

EQUIPMENT FAILURES AND EQUIVALENT LEVELS OF SAFETY

Action Items: Reporting:

- A vessel's Master transiting in the Strait of Juan de Fuca and Puget Sound region, including Haro Strait, Rosario Strait and the Strait of Georgia, shall immediately notify the Captain of the Port Puget Sound either directly or via the Cooperative Vessel Traffic Service (CVTS) of any mechanical or operational deficiency that would reduce the vessel's capabilities.
- Masters shall *immediately* relay the following information:
 - o Nature of the defect, deficiency, damage, failure or breakdown of the vessel's, machinery or navigational/radio equipment
 - o Type of vessel, cargo and fuel capacity
 - o Location and proximity to land or other navigational hazards
 - o On-scene weather, visibility, tide, current, wind and sea state
 - o Traffic density
 - o Maneuverability of the vessel
 - o Proposal to mitigate the deficiency (follow the table below for proposals to the COTP)

Amplifying Information:

The Harbor Safety Committee and the Coast Guard Captain of the Port, Puget Sound are committed to ensuring vessels safely transit the waters of the U.S. and Canadian Strait of Juan de Fuca/Puget Sound region, while also keeping these waters from environmental damage caused by vessel casualties. The Captain of the Port Puget Sound will require additional measures when necessary to provide an "equivalent level of safety" to vessels with reduced capabilities.

The following decision table serves as a guideline to vessel Masters to make timely and effective decisions to ensure an equivalent level of safety during a mechanical or operational deficiency.

Defects/Deficiencies	Additional Safety Measure
Propulsion loss/reduced capabilities while underway	<ul style="list-style-type: none"> • Immediately obtain the services of an escort or a rescue tug of adequate size and horsepower • Maintain frequent communication with the corresponding CVTS Traffic Center and relay status of vessel and propulsion capabilities • Make both anchors ready for letting go • Prepare to anchor at closest anchorage or moor at nearest harbor of safe refuge upon direction of the COTP • Correct deficiency before departing
Loss or reduction of steering capabilities or ship service generator	<ul style="list-style-type: none"> • Immediately obtain the services of an escort or a rescue tug of adequate size and horsepower • Maintain frequent communication with the corresponding CVTS Traffic Center and relay status of vessel and propulsion capabilities • Make both anchors ready for letting go • Prepare to anchor at closest anchorage or moor at nearest harbor of safe refuge upon direction of the COTP • Correct deficiency before departing
Loss of all radars	<ul style="list-style-type: none"> • Transit only in daylight and good visibility • Maintain frequent communication with the corresponding CVTS Traffic Center and relay status of vessel and propulsion capabilities • Provide additional navigation officer on bridge • Correct deficiency before departing
Gyro failure	<ul style="list-style-type: none"> • Transit only in good visibility • Maintain frequent communication with the corresponding CVTS Traffic Center and relay status of vessel and propulsion capabilities • Provide additional navigation officer on bridge • Correct deficiency before departing
Automatic Radar Plotting Aid (ARPA) failure	<ul style="list-style-type: none"> • Maintain frequent communication with the corresponding CVTS Traffic Center and relay status of vessel and propulsion capabilities • Provide additional navigation officer on bridge to assist manual radar plotting • Correct deficiency before departing
Missing navigation chart(s)	<ul style="list-style-type: none"> • Contact agent to supply chart(s) at entrance of Juan de Fuca Strait or appropriate pilot station. (<i>see Information Chapter 2</i>)
Propulsion/electrical power reduction or main engine maintenance while at anchorage	<ul style="list-style-type: none"> • Obtain the services of an escort or a rescue tug of adequate size and horsepower prior to taking the plant off line and the permission of the COTP. • Maintain frequent communication with the corresponding CVTS Traffic Center and relay status of vessel and propulsion capabilities

HEAVY WEATHER (WX)

SOC Quick Reference

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This standard of care has been developed jointly by Sector Seattle, Washington state Department of Ecology SPILLS program, and representatives of the marine industry under the umbrella of the Puget Sound Harbor Safety Committee. This Standard of Care (SOC) is not intended to replace existing company and vessel procedures, it simply institutionalizes sound marine operating practices that responsible vessel operators follow voluntarily. Other sections of the HSP contain weather related guidance, and in particular, the Anchoring SOC is applicable. This SOC covers commercial operations; recreational boats should consult other portions of the plan for guidance. The risks discussed in this SOC have been identified as threats to the port during heavy weather. Initially, a Heavy Weather Workgroup developed standards that consolidate best practices and provide a guide to mitigate these risks. Some more recent minor modifications have been made.

A. WEATHER CONDITIONS FOR PETROLEUM TRANSFERS:

Action Items:

- Vessels- follow the Lightering Standards of Care Guidelines
- Facilities- follow heavy weather procedures in their facility operations manual.

This section principally applies to facilities and vessels transferring to or from a vessel of 250 bbls (approx. 10,500 gallons or 39,900 liters) capacity or more, i.e. the applicability in 33 Code of Federal Regulations 156. However, Washington state has oil transfer rules, i.e. 173-180 WAC and 173-184 WAC, that also address oil transfer operations involving vessels of less than 250 bbls fuel and cargo oil capacity. Companies are strongly urged to incorporate weather criteria into all their guidance on non-internal petroleum transfers, and in certain circumstances are required under state regulations to include weather criteria in making determinations for safe and effective transfer operations. Good sources of guidance include industry standards such as the American Waterways Operators (AWO) Responsible Carrier Program. Transfer operations away from the dock, whether lightering or bunkering, will be conducted under the same weather stipulations outlined in the Puget Sound Harbor Safety Committee Lightering Standards of Care, and the Anchoring Standards of Care. The wind and sea conditions criteria have been developed with industry input and are used by operating companies in the area. These standards are based on historical observations and experience in handling these vessels under prevalent conditions.

At the Dock transfers: At regulated facilities, all personnel and vessels shall follow procedures outlined in the facility operations manual. Each facility ops manual should have specific written criteria, individually tailored for local conditions, that spell out what thresholds trigger extra precautions or transfer suspension. Petroleum transfers at non-regulated facilities, including vessel to vessel transfers, should follow the weather criteria in the Lightering Standards of Care.

B. MOORING BUOYS- OPERATING POLICIES AND WEATHER CRITERIA.

Action items:

- For the West Seattle buoys, follow procedures established by BUOYS-R-US.
- Follow written heavy weather procedures established by buoy owners, including evaluation of size and characteristics of the vessel to be moored, and the forecasted weather conditions.

Barges and vessels made up to a mooring buoy can be of concern during periods of heavy weather. Barges on the West Seattle mooring buoys owned by BUOYS-R-US and

managed by the Marine Exchange of Puget Sound will, as a matter of policy, be moved off the buoys and relocated to more secure moorings when impending winds are expected to reach or exceed sustained speed of 30 MPH. Companies that have or are thinking of establishing commercial mooring buoys are encouraged to follow this model. For commercially used mooring buoys, buoy owners should develop individual written guidelines that address the following:

- Location, including any specific unique characteristics users should be aware of;
- Maintenance procedures and intervals, including position checks;
- Maximum number, type and size of barges/vessels allowed on the buoy;
- Restrictions on operations;
- Plans for reducing the number of barges moored during periods of heavy weather, including specific weather criteria, and a company person responsible for monitoring the situation.

C. GENERAL MOORING POLICIES/BREAKAWAY PREVENTION

Action Items:

- Follow individual port/terminal guidelines as available.
- Individual Facilities and terminals- develop written heavy WX plan that address mooring configurations and peculiarities for the given facility.

