Strait; (3) a weaker southerly current directed along the Washington outer coast; and (4) further offshore, the southerly flowing California current.[vii]

In **Figure 3, appendix F.**, the general winter circulation is represented. Three major features stand out: (1) a strong near-shore current along Vancouver Island; (2) the tidal flow in the entrance to the Strait; and (3) the southerly-flowing California current.[viii] As can be seen in both figures, during both summer and winter the net flow in the Strait of Juan de Fuca is out the Strait toward the northwest.

3. Seasonal Wind Patterns

During the summer, winds are predominantly from the northwest while southeast winds prevail during the winter along the Washington coast. **Figures 4 and 5, appendix F** depict this by representing percent frequency occurrences of total observations of wind for July and December.[ix] In the Strait of Juan de Fuca, winds draw into the strait from the northwest in the summer and out of the strait from the southeast in the winter.[x] However, there are localized effects that influence wind flow. Two examples of exceptions to this general pattern exist: (1) in the area east of Port Angeles, winds are predominantly from the west during the entire year; (2) in the Ferndale-Anacortes area, southerly winds prevail ten months out of the year, while during January and December, winds from the north are predominant.[xi]

C. ENVIRONMENTAL SENSITIVITY

1. Olympic Coast National Marine Sanctuary

a. Title III of the National Marine Sanctuaries Act authorizes the Secretary of Commerce to designate nationally significant areas of the marine environment as National Marine Sanctuaries. As such, the Olympic Coast National Marine Sanctuary was established to provide enjoyment for current and future generations with the following goals in mind:

(1) To provide authority for comprehensive and coordinated conservation and management of this special marine environment;

(2) To support, promote, and coordinate scientific research on the resources of this area;

(3) To enhance public awareness, understanding, appreciation, and wise use of the marine environment; and

(4) To facilitate, to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of this area not prohibited by other authorities.[xii]

b. The sanctuary was established in 1994 and is, thus far, one of only 14 national marine sanctuaries. It owes this designation, in part, to its pristine habitat which contains important fisheries, 29 different species of marine mammals, 102 species of algae, large seabird colonies and other wildlife. In addition, this region hosts 6 species of whales and dolphins. In fact, the entire U.S. gray whale population migrates through the sanctuary.[xiii]

c. This diverse marine habitat borders some very popular hiking, camping, and beach-combing areas. Additionally, the sanctuary has archeological/cultural sites which have important traditional and religious values to the four Native American tribes inhabiting this region.

2. Strait of Juan de Fuca

a. The Strait of Juan de Fuca is home to a variety of natural resources which include five species of salmon, diverse wildlife, five resident species of whales and dolphins, and birds and mammals which are federally listed as either threatened or endangered. In addition, the Straits are host to many important fisheries; the top three, known for their spawning activity, being located in Discovery Bay, Sequim Bay, and Dungeness Bay. The Strait of Juan de Fuca and its bays and harbors also support large areas of tidal vegetation, one of the nation's largest nesting colonies, and Native American sites with great archeological value. Sensitive environmental resources for both the sanctuary and the Strait are listed specifically in **appendix E.**

3. Southwestern Vancouver Island

The Southwest coastal area of Vancouver Island, from Sooke to Barcley Sound, supports a variety of environmentally sensitive resources such as fin fish, shell fish, birds, marine mammals, invertebrates and flora. The presence of salmon and other commercially viable fish and shellfish enhance this regions sensitivity due to the financial dependence of the commercial fisheries on these organisms and their use for native subsistence harvesting. Many marine mammals inhabit the waters of the Strait of Juan De Fuca, which also functions as a migratory path for some species of whale. The majority of the southwest coast of Vancouver Island is relatively inaccessible, with very few roads and harbors, making it difficult to respond effectively in the case of an oil spill.

Tourism and recreation are of high priority along this coastal region and are issues in all the locations which have been designated as either extremely or highly sensitive (see ”Oil Spill Response Atlas for the Southwest Coast of Vancouver Island”). The Canadian Pacific Rim National Park extends from Port San Juan to Tofino which contains within it the West Coast Trail which extends approximately 77 kilometers, from Port Renfrew to Bamfield. The West Coast Trail is an internationally acclaimed hiking/camping trail famous for its pristine natural environment and recreational resources.

Numerous native communities exist within the area of interest, communities which depend on the resources of the area for both commercial and subsistence purposes.

Three locations within the area of interest are rated by the Canadian Government as extremely sensitive, Port San Juan, Sooke Inlet and Beecher Bay. Canadian Government sensitivity ratings are based on four major categories; human use, biological resources, shoreline residence, and special status areas. The following is a list of several areas which are considered to be in the highly sensitive range; Jordan River Estuary to China Beach, Cheewhat River Estuary, Nitinat Narrows and the Pachena River Estuary.

4. Danger of Alternative Route

The Strait is the appropriate route for vessels in transit to US and Canadian ports, due to its width, depth and generally parallel wind and tidal effects. The only alternative route is via the northern end of Vancouver Island, through the Inside Passage between Vancouver Island and the mainland. Vessels transiting the Inside Passage pass through some of the most environmentally sensitive and remote areas in the Province of British Columbia. The route itself is a narrow, winding, rocky channel which at it's narrowest part, Seymour Narrows, is less than a half mile wide, where tidal currents normally run at up to 16 knots. The Inside Passage is the preferred route for tug and barge traffic between Canadian ports and between Alaska and Puget Sound. It is also the site of a large commercial fishery involving many hundreds of small craft. In addition, there were approximately 500 cruise ships transits of Seymour Narrows and the Inside Passage in 1996. These conditions and hazards combine to create a navigational environment where the risks of collision and/or grounding are much higher than in the Strait of Juan De Fuca. Canadian Authorities do not consider the Inside Passage a viable alternative to the Strait of Juan De Fuca except in extreme situations, and would be opposed to any regime that would lead to an increase of traffic through the Inside Passage. It should be noted that at its southern end, vessels en-route to U.S. ports would also have to pass through the similarly constricted , and environmentally sensitive U.S. San Juan Islands.

D. VESSEL CASUALTY HISTORY

1. Event Summary

Within the area of interest, few commercial vessel casualties have resulted in large oil spills, the loss of a vessel or the need for towing assistance. A number of these incidents involved powered groundings. While Congressional direction for this report did not require assessment of a dedicated tug it is unlikely that a dedicated tug could have prevented any one of these incidents. Further, given the nature of these incidents as indicated below it is unlikely that a tug of opportunity system could have prevented their occurrence. The following incidents have occurred since 1972:

a. The unmanned Troopship GENERAL M.C. MEIGGS, while under tow, was lost and grounded 10 miles south of Cape Flattery, Washington, in January 1972, spilling approximately 2,300,000 gallons of U.S. Navy fuel oil.

b. A 260 foot tank barge belonging to United Transportation was lost while being towed and grounded near Moclips, Washington, in March 1985. Approximately 1,200,000 gallons of diesel was spilled.

c. The laden tanker ARCO ANCHORAGE grounded while anchoring in the harbor at Port Angeles, Washington, in December 1985. Approximately 239,000 gallons of Alaska North Slope crude oil was spilled into the harbor. Because this was a powered grounding while the vessel was preparing to anchor, it is unlikely that an emergency response system, dedicated tug or tug-of-opportunity, could have prevented this event.

d. The tanker MATSUKAZE grounded under power west of Port Angeles, Washington, at Crescent Bay in March 1988. Although the vessel was damaged, no oil was spilled. Because this was a powered grounding, it is unlikely that an emergency response system, dedicated tug or tug-of-opportunity, could have prevented this event.

e. The laden tanker EXXON PHILADELPHIA suffered a boiler shutdown and lost power 10 miles west of the entrance to the Strait of Juan de Fuca in April 1989. A tug reached the vessel in approximately five hours. It was subsequently towed to Port Angeles, Washington, without further incident.

f. The empty tanker EXXON SAN FRANCISCO lost power in the Strait of Juan de Fuca in September 1989. The vessel was transiting outbound when it suffered an electrical system failure. Power was restored and the vessel proceeded under its own power to Port Angeles, Washington, for permanent repairs.

g. The tanker ARCO TEXAS grounded while anchoring in the harbor at Port Angeles, Washington, in June 1991. The vessel sustained no damage and no oil was spilled. Because this was a powered grounding while the vessel was preparing to anchor, it is unlikely that an emergency response system, dedicated tug or tug-of-opportunity, could have prevented this event.

h. The fish processing ship TENYO MARU sank immediately after colliding with the freighter TUO HAI in July 1991. The collision took place in Canadian waters off the entrance of the Strait of Juan de Fuca. Approximately 173,000 gallons of oil were spilled and 26,000 gallons were recovered. Due to the nature of this casualty, it is unlikely that an emergency response system, dedicated tug or tug-of-opportunity, could have prevented this event.

i. The bulk carrier VERBIER lost power off Vancouver Island as it was transiting outbound in the Strait in July 1994. A tug was dispatched to provide assistance. Although difficulties were experienced in carrying out the tow and several tugs were needed, the vessel was safely towed to Port Angeles, Washington.

j. The bulk carrier LEDRA stopped in the Strait of Juan de Fuca off Vancouver Island, British Columbia and made main engine repairs in December 1995. The vessel drifted without incident for approximately 6 hours before anchoring 2 miles from shore. A USCG cutter and stand by tug were dispatched. Repairs were completed, the tug order was canceled and the vessel departed without incident.

k. The cruise ship GOLDEN PRINCESS lost power as a result of a disabling engine room fire at the mouth of the Strait of Juan de Fuca in July 1996. Within forty-five minutes, two merchant ships were on scene and prepared to assist. Within approximately four hours of the fire, an assist tug had arrived on scene and had the vessel in tow. Three hours later a more powerful tug assumed the tow and brought the vessel safely to Victoria, British Columbia.

l. The tanker KENAI lost all power in the Strait of Juan de Fuca approximately 1.2 nautical miles off Ediz Hook, Port Angeles, Washington, in July 1996. The tanker had just departed the anchorage in Port Angeles Harbor and still had an assist tug alongside. The tanker was taken in tow back to Port Angeles, Washington.

E. COMMERCIAL VESSEL TRAFFIC ACTIVITY

1. Overview

Vessel traffic transiting through the Strait of Juan de Fuca is comprised of all types of vessels calling at Washington State and British Columbia ports. Over 5,800 commercial vessel port calls were recorded in 1995 at the commercial ports of Puget Sound and the Port of Vancouver, Canada (this figure does not include Canadian domestic arrivals). In addition, there is significant daily tug and barge traffic throughout the area. Typical types of vessels trading into the region include tank vessels, roll-on/roll-off ships, car carriers, container ships, bulk carriers, commercial fishing vessels and tenders.

Commercial traffic movements in Juan De Fuca Strait and it’s approaches are monitored by Vessel Traffic centers located at Ucluelet on Vancouver Island (Canadian Coast Guard Tofino Traffic) and at Seattle (U.S. Coast Guard Vessel Traffic System Puget Sound). Vessels are required to contact Tofino Traffic 50 miles from Vancouver Island; as they proceed into the Straits they are formally “handed-off” to Seattle Traffic at Buoy “J”, at the entrance to the Straits. Through the Cooperative Vessel Traffic Services Agreement, Seattle Traffic regulates vessel movements in both Canadian and US waters of the Straits, and Tofino Traffic assumes responsibility for vessels in Canadian and US waters at the approaches to the Straits. The Strait of Juan De Fuca is the preferred route for vessels calling at Puget Sound and Georgia Straits ports, due to the relative shortness of the route and the deep and wide nature of the passage. The Canadian Government indicates any changes to this traffic pattern that might see deep sea vessels proceeding to Canadian and US destinations via the Inside Passage on the east side of Vancouver Island, as a result of any additional costs or changes in procedure associated with transit

of the Strait of Juan De Fuca, should be avoided, as this inside passage presents a greater risk to shipping and the environment than use of the Strait of Juan de Fuca.

Generally, inbound tankers are laden with crude oil cargo and outbound tankers are in ballast or carrying a cargo of non-persistent refined cargo. Occasionally, some outbound tankers carry partial crude oil cargo destined for a California port. Inbound tankers reportedly carry on average approximately 13.5 million gallons of crude oil, outbound tankers reportedly carry on average 5 million gallons of refined petroleum products. Large commercial cargo vessels may carry between 250,000 and 2 million gallons of bunker fuel.[xiv] Approximately 95% of the crude oil transported by vessel to the Puget Sound refineries is carried in U.S. flag tankers.[xv]

2. Commercial Vessel Traffic Data

Vessel traffic data sources for the Strait of Juan de Fuca and adjacent port areas are maintained by several independent organizations, including but not limited to:

a. U.S. Coast Guard Puget Sound Vessel Traffic Service

b. Canadian Coast Guard Tofino Vessel Traffic Service

c. Marine Exchange of Puget Sound

d. Washington State Office of Marine Safety

e. Chamber of Shipping of British Columbia

3. Multiple Data Sources

No one data source serves to adequately portray the nature and extent of the commercial maritime transportation activity in this region. Inconsistency exists among the various data sources because of the different reporting criteria and statistical objectives of the various groups. A lack of standardization, different vessel category definitions and different data collection criteria characterize these sources. When reviewing vessel traffic data for these waters one must understand the different categories of vessel type and vessel size that a particular database is capturing. For example, Puget Sound Vessel Traffic Service has a vessel type category called "cargo" that encompasses all types of commercial vessels such as container-ships, bulk-ships, Ro-Ro and freight-ships. The Marine Exchange has several vessel type categories called "bulk-ship", "tankers", "container-ships" and "Ro-Ro". The Washington State Office of Marine Safety has a vessel type category called "cargo/passenger" that captures all commercial vessels greater than 300 gross tons. Consequently, to fully appreciate the complexity and magnitude of the maritime transportation system of this region, it is imperative to look at all pertinent vessel traffic data sources.

a. Puget Sound Vessel Traffic Service

The U.S. Coast Guard's Puget Sound Vessel Traffic Service captures data on those vessels required to participate in the VTS. Data is collected on the types and sizes of vessels as follows:

(1) A power driven vessel of 40 meters (approximately 131 feet) or more in length, while navigating;

(2) A commercial vessel engaged in towing of 8 meters (approximately 26 feet) or more in length, while navigating; and

(3) A vessel certificated to carry 50 or more passengers for hire, when engaged in trade.[xvi]

b. Puget Sound Vessel Traffic Service Recorded Transits

(1) Puget Sound VTS recorded over 23,256 vessel transits in 1995. 5,435 of these transits were recorded as vessels en route to or from a Canadian port. For VTS purposes, transit means any vessel movement handled by two traffic centers, and thus includes both arriving and departing vessel movements. **Figure 6, Appendix F** reflects the percentage of transits by vessel type for 1995.

(2) Vessel transits account for only a portion of the maritime transportation activity in Washington State waters. Intra-VTS movements account for almost an additional 50% of vessel activity. The average numbers of intra-VTS vessel movements recorded by the U.S. Coast Guard's Puget Sound Vessel Traffic Service for 1993-1995 by vessel type are:

Ferry	200,000
Tug w/tow	11,000
Navy/Public Vessels	1,000
Tanker	300
Cargo	200

Puget Sound VTS data captures both inbound and outbound transits, as well as movements within the VTS coverage area.

c. Tofino Vessel Traffic Service

Like VTS Puget Sound, the Tofino VTS captures data on the movements of vessels required to participate in the Canadian VTS. However, the vessels to which the respective regulations apply differ. Canadian VTS regulations apply to:

(1) Every ship 20 meters or more in length;

(2) Every ship engaged in towing and pushing any vessel or object, other than fishing gear, where:

(i) The combined length of the ship and any vessel or object towed or pushed by the ship is forty-five meters or more in length; or

(ii) the length of the vessel or object being towed or pushed by the ship is twenty meters or more in length.[xvii]

(3) Although different, the vessel data categories recorded are almost equivalent. Consequently, Tofino VTS data when viewed in conjunction with Puget Sound VTS data is particularly useful for visualizing both the inbound and outbound traffic flow throughout the entire Cooperative Vessel Traffic Service area. Furthermore, the data captured by Tofino VTS is the most accurate data of the various sources for characterizing the nature of the vessel traffic transiting the western entrance to the Strait of Juan de Fuca. **Figure 7, appendix F** displays the percentage of transits by vessel type for 1995. Of particular note are the percentage figures for oil tankers and, tugs and tugs with tows other than oil or chemical barges. Oil tankers comprise approximately 10% of all the vessels transiting in the vicinity of Buoy "J". Tugs and Tugs with tows comprise approximately 7.5% of all vessels.

d. Marine Exchange of Puget Sound

(1) The Marine Exchange of Puget Sound captures data on commercial vessels that transact commercial activities at Washington State ports. Most of the commercial vessels that conduct economic activity within Washington State are members of either the Puget Sound Steamship Operators Association, Western State Petroleum Association or American Waterways Operators.

(2) Unlike Puget Sound VTS that employs the category "cargo" to record vessels carrying dry cargo, the Marine Exchange employs eleven categories to record vessels carrying dry bulk or packaged cargoes. The Marine Exchange recorded 3,040 vessel arrivals in 1995. As shown in **Figure 8, appendix F,** container ships and bulk ships made up 67% of all arriving vessels, tankers made up 18%.

(3) The Marine Exchange database also records the vessel's deadweight tonnage, providing a perspective on the size of vessels arriving at Washington State ports. The U.S. Coast Guard vessel traffic regulations restrict tankers larger than 125,000 deadweight tons (DWT) from entering northern Puget Sound.

(4) As shown in **Figure 9, appendix F**, in 1995, over 93% of all arriving vessels were less than 80,000 DWT, only 6% were in the range from 80,000 to 129,999 DWT and less than 1% were greater than 130,000 DWT in size.

e. Washington State Office of Marine Safety

(1) The Washington State Office of Marine Safety records data on cargo and passenger vessels 300 gross tons and greater, and tank vessels of any tonnage. It also records tank barge transits for various operating areas. For the Puget Sound operational area which includes the Strait of Juan de Fuca, it recorded 2,854 tank barge transits for 1995.

(2) For the Strait of Juan de Fuca, Washington State Office of Marine Safety recorded the 2,447 cargo/passenger transits, 498 tanker transits and 255

fishing industry vessel entering transits in 1995 as depicted in **Figure 10, appendix F**.

f. Chamber of Shipping of British Columbia

(1) The Chamber of Shipping of British Columbia vessel data captures foreign commercial vessel arrivals at the Port of Vancouver. The Chamber of Shipping is similar to the Marine Exchange of Puget Sound in that it tracks commercial vessels engaged in economic activity. The Chamber of Shipping employs ten categories of vessel type to record data. In 1995, 2,664 foreign vessels called at the Port of Vancouver. As shown in **Figure 11, appendix F** of the 2,664 vessels calling at the Port of Vancouver, bulk ships represented 61% of the total, container-ships represented 13%, passenger ships represented 11% and tankers represented only 7% as compared to 18% for tanker calls at Puget Sound ports.

(2) The Chamber of Shipping also records the gross tonnage of calling vessels. For 1995, the average gross registered tonnage by vessel type was:

Bulk-ship	28,065	GRT
Container-ships	35,043	GRT
Tank ship	14,791	GRT
Ro-Ro	29,438	GRT
Passenger Vessel	39,821	GRT

(3) From this data it can be seen that tank ships are on average significantly smaller than most of the other classes of ships calling at the Port of Vancouver.

4. Crude Oil Supply and Washington Refineries

a. In 1972 the crude oil requirement of the four north Puget Sound refineries in Ferndale, Washington, and Anacortes, Washington, was approximately 347,500 barrels per day with Trans Mountain Pipeline supplying 80% of this requirement and foreign imports by foreign flag tanker satisfying the remaining 20% of this requirement.[xviii] Beginning in 1977 with the opening of the Trans-Alaska pipeline, that picture began to change drastically. By 1990, 99% of the requirement, 174 million barrels, of the north Puget Sound refineries was satisfied with Alaska North Slope (ANS) crude oil carried in 282 tanker transits.[xix]

b. 1995 marked a decline in Washington State's dependence on Alaska crude supplies due to the North Slope's diminishing production. The demand for ANS crude oil at the West Coast refineries in Puget Sound, San Francisco and Los Angeles is steadily increasing. Historically, one third of ANS crude went to the US Gulf Coast via Panama; now only 18 percent leaves the west coast. The Washington State Energy Office predicts that by the year 2000, oil from Alaska will comprise only 60 percent of the state's supplies, declining to 45 percent by 2005 and finally to less than 25 percent by 2020.[xx] The oil industry disagrees and suggests that the demand of crude oil should continue to be satisfied by ANS crude oil due to Washington State's proximity to Valdez,

Alaska.[xxi] The State of Alaska provides the U.S. with 25 percent of domestic oil production and forecasts that known crude oil reserves will run out early in the next millennium.[xxii] Regardless of which view is taken concerning the forecast of the availability of Alaskan North Slope crude oil, Washington State's refineries have identified other sources of supply.

c. One such source is Trans Mountain Pipeline, the original principal crude oil supply source for the north Puget Sound refineries. Trans Mountain has recently undergone a series of capacity expansions to accommodate increased exports. Capacity has been increased to roughly 275,000 barrels per day and can easily and economically be expanded to over 300,000 barrels per day. Approximately one-half of Trans Mountain's deliveries are to domestic Canadian markets, with the other half to export markets. Deliveries to Washington State markets have increased from a low of 6,000 barrels per day in 1990 to 124,000 barrels per day in January of 1996. According to Trans Mountain, this is well below current pipeline capacity of 180,000 barrels per day. Further, Trans Mountain argues it could easily increase deliveries to 200,000 barrels per day or 73 million barrel per year. Canadian producers intend to aggressively pursue the Washington State market and could potentially supply almost half of the State's crude oil demand.[xxiii] This is to be expected given the closer proximity of the region to Canadian crude oil than to other sources of foreign crude. As this source of supply expands, it should reduce tanker traffic in the area of interest, thus reducing the risk of marine oil spills from tankers.

F. TUG RESOURCES

1. General

The Pacific Northwest is the home base for some of the largest and most capable tug and towing companies operating along the Pacific coast of both the United States and Canada. These companies include Foss Maritime, Crowley Marine Services Inc., Seaspan International Ltd., and Rivtow Marine Ltd. Services offered by these large tug and towing operators run the full spectrum of tug and towing activity. Besides these large operators, numerous smaller tug and towing companies operate throughout the area. Many of these smaller operators engage in local harbor assist work whereas others engage primarily in point-to-point towing.

2. Marine Salvage Posture

As a consequence of this large and capable tug population, the National Research Council, in its 1994 assessment of the marine salvage posture of the U.S., expressed less concern over rescue towing along the Pacific Coast than in other areas of the country.[xxiv] A 1995 report commissioned by the Canadian Council of Ministers of the Environment (CCME) regarding escort, rescue and salvage towing capabilities in Canada made a similar observation.[xxv]

3. Other Tugs in Transit

In addition, to those tug resources that can be classed as resident in the Strait and Puget Sound area, there is a highly capable population of ocean towing tugs that in 1995 made approximately 2 transits each day in the area.[xxvi] Appendix C lists some of the tug resources that could respond to a vessel in distress in the area of interest. Most of the tugs range in horsepower from 2,000 HP to 5,000 HP. A very few exceed 5,000 HP and none exceed 10,000 HP. However, because 93% of all vessels transiting the area of interest are less than 80,000 DWT,[xxvii]gaining control of and towing a slowly drifting disabled vessel requires an ordinary tug of moderate horsepower except under severe weather and sea conditions. For example, given the predominant weather and sea conditions found throughout the area, ordinary tugs of moderate horsepower (2,000 HP to 3,000 HP) should be capable of performing this mission without difficulty.

4. Extended Capability

In addition to the highly capable fleet of tugs in the region, two tugs possess an enhanced fire-fighting capability (6,000 gallon per minute pumping capacity). As noted by the National Research Council, the Pacific Northwest has the only dedicated salvage vessels in the U.S., located at Seattle, Washington and Astoria, Oregon.[xxviii] Furthermore, in the area of pollution response, it should be noted that eight high volume (10,000 barrels/day) oil skimming vessels are located at Astoria, Oregon, Port Angeles, Washington, Anacortes, Washington, Seattle, Washington, and Tacoma, Washington.

5. Coast Guard Resources

Both the U.S. Coast Guard and Canadian Coast Guard maintain fleets of the vessels and boats home-ported in the region that are capable of responding to and towing commercial vessels up to 10,000 GRT. Both US and Canadian Coast Guards have responsibilities in pollution response and search and rescue, and cooperative agreements exist in both areas. Situations that begin as Search And Rescue (SAR) cases would be passed to the Seattle or Victoria Rescue Coordination Centers (RCC). Both RCCs would ensure that action was taken to prevent loss of life, and in the situations where danger to the marine environment was a potential, then additional action would normally be initiated to ensure an appropriate pollution prevention response. This action could take the form of ensuring the ship owner/operator was aware of their responsibilities, and of the availability of salvage tugs in the area. In incidents which occur in the Straits of Juan De Fuca the USCG’s, CCG’s and Transport Canada’s Marine Safety sections jointly discuss appropriate remedial action to be taken. The Coast Guards could also task their vessels to respond. Detailed information concerning these resources is found in Appendix E. The Canadian Coast Guard, in extreme situations, could engage the services of a tug if no appropriate action was being taken by the disabled vessel. The U.S. Coast Guard has similar powers under the statutory authority of the Captain of the Port.

CHAPTER IV.