Good mooring practices are the best preventative measure during heavy weather (HEAVY WEATHER TO BE DESCRIBED AS ANY PERIOD WHEN GALE FORCE WINDS ARE FORECASTED THAT WOULD CAUSE THE MOORING BUOYS TO BE CLOSED). The vessel master and terminal operator jointly share the responsibility to ensure prudent actions are taken. Due to the individual nature of each terminal/vessel configurations, it would be too complex to write specific guidelines into the HSP. Individual ports and SSA have guidelines that should be followed. For unmanned locations, the vessel master is responsible for securing the vessel properly, monitoring it as appropriate, and should be mindful of the issues applicable at terminals that could apply to their situation. At manned facilities, each terminal should develop a written heavy weather plan that at a minimum addresses the following:

- Mooring configurations for each anticipated vessel type
- Minimum number, size, and positioning of all lines for foreseeable weather conditions.
- Standards and responsibilities for monitoring weather and taking appropriate actions, including after hours, and reporting as appropriate to the Coast Guard.
- Standards for making rounds of the facility, and ensuring the satisfactory material condition of mooring facilities, cleats, bollards, piers, etc.
- Plans and criteria for moving vessels to alternate locations should the need arise.

- Any abnormalities particular to that terminal and pier that could affect safe mooring.
- Maximum number of barges/vessels permitted to raft together for given weather conditions.
- Standards for securing rafted vessels to each other and to the mooring or pier.

**D. DERELICT AND DILAPIDATED UNATTENDED VESSELS
(ABANDONED BUT NOT YET DERELICT), AND OTHER
HAZARDS TO NAVIGATION**

Action Items:

- Report sightings to the Captain of the Port, particularly if any may threaten safe navigation or public health and safety to the environment.

If these types of vessels are observed while mariners are going about their business in the port, they should be reported to the Captain of the Port as soon as possible. This applies especially to vessels that are moored or anchored precariously and threaten to become hazards to navigation, as well as objects that are actively creating a hazard to navigation.

Although the vessel owner retains responsibility to remove a derelict vessel, the Washington Department of Natural Resources (DNR) has the authority to take temporary possession of vessels posing an imminent threat to public health and safety to the environment in order to safeguard same and, subject to due process and funding availability, may permanently remove and dispose of the derelict or abandoned vessel.

**E. DEEP-DRAFT VESSELS UNDERWAY, HIGH RISK LOCATIONS, AND
VESSELS WITH PROBLEM HISTORIES**

Action Items:

- Call for additional tugs or take other action early, before dangerous situations develop.
- Consult Puget Sound Pilots and the U.S. Coast Pilot to identify high risk areas.

In all cases, the vessel master and pilot should make a proactive evaluation of the current and forecasted weather, and if necessary delay movement, call for additional tugs, or take other appropriate measures. Vessels which have particular attributes that introduce additional risk should be especially sensitive to environmental conditions that take advantage of the vessel's weaknesses. High risk areas in the Puget Sound region include:

- North and Sound bound transits of the eastern Strait of Juan de Fuca via Haro or Rosario Straits
- Admiralty Inlet (in vicinity of Partridge Point)
- Southern end of the Straits of Georgia.

Masters and Pilots should consult the Coast Pilot and other sources of local knowledge when transiting these areas, and be pre-paring for strong tides, currents, and weather conditions.

Vessels with problem histories are those that the COTP has noted as:

- Having experienced previous propulsion control or steering problems
- Having lost anchors or damaged anchors
- Having poor or negligent operating histories.

F. TUGS WITH TOW UNDERWAY, HIGH RISK LOCATIONS, TOW CONFIGURATION /CARGO DEPENDENT

Action Items:

- Close all watertight openings on the tug and tow
- Reduce speed when necessary, post extra lookouts to monitor the tow
- Inspect terminal gear, including bridle, pendant, chafe gear, drum and brake; ensure compliance with 33 CFR 164.74.

Tug masters must be especially cognizant of the high risk areas as out-lined in the above paragraph. The areas to be transited and forecasted weather and tidal/current conditions should be considered when deciding tow configurations, cargo, and size and type of barges to be used. During periods of heavy weather, tug masters should take the actions covered in the “Action items” portion of this SOC.

G. LOG TOWS AND STORAGE

Action Items:

- Check the condition of the log rafts before towing.
- Consider raft size, tug capability, and expected weather and current conditions.
- Assign personnel to check condition of logs in storage, including end chains, buoys, etc.
- Take prompt action in the event of loose or damaged bundles; recover loose logs.

Because of the lack of maneuverability and dangers associated with log tows breaking up, companies engaged in log storage or towing should have written guidance for their masters and other operational personnel. For tows, masters should make positive evaluations prior to getting underway to check the current and forecasted weather, applicable tides and currents, suitability of the tug for the tow size, and any other factors.

For logs in storage, personnel should be assigned to check all storm booms (end chains and floatation), buoys (strain) and standing booms (end chains and floatation), for damage, loose bundles or spillage of logs. Depending on wind direction and number of bundles in the boom, action may be required to tighten or loosen tie lines to relived strain. If damage is observed, the deck officer on watch shall notify dispatch immediately and take appropriate action to recover or affect necessary repairs

H. RECREATIONAL VESSELS

Action Items:

- Ensure that all prudent actions have been taken to minimize water entry into the vessel.
- Check the condition of anchor and mooring lines, pendants, chafe gear.
- Move vessels to safe areas or remove from water before severe weather.

I. FERRIES (WASHINGTON STATE FERRIES (WSF), COUNTY AND PRIVATE.)

Action Items:

- Masters must adhere to written policies concerning heavy weather procedures.

WSF has its own internal practices that address the risks on each particular run. However, county and private ferries do not necessarily have their own written policies. Each company should have written guidance directing vessel masters to take weather conditions into account during operations. Particular attention should be paid to the prevailing and forecasted weather conditions at all docks to be visited, as well as on the planned route, and other alternative possibilities should conditions become too severe.

J. BRIDGE POLICY

Action Items:

- Use the U.S. Coast Pilot and Notice to Mariners to determine if bridge issues may impact a voyage.

There are several bridges over major waterways in the Puget Sound Region, and their operations could be curtailed due to heavy weather or other problems. General policies are outlined in the Coast Pilot, and emergent issues will be addressed either through the Local Notice To Mariners, or Broadcast Notice to Mariners. Mariners should use these resources to determine in advance if their planned voyage will be impacted.

K. FISH FARMS

Action Items:

- Develop and maintain company policy to address heavy weather concerns.
- Ensure fish pens are secured and monitored as per company policy as available.

L. CARGO HANDLING, CRANE OPERATIONS, CARGO SECURING

Action Items: Individual Facilities should develop written heavy WX plan that address:

- Designation of a person to monitor weather, and assess need for additional security.
- Moor IAW the mooring section of this SOC.
- Shore crane securing and tiedown requirements (per manufacturer's instructions).
- Container/cargo height reductions and location away from the water or other hazardous areas.
- General operating equipment securing.
- Applicable federal, state, local, as well as contractual labor safety regulation compliance.

Each individual cargo handling operation has its own unique operating concerns requiring more or less procedural oversight, depending on the complexity of the operation and its exposure to the weather elements. In any case, heavy weather procedures are a critical centerpiece of a company's emergency response plan, regardless of location in Puget Sound. Port, pier, terminal and dock authorities, operators and/or owners are encouraged to conduct annual reviews of internal heavy weather procedures specific to vessel/dock operations at their facilities. Procedures should be updated and distributed to key personnel to ensure the safety of employees, cargo, equipment, the public and the environment during periods of heavy weather. Procedures should cover all the items in the "Action items" portion of this SOC.

M. FLOATING PLANT, DREDGING, PORT OPERATIONS

Action Items:

- Adhere to written policy for modifying/securing operations under certain WX conditions.
- Identify a safe anchorage/moorage for each job.
- Proactively consider the activity's impact on safe navigation in all WX conditions.

Companies that conduct these types of relatively fixed operations should also be cognizant of the impact of heavy weather. Companies should develop written guidance to operations supervisors to take into account current and forecasted weather, and have specific plans for ceasing operations and moving to a safe anchorage or mooring at a specific weather

threshold. Operations supervisors should be especially cognizant of how their operations impact navigable waterways. For further guidance, see the HSP Anchoring Standards of Care.