MARINE SAFETY REGIME

IV. MARINE SAFETY REGIME

A. OVERVIEW

The marine safety regime for the region can be viewed as consisting of a number of spill prevention related measures sorted into two very broad categories; vessel routing measures, and vessel safety and spill prevention measures. Some of these measures are voluntary while others are compulsory. Currently, four different voluntary vessel routing management measures exist in the waters of the Pacific Northwest: the Olympic Coast National Marine Sanctuary Area to be Avoided, the Western States Petroleum Association 50 mile transit zone, the Canadian Tanker Exclusion Zone (TEZ) off the Canadian Coast and the International Maritime Organization approved Traffic Separation Scheme for the Strait. In addition to the voluntary measures, U.S. regulation prohibits tankers from operating in certain areas of the Strait and Puget Sound.[xxix]

B. VESSEL ROUTING MEASURES

1. Area to be Avoided (ATBA)

a. The Olympic Coast National Marine Sanctuary regulations went into effect in July of 1994. NOAA's Final Environmental Impact Statement for the Sanctuary raised the concern that the Sanctuary was at risk from a marine spill of oil or other hazardous materials. Under NOAA's broad authority to protect sanctuary resources, it worked with the U.S. Coast Guard to request the International Maritime Organization (IMO) to designate a 25 nautical mile wide buffer zone generally coincidental with the boundaries of the Sanctuary as an "Area To Be Avoided" (ATBA). The U.S. proposal was approved at the Fortieth Meeting of the Subcommittee on the Safety of Navigation (NAV40) and forwarded to the Maritime Safety Committee (MSC) where it was adopted with an effective date of June 7, 1995.

b. The ATBA requests vessels transporting hazardous material to remain at least 25 nautical miles offshore while in the vicinity of the Sanctuary waters. The 25 nautical mile ATBA extends from the southern boundary of the Sanctuary north to a line directly seaward from the designated traffic lane entering the Strait of Juan de Fuca. The ATBA increases the response time available to reach a disabled vessel drifting within the Sanctuary by creating a "buffer zone". Additionally, the ATBA provides time for emergency teams ashore to be notified, contingency plans to be activated, and, should there be a spill, some weathering to occur which would reduce the risk of damage to the shoreline.[xxx]

c. As mentioned above, adoption of the ATBA by the IMO does not make its observance compulsory for foreign flag vessels; however, there is no credible basis to assert that vessels are not complying with the ATBA. In a meeting with the Deputy Assistant Secretary for Transportation Policy on September 11, 1996, the sanctuary manager for the Olympic Coast National Marine Sanctuary indicated that a study of ATBA compliance is in the formative stages. Once

complete, such a study will provide added data for thorough risk assessment of the area. The IMO has also recently adopted amendments to the International Convention for the Safety of Life at Sea, 1974 (SOLAS) that will authorize signatory nations to enforce vessel routing schemes, subject to IMO approval. IMO is in the process of developing guidelines to implement this change.[xxxi]

d. Prior to the ATBA coming into effect, several Northwest towing companies required their towing vessels to remain anywhere from 10-30 nautical miles offshore while transporting petroleum products off the Washington Coast.[xxxii]

2. Tanker Exclusion Zone (TEZ)

In 1977, environmental concerns over the newly-established TAPS trade resulted in the establishment of a voluntary tanker routing system off the Canadian West Coast. The system was designed to keep tankers in excess of 100 miles west of the Queen Charlotte Islands, with varying decreasing distances from shore as the vessel transited south in the vicinity of available rescue tug resources. In 1982, the initial voluntary tanker routing system was terminated. Subsequently in 1985, a temporary Tanker Exclusion Zone (TEZ) was established off the Canadian West Coast as an interim measure. Following a 1988 tanker drift study, all parties agreed to make the TEZ permanent with a boundary that was far enough offshore to almost eliminate the possibility that a disabled tanker could ground prior to the arrival of assistance.[xxxiii]

3. Voluntary 50 Mile Tank Vessel Buffer

a. The Western States Petroleum Association (WSPA) implemented a voluntary tanker routing scheme for its members. WSPA tankers engaged in offshore coastal traffic, carrying North slope crude or other persistent oils, voluntarily remain at least 50 nautical miles off the U.S. coastline when not entering port. For tankers transiting from Valdez, Alaska, to California or Panama, the route is approximately 340 miles offshore of the United States/Canadian border narrowing to approximately 125 miles from the shoreline at the Washington/Oregon border.

b. Foreign tankers inbound to Puget Sound include vessels from the Far East, and Central and South America whose operators are not WSPA members. The Far East routes maintain adequate distances from the shoreline until their approach into the Strait. During implementation of the Olympic Coast National Marine Sanctuary, NOAA found that the Latin American vessels usually transited 25 nautical miles offshore of the Washington Coast.[xxxiv]

4. Traffic Separation Schemes (IMO Rule 10)

The traffic separation schemes established beyond the territorial sea of a nation must be internationally approved by the IMO. Traffic Separation Schemes are intended to improve safe movement of vessel traffic in converging areas and areas of high traffic density. At the western entrance to the Strait of Juan de Fuca there are a precautionary area and two traffic separation schemes, one for traffic inbound from or outbound to the west, and one for southwestern inbound or outbound traffic. Within the Strait there are three traffic separation schemes (Western, Southern,

Northern) and a precautionary area south of Race Rocks, B.C. and north of Port Angeles, Washington.[xxxv]

5. 125,000 DWT Tanker Exclusion

In 1978, the Secretary of Transportation issued an interim navigation rule limiting the size of tankers, regardless of whether or not they were carrying cargo, from operating within Puget Sound and a portion of the Strait.[xxxvi] Specifically, the rule prohibits tankers greater than 125,000 DWT bound for a port or place in the United States from operating east of a line drawn from Discovery Island Light, B.C. to New Dungeness Light, Washington, and all points in the Puget Sound area north or south of these lights.[xxxvii]

6. Tanker Routing (Oil Pollution Act of 1990)

a. Section 4111(b)(7) of the Oil Pollution Act of 1990 tasked the Secretary of Transportation to "evaluate whether areas...should be designated as zones where the movement of tankers should be limited or prohibited."[xxxviii]

b. The U.S. Coast Guard studied this issue and forwarded a report on tanker routing to the Congress in February of 1996. The study did not support designation of zones or additional areas where tankers should be limited or restricted. Rather, it recommended that improvements to tanker safety resulting from OPA 90 mandates should be assessed prior to altering tanker routing.[xxxix] Furthermore, it emphasized the critical need for port access, along with the need to strike an acceptable balance between the conflicting interests of commerce and resource protection. As stated:

"Agreement must be reached on the marine areas and/or resources to be protected and an acceptable level of protection. Agreement must be reached regarding the appropriate balance between protection of marine resources and any negative effects on navigation safety and transport efficiency."[xl]

c. As a final note, the study concluded that tanker traffic complying with the 50 nautical mile voluntary "buffer zone" along the West Coast remained well beyond all designated sensitive areas, with the exception of the Olympic Coast National Marine Sanctuary.

C. VESSEL SAFETY AND SPILL PREVENTION MEASURES

1. Overview

The second broad category consists of a variety of international, federal, and state requirements designed to promote marine safety and to protect the marine environment. These measures consist of, but are not limited to, identification of potential substandard foreign ships by pre-screening the vessel's risk attributes prior to port entry, a foreign tanker inspection program, a U.S. tanker inspection program, mandatory escort vessels for single hulled tankers, an additional officer on the bridge of tankers operating in U.S. waters, a double hulled tanker requirement, extensive safety of life at sea requirements, pollution prevention regulations, load line requirements, and standards of training, certification, and watchkeeping.

2. Foreign Vessel Screening

a. Under the Coast Guard's Port State Control program, all foreign ships are screened prior to entry into U.S. waters.[xli] Depending on the results of the risk matrix screening, vessels may be targeted for Coast Guard boarding before entering U.S. waters, or some other operational control measures may be imposed as conditions of entry. Regardless of the results of the risk matrix screening, all vessels are boarded and examined by the U.S. Coast Guard at least annually for compliance with international agreements and U.S. law or regulations.

b. A myriad of international standards exist with which Coast Guard personnel verify compliance. These include: International Convention for the Safety of Life at Sea (SOLAS 74) with amendments, International Load Line Convention (ILCC) 1966, Vessel Load Line Amendments of 1986, International Convention for the Prevention of Pollution from Ships of 1973 as modified by the Protocol of 1978 (MARPOL 73/78), International Regulations for the Prevention of Collisions at Sea of 1972 (COLREGS), International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties of 1969, International Convention for Safe Containers of 1972, and Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 1972.

3. Foreign Vessel Examination

Foreign tank vessels operating in U.S. waters must have Tank Vessel Examinations annually, which consist of record and documentation checks, unless the vessel's age and appearance indicate that a full inspection of the vent system, cargo tanks, steering gear, and fire and safety equipment should be undertaken. If the inspection is successful, the vessel is then allowed to commence cargo transfer operations.[xlii] As noted above, foreign freight and passenger ships are also boarded and examined at least annually for compliance with international and U.S. requirements.

4. U.S. Tanker Inspection

U.S. tank vessels are required to have a Certificate of Inspection (COI) issued by the Coast Guard. The COI inspection, required every two years, is the most extensive of the Coast Guard inspections. All lifesaving appliances, fire-fighting equipment, navigation equipment, propulsion machinery, auxiliary equipment, piping and hull structures are inspected. The internal tanks, voids and spaces are opened and inspected, as is the vessel's overall structural integrity, including framing and plating during a dry-docking exam. Each tank vessel must have two dry-docking inspections within any five-year period.[xliii] In addition to the above, Alaska North Slope (ANS) tankers must undergo special annual structural/material condition surveys known as Critical Area Inspection Plan (CAIP) surveys.[xliv] This program has been extended by the President to include any ANS crude oil export tank-ship.[xlv]

5. Other Vessel Inspection Requirements

Other inspected vessels are required to be inspected under the provisions of various subchapters of 46 Code of Federal Regulations and are required to complete inspections on a biennial or triennial basis. At such time compliance with all applicable regulations for material and operational safety which fall under U.S. Coast Guard cognizance is verified.

6. Escort Vessels for Certain Tankers

Section 4116(c) of the Oil Pollution Act of 1990 requires a two tugboat escort for single hulled tankers larger than 5,000 gross tons transporting oil in Prince William Sound, Alaska and Puget Sound, Washington. The purpose of this requirement is to provide immediate, on-site assistance to a tanker that experiences an unexpected steering or propulsion failure, thereby averting or lessening the chances of a tanker grounding or collision, and ultimately the possibility of an oil spill. The federal escort boundary coincides with the same escort boundary established by the State of Washington's tanker law: all U.S. waters east of a line connecting New Dungeness Point Light (Washington) with Discovery Island Light (Canada). Regulations, including performance standards for escort vessels, implementing this provision went into effect on November 17, 1994.[xlvi]

7. Second Licensed Officer on the Bridge

Section 4116(b) of the Oil Pollution Act of 1990 authorizes the Secretary of Transportation to designate waters where tankers over 1,600 gross tons shall have a licensed master or mate to direct and control the vessel on the bridge in addition to the state or federal pilot onboard. This requirement is in force.[xlvii]

8. Double-hulled Tankers

In 1995, the OPA 90 phase-out schedule for single-hulled tankers began. OPA 90 does not mandate that a phased out single-hulled tanker be replaced in kind by a double-hulled tanker. Consequently, many of the single-hulled tankers not immediately scheduled for phase-out may be moved into routes that are becoming depleted from the phase-out of other older single hulled-tankers. Nevertheless, an entirely new TAPS fleet will emerge within the next 20 years. It is still not known how many double-hulled tankers will comprise the TAPS fleet that calls at Puget Sound. Regardless, it is expected that Washington State will still remain the preferred destination for Alaskan North Slope crude oil because of its proximity to the pipeline terminus and the transportation cost advantages that provides.[xlviii]

9. State of Washington Requirements

a. In 1975, the Legislature passed the Washington State Tanker Law, making it the first state in the nation to place restrictions on the size of tankers allowed in state waters, as well as requiring single tug escorts for laden tankers operating in certain state waters.[xlix] That portion of the restriction limiting the size of tankers to 125,000 DWT was set aside by the U.S. Supreme Court in Arco v. Ray, 435 U.S. 151(1978). The court ruled that the Federal government had "occupied the field" in the area of tanker size restrictions through the Coast Guard's vessel traffic regulations; therefore, the state was preempted from limiting tanker size.

b. However, the escort requirement was allowed to stand. It applies to all single-hull, single-screw tankers larger than 40,000 deadweight tons while transiting through certain state waters. State law further requires that the escort vessel have appropriate horsepower based upon 5 percent of the deadweight tonnage of the tanker. For example, the 5 percent rule would require a 125,000 DWT laden tanker to be escorted by a vessel of at least 6,250 horsepower.

c. In 1991, Washington's legislature passed the Oil Spill Prevention and Response Act, which, among other things, created the Office of Marine Safety (OMS).[l] OMS was charged with reducing the risk of oil spills in Washington waters by promoting safe marine transportation.[li] Since 1991, OMS has developed active programs involving vessel contingency plans, tank vessel spill prevention plans, vessel screening for risk, vessel inspections, and "Best Achievable Protection" standards for both tank vessels, and cargo and passenger vessels. For example, Washington State operating procedures - watch practices prescribes that a vessel's position be fixed every 15 minutes.[lii]

10. Government of Canada Requirements

Canada is a party to the major international and bi-lateral agreements including; SOLAS 74 with amendments; ILCC ‘66; COLREGS; MARPOL 73/78: CVTS; etc. Canada is a signatory to both the Paris and Tokyo Memoranda of Understanding on Port State Control. Under the Port State Control Memoranda, Canada targets all foreign flag tankers and passenger ships for annual inspection; all bulk carriers over 10 years old lifting certain cargoes, for structural inspection (Bulk Carrier Inspection Program); and, 25 % of all other vessels for unannounced inspections. On a working level, information on sub-standard vessels is regularly exchanged between the US and Canadian Marine Safety sections. Canadian domestic passenger vessels over 5 Gross Tons or carrying more than 12 passengers, and non-passenger commercial vessels of over 15 Gross Tons are subject to Canadian law and regulations that address inspection and approval of design and construction; equipment; lifesaving appliances; mariner training; qualifications and crewing; ship operations; and, pollution response[liii]

11. Tug Escort Requirements in Canadian Waters

In the Port of Vancouver, the Harbor Master has developed standing orders which require laden oil tankers over 40000 tons to be attended by escort and assist tugs during their transit of the First and Second Narrows in Vancouver harbor. The movement of other vessels in the harbor is restricted during these transits to provide the transiting tankers a ”clear narrows”. The number and horsepower requirements of the tugs is dependent on the size of the tanker. For example, a tanker of 60,000 tons transiting the Second Narrows would require two 2,400 HP tugs made fast to the ship, and two escort tugs of 1,800 HP. Standing orders regarding clear narrows requirements also cover the transiting of smaller oil and chemical carrying ships and barges through Vancouver harbor.

Current voluntary industry practice is to provide a tug escort for laden tankers from the Port of Vancouver through the waters of Boundary Passage and Haro Strait en route to Juan De Fuca Strait. In addition, the transit of these tankers is timed to arrive at Turn Point, Stuart Island, at high water slack to minimize the exposure to tidal currents in this area.

12. Tanker Restrictions in Canadian Waters

Transport Canada, Marine Safety, has restricted the transit of laden oil tankers through the Inside Passage to ships of less than 40,000 tons deadweight.

D. VESSEL TRAFFIC SERVICES

1. U.S. Coast Guard

a. On July 10, 1974, the U.S. Coast Guard established VTS regulations for Puget Sound and the Strait of Juan de Fuca in response to the environmental concerns Washington state had over congestion in these waterways. Puget Sound Vessel Traffic Service (VTS) operates from the Vessel Traffic Center (VTC) at Seattle. VTS is comprised of three major components: a vessel movement reporting system; a Traffic Separation Scheme (TSS) adopted by the International Maritime Organization (IMO); and surveillance systems including radar and closed circuit television. The VTS operates in primarily an advisory nature providing the mariner with information to assist safe navigation. However, under certain circumstances, the VTS may issue directions to control the movement of vessels in order to minimize the risk of collision between vessels, or damage to property or the environment.

b. The geographic area of VTS Puget Sound consists of the navigable waters of the United States bounded by a line drawn from Cape Flattery, Washington, to the Cape Flattery Light on Tatoosh Island, due west to the territorial sea boundary; then north along the territorial sea boundary to the U.S./Canada international boundary; then east along the international boundary in the Strait of Juan de Fuca, Haro Strait, Boundary Pass and the Strait of Georgia to the Washington State coastline at Point Roberts, Washington. This area includes: Puget Sound, Hood Canal, Possession Sound, the San Juan Island Archipelago, Rosario Strait, Guemes Channel, Bellingham Bay, the waters of the Strait of Juan de Fuca, the Strait of Georgia, and all waters adjacent to the above. Full participation in the VTS is required by:

(1) A power driven vessel of 40 meters (approximately 131 feet) or more in length, while navigating;

(2) A commercial vessel engaged in towing of 8 meters (approximately 26 feet) or more in length, while navigating; and

(3) A vessel certificated to carry 50 or more passengers for hire, when engaged in trade.

c. Passive participation in the Vessel Traffic System is required by:

(1) A power driven vessel of 20 meters (approximately 66 feet) or more in length;

(2) A vessel of 100 gross tons or more carrying 1 or more passengers for hire; and

(3) A dredge or floating plant.[liv]

2. Existing U.S. Coast Guard Directed Tug of Opportunity Procedures

The VTC receives radar signals from 12 strategically-located radar sites throughout the CVTS area. Radar provides approximately 2,900 square miles of coverage including the Strait of Juan de Fuca, Rosario Strait, Admiralty Inlet, and Puget Sound to Commencement Bay.

a. Under current practices, the U.S. or Canadian Coast Guard respond to a disabled commercial vessel threatening to ground and spill oil in the waters of the Olympic Coast National Marine Sanctuary (OCNMS) or the Strait of Juan de Fuca, by locating the nearest available tug. This "tug-of-opportunity" provides the first response assistance to the disabled vessel. Within the area under the control of the Puget Sound Vessel Traffic Service (PSVTS), the VTC watchstanders are directed to take the following actions. These actions may include, but are not necessarily limited to, the following, or executed in that order:

(1) Issuing a general Search and Rescue telephone (SARTEL) broadcast to other agencies on the SARTEL circuit to see if any U.S. or Canadian government vessels or resources can assist.

(2) Issuing a Marine Broadcast (MARB) on all Vessel Traffic Service (VTS) VHF-FM radio frequencies for any vessel in the vicinity to assist.

(3) Contacting area tug companies to locate and dispatch available tugs to assist.

(4) Arranging for the dispatch of search and rescue resources.

b. While any one or combination of these actions often brings about satisfactory results, each consumes critical time and attention. This is particularly true when the watchstander has to contact numerous tug companies

before an available tug is located and determined to be available for dispatch. But, more importantly, these actions only address one part of the problem. They do not eliminate nor do they reduce the possibility that a master of a disabled vessel may reject assistance, and thus increase the risk of grounding and spilling oil.

3. Canadian Coast Guard

a. The Canadian Coast Guard VTS operates out of Marine Communications and Traffic Services (MCTS) at Tofino, B.C., and Vancouver, B.C. The MCTS at Tofino, B.C. manages vessel traffic in the area west of the Strait of Juan de Fuca, while the MCTS at Vancouver, B.C., manages vessel traffic north of the Strait of Juan de Fuca, through Haro Strait, to Vancouver, B.C. Like VTS Puget Sound, the Canadian MCTS is comprised of three major components: a vessel movement reporting system; Traffic Separation Schemes (TSS) adopted by the International Maritime Organization (IMO); and surveillance systems including radar and closed circuit television.

b. Tofino Traffic is now referred to in Canada as Tofino Marine Communications and Traffic Services (MCTS) , as they are an amalgamation of the Canadian Coast Guard Radio Stations and the Vessel Traffic Services Tofino. Tofino is the first VTS center to be contacted by inbound vessels. Tofino has the task of identifying the radar targets approaching the coast, and confirming details provided in the Cooperative Vessel Traffic Services (CVTS) Advance Reports. The radar located on Mount Ozzard overlooking the village of Ucluelet, is capable of picking up an approaching vessel at ranges up to 75 miles in an arc to seaward extending from Cape Alava, U.S. in the south, to Estevan Point on Vancouver Island in the north.

c. The Vancouver MCTS Center is the recipient of CVTS Advance Reports. The Reports are screened for information regarding vessel defects or deficiencies, and compliance with International and Canadian/U.S. domestic regulations. Based on information provided, either Transport Canada, Marine Safety, or the USCG Captain of the Port, depending upon destination, may dictate compensatory measures with respect to the transit of Juan De Fuca Straits. For example, transit may be permitted only in good visibility during daylight hours for a vessel with only one operational radar.

d. Like the Puget Sound VTS, Tofino and Vancouver MCTS operate primarily in an advisory capacity but will issue a direction to a ship, if necessary.

4. Cooperative Vessel Traffic Service (CVTS)

In 1979, the U.S. Coast Guard and the Canadian Coast Guard formally agreed to work cooperatively to manage vessel traffic in adjacent waters. The purpose of the CVTS to manage vessel traffic to provide for the safe and efficient movement of vessel traffic while minimizing the risk of pollution by preventing collisions and groundings and the environmental damage that would follow. The CVTS facilitates traffic movement and anchoring, avoids jurisdictional disputes, and renders assistance in emergencies in adjoining United States and Canadian waters. By the terms of the Agreement, MCTS Tofino, VTC Vancouver and VTC Puget Sound manage all traffic in their respective areas as shown in **Figure**

12, appendix F. As part of the Agreement, all vessels en route to U.S. or Canadian ports through the Strait of Juan de Fuca must submit a "CVTS Advance Report" 24 hours in advance of entry that satisfies U.S. Coast Guard entry requirements[lv] and Canadian Coast Guard entry requirements. MCTS Tofino receives this report and disseminates it to the other VTC's.

CHAPTER V.

DOCUMENTATION REQUIREMENTS

V. DOCUMENTATION REQUIREMENTS

A. OVERVIEW

The U.S. Department of Transportation Action Plan to address vessel and environmental safety in Puget Sound-area waters of April 28, 1996, charged the U.S. Coast Guard with establishing requirements by which any private sector ITOS could be evaluated. The documentation requirements identify the basic components of an ITOS plan which should be addressed in writing in such a plan and provide brief discussions of the nature of the information required. These documentation requirements were prepared by the U.S. Coast Guard with inputs from industry and the office of marine safety of the State of Washington. The role of the Canadian Coast Guard, Transport Canada (Marine Safety), and the Province of British Columbia, was the provision of information to assist the U.S. Coast Guard in the development of these standards. While all of the areas within this section must ultimately be addressed with any ITOS implementation, the Department of Transportation and the U.S. Coast Guard asked the industry ITOS coalition to focus their efforts on the technology and information aspects of these requirements.

B. PUBLIC MEETING

Together with the marine safety requirements in the next section, these documentation requirements were considered together by the public with the U.S. Coast Guard during a Public Meeting on October 17, 1996.

C. CORE CONCEPTS

Documentation core concepts are identified under four major categories:

1. Organizational and Operations Structure

This addresses the structure, functional operations, processes for change, and governance of the organization which carries out the ITOS.

2. Technology Issues

This addresses among other issues communications; database requirements; tug performance, crew qualifications, exercises, certifications, and availability; and towing package procedures for an ITOS.

3. Fiscal Administration

This addresses the fiscal administration of the ITOS including administrative support fees, service fees, chartering fees, operational costs, capital investment requirements, financial charges and billing processes for the ITOS.

4. Legal and Contractual Requirements

This identifies the legal responsibilities of the parties to the ITOS, the consequences of action on ITOS users, liability, salvage, commercial agreements, and related consequences of Federal, state and local statutes.

D. ORGANIZATIONAL AND FUNCTIONAL STRUCTURE

1. Organizational Purpose

Identify the specific purpose of the ITOS. This should be to check disabled vessels and tow, if necessary, with a tug of opportunity. The purpose is not to provide salvage, fire fighting, or spill response services available through other aegis. To accomplish this, specify primary responsibilities such as:

a. Tracking commercial vessel movement relevant to services provided;

b. Establishing and maintaining the status of available tugs and their performance capabilities;

c. Establishing contracted tug response capabilities;

d. Matching tug capability to need and dispatching tug resources;

e. In cascading resource situations, identifying additional tug resources including tug replacement to release another tug for response; and

f. Maintaining the administrative, financial, technical and legal processes necessary to ensure an effective tug of opportunity system.

2. Rules of Incorporation

a. As an independent non-profit cooperative organization there is the need to identify organizational structures and functional responsibilities. This may include rules for initiation, amendment and cessation of operations. Identify general organizational governance and day-to-day operational management (e.g., Board of Industry), the method of personnel appointment, change, performance review, and task assignment.

b. This should include definition of mission, member responsibilities, financial commitments, terms of office, rules for operation, compensation, and related matters.

c. Indicate whether the ITOS will be registered with US and Canadian governments as a business, cooperative, nonprofit group, or other legal entity.

3. Functional Operations

a. Identify the day-to-day functions of the organization including services, database maintenance, financial planning and fiscal support, accounting/billing, capital improvement, equipment installation and maintenance. Where functions are performed by contractors or other organizations indicate the other governmental and non-governmental organizations and the cooperative agreements or contracts used (e.g., communications, vessel tracking, and operational coordination).

b. Identify the organizational decision making process by which a vessel may request assistance or assistance may be directed by another authority. This should also indicate the command process to be used, identifying the service call initiator, call reception, call referral, action taken or ordered, and report on event. Identify the protocol for determining need or priority of competing needs and for tug dispatching.

4. Tug Capability Matching Decision Process

Identify the method for matching of tug capabilities with vessel requirements. Identify the minimum performance requirements expected of the tug fleet to meet the range of expected assistance requests. This may include a determination of minimum tug performance capability to prevent a vessel from going aground or having a collision rather than performance for towing. This determination should address special tug performance limiting factors such as specified sea states, sea conditions, weather, wind conditions, and current rather than towing.

5. Monitoring

Identify the method by which 24 hour, 7 day per week monitoring for ITOS operations will be provided. If appropriate, include additional capabilities for periods of increase traffic, seasonal extreme weather or sea conditions, or other contingencies.

E. TECHNOLOGY ISSUES

1. Communications

Identify the hardware and software system for use to identify, locate, and communicate with tugs and vessels as well as the organizations with which they interact. This should include voice, data, and facsimile communication equipment (e.g., communications links), communications frequencies, decision

making information transfer between organizations (e.g., Marine Exchange, US Coast Guard VTS, agent). System reliability is an important specification for system components.

2. Vessel Traffic Characteristics and Patterns

Identify the vessel transit characteristics (e.g., number of transits, types of vessels, tonnage, flag port). Based on past experience, identify the most likely vessel distress conditions to be used in assessing possible instances of future need. This may include special operational ,environmental or other areas of waterway concern (e.g., regattas, seasonal weather, commercial cycles).

3. Tug Identification

Identify tug resources (e.g., firms, locations, equipment) and the method for identifying and updating tug resources and capabilities (e.g., annual survey of industry).

4. Tug System Identification

Identify the system by which tugs and their performance capabilities will be tracked. This should include tracking the location of tugs, their equipment, and their activities, procedures for ascertaining the availability of underway tugs, for tracking the availability of moored tugs (e.g., time to get underway), and for locating and directing additional tug assistance for vessels in need or additional tug assistance to take on tow/escort to relieve a tug for assistance operations. Frequency of position updates and system reliability are important selection criteria for system components.

5. Tug Tracking Equipment

Unless previously addressed as communications, this should include equipment (e.g., transponder, Automated Dependent Surveillance (ADS), radar, signal repeaters), data displays (e.g., video, computer), and data access identification. Frequency of position updates and system reliability are important selection criteria for system components.

6. Tug and Vessel-in-transit Inventory Database

Identify the method for initiating and maintaining ready access to the performance characteristics of any tug available for response. This should include speed, bollard pull, horsepower, method of propulsion, maneuverability and contact.

Identify the method for initiating and maintains information regarding vessel-in-transit including towing package aboard, DWT/GWT, performance characteristics. This should include the method by which equipment and tug readiness is certified (e.g., self certification, inspection).