N. POTENTIAL VESSEL TRAFFIC SERVICE ACTIONS

Action Items:

- Vessel Traffic Service (VTS) Puget Sound will provide weather warnings.
- May direct vessels to raise or drop anchor, seek shelter, increase reporting requirements.

VTS Puget Sound will monitor vessels underway and at anchor, and the general port areas as much as is practicable. VTS will provide weather warnings as outlined in the PSVTS Users Manual: <http://www.uscg.mil/d13/psvts/>. If Coast Guard intervention in a situation is absolutely necessary to ensure safety, VTS actions may include directing vessels to anchor or raise anchor, seek sheltered areas, increase position reporting requirements, and / or control vessel movements to mitigate the threats posed by heavy weather.

O. POTENTIAL CAPTAIN OF THE PORT (COTP) ACTIONS

Action Items:

- Direct bunkering and lightering operations to cease.
- Direct hazardous materials and explosives loading to cease.
- Direct changes in mooring configuration or location for vessels at terminals.
- Direct vessel movement including course/speed.
- Direct vessels to seek shelter and hold position.
- Require stand-by tugs or tugs in attendance.

If individuals or vessels are not taking actions to mitigate the risks posed by heavy weather, the COTP is authorized under various Federal laws to take or direct certain actions, including but not limited to those described in the “Action items” section of this SOC.

P. REPORTING PROCESS TO THE COAST GUARD

Everyone can take ownership in making the waterways safe during heavy weather, just as anyone located on the water can be affected by weather induced problems. Mariners going about their business in the port should report any actual or potential problems on or near the water to the Captain of the Port at 206-217-6001, or via VTS for VTS participants. If anything appears out of place, or if any vessels, boats or barges in the port are tied up in a less than safe or prudent manner, a timely report to the Coast Guard can prevent such events. If the Coast Guard identifies unsafe situations, they will, if time permits, bring the situation to the attention of the party responsible for it. If the responsible party is not

taking timely action, then the CG will assist them in doing so, by helping to identify and organize other resources. If the responsible party is not taking action, and does not look capable or willing to do so, then the COTP may issue directions to compel action, or take independent actions to mitigate unsafe situations for which the responsible party may be liable for.

HOT WORK

A. DISCLAIMER

This standard of care in no way supersedes or is meant to take the place of applicable local requirements from the local fire prevention authority. Where requirements from the local authority are in excess of this standard, they must be met. For example, a marine hot work permit is required by the City of Seattle; for more information see <http://www.seattle.gov/fire/FMO/permits/permits.htm>.

B. HOT WORK DEFINED

- Flame heating, welding, torch cutting, brazing or carbon arc gouging.
- Any operation which produces temperatures of 204°C or higher.
- Note: Operations not producing hot sparks or flame such as spark-producing or arc-producing tools or equipment, static discharge, friction, open flame or embers, impact, and nonexplosion-proof equipment such as lights, fixtures, or motors are not considered hot work unless in the presence of flammable liquids or in a flammable atmosphere.

C. MASTER'S RESPONSIBILITIES

Any hot work operation has the potential to ignite combustible or flammable materials. It is the Master's responsibility to take precautions to prevent fires caused by the exposure of combustibles to the effects of hot work.

D. CONFINED SPACES -- MARINE CHEMISTS

Contact marine chemists to certify confined spaces as safe for hot work. Marine chemists are also extremely valuable to use in evaluating spaces and attendant conditions for hazards.

E. PRECAUTIONS

1. CLEANING AND VENTILATING FOR HOT WORK

- Before hot work is started, the space should be inspected, emptied of flammable cargo, cleaned, ventilated and tested to ensure the atmosphere is at 10% or less of the **Lower Explosive Level** and that toxic concentrations are limited to the **Permissible Exposure Level**.
- Extraneous flammable or combustible materials such as scrap wood, paper, ropes or rags should be removed from the space or moved a minimum of 11 meters away from the work site. Combustible materials that cannot be removed should be adequately protected.

- Fans, blowers, motors and other such equipment utilized to ventilate atmospheres containing flammable or explosive vapors, fumes, mist or dust shall be approved, explosion-proof equipment or intrinsically safe equipment.

2. FLAMMABLE LIQUIDS/ ATMOSPHERES

- Do not perform hot work when flammable liquids or flammable atmospheres are present.
- When hot work is to be performed on fuel tanks, associated vent spaces or other spaces containing flammables (e.g., paint lockers, flammable liquid storerooms), the adjacent spaces above, below and on all sides (boundary spaces) should first be inspected and tested, cleaned and ventilated or inerted as appropriate.
- Hollow connections to a space can present the same hazards as the space itself. Pipes, tubes, coils or similar items that service, enter or exit a confined space should be flushed, blown, purged or otherwise cleaned before the performance of hot work on such items. If not so treated, the space should not be considered safe for hot work.
- Valves to pipes, tubes or similar items should be closed, or the pipes blanked off, to prevent inadvertent discharge or backflow of material into the space.

3. FIRE WATCH

- Hot work should only be conducted in those spaces where it is certain that no combustible materials or flammable residue exist. Even then, when flame heating, welding, torch cutting, brazing or carbon arc gouging or any operations that produce temperatures of 204°C or higher are conducted, establish a trained fire watch at the worksite with an unobstructed view of the hot work operation.
- When hot work may transmit a fire hazard into adjacent spaces by overheating the connecting deck, overhead or bulkhead, provide fire watches on both sides of the deck, overhead or bulkhead.
- When more than one fire watch is appropriate, a means of communication is required; this will enable the fire watch to report hazardous conditions on the opposite side of separating structures and provided a signal to stop the work.
- Fire watches on both sides of the separating structures should have and know how to use fire-extinguishing equipment suitable to the exposure.
- After completion of the hot work operation, fire watches should remain on station until all hot work is cool to the touch or 30 minutes (whichever is greater), ensuring that no smoldering embers remain.

4. HANDLING DANGEROUS CARGO AT WATERFRONT FACILITIES

- When handling dangerous cargo (all hazardous materials listed in 49 CFR parts 170 through 179, except those materials preceded by an “A” in the Hazardous Materials Table in 49 CFR 172.101 and all cargo listed in 46 CFR part 148) at designated waterfront facilities, the provisions of 33 CFR 126.15 and 33 CFR 126.30 must be adhered to. This includes safety requirements, fire extinguishing equipment, and welding and hotwork conditions.
- Contact Coast Guard Sector Seattle at 206-217-6165 for more information.

LIGHTERING WITHIN THE WATERS OF PUGET SOUND AND THE STRAIT OF JUAN DE FUCA

SOC Quick Reference

Risk	Section
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• Personnel	B-3
• Mooring Equipment	B-4
• Tug Availability	B-5
• Response Equipment	B-6
• Number of vessels involved	B-7
• Flow Rate, Topping off, and Gauging	B-8
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Example Advance Notice of Lightering Operations	

A. GENERAL INFORMATION, DEFINITIONS, AND REGULATIONS

1. The waters of Puget Sound and the Strait of Juan de Fuca are environmentally sensitive and a precious environmental and economic resource. Lightering operations, while routine in many parts of the country, do in fact pose risks different than those normally expected of standard ship to shore cargo transfer operations. Sector Seattle, the State of Washington, and representatives of the petroleum industry have jointly developed the following guidelines to address those risks and ensure safe lightering operations in the Puget Sound region. For the purposes of this policy, lightering is defined as any oil transferred as cargo (not used for that vessel's propulsion) between vessels not docked at a marine transfer facility as defined in 33 CFR 154.
2. These guidelines represent the cooperative efforts of the Coast Guard, Washington State, and industry leaders to develop the best way to mitigate risks to the environment during lightering operations. As such, it is expected that industry members follow them, educate and enforce them among industry groups, and make recommendations to the Coast Guard and Puget Sound Harbor Safety Committee as changes are needed. In order to best mitigate risks, non-emergency requests for lightering operations that do not meet these standards must be made at least one

month in advance, and include a description of how the operation can be conducted with an equivalent level of safety. Full compliance with these standards of care will be considered a mitigating factor in the event of a spill or marine casualty.