7. Tug and Vessel Towing Equipment

Identify the towing equipment needed on a vessel and on a tug. The tug towing package may be similar to the standard found in the Washington State, Office of Marine Safety, best achievable standards regulations. For vessels, the towing package could be similar to what is expected under International Maritime Organization towing package requirements.

Since few merchant vessels currently have emergency towing capacity, identify any pre-staged equipment packages and plans to deploy them on-board a vessel.

8. Response Time

a. Identify expected response times for tug assistance and the method for ensuring these response times are observed.

b. Indicate the ITOS response structure which will ensure observance of response times (e.g., defining geographical areas of operation within which any tug can respond).

c. This should include boundary areas for response tugs. In addition, this should identify unique geographical area characteristics and seasonal changes as well as the tug resources typically available (e.g., the geographical area of operation may be smaller during the most difficult January-March periods for wind conditions, sea conditions, and visibility than it is during the remainder of the year).

d. Indicate the method by which response times will be communicated to vessels for their information in making assistance requests.

e. Identify the method(s) by which response time requirements will be observed and documented on assistance calls.

F. CREW QUALIFICATIONS, TRAINING, TESTING AND CERTIFICATION

1. Identify Qualifications

Identify the crew qualifications necessary to operate tugs of

opportunity in response to vessel requests for assistance. This may be referenced by existing crew qualifications requirements from Federal, state or local authorities or Coast Guard developed Marine Safety Criteria provided.

2. Identify Training

In addition, identify training which is either consistent with or in addition to these qualifications requirements, and the method for its provision.

3. Identify Testing

Indicate the requirement for and manner of conducting periodic testing for qualifications and the procedures for certification of capability (e.g., who will certify by inspection, or certify by self reporting).

G. LEGAL REQUIREMENTS

1. Legal Impacts

a. Identify applicable laws and determine if legal constraints currently prohibit, increase the cost of operation, or establish liability consequences which would undermine an ITOS.

b. If appropriate, this should include establishing the authority to require vessels to take the assistance of a tug or opportunity and to require vessels to be able to be towed. The conditions and procedures for exercising this authority should be specified.

2. Intervention on the High Seas

Indicate international law, treaty or convention issues which would preclude or unnecessarily limit an ITOS. In this context for example, the U.S. may direct measures or direct the ITOS to take measures to address any occurrence which creates a grave and imminent danger to U.S. interest in those waters where the U.S. has jurisdiction. This would exclude such directed action in Canadian waters in the Straits of Juan de Fuca.

3. Salvage and Cabotage Laws

a. Identify salvage legal constraints as well as operational constraints (e.g., selection of salvor) with regard to awards against maritime property subject to a marine peril and benefited by services voluntarily rendered by the claimant.

b. Identify cabotage legal constraints associated with foreign towing vessels operating in US waters.

4. Liability Coverage

a. Indicate any liability coverage issues in the context of responders or salvors for ITOS participants.

b. Indicate the use of any contractual relationship between the ITOS and service recipients to further limit liability. This may include the legal liability of the tug of opportunity and the ability of the tug to engage additional resources (e.g., who calls for salvage or other assistance over and above the tug of opportunity-the vessel master, tug master, the ITOS or the Coast Guard).

H. FISCAL ADMINISTRATION

1. Service Payment Fee Structure

Identify the fee structure for organizational administration, the structure of incident specific assistance services, the penalties for noncompliance and the billing process. This may be based on vessel transits, subscription, arrival fee, pilotage fee add-on, risk evaluation etc., and may distinguish between ITOS member and nonmember participants. Fee structure principles should be identified. For example, these may include:

a. Service to all vessels transiting the area of ITOS operations;

b. Assisted vessels will bear the costs of any aid provided by the ITOS;

c. ITOS member enrollment will be promoted to minimize costs to all vessels;

d. Recognize those vessels already required to carry towing packages and utilize escorts;

e. Recognize the difference between member and nonmember use of services;

f. Method of enacting legal collection; and

g. Any process for the review of service charges upon challenge.

2. Reimbursement Process

Identify the principles and processes to be used for collection of payments for service and reimbursement of contractor and governmental authorities for services provided.

3. Capitalization

Identify the requirements and expected methods to be used for initial capital investments. Define time frame for establishment, period of capitalization, method for funding, partnerships with other governmental and non-governmental organizations and expected depreciation.

CHAPTER VI.

MARINE SAFETY REQUIREMENTS

VI. MARINE SAFETY REQUIREMENTS

A. OVERVIEW

This section presents performance requirements to evaluate any international tug of opportunity system proposed for the Strait of Juan de Fuca and the Olympic coast area of the State of Washington. These together with the documentation requirements previously stated in this report provide the basis for the Coast Guard evaluation of a private sector ITOS plan. The initial parts of this section define the nature and objectives of an ITOS and a description of the area of interest. The framework for the performance requirements for a tug of opportunity system and a discussion of the environmental and situational conditions that limit the effectiveness of such a system are discussed next. In addition, specific performance requirements are developed and discussed.

1. Concept

The assistance of vessels in distress by vessels of opportunity is solidly supported by maritime tradition, custom, and law. The U.S. Coast Guard AMVER program has provided a system for effectively coordinating the mutual assistance of merchant vessels on the open ocean for over 30 years. An international tug of opportunity system extends this traditional concept of coordinated assistance to the inshore environment. A tug of opportunity will not prevent a powered grounding, collision, structural failure or fire, nor will it typically possess the specialized resources found on dedicated salvage vessels that are required for marine salvage, re-floating, or marine firefighting. However, the current practice in the region for training salvage tug masters and crew members is to place those trainees on escort tugs and other tugs which are engaged in operations for vessels having large displacements. These skills are readily transferable and suggest a broad level of experience throughout the towing industry. This experience could be harvested by an ITOS in the region.

2. Primary and Secondary Objectives

The primary objective of a tug of opportunity is to prevent drift groundings by controlling a drifting, disabled vessel. Secondary objectives are to assist vessels in distress and to rescue crew members and passengers following a fire, explosion, collision, or structural failure.

3. Coverage approach

The risk survey performed included the required geographic areas of the Act and the President’s directive. Among the techniques employed was use of a coverage approach to ensure effectiveness. The Coast Guard completed its review of the performance requirements and believes these criteria form the basis for an effective international tug of opportunity system. The Coast Guard chartered and contracted for the study culminating in the proposed performance requirements. These requirements were reviewed as indicated under documentation requirements.

4. Public Meeting

A Public Meeting on these criteria for performance requirements was conducted on October 17, 1996. The comments received are addressed in the context of

this report. Formal, procedurally correct, response will be published in the Federal Register.

B. SPECIAL DEFINITIONS

This section uses the following definitions when referring to tug, salvage, and towing vessels:

1. Towing Vessel

A towing vessel is a commercial vessel engaged in, or intending to engage in, the service of pulling pushing, or hauling alongside or any combination of pulling, pushing, or hauling alongside (46USC, Sec. 2101 (40)). Towing of cargo barges is a routine commercial operation and towing vessels are a primary source of tugs of opportunity during an emergency situation. Tugs engaged in commercial towing operations vary in design and power. Most commercial tugs engaged in towing have less than 3,500 brake horsepower (BHP) and have conventional propulsion systems. Crew members maintain proficiency in routine towing through experience.

2. Escort Vessel

An escort vessel is any vessel that is assigned and dedicated to a tanker during a transit where escort vessels are required, and is properly equipped and appropriately powered for emergency response to a disabled tanker (33CFR168). The critical objective of an escort vessel is to prevent a powered grounding or a collision from occurring if a mechanical or electrical failure or human error occurs on a laden tanker. The critical criteria for an escort tug is, therefore, the time required to stop and/or control an underway laden tanker. USCG regulations (33CFR168.50) require that an escort tug be capable of towing a tanker at 4 kts in calm conditions, holding it in a steady position against a 45 knot head wind; crash stopping the tanker from a speed of six knots, and holding the tanker on a steady course against a 35 degree locked rudder at a speed of 6 kts. Because of these requirements, escort tugs are typically more powerful (more than 3,500 BHP) than commercial tugs and often have propulsion systems that enhance their ability to maneuver to apply a force capable of stopping a tanker (e.g. tractor and nozzle systems). Escorting an underway tanker is obviously a different task than towing a disabled vessel or a barge. Escort tugs and crews gain towing experience through drills and exercises and non escort routine and emergency operations. Escort vessels are a primary source for a tug of opportunity during an emergency situation in areas, such as Washington State, where tanker escort programs exist. Since towing operations are not part of the escort tug’s routine operation, emergency towing skills must be developed and maintained through training and exercise programs.

3. Salvage Vessel

A salvage vessel is a vessel designed to assist any vessel in any type of distress, stationed near high risk areas, and dedicated to emergency response (Castillo et al., 1995). A salvage vessel and its crew are prepared to tow a disabled vessel to safety; extinguish a fire on board a vessel, provide pumping support to a flooding vessel, or off-load cargo. If a vessel is stranded (aground), a salvage vessel will attempt to free and refloat the vessel or to salve the cargo before the vessel is lost. A salvage vessel is a specialized vessel, designed and equipped for all maritime emergency situations. Salvage vessels are larger and more powerful (8,000-12000 BHP)

than commercial tugs and escort tugs. Salvors are seamen specially trained for salvage tasks. When a salvage vessel is available, it is the preferred emergency resource. Salvage operations are conducted within the legal framework of the International Convention on Salvage, 1989 and a significant body of maritime law. Terms of salvage are negotiated by the master of the vessel requiring assistance and the master of the salvage vessel.

4. Tug of Opportunity

A tug of opportunity is a vessel that is engaged in or waiting to be engaged in non emergency commercial activities (typically towing or escort services) but may be diverted to assist a disabled vessel and is capable of rendering the required assistance. The critical capability for a tug of opportunity is the ability to control a drifting vessel until additional assistance arrives. The tug of opportunity is not intended to be a salvage resource, even though its initial emergency actions technically fit within the broad definition of salvage in the International Convention on Salvage: ″any act or activity undertaken to assist a vessel or any other property in danger in navigable waters or in any other waters whatsoever.″ The Law of the Sea and maritime tradition clearly recognizes that a vessel responding as a ″good Samaritan″ to render immediate assistance is not engaged in salvage.

C. DESCRIPTION OF AREA AND CALLING FLEET

1. Description of Area

The Strait of Juan de Fuca separates Vancouver Island and the northern coast of the State of Washington. It provides a natural waterway between the Pacific Ocean and the ports of Puget Sound, Bellingham, Anacortes, and Vancouver. The strait varies in width from 8.5 nautical miles at Race Rocks to 13 Nautical miles just west of Low Point. The distance from the western entrance of the Strait at Buoy ″J″ off of Cape Flattery, Washington to the pilot stations at Port Angeles and Victoria is approximately 54 nautical miles. The distance from the Pilot Station to the Eastern end of the Strait at Pt. Partridge on Whidby Island is 27 miles. Deep draft traffic is required to adhere to the traffic separation scheme coordinated by the USCG and Canadian Vessel Traffic Services. Three waterways diverge off the eastern end of the Strait: Admiralty Inlet leads to Puget Sound, Haro Strait to Vancouver, and Rosario Strait to the ports of Bellingham and Anacortes. Tanker traffic in U.S. waters east of a line connecting New Dungeness Light with Discovery Island Light must be accompanied by at least two escort vessels. (33CFR168.40 (b)).

2. Calling Fleet

a. General

The calling fleet for Puget Sound is a mix of deep draft traffic (crude oil tankers, product tankers, liners, bulk cargo vessels, passenger vessels) and tug and barge traffic. Approximately 21 million metric tons of crude are transported to refineries in Anacortes and Bellingham by tankers. Currently, 20 million tons are carried in U.S. flag vessels in the Alaskan trade and 1 million tons are carried by foreign flag vessels. This ratio will change as the availability of Alaskan north slope (ANS) crude diminishes with declining Prudhoe Bay production.

b. Canadian Crude

An additional 1 million tons of Canadian crude oil is exported from the Port of Vancouver. Tank vessels larger than 125,000 DWT bound for U. S. Ports are prohibited in the Strait of Juan de Fuca east of a line connecting Dungeness Light and Discovery Island light (33 CFR 165). Larger crude carriers must transfer (or lighter) their cargoes to smaller vessels west of this line.

c. ANS Fleet

The ANS fleet carrying U.S. oil consists primarily of tankers in the 70,000-125,000 DWT range. The fleet carrying Canadian oil is somewhat smaller averaging 70,000 DWT (Allen 1995), although there is no restriction on the size of tankers entering Canadian waters. Product tankers engaged in the coastal trade are typically in the range of 20 to 40,000 DWT.

d. Refined Oil

Refined oil is also carried in product barges ranging in size from 5,000 to 20,000 tons. According to the State of Washington Office of Marine Safety (1995), vessel entries and transits via the Strait of Juan de Fuca bound for Puget Sound ports in 1995 were as found in **Appendix F, table 1.** Note that Table 1 includes inbound transits only, so a total of approximately 11,000 deep draft transits were made through the Strait of Juan de Fuca.

e. Agreement

These figures agree roughly with those produced by USCG Vessel Traffic System (approximately 10,600), and the Canadian Coast Guard Traffic System at Tofino, B.C. (11,300), and the Seattle Marine Exchange. Analyses of the marine traffic in the Straits of Juan de Fuca are contained in Allan and Dickens (1994, 1995), Wolferstan (1980), and the Washington State Office of Marine Safety 1994 proposal for a dedicated rescue tug.

f. Observations from Raw Data

From these analyses and the raw data the following observations can be made:

(1) Tank vessels make approximately 1200-1400 transits through the Strait of Juan de Fuca per year, 11 to 13% of the total deep draft traffic. Half of these transits are laden, half in ballast. Two thirds of the transits are made by crude oil tankers (about 400-550/year), the remainder(150-200) are product carriers. The majority of the laden crude carriers are delivering North Slope crude oil to Washington State refineries. These tankers range in size from 60,000 DWT to 125,000 DWT. The average size of an ANS oil tanker is 89,000 DWT (Allan, 1994). Approximately 20 smaller tankers (average size 70,000 DWT) a year make west bound transits laden with exported crude from Canadian refineries.

(2) Bulk carriers make up the largest segment of the deep draft calling fleet, accounting for 45-50% of all transits.

g. Tofino Statistics

In addition to the deep draft traffic statistics, the VTS Tofino statistics show that on an average day 4 tugs are engaged in activity in the western Straits of Juan de Fuca. Coast Guard VTS statistics do not differentiate the eastern area of the strait from Puget Sound, Haro Strait, and Rosario Strait, but an assumption that 1/3 of the tugs tracked by the Seattle VTS are in or near the Strait of Juan de Fuca produces an estimate of 5-6 tugs underway on a typical day in the eastern end of the straits of Juan de Fuca. This is identical with the estimate made by the Puget Sound Steamship Operators Association. (Hutchins, 1996). Data supplied by the PSSOA indicates that an

average of two ocean going tugs a day were engaged in towing operations off the Western Coast of Washington.

h. Section Conclusion

The tug fleet in the Pacific Northwest is unique in size and capability in the United States due to the presence of a significant ocean towing industry and to the Federal requirement that all laden tankers entering U.S. ports be escorted when east of a line connecting New Dungeness Light and Discovery Island light. Tugs used for escort and ocean towing in the Pacific Northwest range in power from 3,000 BHP to 6,000 BHP.

D. MARINE SAFETY CRITERIA

The marine safety requirements defined in a plan for tug of opportunity system must establish the definition of an adequate potential ”save” or cover and standards for ensuring that those criteria can be met. At a minimum, these criteria will include both tug and system criteria as follows:

1. Tug Criteria

a. Define Adequate Assist Vessel

Although standards for assist vessels do not exist, the standards created for escort tugs are of some assistance. As described above, the ASTM has provided guidelines for determining tug escort selection criteria for tankers. USCG regulations, 33 CFR168.50 (b) (1), require that an escort tug be capable of towing a disabled tanker at 4 knots in calm conditions, and holding it in a steady position against a 45 knot head-wind, stopping an underway tanker from a speed of six knots, and holding a tanker on a steady course against a 35 degree locked rudder at six knots. The escort vessel standard does not define the capability required for an assist tug that will effect the ”save” or provide adequate ”cover” since, as described above, the objectives of the two vessels differ. A tug assisting a disabled vessel does not require the ability to exert forces at angles necessary to stop or control an underway vessel that has led to the use of tractor and nozzle type propulsion systems for escort tugs. However, a tug of opportunity will have to transit and maneuver in a heavy sea state in order to get a line on to a disabled vessel.

A suggested approach to defining an adequate covering vessel of opportunity is to bracket the problem using a lower bound best case scenario (calm seas, minimum winds) and a reasonable upper bound difficult case scenario (high winds and sea conditions). Often bounding the problem in this way will provide enough information for policy decisions. (If the coverage in the best case is unacceptable the system performance will be unacceptable. If the coverage in the upper bound case is acceptable, coverage in less severe situations will also be acceptable.) As stated above, deteriorating conditions will affect both the definition of an adequate saving resource, and the calculation of the available covering time. A logical upper bound is the 95th percentile of sea state and wind conditions. The following boundary conditions can be derived from the weather and sea state information described above (See **appendix F, figure 15**):

(1) Strait of Juan de Fuca Upper Bound (95th percentile) case: waves heights of 3 meters or more, sustained wind speed of greater than 20 kts

(2) Offshore Upper Bound (95th percentile) case: wave heights of 4 meters or more, sustained wind speeds of greater than 30 kts.

b. Required Assist Capability (Should be defined in terms of)

(1) Tug rated bollard pull: The bollard pull required for a disabled 125,000 ton tanker in 4 meter wave heights is, from above, approximately 40-60 tons. The bollard pull required to control the same tanker in 3 meter wave heights is 35 tons or more. Tugs of less than 35 tons bollard pull could save a drifting tug/barge or cargo ship or a tanker vessel under good conditions. Tugs with a bollard pull of 60-110 tons and appropriate sea keeping abilities would be required to effectively control a laden VLCC in wave heights of 5-6 meters. Beyond 6 meters, only a fully equipped ocean going salvage tug would be an appropriate resource. The available tug fleet may be grouped into four performance categories.

(i) Class A - T*ugs with bollard pull of more that 60 tons* are capable of responding to 125,000 DWT tanker in wave heights of 5-6 meters, a 98% performance criteria in the OCNMS, a 100% criteria in the Strait of Juan de Fuca

(ii) Class B - *Tugs with bollard pull of 40 to 59 tons* are capable of responding to 125,000 DWT tanker in wave heights of 4 meters, a 95% performance criteria in the OCNMS and a 98% criteria in the Strait of Juan de Fuca

(iii) Class C - *Tugs with bollard pull of 35 to 39* tons are capable of responding to a 125,000 DWT tanker in wave heights of 3 meters, a 90 % performance criteria for the OCMS, and a 95% performance criteria for the Strait of Juan de Fuca for tankers. (A 100% criteria for all other vessels in the Strait)

(iv) Class D - *Tugs with bollard pull of less than 35 tons* are capable of responding to barge incidents under most conditions; to tankers and deep draft vessels under calm conditions.

c. Tug Classes

(1) The tug fleet that operates in the Strait of Juan de Fuca area has vessels in all these classes. A list of 70 U.S. and Canadian tugs furnished by the USCG indicates the following breakdown:

- 15 Class A tugs
- 25 Class B tugs
- 6 Class C tugs
- 29 Class D tugs

(2) Class A and B tugs satisfy the upper bound case in both the Strait of Juan de Fuca and offshore. Class A, B and C tugs satisfy the upper bound case in the Strait of Juan de Fuca. Class C tugs satisfy the best case offshore, class D tugs satisfy the best case in the Strait of Juan de Fuca.

d. Tug Equipment

The mission of a tug of opportunity is to save a disabled vessel and to prevent a drift grounding. The tug of opportunity is not a salvage or a firefighting vessel. The tug must have adequate line and line handling equipment and adequate fendering. Three sources are available to help

determine the requirements for towing equipment. The OCIMF (1981) recommends equipment for towing disabled tankers. Recent US Coast Guard regulations define towline and terminal gear required for towing astern (33CFR164.74) and required tests and inspections for this gear (33CFR164.80). The Prince William Sound Disabled Tanker Towing Study (1995) describes an emergency towing package for ANS tankers. Allen (1994) defines the following as the essential standards for towing equipment for an escort or assist tug:

(1) Line handling winch	- brake capacity	= 3 X BP
		- line pull = 1/3 X BP
	- Abort mechanism	
(2) Tow line	- Minimum breaking Strength	= 5 X BP

e. Tug Sea Keeping

The maximum tug speed (typically 14 kts) is degraded by sea conditions (See **Appendix F, table 4**). A minimum acceptable speed over ground for the difficult case (wave heights of 4 meters off shore, 3 meters in Strait) should be also be defined. The following dual criteria are proposed:

(1) Minimum acceptable speed under calm conditions--13 kts

(2) Minimum acceptable speed under degraded conditions--10 kts

f. Tug stability: The tug must provide a stable work platform in anticipated upper bound conditions (wave height of 4 meters offshore, 3 meters in Strait). Ocean going tugs and other tugs greater than 300 GT are inspected by the Coast Guard, have load lines, and have met stability requirements to work offshore. The offshore stability of other tug platforms cannot be inferred.

2. Crew Criteria

a. Define crew skill and training requirements

Minimal manning standards for tugs and the documents and licenses required for tug crews are set by USCG regulations (46CFR15). Accepted industry practice and economic incentives ensure that tug crews routinely engaged in towing are proficient in towing vessels of all types and sizes. Routine operations do not ensure proficiency in emergency operations. Tugs exclusively engaged in escort duties are not engaged in towing operations so skills must be developed and maintained through training and exercises. The marine safety requirements for crew skills and knowledge must include:

(1) A requirement that a tug must demonstrate proficiency in towing of deep draft vessels under adverse conditions.

(2) A definition of the specific experience and or training that will be accepted as surrogate measure of this proficiency.

(3) A requirement that an adequate number of trained and skilled crew members must be on a tug before the tug may be considered as a tug of opportunity resource..

(4) A description of a training/certification program that ensures that crew members have the skill required to operate towing equipment and that certifies and tracks these skills.

(5) A description of an exercise program for tugs that do not routinely tow deep draft vessels that will require these tugs to actually take a vessel in tow. In Prince William Sound, for example, SERVS conducts quarterly towing drills for escort tugs.

b. Substance Abuse Standards

The drug and alcohol testing standards for vessels expected to control the movements of other vessels are described in 46CFR16, 49CFR40, 33CFR95 and 46CFR4.

3. System Criteria and Goals

a. Coverage Goals

Define coverage goals, expressed as the desired capability of available tug. From above, four classes of tugs are defined and a coverage goal of 95% means coverage by a class A or class B tug in the offshore area, and coverage by a class A, B, or C tug in the Strait of Juan de Fuca.

b. Response Goals

Define response time goals, expressed in terms of maximum time available to respond. The area of interest may be divided into the seven areas shown in **Appendix F, Figure 14**: areas 1, 2 and 3 sub divide the Strait of Juan de Fuca; area 4 is the entrance to the Strait to 50 miles off shore, and areas 5,6, and 7 are 30 mile from north to south, and extend 50 miles offshore. The maximum available response times are determined by the worst case onshore drift speed described above (1 kt in Juan de Fuca, 2 kts offshore) and the location of the deep draft traffic lanes (2-3 miles offshore in the Strait of Juan de Fuca, 25 miles offshore).

These areas are defined as follows:

Area 1: Area East of a line between Port Angeles Light to Race Rocks Light

Area 2: Area East of a line between Slip Point Light to San Simon Point and West of the western boundary of Area 1.

Area 3. An area defined in the West by a 10 mile Arc centered on Buoy ”J” (modified in response to comments from Washington State OMS and the Makah Indian Tribe) defined in the East by the western boundary of area 2.

Area 4: An area bounded on the East by the boundary of area 3 and on the South by the latitude of Buoy ”J” (48° 30’N)

Area 5: An area bounded by 48° 30’N and 48° 00’N and the Western Boundary of the OCNMS

Area 6: An area bounded by 48° 00’N and 47° 30’N and the Western Boundary of the OCNMS

Area 7: An area bounded by 47° 30’N, the Southern Boundary of the OCNMS, and the Western Boundary of the OCNMS

The response times are for these areas are (See **appendix F, table 3**):

Area 1	2 hours (based on maximum wind onshore drift, distance of inbound traffic lane from shore)
Area 2, 3	2.5 hours (based on maximum wind drift and wind driven current, distance of inbound traffic lane from shore)
Area 4	6 hours (based on wind drift, wind current, tidal current)
Area 5,6,7	12 hours (based on wind drift, wind current tidal current, and ocean current and assumption that tank vessels and barges adhere to voluntary Area to be Avoided)

Response goals should be based on the use of adequate, appropriate wind, wave, and current data to calculate anticipated drift patterns for all types of disabled vessels; the US Coast Guard is reviewing these patterns with the National Oceanic and Atmospheric Administration (NOAA). Absent further compelling data, there is insufficient basis to amend the criteria established in the interim report and public meeting process contained in this report. Should additional compelling data become available as a result of US Coast Guard and NOAA efforts in the region, results will be addressed in the addendum to this report.

This section is available at District 13 contact Chief Cihelka at (206)220-7244...

CHAPTER VII.

PRIVATE SECTOR TUG OF OPPORTUNITY SYSTEM PLAN
(As provided by the industry coalition)

CHAPTER VIII.

ITOS PLAN REVIEW

CHAPTER X.

CANADIAN INVOLVMENT WITH AN ITOS

X. CANADIAN GOVERNMENT INVOLVEMENT WITH AN ITOS

A. MEETINGS

The Coast Guard met with the Canadian Government at the national (May 15, 1996, October 18, 1996, and November 26, 1996) and local levels (monthly). The Canadian Coast Guard and Transport Canada have assisted in the facilitation of an American-Canadian industry working group to develop an industry proposal pursuant to Title IV of the Act and the Administration's direction. The Canadian Coast Guard and Transport Canada reviewed the Interim Report's documentation and performance requirements, but have not provided any input to these sections of the report other than to note that the area of interest should include the Canadian waters in the approaches to the Strait of Juan de Fuca, which are contiguous with the waters of the Olympic Coast National Marine Sanctuary. Their recommended wording was adopted. In addition, their comments on the ITOS plan are included verbatim below:

CANADIAN COAST GUARD, PACIFIC REGION

COMMENTS ON THE INTERNATIONAL PRIVATE SECTOR TUG OF OPPORTUNITY SYSTEM (ITOS) PLAN dated October 14th, 1996.

The Canadian Coast Guard (CCG) have received a copy of the private sector ITOS Plan which was submitted to the U. S. Coast Guard (USCG), on 14 October 1996.