3. Sector Seattle will conduct announced and unannounced monitoring of lightering operations. Companies should expect to be monitored the first time they lighter in Puget Sound. The frequency of monitoring will be determined by the level of risk, familiarity with company operations, procedures and track records. Sector Seattle may stop any lightering operation, or prohibit planned operations due to safety concerns or unacceptable risks.
4. Sector Seattle will periodically review the safety record of lightering operations, and work with the Harbor Safety Committee to determine if changes are needed to promote safety. Changes could include additional guidelines or a formal regulatory initiative.
5. **Definitions:** In addition to the terms defined in applicable federal regulations, the following definitions apply:
 - a. **Lightering:** The transfer of petroleum cargo in bulk from one tank vessel to another tank vessel while at anchor, or at a dock that is not regulated under the facility response plan and other requirements of 33 Code of Federal Regulations (CFR) Part 154. Specifically, this Standard of Care applies to cargo to cargo transfers, but not those transfers of fuel for vessel propulsion (commonly referred to as bunkering.)
 - b. **Service vessel:** The vessel receiving the cargo in a lightering operation.
 - c. **Ship to be lightered (STBL):** The vessel delivering the cargo in a lightering operation.
 - d. **Lightering specialist:** A person with significant experience in operations of the type to be conducted, i.e. ship-to-ship experience to conduct a ship-to-ship evolution. Individual companies should establish policies regarding their lightering specialists. A lightering specialist must be knowledgeable of safety regulations and industry standards, as well as pollution response procedures. The lightering specialist shall act as an advisor and in consultation with the PICs. Note that the lightering specialist is in addition to both PICs. The lightering specialist may be a licensed officer from the ship, but should have no other duties than to monitor the operation. The lightering specialist shall not be the vessel master. Consideration should be given to the length of lightering operations, and appropriate provisions should be made to provide relief for the lightering specialist during extended operations. Finally, a lightering specialist must have the authority to stop a lightering operation in the interest of safety. This in no way removes the final authority of the master (or PIC if a barge) regarding all operations. The lightering specialist should normally be stationed on the service vessel, but may visit the STBL if circumstances dictate. Most operations in Puget Sound involve a tank ship lightering to a tank barge.
 - e. **Integrated Tug Barges (ITBs) and Articulated Tug Barges (ATBs)** shall be considered as ships for the purposes of these Standards of Care.

6. **Regulations:** Lightering operations must be conducted in strict accordance with the letter and intent of all regulations. In particular, lightering operations fall under the following regulations:

- a. 33 CFR 151 (MARPOL implementation)
- b. 33 CFR 153 Notice of Discharge and Removal of Discharged Oil
- c. 33 CFR 155 Oil or Hazardous Material Pollution Prevention Regulations for Vessels
- d. 33 CFR 156 Oil and Hazardous Material Transfer Operations
- e. 46 CFR 30-40 Tank Vessels
- f. 173-184 WAC Vessel Oil Transfer Advance Notice and Containment Requirements

The following references contain worldwide industry standards, and should be consulted for applicability to Puget Sound lightering:

- g. Oil Companies International Marine Forum Guidelines (OCIMF) Ship to Ship Transfer Guide
- h. Oil Spill Risks from Tank Vessel Lightering - published by the Commission on Engineering and Technical Systems (CETS)

B. STANDARD OF CARE ITEMS

1. **Wind:** Vessels will not come alongside in preparation for lightering if sustained winds are at or exceed 30 knots. If lightering operations have already begun when sustained winds reach 30 knots, personnel in charge of lightering operations will monitor environmental conditions with particular attention, and take any additional measures necessary to reduce risk and prepare for worsening weather. When sustained winds reach 40 knots, lightering operations will cease, and hoses will be drained and disconnected. Personnel should consult separate guidance issued by Sector Seattle and the Puget Sound Harbor Safety Committee regarding heavy weather and anchoring procedures relevant to all vessels.
2. **Seas:** For barge to barge or ship to barge operations, lightering operations will cease, with hoses drained and disconnected when waves or swells reach 3 ft. For ship to ship operations, lightering operations will cease, with hoses drained and disconnected when waves or swells reach 6 ft. The wind and sea conditions criteria have been developed with industry input and are used by operating companies in the area. These standards are based on historical observations and experience in handling these vessels under prevalent conditions.
3. **Personnel:** A lightering specialist will be present for each lightering operation, in addition to the personnel normally required for transfer operations. The lightering

specialist shall adhere to OPA 90 fatigue standards to ensure the safety of prolonged operations.

4. **Mooring equipment:** All parties will use fenders and mooring lines of sufficient size and type in accordance with the OCIMF Ship to Ship Transfer Guide.
5. **Tug availability:** During lightering operations involving a barge or barges, at least one tug will remain on scene and ready to render assistance during the entire evolution. The attending tug(s) must have sufficient horsepower to maneuver and control at least the smaller of the vessels involved in the operation. Ship to ship operations may take place without direct tug assistance, once the mooring portion of the operation has been completed. However, a tug of sufficient horsepower must be on immediate standby in the area to render assistance in less than 30 minutes. The name of the tug and tug company shall be listed on the Advance Notice of Lightering Sheet.
6. **Response equipment:** In addition to the vessel's Vessel Response Plan requirements, when lightering operations take place, boom capable of encircling the entire operation must be in place with at least a five foot stand-off from the vessels or boom must be positioned so as to provide for the maximum containment of any oil potentially spilled whenever it is safe and effective to do so. Each vessel that delivers oil at a rate exceeding 500 gallons per minute is obligated to have developed and implemented pre-booming strategies using such thresholds under state requirements which become in full force after October 26, 2007. Where it is not safe and effective to pre-boom transfer operations then such length of boom will be made available on scene and ready for immediate deployment such that the boom could be completely in place within 1 hour of detection of a spill, unless the vessel has an equivalent compliance plan approved by ecology and accepted by the USCG COTP. The standby booming requirement could be met by the equipment normally carried by a barge, or by a dedicated response vessel, or by both. If this requirement is met without a response vessel, then a small boat, capable of deploying the boom in a timely fashion, must be on scene and immediately available. If both the barge and a response vessel contribute toward this requirement, the equipment must be compatible. Adequate personnel should be on scene to take appropriate actions on the vessels, while simultaneously deploying boom. Personnel shall be trained in deploying boom, and the boom and response equipment shall be prepared so that it can be deployed with the absolute minimum of delay.
7. **Number of vessels involved:** Lightering operations will involve not more than one ship to be lightered and one service vessel. Bunkering will not take place simultaneously with lightering.
8. **Flow rate, topping off and gauging procedures:** In accordance with OCIMF Ship to Ship Transfer Guide.
9. **Watchkeeping:** Qualified deck officers will monitor the lightering operation as well as the vessel's navigational status. In the case of barges, the PIC and tankermen will monitor the transfer, but an officer will remain on the bridge of the tug or tugs to

monitor the tugs communications and navigational status. The STBL must maintain constant communications with Puget Sound VTS on the appropriate working frequency, either 5A or 14, throughout the lightering operation.

- 10. Lightering Plans:** Companies will submit a lightering plan to Coast Guard Sector Seattle at least five business days prior to the proposed date of lightering. It is understood that it is the nature of marine industry to have unforeseen schedule changes. However, all possible effort must be made to submit a lightering plan in time for this office to review it, and arrange for lightering monitors. Individual requests for a shorter time period may be considered on a case-by-case basis, but will generally not be granted for other than safety reasons.