The Plan is the private sector's response to the USCG, who were directed to *"submit a plan to Congress on the most cost effective means of implementing an international private-sector tug of opportunity system, including a coordinated system of communications, using existing towing vessels to provide timely emergency response to vessels in distress transiting the waters within the boundaries of the Olympic Coast National Marine Sanctuary, or the Straits of Juan De Fuca."*

The Canadian Coast Guard and Transport Canada, Marine Safety, on behalf of the Government of Canada, has, where appropriate, provided the USCG and the private sector with information to assist in the preparation of the ITOS Plan. The role of the CCG, Transport Canada, Marine Safety, and the Province of British Columbia has been in the provision of information that was of assistance to the USCG in their development of the standards contained in the Report.

The USCG Report, and the resulting ITOS Plan, do not address all areas of concern to Canada, particularly with respect to the areas of coverage, and environmental sensitivities. However, the ITOS Plan is considered to offer an improvement to the existing level of preparedness in Juan De Fuca Strait and its' approaches, and as such would be supported by both the Canadian Coast Guard and Transport Canada, Marine Safety.

One of the key goals and objectives of Canada's Ocean Management Strategy is the conservation and protection of the marine environment. The Canadian Council of Ministers of the Environment(CCME) , and the Province of British Columbia, recommended the consideration of a *dedicated rescue/salvage tug,* for the area in question. Studies were completed to indicate the need for such a service, and to establish criteria for implementation. The ITOS Plan could provide an enhanced level of safety and better protection for the marine environment, although it does not meet the higher expectations represented in other proposals for the area. Notwithstanding, the ITOS Plan would represent

an improvement to the present situation, and is a clear indication of the acceptance by the private sector of a greater responsibility for the protection of the marine environment. The CCG and TC encourage the ITOS coalition to continue with the development of their plan through to its' implementation.

The private sector ITOS Plan, completed in response to the need for protecting certain areas previously identified, does not address all areas of Canadian concern. The southwestern portion of Vancouver Island, and the Canadian waters at the approaches to Juan De Fuca Strait, are not included in the plans' identified "areas of interest". This is an area of concern to Canada as it contains the Pacific Rim National Park; many environmentally sensitive areas; natural habitats for important species; and, Provincial and native lands. It should be noted that much of the southwest coast of Vancouver Island has no road access, and much of the access from seaward is difficult or impossible, making effective pollution clean-up operations in the area extremely demanding.

Considerable additional information is needed to fully assess the ITOS plan's capabilities, such as response times, tug availability, and Canadian coverage areas. It is also apparent that additional information is required to accurately determine response time criteria for Juan De Fuca Strait and it's approaches.

The primary benefit of this plan appears to be that tug location, status, and availability is tracked continuously, i.e. alongside, versus the current situation of tug tracking only while participating in a VTS zone.

The traditional role and responsibility of masters and ship owners has been re-enforced by recent legislation in both Canada and the US. Ship owners and masters must take responsible action to prevent marine occurrences, accidental spills or the discharge of pollutants. They must also take responsible action to clean-up any spills that occur, the mandatory reporting requirements covering these occurrences are well established. To avoid situations where hesitancy on behalf of ship owners and masters to engage the services of tugs might pose a risk to the marine environment, US and Canadian federal authorities can take action to ensure that vessels with a towing capability are available on scene. In the event the repairs could not be completed as anticipated, or the situation deteriorates, then tugs or other vessels are available to the disabled vessel, without delay. The ITOS Plan appears to address these scenarios and has the potential to; improve the identification and availability of towing vessels, make this information available to disabled vessels without delay, shorten the tug response time to disabled and drifting vessels, and expedite the hiring of tug services.

Canadian Coast Guard, Pacific Region
13 October, 1996

B. LOCAL SENTIMENT

The province of British Columbia, Canada, expressed, through written correspondence to the Canadian Minister of Transport, a desire for a dedicated large ocean-going tug to be stationed at the entrance to the Strait of Juan de Fuca. They state in the correspondence that the benefits of a pre-positioned tug outweigh the fifty-million dollar start-up cost. The Vancouver government stated that a tug of opportunity system is the least costly alternative but were skeptical about effectiveness of such a system.

C. FOLLOW-UP

The addendum to this report will further address Canadian concerns. This will be done in a manner which affords participation of Canadian stakeholders at the national and local levels. The Canadian government anticipates further resolution of their concerns by June 1, 1997.

CHAPTER XI.

NATIVE AMERICAN INVOLVMENT

XI. NATIVE AMERICAN INVOLVEMENT WITH AN ITOS

A. BACKGROUND

1. Constitution

The Constitution classes Indian treaties among the supreme law of the land. As a result of early treaties, a principle upheld by the courts, the United States established a Federal trust responsibility in our government-to-government relations with tribes. The President, during a speech on April 29, 1994, issued a directive, which was promulgated in the form of a memorandum on May 3, 1994 and is summarized in the following paragraph. In his remarks, he highlighted the need for respect of tribal sovereignty.

2. Memorandum

Presidential Memorandum 18:12 May 03, 1994, entitled Government-to Government Relations with Native American Tribal Governments, makes the head of each executive department and agency responsible to ensure that the department or agency operates within a government-to-government relationship with federally recognized tribal governments. Each department and agency must consult with tribal governments, to the greatest extent practicable within the law prior to taking actions which could affect tribal governments. This includes assessing the impact of Federal Government plans, projects, programs and activities on tribal resources and assuring that tribal government rights and concerns are considered during the development of such plans, projects, programs and activities. Each executive department and agency shall work cooperatively with other Federal departments and agencies, where appropriate, to accomplish the goals of the memorandum. In addition, executive departments and agencies are directed to remove procedural impediments to working directly with tribal governments on matters that affect trust property or governmental rights of the tribes.

B. GOVERNMENT-TO-GOVERNMENT INTERACTION

1. Early Contact

The Coast Guard and the Department of Transportation met and consulted with the Makah Tribe and the Northwest Indian Fisheries Commission. After this meeting the Coast Guard initiated formal consultations with all interested tribes. The regional representative of the Bureau of Indian Affairs

provided the Coast Guard with a list of tribes, highlighting six tribes as those the Coast Guard should specifically contact. After contacting the initial six tribes, the project team determined to notify all tribes throughout the region. Those tribes contacted during this process are:

*Makah
*Quileute
*Hoh
*Quinault
*Lower Elwah
*Jamestown S'Klallam
Nisqually
Squaxin Island
Puyallup
Port Gamble S'Klallam
Skonomish
Swinomish
Sauk-Suiattle
Upper Skagit
Tullalip
Stillaguamish
Muckleshoot
Suquamish
Nooksack
Lummi
Northwest Indian Fisheries Commission (Represents the tribes who have fishing rights in the waters of the Strait of Juan de Fuca and the Olympic Coast National Marine Sanctuary.)

*Note: The original six tribes are identified with an asterisk.

2. Desire for Consultation

The activities which the Coast Guard has taken or plans to take, to date, on this project do not impact tribal concerns in any negative way. On the contrary, based on consultations, an ITOS in the specified region will enhance the environmental and marine safety related protection of trust protected resources. Of special note is the fact that the ITOS plan represents a voluntary effort on the part of an industry coalition. Of the tribes notified, only two tribes indicated a need or desire for consultation. Those were the Makah and the Quileute. Meetings of a consultative nature were also conducted with the Northwest Indian Fisheries Commission.

3. Notification

The Coast Guard has provided notification and documents to tribes and tribal interests to ensure the tribes are included, to the maximum extent practicable, in the planning and decision making process. The Coast Guard conducted a number of consultation sessions for this project, especially at key milestones. One written comment which applied directly to the industry ITOS plan was provided by the Quinault Indian Nation. They suggest ITOS, pacifically the transponder technology, offers an opportunity to track fishing vessels of all the tribes in the region. This suggestion falls outside of the mandate for the ITOS plan development. The technology is capable of doing such tracking but the funding of costs for providing a transponder for each of these vessels is not discussed in the letter. Further, such an action, while providing a positive means of tracking Native American vessels, would not significantly enhance marine safety in the region.

4. Follow-on

As required by the Action Plan, a risk assessment of the overall marine safety regime, including scenarios beyond response to a disabled vessel (ITOS), is currently underway. The potential for additional measures to address tribal protected resources is significant. This fact has been discussed as part of the consultative process. Throughout the entire consultative process, the project team have ensured the government’s trust responsibility has been maintained.

CHAPTER XII.

COAST GUARD ACTION PLAN

XII. U.S. COAST GUARD ACTION PLAN INCLUDING FURTHER ITOS ACTIONS

A. Resolution of outstanding documentation requirements on legal and contractual issues, operational issues and fiscal administration.....February 15, 1997

B. Further review of weather and current conditions with NOAA..... .....[May, 1 1997]

C. Resolution of Canadian concerns..... June 1, 1997

D. Addendum date.....July 15, 1997

Final document for ITOS including results of the other action items.

CHAPTER XIII.

APPENDICIES

This section is available at District 13 contact Chief Cihelka at (206)220-7244...

APPENDIX A.

ABBREVIATIONS

A. ABBREVIATIONS

ADSS - Automated Dependent Surveillance System

ANS - Alaska North Slope

ATBA - Area To Be Avoided

BHP - Brake Horse Power

BP - Bollard Pull

BOA - Basic Ordering Agreement

CAIP - Critical Area Inspection Plan

CCG - Canadian Coast Guard

CCME - Canadian Council of Ministers of the Environment

CVTS - Cooperative Vessel Traffic Service

DWT - Deadweight Tons

FAR - Federal Acquisition Regulations

GPM - Gallon Per Minute

GRT - Gross Registered Ton

ITOS - International Tug-of-Opportunity System

IMO - International Maritime Organization

LOA - Length Overall

MARB - Marine Broadcast

MOA - Memorandum of Agreement

MOU - Memorandum of Understanding

OCNMS - Olympic Coast National Marine Sanctuary

SARTEL - Search and Rescue Telephone Network

TAPS - Trans-Alaska Pipeline System

TOS - Tug of Opportunity System

TSS - Traffic Separation Scheme

USCG - U.S. Coast Guard

VHF-FM - Very High Frequency, Frequency Modulation

VTC - Vessel Traffic Center

VTS - Vessel Traffic Service

APPENDIX B.

DEFINITIONS

B. DEFINITIONS

Automated Dependent Surveillance System (ADSS): A remote electronic monitoring system capable of tracking vessel movements and obtaining vessel status information. The system integrates precise positioning (GPS), a suitable data link (VHF), and appropriate processing and display equipment.

Area To Be Avoided (ATBA): Areas within defined limits in which either navigation is particularly hazardous or in which it is exceptionally important to avoid casualties, and which should be avoided by all ships, or certain classes of ships.

Brake Horse Power (BHP): The power available to a vessel at the drive shaft. Same as shaft horse power (SHP).

Basic Ordering Agreement (BOA): A pre-negotiated, written understanding between a federal contracting officer and contractor, as the preferred method of contracting for oil spill cleanup. A BOA contains terms and conditions, fixed prices, description of supplies or services and terms for issuance and administration.

Bollard Pull (BP): The maximum static pull which a tug can exert without forward tug movement, measured in tons force. A bollard pull rating is measured by testing a tug pulling against a fixed object, metered to indicate force exerted by tug on the tow line.

Cooperative Vessel Traffic System (CVTS): A system of vessel traffic management established and jointly operated by the United States and Canada within adjoining waters. In addition, CVTS facilitates traffic movement and anchorages, avoids jurisdictional disputes, and renders assistance in emergencies in adjoining United States and Canadian waters.

Dead Weight Tons (DWT): The weight in metric tons of cargo, stores, fuel, passengers and crew carried by the vessel when loaded to her maximum summer loadline.

Gross Registered Ton (GRT): Capacity, in cubic feet, of a vessel's space within the hull and of enclosed spaces above deck available for cargo, stores, fuel, passengers, and crew, with certain exceptions, divided by 100. Thus 100 cubic feet of capacity is equivalent to 1 gross ton. GRT indicates the vessel has been measured in accordance with class society requirements.

Marine Communications and Traffic Services (MCTS): Canadian equivalent of a Vessel Traffic System coupled with a Coast Guard Radio Station: A Coast Guard operational communications station.

Precautionary Area: A vessel routing measure comprising an area within defined limits where shipping must navigate with particular caution, and within which the direction of traffic flow may be recommended.

Towing Vessel: A commercial vessel engaged in, or intending to engage in the service of pulling, pushing, or hauling alongside, or any combination of pulling, pushing, or hauling alongside.

Traffic Separation Scheme (TSS): A routing network separating opposing streams of traffic by appropriate means and by the establishment of traffic lanes.

Tug-of-Opportunity System: An emergency response system that employs non-dedicated tugs that by happenstance may be in a response area to provide assistance to a vessel in distress.

Vessel Traffic Center (VTC): The shore-based facility that operates the vessel traffic service for the Vessel Traffic Service area or sector within such an area.

Vessel Traffic Service (VTS): A service implemented by the United States Coast Guard designed to improve the safety and efficiency of vessel traffic and to protect the environment. The VTS has the capability to interact with marine traffic and respond to
traffic situations developing in the VTS area.

This section is available at District 13 contact Chief Cihelka at (206)220-7244...

APPENDIX C.