Companies can either develop a general fleet lightering plan for each type of operation (ship to ship, ship to barge, barge to barge); or, can submit individual plans prior to each event, covering the details of that specific operation. Fleet lightering plans will be approved and maintained on file at the Sector Seattle for review when an "Advance Notice of Lightering" is received. All lightering plans should also be available for inspection when the Coast Guard monitors a lightering operation, or upon request. Once a company has a fleet plan approved, they only have to submit the Advance Notice Form. Both types of lightering plans should include the following elements:

- a. Exact/anticipated location(s) of lightering operations. Locations used beyond the scope of a fleet plan should be added to the Advance Notice Form, when necessary.
- b. Names, official numbers, lengths, and other pertinent data for all vessels and barges, including if they have approved Washington State response plans.
- c. Names of the two PICs, and the name(s), required qualifications, and experience of the Lightering Specialist(s). For fleet plans, if this information is left out it must be included with the Advance Notice Form.
- d. Date of transfer, and estimated start and stop times. Note if the operation will be restricted to daylight hours.
- e. The maximum limiting weather and sea conditions, if different than the SOC limits.
- f. Total cargo capacity of the barge(s) and the STBL, and volumes of transfers.
- g. Planned spill response equipment to be either on scene, pre-staged, or on standby, as per the SOC.
- h. General description of written transfer procedures, as required by 33 CFR 155. This should include maximum flow rate, means of communication, overflow protection devices, and topping off procedures.
- i. Proper shipping name, type, and characteristics of product.
- j. Mooring and fendering configuration between participating vessels.
- k. Location and disposition of assist tug during lightering operation.
- l. The final destination of the product.

- m. If vapor balancing will be conducted (if yes, must comply with all applicable regulations).
- n. How this Standard of Care will be implemented.

- 11. Notifications:** Companies wishing to conduct lightering operations must notify Sector Seattle via fax using the attached "Advance Notice of Lightering Operations" Fax Sheet. This fax must be sent at least 24 hours prior to commencement of lightering operations. This sheet must be signed by the attending lightering specialist or a company officer senior to the lightering specialist. The STBL shall notify Puget Sound Vessel Traffic Service (PSVTS) via the appropriate working frequency immediately prior to starting and immediately after stopping transfers, using (approximately) the following language:

"Seattle Traffic, this is the T/V _____, commencing lightering operations. On scene weather is within parameters. Out."

"Seattle Traffic, this is the T/V _____. Lightering operations are secured. Out."

Vessels involved in the operation shall monitor the appropriate PSVTS working frequency throughout the duration of the operation, and must immediately report any spills or other problems. These notifications exceed the requirements contained in the Code of Federal Regulations, but allow the Sector Seattle enough time to screen operations and dispatch monitors.

- 12. Anchorage Management:** Vessels desiring to lighter in designated anchorages in Puget Sound are reminded to consult the Sector Seattle guidance on securing reservations, as follows:

- PSVTS manages the anchorages in Puget Sound and adjacent areas for the Captain of the Port. For safety reasons, each anchorage has a restricted number of anchorage spaces available, and are normally reserved on a "first come, first served" basis. To allow a more efficient and fair allocation of available space the VTS asks that:
 - Reservations be made as far in advance of arrivals as possible.
 - Revisions of ETA's and ETD's be made as they become known.
 - Reservations are only valid for the time span requested. A vessel staying past the ETD may be subject to movement orders to make room for an inbound vessel with a reservation.
 - Anchorage reservations will not be accepted in high usage areas, such as Elliott Bay or Port Angeles, if there is a possibility of delay due to uncertain orders.
 - With these considerations, the occasions of a vessel being denied anchorage or being ordered to depart to make room for another vessel should be infrequent.

Lightering operations are normally permitted in Anacortes, Port Angeles, Elliott Bay, and Commencement Bay. Lightering operations at Vendovi Island anchorages will only be approved on a case-by-case basis. Requests to lighter in other locations should be submitted to Sector Seattle at least one month in advance.

ADVANCE NOTICE OF LIGHTERING OPERATIONS

This form, or the equivalent information, must be faxed to Sector Seattle at **(206) 217-6199**, a minimum of 24 hours prior to commencing transfer operations. Start / stop times are assumed to be accurate to within 1 hour. Changes should be made by either a revised fax, or by telephone to our operations center at **(206) 217-6001**. Sector Seattle will accept one notification for both the service vessel and STBL. It is the company's responsibility to ensure anchorage reservations are made separately through Coast Guard Vessel Traffic Service Puget Sound at **(206) 217-6040**.

Fleet plan on file with Sector Seattle: No / Yes Date Submitted: _____

Location of Operation: _____

Date of Operation: _____

Estimated Start Time: _____ Estimated Stop Time: _____

Lightering Specialist (L/S) in Charge: _____ Telephone: _____

Experience/ # of lighterings previously conducted by L/S: _____

PIC #1: _____ PIC #2: _____

Ship to be Lightered (STBL): _____ Official No: _____

Total Cargo Capacity of STBL: _____

Service Vessel: _____ Official No: _____

Total Cargo Capacity of Service Vessel: _____

Product to be Transferred: _____ Amount (bbls): _____

Product to be Transferred: _____ Amount (bbls): _____

OSRO, STBL: _____ Telephone: _____

OSRO, Service Vessel _____ Telephone: _____

Standby Tug Name/Company: _____ Telephone: _____

STBL Company Point of Contact: _____

POC Telephone: _____ Fax: _____

24 Hour Company Telephone: _____

I certify that this lightering operation will be conducted in accordance with the Puget Sound Harbor Safety Committee Lightering Standard of Care and my company's lightering plan, particularly with regard to the limiting weather parameters.

Signature of lightering specialist (or lightering company officer):

Date/Time Submitted: _____

This form is (circle one): ORIGINAL / UPDATE to form dated: _____

PROPULSION LOSS PREVENTION

BACKGROUND:

A significant percentage of propulsion failures occur on vessels with direct drive diesel propulsion plants. These problems typically occur when a vessel is reducing speed or changing direction, where a stop or backing bell is ordered. For example: While picking up a pilot, the vessel has to reduce speed often below the vessel's slow ahead bell; a stop bell is ordered to further slow the vessel; this is followed some time later by an ahead bell which, on occasion, is unable to be answered, typically due to a failure of the air start system. This type of propulsion system failure suggests that this evolution is the first engine operation in anything other than the ahead mode since the vessel departed the last port, and that the required testing in 33 CFR 164.25(a)(5) of the vessel's propulsion in the ahead and astern mode 12 hours prior to port entry was not performed. Since such testing would have likely revealed problems with the propulsion system, *it is apparent that a complete test of the propulsion plant in the ahead and astern modes is often not being done prior to port entry. While not testing may be permitted (upon notification to the Captain of the Port)* due to rough sea conditions prohibiting safely conducting the tests, the tests must in all other cases be conducted. Programming engine slow down to properly reduce from sea speed to maneuvering speed for temperature management should be managed to enable conducting the propulsion tests. Failure of the air start system upon first use at port entry has been shown typically to be due to problems that can be minimized by increased vigilance in checking or testing of the air system.

In addition to air start system failures, fuel switching is another (more limited) cause of failure. Though the incidence of propulsion failure due to fuel switching has decreased as a higher percentage of vessels now use one fuel type, vessels still utilizing two fuel types can minimize risk by conducting a positive risk assessment prior to initiating the change. Prior to switching fuels, the master (together with the pilot if embarked) should positively evaluate the situation, taking into account these and other factors:

- Traffic conflicts and general congestion
- Weather/sea/current conditions
- Vessel's current operating condition
- Local tug availability
- Proximity to navigationally challenging portions of the transit

In order to reduce the threat posed by propulsion losses, the Puget Sound Harbor Safety Committee has adopted the above and below actions to be conducted by vessels arriving in Puget Sound ports. Many of these suggestions are currently standard industry practice. The Puget Sound Harbor Safety Committee hopes that by describing propulsion loss information, and presenting this Standard of Care doctrine and Coast Guard expectations, the frequency and severity of propulsion losses can be significantly reduced.

PROPUSION LOSS PREVENTION: ACTION ITEMS

ENHANCED MAINTENANCE PROCEDURES (Starting and Control Air Systems For Direct Drive Diesels)

1. Remove, clean, and replace filters as necessary
2. Inspect, clean O rings, repair and replace as necessary
3. Inspect, clean, and test air tanks as necessary, consider inner coatings
4. Inspect, clean, and test air lines. Conduct frequent blow downs to remove moisture.
5. Inspect and test air compressors
6. Install air dryers or heaters in the air start/receive system as necessary
7. Incorporate enhanced maintenance procedures into the vessel's ISM system.
8. Do not conduct maintenance on the starting or control air systems while underway in pilotage waters.

PRE ARRIVAL TESTS AND VESSEL OPERATION:

1. Follow the requirements of 33 CFR 164 including testing ahead/astern propulsion and actually backing down the vessel (Unless weather or sea conditions prohibit; you must report this to CVTS and the COTP to gain port entry).
2. Do not test propulsion in the Traffic Separation Scheme (TSS) or within 12 miles of the coastline unless you have permission from CVTS. Test farther from the coastline if onshore wind and sea conditions are severe and there is no immediately available tug; coordinate with CVTS. If testing at sea must be delayed for safety reasons, then report this to CVTS and request permission to conduct the test in the open but more protected waters of the Strait of Juan de Fuca before arriving at the pilot station.
3. Coordinate testing with CVTS. Although tests are required within 12 hours (not at 96 hour advance notice), the tests will be required in an area where tug assistance can be provided in a timely manner, if needed. The tests shall not be conducted on approach to the pilot boarding area off Ediz Hook or off Victoria.
4. Tests are also to be done prior to departure from the dock or while the vessel has tugs tethered/alongside.
5. Check air tank, air line pressures (Classification Societies and the U.S. Coast Guard set standards typically 12 starts are required).
6. Implement blow down procedures to reduce moisture in the air start system.
7. Insure a licensed engineering officer is in the engine control room while the vessel is in pilotage waters.
8. If fuel switching in confined and/or pilotage waters is necessary, then before switching fuel types, the master must carefully evaluate surrounding elements such as current or potential traffic conflicts, weather/seas/currents, tug availability and vessel operating condition, and proximity to navigationally challenging portions of the transit. If propulsion is lost during the switching evolution, then the master must immediately notify the Vessel Traffic System and obtain the services of the nearest tug(s).

IN THE EVENT OF A PROPULSION OR STEERING LOSS

The master and/or pilot must:

1. Obtain tugs immediately.
2. Immediately inform VTS Puget Sound and establish a communications schedule.
3. Track the vessel's position in relation to land, determine and monitor the drift rate.
4. Set the anchor detail.
5. Place the emergency generator on line.
6. Identify the source of the problem, conduct and test repairs.

The U.S. Coast Guard will:

1. Require immediate tug assistance.
2. Assist in locating nearest tug capabilities via Vessel Traffic System.
3. Issue Captain of the Port orders as appropriate to ensure required responses are undertaken.
4. Hire tug(s) directly if COTP order to obtain tug assistance is not complied with in a timely manner.
5. Require classification society inspection, technical representative oversight, and Coast Guard inspection and/or approval of repairs
6. Apply some or all of the above for partial propulsion or steering losses.

MOVEMENT IN RESTRICTED VISIBILITY

A. GENERAL

Conditions of restricted visibility pose an increased risk to the mariner. As set forth in rule 19 of the COLREGS, vessel operating in conditions of restricted visibility, not in sight of one another, shall proceed at a safe speed adapted to the prevailing circumstances, have her engines ready for immediate maneuver and, if a risk of collision exists, take avoiding action in ample time.

B. STANDARDS

1. When getting underway or transiting an area of restricted visibility the master, pilot, or vessel operator shall make a positive evaluation, including but not limited to the following operating factors:
 - a. Qualification of personnel
 - b. Maneuvering characteristics of the vessel.
 - c. The vessels size and draft relative to the waters to be transited.
 - d. The quality of the vessels radar picture and navigational system.
 - e. Whether the Vessel Traffic System (VTS) has radar coverage of the waters to be transited.
 - f. Vessel traffic/congestion in the area
 - g. Proximity of hazards to navigation to the transit route.
 - h. Weather, Tides, Currents.
 - i. Watertight Integrity.
2. **Crews should be informed of the situation for heightened awareness.**

Action Items:

- VTS Puget Sound, “Seattle Traffic” relies on the reports of mariners to identify areas of restricted visibility. Once a report of restricted visibility of 2 NM or less is received, “Seattle Traffic” will notify participants of transits by vessels on a published schedule and route, (Washington State Ferries). Further, when visibility reduces to 1 NM, “Seattle Traffic” will advise participants of anchored vessels and advise ferries of the transits by other ferries. Note: During periods of restricted visibility ferry system traffic may be behind schedule and not where vessels may normally expect.
- Smaller vessels (vessels under 20 meters in length) take on an increased risk in restricted visibility due to the difficulty in detecting these vessels with radar. Smaller vessels should use a radar reflector to increase the possibility of being detected by other vessels.

TANKER ESCORT

A. APPLICABLE VESSELS

All tank vessels as defined in Federal OPA 90 tanker escort requirements as per 33 CFR 168 (single hull tankers over 5,000 GRT); and State of Washington RCW 88.16.190 and WAC 363-116-500 (all tankers 40,000 DWT and over). Refer to Attachment 1 containing Federal and State tanker escort regulations.

B. ESCORT OPERATION

All escorts must be in close proximity for timely and effective response taking into consideration ambient sea and weather conditions, escort configuration, maneuvering characteristics of the vessels, emergency connection procedures, surrounding vessel traffic and other factors that may affect response capability. When required by this standard or otherwise deemed appropriate by the Master/Pilot to tether, the geographic areas include, but are not limited to, Rosario Strait, Guemes Channel, the Turn Point area of Haro Strait, Boundary Pass and between Saddlebag and Huckleberry Islands.

1. TETHERING REQUIRED: Areas where tethering between escort tug and tank vessel is a requirement of this standard are specifically:
 - a. Between Saddlebag and Huckleberry Islands.
 - b. In the vicinity of Viti Rocks.
 - c. Within the confines of Guemes Channel from Shannon Point to Cap Sante.
2. ESCORT SPEED: The speed of a tank vessel required to have escort(s) shall not exceed the service speed of the escort(s). The speed of the tank vessel shall be such that the escort(s) can reasonably be expected to bring the tank vessel under control within the navigational limits of the waterway. This speed shall take into consideration ambient sea and weather conditions, maneuvering and other characteristics of the vessel, surrounding vessel traffic, hazards, and other factors reducing maneuvering room. In Rosario Straits, speed through the water should not exceed 11 knots. When tethered, tank vessel and escort(s) must communicate as to appropriate speed so as to allow effective response and facilitate escort vessel maneuvering.
3. TUG AVAILABILITY: Refer to Attachment 1 for minimum state and federal escort tug performance requirements. Regardless of minimum state/federal performance requirements, tanker Master/Pilot are to confirm that escort vessel(s) assigned to the transit are of suitable type, power and configuration. Currently, there are two companies providing escort services in Puget Sound. For information regarding their available escort tugs, refer to each companies web site:
 - Foss Maritime – www.foss.com. For Ship Assist and Escort Services go to www.foss.com/services_shipassist.html.