U.S. AND CANADIAN TUG RESOURCES

C. U.S. AND CANADIAN TUG RESOURCES

TUG/BHP/LOA/DRAFT/GRT					BOLLARD PULL	PROPULSION
Seaspan International Ltd. (Canada)						
Commodore	5750	143'	20'	657	90 ST	2 Screw
Regent	5750	140'	20'	567	90 ST	2 Screw
Discovery	4000	104'	18'	430	66 ST	Tractor
Challenger	3600	131'	14'	501	54 ST	1 Screw
King	3600	131'	18'	497	54 ST	1 Screw
Monarch	2600	114'	14'	393	45 ST	2 Screw
Sovereign	2400	123'	18'	432	40 ST	1 Screw
Pacer	2400	96'	14'	203	37 ST	2 Screw
Cutlass	1800	83'	14'	149	30 ST	2 Screw
Crusader	1800	83'	14'	149	30 ST	2 Screw
Corsair	1800	83'	14'	149	30 ST	2 Screw
Queen	1710	95'	10'	206	26 ST	2 Screw
Navigator	1700	85'	11'	149	28 ST	2 Screw
Champion	1450	88'	14'	149	23 ST	1 Screw
Protector	1450	77'	9'	149	19 ST	2 Screw
Guardian	1450	77'	9'	149	19 ST	2 Screw
Master	1230	88'	14'	149	21 ST	1 Screw
Chief	1230	88'	13'	149	21 ST	1 Screw
Union Tug and Barge Ltd. (Canada)						
Sea Commander	3200	142'			40 ST	
Arctic Hooper	2250	102'			28 ST	
Rivtow Marine Ltd. (Canada)						
Rivtow Capt Bob	6170	144'	17'	975	101 ST	2 Screw
Escort Protector	3280	170'	18'	718	42 ST	2 Screw
Mercer Straits	2200	87'	14'	229	28 ST	2 Screw
Ocean Clipper	1800	87'	14'	238	28 ST	1 Screw
Ballantyne Straits	1500	70'	11'	149	27 ST	2 Screw
Elliott Straits	1500	70'	11'	149	27 ST	2 Screw
Stormcoaster	1500	57'	13'	102	21 ST	2 Screw
Hecate Straits	1440	69'	15'	147	25 ST	1 Screw
Neva Straits	1320	92'	14'	150	15 ST	1 Screw
Sea Coast Towing Inc. (U.S.)						
Pacific Eagle	2000	93'	17'	127		2 Screw
Ocean Warrior	4000	134'	14'	191		1 Screw
Cascade	3000	91'	11'	143		2 Screw
Pacific Pride	2600	83'	13'	148		2 Screw

Sause Brothers ocean Towing Co. (U.S.)

Miki Hana	3000	99'	9.7'	194	2 Screw
Robert L.	3000	116'	10'	198	2 Screw
CAPT Les Easom	3900	121'	12.6'	197	Twin Screw
Roughneck	2850	116'	14.3'	199	2 Screw
Chinook	3900	126'	15.7'	196	2 Screw
Salishan	4200	109'	14.5'	186	2 Screw
Titan	6400	143'	16'	199	2 Screw
Chahunta	2400	100'	13.5'	84	2 Screw
Tillamook	2850	116'	15.4'	296	2 Screw

Crowley Marine Services, Inc. (U.S.)

Hunter	7200	136'	17'	199	75 ST	2 Screw
Cavalier	7200	136'	17'	199	75 ST	2 Screw
Guardsman	7200	136'	17'	199	75 ST	2 Screw
Adventurer	7200	136'	17'	199	75 ST	2 Screw
Warrior	7200	136'	17'	199	75 ST	2 Screw
Commander	7200	136'	17'	199	75 ST	2 Screw
Sea Valor	5750	128'	18.5'	199	80 ST	2 Screw
Sea Valiant	5750	128'	18.5'	199	80 ST	2 Screw

Foss Maritime (U.S.)

Arthur Foss	4000	102'	11.9'	298	2 Voith Cycloidal
Barbara Foss	4300	120'	13.7'	198	2 Screw
Garth Foss	8000	138'	16'	460	2 Voith Cycloidal
Lindsey Foss	8000	138'	14.4'	997	2 Voith Cycloidal
Alapul	3000	101'	14.1'	192	2 Screw
Craig Foss	4000	115'	15.4'	298	1 Screw
Fairwind	4300	106'	12.5'	168	2 Screw
Henry Foss	3000	96'	16'	193	2 Voith Cycloidal
Richard Foss	3000	105'	12.1'	152	2 Screw
Sandara Foss	2900	106'	13.5'	199	2 Screw
Stacey Foss	2900	106'	13.5'	199	2 Screw
Wedell Foss	3000	96'	11.5'	196	2 Voith Cycloidal

Dunlap Towing Co. (U.S.)

Manfred Nystrom	4000	126'	12.8'	198
Mike O'Leary	2250	101'	11.3'	155
Snohomish	3420	110'	13.9'	152
Taurus	2250	90'	10'	199
Suiattle	3070	120'	15.9'	199

Olympic Tug and Barge Co. (U.S.)

Go Getter	3000	105'	11.5'	197		2 Screw
Alyssa Ana	2100	107′			35ST	2 Screw

Catherine Quigg	3350	65′		31ST	2 Screw
James T. Quigg	1000	63′		17ST	1 Screw
Lucy Franco	1530	69′		31ST	2 Screw
Onion Tug and Barge Ltd.(U.S.)					
Sea Commander	3200	142′		40ST	
Puget Sound Freight Lines, Inc. (U.S.)					
Anne Carlander	1125	75′			1 Screw
Duwamish	2250	104'	14.4'	284ST	2 Screw
Edith Lovejoy	1125	75′			1 Screw
Victory Marine, Inc.					
Alaskan Victory	4000	102′	12′	206ST	2 Voith Cycloidal
Commander	4000	153′			1 Screw
Enforcer	4000	128′			2 Screw
Explorer	2400	170′			2 Screw
Hawaiian Victory	1000	170′			2 Screw
Western Towboat Co. Inc.					
Pacific	1550	72'	8'	96ST	2 Screw
Ocean Mariner	3600	94′		49ST	2 Screw
Ocean Navigator	3600	94′		49ST	2 Screw
Ocean Ranger	4000	116′		60ST	2 Screw
Wasp	1000	65′		18ST	2 Screw
West Point	1200	60′		13ST	Z-drive
Western Navigator	3600	94′		49ST	2 Screw
Western Ranger	3600	116′		49ST	2 Screw
Westrac	2400	75′		30ST	Z-drive
Westrac II	2400	75′		30ST	Z-drive

APPENDIX D.

ENVIRONMENTALLY SENSITIVE RESOURCES

D. ENVIRONMENTALLY SENSITIVE RESOURCES

OLYMPIC COAST NATIONAL MARINE SANCTUARY

FISHERIES & SHELLFISH	SHOREBIRDS, WATERFOWL & RAPTORS	MARINE MAMMALS	MARINE INVERTEBRATES	OTHER
Rockfish	Cormorants (3 species)	Gray Whale	Sponges	Giant Kelp
Lingcod	Glaucous-winged Gulls	Humpback Whale	Isopods	Bull Kelp
Kelp Greenling	Common Murres	Orca	Amphipods	Other Algae
Wolf Eel	Leach's Storm-petrels	Minke Whale	Barnacles	
Cabezon	Fork-tailed Storm-petrels	Dall's Porpoise	Various Bivalves	
Chinook Salmon	Rhinoceros Auklets	Harbor Seal	Sea Urchins	
Coho Salmon	Cassin's Auklets	Stellar's Seal Lion**	Sea Cucumbers	
Sockeye Salmon	Tufted Puffins	California Sea Lion	Sea Stars	
Pink Salmon	Loons	Northern Fur Seal	Polychaete Worms	
Chum Salmon	Grebes	Sea Otter	Dungeness Crabs	
Steelhead Trout	Albatrosses	River Otter	Snails	
Sea-run Cutthroat Trout	Shearwaters		Colorful Nudibranchs	
Albacore Tuna	Waterfown		Sand Dollars	
Halibut	Gulls		Mud Shrimp	
Pacific Hake	Terns		Razor Clams	
Pacific Cod	Sanderlings			
Sablefish	Dunlins			
Polluck	Black-bellied Plovers			
Spiny Dogfish	Black Turnstones			
Tidepool Sculpin	Surfbirds			
Gunnel	Black Oystercatchers			
Prickleback	Marbled Murrelet**			
Flounder	Bald Eagle*			
Sand Lance	Peregrine Falcon*			
Sole				
Sanddab				
Surf Perch				
Surf Smelt				

*Federally listed under the Engagered Species Act
**Federally listed as threatened
Not classified as marine mammals, but are largely marine in their habits
Majority of recreational harvesting in US occurs in this region

Source: Northwest Area Contingency Plan, Outer Coast, Washington, Geographic Response Plan

STRAIT OF JUAN DE FUCA

FISHERIES & SHELLFISH	SHOREBIRDS, WATERFOWL & RAPTORS	MARINE MAMMALS	OTHER
Pacific Herring	Rhinoceros Auklet	Gray Whale	Kelp Beds
Surf Smelt	Tuften Puffin	Minke Whale	Eelgrass Beds
Pacific Sand Lance	Crested Cormorants	Humpback Whale*	
Pacific Salmon	Pelagic Cormorants	Orca	
Rockfish	Glaucous-Winged Gull	Dall's Porpoise	
Lingcod	Pigeon Guillemot	Harbor Porpoise	
Redrock Crab	Black Oystercatcher	Harbor Seal	
Cancer Crab	Bald Eagles*	Stellar's Seal Lion**	
Dungeness Crab	Peregrine Falcons*	California Sea Lion	
Intertidal Softshell Clams	Marbled murrelets**	Northern Elephant Seal	
Subtidal Hardshell Clams		River Otter	
Geoduck Clams			
Pacific Oyster			
Sea Urchin			
Northern Abalone			
Octopus			
Pandalid Shrimp			
Pintail Shrimp			
Pink Scallops			
Spiny Scallops			

* Federally listed under the Engagered Species Act
Federally listed as threatened
Not classified as marine mammal, however, largely marine in their habits
Rare or accidental

Source: Northwest Area Contingency Plan, Strait of Juan de Fuca, Washington, Geographic Response Plan

APPENDIX E.

U.S. AND CANADIAN COAST GUARD VESSELS AND BOATS

E. U.S. COAST GUARD AND CANADIAN COAST GUARD VESSELS AND BOATS

U.S. COAST GUARD VESSELS AND BOATS

VESSEL/BOAT	TYPE	Length	Draft	MAX SPEED	HOMEPORT	REMARKS
MELLON	WHEC	378'		29 KTS	SEATTLE, WA	10,000 GRT TOW LIMIT
MIDGETT	WHEC	378'		29 KTS	SEATTLE, WA	10,000 GRT TOW LIMIT
ACTIVE	WMEC	210'6"	10'6"	18 KTS	PT ANGELES, WA	10,000 GRT TOW LIMIT
ALERT	WMEC	210'6"	10'6"	18 KTS	ASTORIA, OR	10,000 GRT TOW LIMIT
STEADFAST	WMEC	210'6"	10'6"	18 KTS	ASTORIA, OR	10,000 GRT TOW LIMIT
CUTTYHUNK	WPB	110'	7'4"	26 KTS	ASTORIA, OR	500 GRT TOW LIMIT
COWSLIP	WLB	180'	14'7"	11.9 KTS	ASTORIA, OR	5,000 GRT TOW LIMIT
MARIPOSA	WLB	180'	13'4"	13.5 KTS	SEATTLE, WA	5,000 GRT TOW LIMIT
POINT BENNETT	WPB	82'10"	5'11"	22.9 KTS	PT TOWNSEND, WA	250 GRT TOW LIMIT
POINT DORAN	WPB	82'10"	5'11"	22.9 KTS	EVERETT, WA	250 GRT TOW LIMIT
POINT RICHMOND	WPB	82'10"	5'11"	22.9 KTS	ANACORTES, WA	250 GRT TOW LIMIT
SAR BOAT (1)	MLB	52'	6'11"	11 KTS	WESTPORT, WA	750 GRT TOW LIMIT
SAR BOAT (1)	MLB	52'	6'11"	11 KTS	ILWACO, WA	750 GRT TOW LIMIT
SAR BOAT (1)	MLB	47'	4'		ILWACO, WA	125 GRT TOW LIMIT
SAR BOAT (2)	MLB	44'2"	3'2"	14 KTS	LAPUSH, WA	125 GRT TOW LIMIT
SAR BOAT (2)	MLB	44'2"	3'2"	14 KTS	WESTPORT, WA	125 GRT TOW LIMIT
SAR BOAT (2)	MLB	44'2"	3'2"	14 KTS	NEAH BAY, WA	125 GRT TOW LIMIT

CANADIAN COAST GUARD VESSELS/BOATS

VESSEL/BOAT	TYPE	Length	Draft	MAX SPEED	HOMEPORT	REMARKS
BARTLETT	1100	260'	12'25"	13 KTS	VICTORIA, BC	TOWING CAPABLE
NARWHAL	1100	260'	12'25"	13 KTS	VICTORIA, BC	TOWING CAPABLE
GORDON REID	500	163'8"	17'1"	15 KTS	VICTORIA, BC	TOWING CAPABLE
JOHN JACOBSON	500	163'8"	17'1"	15 KTS	VICTORIA, BC	TOWING CAPABLE
TSEKDA II	400	87'6"	6'56"	12 KTS	VICTORIA, BC	
BAMFIELD LIFEBOAT	300	44'11"	4'	11.5 KTS	BAMFIELD, BC	TOWING CAPABLE
TOFINO LIFEBOAT	300	44'11"	4'	11.5 KTS	TOFINO, BC	TOWING CAPABLE

APPENDIX F.

FIGURES AND TABLES

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[xviii] Washington State Energy Office, Washington State Petroleum Markets Data Book, January 1992, p. 1-3.

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[xxv] Allan, R.G., Dickens, D.F., A Review of Escort, Rescue and Salvage Towing Capability in Canadian Waters, for the Canadian Council of Ministers of the Environment, April 1995, pp. xii, 105.

[xxvi] McMahon, G.P., (The American Waterways Operators, Seattle, Washington) personal communication, 22 April 1996.

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