- Crowley Maritime – www.crowley.com. For Ship Assist and Escort Services in the Pacific Northwest go to: www.crowley.com/ship-Assist-Escort/pacific-northwest.asp.
4. **MASTER’S RESPONSIBILITIES:** It is the tanker Master’s responsibility to ensure the vessel can make a safe transit. Nothing in this SOC precludes the Master from taking the appropriate action to ensure the safety of the vessel. The Master must provide the identification of strong tow point areas where escort tug(s) are likely to be made fast. When vessels tether, particular attention should be paid to not exceed the safe working loads of either vessel’s equipment. Tanker Masters and tug Masters should refer to OCIMF guidelines “Recommendation for Ship’s Fittings for Use with Tugs”.
 5. **PRE-ESCORT CONFERENCE:** All tank vessels that are required to have escort(s) must also conduct a tanker Master – Pilot – Tug Master pre-escort conference as listed in 33 CFR 168.60, and will include relevant port security issues for the transit.
 6. **ESCORT MANUALS:** Tanker Escort Manuals are available from the tug companies performing escort service in Puget Sound. Tanker owners and operators are encouraged to obtain copies of these manuals for reference.
 7. **DIVERSION OF ESCORT TUG IN EMERGENCY:** The Captain of the Port may, in an emergency search and rescue situation, for which the tank vessel escort tug is the closest and most appropriate rescue vessel, request the escort tug proceed to serve as the rescue vessel. The Captain of the Port will make a determination at that time as to whether the escorted tanker may proceed unescorted, or if additional safety measures are required, such as waiting for another tug escort, or anchoring.

C. RECOMMENDATIONS

1. **TRAINING:** When planned, and on a real-time basis, training that is mutually beneficial for the tug and tanker will be conducted within the four scenarios of Hook-up, Retard, Assist, and Deflect. Pilots are strongly encouraged, when doing their 5-year refresher training on manned models, to include scenarios with tethered and non-tethered loss of steeage and propulsion. When conducting simulator training, tanker companies are encouraged to include escort training. Tug companies are encouraged to coordinate with tanker company simulations.
2. **OPERATIONS:** Tug companies are strongly encouraged to have one other crew member, besides the boat operator, on the bridge of the escorting tug whenever it is tethered.
3. **SOC REVIEW:** During the annual review of the Harbor Safety Plan the continuing evolution of technology onboard escorted tank vessels and their required tugs will be evaluated.

Attachment 1: Applicable Federal and State Regulations

TANKER ESCORT

ATTACHMENT 1 - Applicable Federal and State Regulations

A. FEDERAL OPA 90 REQUIREMENTS:

TITLE 33 – NAVIGATION AND NAVIGABLE WATERS

PART 168 – ESCORT REQUIREMENTS FOR CERTAIN TANKERS

- 168.01 Purpose
- 168.05 Definitions
- 168.10 Responsibilities
- 168.20 Applicable Vessels
- 168.30 Applicable Cargoes
- 168.40 Applicable Waters and Number of Escort Vessels
- 168.50 Performance and Operational Requirements
- 168.60 Pre-escort Conference

Abstract: All single-hull tankers over 5,000 Gross Tons and laden with petroleum oil cargo are required to be escorted by at least two suitable escort tugs. These requirements apply to any petroleum oil listed in 46 CFR Table 30.25-1 as a pollution category I cargo. These requirements apply to the navigable waters in the U.S. east of a line connecting New Dungeness Light with Discovery Island Light and all points in the Puget Sound area north and south of these lights.

B. STATE OF WASHINGTON REQUIREMENTS:

- WAC 363-116-500 Tug Escort Requirements For All Tankers
- RCW 88.16.170 Oil Tankers - Intent and Purpose
- RCW 88.16.180 Oil Tankers - State Licensed Pilot Required
- RCW 88.16.190 Oil Tankers - Restricted Waters - Standard Safety Features Required - Exemptions

Abstract: Tug escort is required for all tankers of 40,000 DWT or greater when in a laden condition. The tug horsepower must equal or exceed 5 percent of the ship's deadweight tonnage. These requirements apply to all liquid cargoes, whether or not petroleum-based. These requirements apply to the navigable waters of Washington State east of a line extending from Discover Island Light south to New Dungeness Light. Laden tankers greater than 125,000 DWT are prohibited from navigating in these regulated waters.

C. 33 CFR Part 168 Federal Performance Requirements:

The escort vessels, acting singly or jointly in any combination as needed, and considering their applied force vectors on the tanker's hull, must be capable of:—

1. Towing the tanker at 4 knots in calm conditions, and holding it in steady position against a 45-knot headwind;
2. Holding the tanker on a steady course against a 35-degree locked rudder at a speed of 6 knots; and
3. Turning the tanker 90 degrees, assuming a free-swinging rudder and a speed of 6 knots, within the same distance (advance and transfer) that it could turn itself with a hard-over rudder.

TOWING VESSEL OPERATIONS

For the purpose of the Harbor Safety Plan, the Harbor Safety Committee notes that the American Waterways Operator's (AWO) Responsible Carrier Program (RCP) contains the standards of care that responsible towing vessel operators follow in the Puget Sound region.

The Responsible Carrier Program (RCP) has three principal parts –

- Management and administration
- Equipment and inspection
- Human factors

Each part reflects the role that each of these components plays in ensuring safe and efficient vessel operations. The program is intended to serve as a template for AWO member companies and other towing companies to use in developing company specific safety programs that are consistent with applicable law and regulation, that incorporate sound operating principles and practices not currently required by law or regulation, and that are practical and flexible enough to reflect a company's unique operational needs. The three sections of the program are meant to be used in conjunction with one another; the policies and procedures called for in the management and administration section, for example, should reflect the recommended principles and practices outlined in the equipment and inspection and human factors sections, as well as the variables of a company's trade, area of operations, size and organizational structure, and the like.

A. MANAGEMENT AND ADMINISTRATION

The management and administration section, the first section of the program, requires companies to look at nine principal aspects of their operations and to develop written company policies and procedures for each. These nine aspects are:

- Vessel operating policies/procedures
- Safety policy/procedures
- Environmental policy/procedures
- Incident reporting procedures
- Emergency response procedures
- Internal audit/review procedures
- Vendor safety
- Organization/levels of authority
- Personnel policies.

B. EQUIPMENT AND INSPECTION

The second section of the program contains guidelines for vessel equipment and inspection, and it's divided into two parts: one for inland towing vessels and one for

coastal towing vessels. In most respects, the two sets of guidelines are identical, but there are some differences that reflect the significant differences in the inland and coastal operating environments. This section of the program addresses six major areas:

- Hull,
- Machinery
- Firefighting and lifesaving equipment
- Navigation and communication equipment
- Rigging or towing gear
- Environmental controls

C. HUMAN FACTORS

The last section of the program deals with human factors: manning, watchstanding and work hours, and training. The program outlines a set of comprehensive criteria to be taken into account by companies in establishing safe manning levels for their vessels. It establishes maximum work hour limits for all towing vessel personnel. And, it focuses heavily on training, requiring that all vessel crewmembers receive initial and periodic refresher training in a specified list of subjects.

Training requirements are based on the position an individual holds aboard a towing vessel, not the Coast Guard license he or she happens to hold, and these requirements cover everyone, from the captain and mate to the engineer, tankermen, and deckhands -- both experienced and entry-level.

The practices and principles outlined in the RCP are, in large measure, based on principles of safe and sound operation that many companies in our industry have already voluntarily embraced. This program aims to build upon that foundation by extending those practices and principles throughout the industry as a whole.

UNDERKEEL CLEARANCE

Action Items:

- When underway, minimum clearance shall be 10% of vessel's draft or 3 feet, whichever is greater.
- When at anchor, the minimum clearance is 3 feet.
- The vessel is to remain always afloat on final approach to a berth, while at the berth and on its departure from a berth.

The above underkeel clearance standards shall be adhered to by all commercial vessels in Puget Sound. These standards of care are written with the understanding that certain vessels such as tugs with uninspected barges and commercial fishing vessels are required by the very nature of their business to operate with less than these minimum underkeel clearances when in specific locations and conditions. However, operating with the hull touching or resting on the bottom is no longer considered a prudent or appropriate practice.

While the above guideline is general in nature, it is noted that the determination of an appropriate minimum under-keel clearance for a specific vessel transiting a specific waterway must take into account many factors in addition to vessel draft and least depth, including but not limited to: vessel size, configuration, speed, trim, and list; the shape, size and hydrography of the waterway; and variations from predicted tidal levels.

APPENDIX 1 TO THE PUGET SOUND HARBOR SAFETY PLAN

Glossary of Terms

Captain of the Port (COTP)	The Coast Guard officer designated by the Commandant to command a Captain of the Port Zone as described in Part 3 of Title 33 Code of Federal Regulations.
Captain of the Port (COTP) Zone	A zone specified in Title 33 Code of Federal Regulations, Part 3 and, for coastal ports, the seaward extension of that zone to the outer boundary of the EEZ.
Cooperative Vessel Traffic Service (CVTS)	The 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 occurring in adjoining United States and Canadian waters.
District Commander	The Coast Guard officer designated by the Commandant of the U.S. Coast Guard to command a Coast Guard District as described in Part 3 of Title 33 Code of Federal Regulations.
Exclusive Economic Zone (EEZ)	The zone contiguous to the territorial seas of the United States, extending to a distance up to 200 nautical miles from the baseline from which the breadth of the territorial seas is measured.
Marine Transportation System (MTS)	38The U.S. Marine Transportation System (MTS) consists of waterways, ports and their inter-modal connections, vessels, vehicles, and system users, as well as federal maritime navigation systems. Specifically, it consists of: 25,000 miles of navigable channels; over 300 ports; 238 locks at 192 locations; Great Lakes; St. Lawrence Seaway; over 3,700 marine terminals; and numerous recreational marinas. Through 1400 designated inter-modal connections, it connects with over 174,000 miles of rail connecting all 48 contiguous States, as well as Canada and Mexico); over 45,000 miles of interstate highway (supported by over 115,000 miles of other roadways); and over 460,000 miles of pipelines.
Preparedness	The range of deliberate, critical tasks and activities necessary to build, sustain, and improve the operational capability to prevent, protect against, respond to, and recover from domestic incidents. Preparedness is a continuous process involving efforts at all levels of government and between government and private-sector and nongovernmental organizations to identify threats, determine vulnerabilities, and identify required resources.
Prevention	Actions taken to avoid an incident or to intervene to stop an incident from occurring. Prevention involves actions taken to protect lives and property. It involves applying intelligence and other information to a range of activities that may include such countermeasures as deterrence operations; heightened inspections; improved surveillance and security operations; investigations to determine the full nature and source of the threat; public health and agricultural surveillance and testing processes; immunizations, isolation, or quarantine; and, as appropriate, specific law enforcement operations aimed at deterring, preempting, interdicting, or disrupting illegal activity and apprehending potential perpetrators and bringing them to justice.

Response	Activities that address the short-term, direct effects of an incident. Response includes immediate actions to save lives, protect property, and meet basic human needs. Response also includes the execution of emergency operations plans and of incident mitigation activities designed to limit the loss of life, personal injury, property damage, and other unfavorable outcomes. As indicated by the situation, response activities include applying intelligence and other information to lessen the effects or consequences of an incident; increased security operations; continuing investigations into the nature and source of the threat; ongoing public health and agricultural surveillance and testing processes; immunizations, isolation, or quarantine; and specific law enforcement operations aimed at preempting, interdicting, or disrupting illegal activity, and apprehending actual perpetrators and bringing them to justice.
Sector Commander	Field level Coast Guard operational command. The senior Coast Guard official is the Sector Commander and, in most cases, this individual will also be the designated COTP.
Stakeholder	Those individuals or groups who can have an affect on, or be affected by, maritime operations and other events with the coastal marine environment.
Standard of Care (SOC)	Standards of Care are the procedures and practices, beyond regulatory requirements, that experienced and prudent maritime professionals follow to ensure safe, secure, efficient and environmentally responsible maritime operations. Formalized Standards of Care are “good marine practices” that are developed and published to provide a guide for maritime professionals to consider and incorporate into their decision making process. Standards of Care complement the laws and regulations and should they seem to conflict with law or regulation, the law or regulation is always superior.
State	Any state of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any possession of the United States. (As defined in section 2(14) of the Homeland Security Act of 2002, Public Law 107-296, 116 Stat. 2135, et seq. (2002).) For purposes of this Plan, we mean the State of Washington.
Tribe	Any Indian tribe, band, nation, or other organized group or community, including any Alaskan Native Village as defined in or established pursuant to the Alaskan Native Claims Settlement Act (85 Stat. 688) [43 U.S.C.A. and 1601 et seq.], that is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.
Vessel Response Plan	The oil spill response plan, to which the vessel is subject, as required by Federal and/or State regulations.
Vessel Traffic Service	The 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. In the Pacific Northwest, we have a Cooperative Vessel Traffic Service – see description above.

APPENDIX 2 TO THE PUGET SOUND HARBOR SAFETY PLAN

List of Acronyms

AC -- Area Committee
ACOE -- (United States) Army Corps of Engineers
AIS -- Automatic Identification System
AMSC -- Area Maritime Security Committee
APIS -- Advance Passenger Information System
ATB -- Articulated Tug Barge
ATBA -- Area to be Avoided
ATON -- Aids to Navigation
AWO -- American Waterways Operators
BTM -- Bridge Team Management
CBP -- (United States) Customs and Border Patrol
CCG -- Canadian Coast Guard
CDC -- Certain Dangerous Cargo
CFR -- Code of Federal Regulations
COLREGS -- Int'l Regulations for Avoiding Collisions at Sea (Rules of the Road)
COTP -- Captain of the Port
CVTS -- Cooperative Vessel Traffic Service
DOE -- (Washington State) Department of Ecology
DWT -- Deadweight Tons
ECDIS -- Electronic Chart Display and Information Systems
eNOAD -- Electronic Notice of Arrival/Departure System
ETA -- Estimated Time of Arrival
ETD -- Estimated Time of Departure
GT -- Gross Tons
HSP -- Harbor Safety Plan
ITB -- Integrated Tug Barge
ITU -- International Telecommunication Union
IMO -- International Maritime Organization
LNM -- Local Notice to Mariners
MARAD -- (United States) Maritime Administration
MARPOL -- International Convention for the Prevention of Pollution From Ships
MDA -- Maritime Domain Awareness
MMSI -- Maritime Mobile Service Identity
NOA -- Notice of Arrival (i.e., U.S. 96 hour Notice of Arrival)
NOD -- Notice of Departure
NOAA -- National Oceanic and Atmospheric Administration
NVMC -- National Vessel Movement Center
NVPZ -- Naval Vessel Protection Zone
OCIMF -- Oil Companies International Marine Forum Guidelines
OCNMS -- Olympic Coast National Marine Sanctuary

OPA -- Oil Pollution Act of 1990
OSRO -- Oil Spill Removal Organization
PAIR -- Pre-Arrival Information Report (i.e., Canadian 96 hour Pre-Arrival)
PIC -- Person in Charge
PSHSC -- Puget Sound Harbor Safety Committee
PSHSP -- Puget Sound Harbor Safety Plan
PSMFC -- Puget Sound Marine Firefighting Commission
PSP -- Puget Sound Pilots
PSVTS -- Puget Sound Vessel Traffic Service
RCP -- Responsible Carrier Program
RCW -- Revised Code of Washington (State)
RRT -- Regional Response Team
SLNM -- Special Local Notice to Mariners
SOC -- Standard Of Care
STBL -- Ship to be Lightered
SOLAS -- Safety of Life at Sea
STCW -- Standards for Training, Certification, and Watchkeeping for Seafarers
TSS -- Traffic Separation Scheme
USCG -- United States Coast Guard
VRP -- Vessel Response Plan
VTS -- Vessel Traffic Center
WAC -- (State of) Washington Administrative Code
WDFW -- Washington State Department of Fish and Wildlife
WDNR -- Washington Department of Natural Resources
WX -- Weather