

Lessons Learned from Vessel Fueling Spills

OVERVIEW

Washington State’s new oil transfer rules (Washington Administrative Code (WAC) 173-180 & 184) went into effect in stages between October 2006 and 2007. Since then, the Department of Ecology focused investigative work on oil spills occurring during regulated fuel oil transfers. Those subject to the oil transfer rules, as well as Washington’s 1994 safe bunkering (ship fueling) rules (WAC 317-40), received prevention recommendations from these investigations.

On the next page are Ecology’s recommendations to help prevent oil spills during fuel transfers. Some relate to spill cause; others to oil transfer procedures. Some relate to regulations; others recommend best practices.

WHY THIS MATTERS

When things go wrong it is important to share lessons learned in order to avoid repeating mistakes. This safety advisory bulletin provides tips garnered from spills that occurred while fueling vessels (boats and ships).

This information is for those who deliver fuel to vessels and those who operate vessels receiving fuel. Learning from spills will help Washington move towards its “zero oil spills” goal.

WEBSITE INFORMATION

<http://www.ecy.wa.gov/programs/spills/spills.html>

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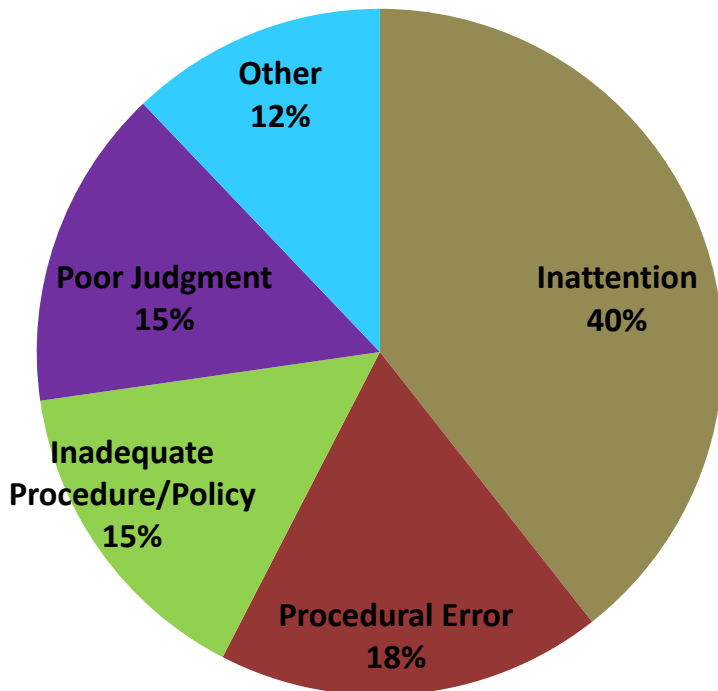
DISCLAIMER

This bulletin is provided to share lessons learned and does not replace requirements of federal or state law or regulation.

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Bunkering/Fueling Spills: Immediate Cause



Safety Advisory Bulletin 09-01

NOTIFYING AND WORKING WITH ECOLOGY AND THE U.S. COAST GUARD

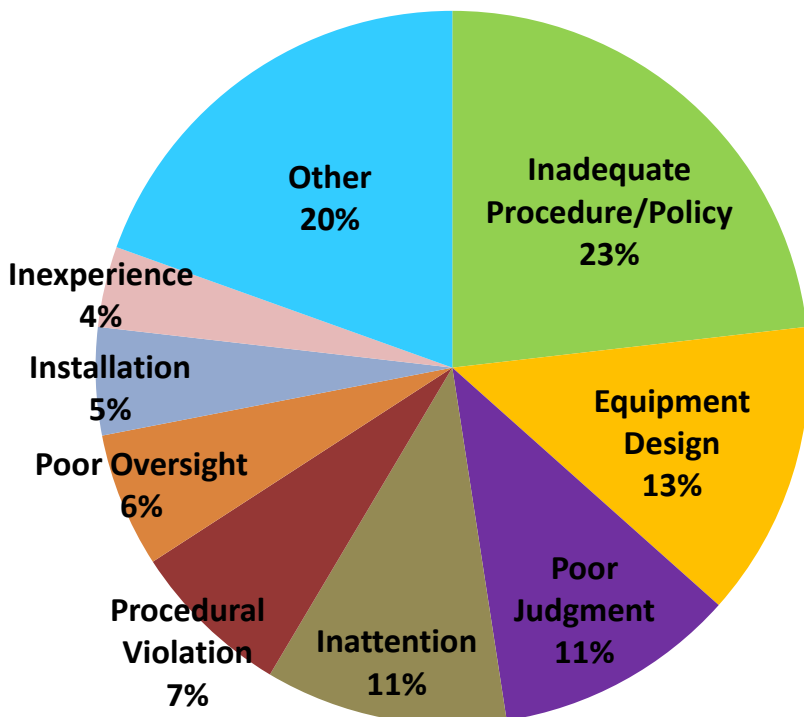
- Companies delivering oil should reliably report Advance Notice of Transfers (ANTs) to Ecology.
- Companies delivering oil should develop procedures to identify and correct missing or inaccurate ANTs as soon as possible.
- The person-in-charge (PIC) should notify the U.S. Coast Guard and Washington Emergency Management Division of any spill during an oil transfer, even if that person was not at fault.
- The PIC must activate their vessel or facility oil spill contingency plan quickly when they spill oil in Washington State.

- The PIC of a tank truck delivering oil should remain at the scene of a fueling operation from which a spill occurs until he or she receives approval to depart by the federal and state on-scene coordinator.
- The PIC should not restart a fueling operation after a spill to water until he or she receives approval from the federal and state on-scene coordinators.

TRAINING AND AWARENESS

- The PIC of a fueling operation should know about, and fully comply with, Washington’s rules for safe oil transfer (WAC 173-180 & 184; WAC 317-40).
- Personnel should understand the importance of getting enough rest and the dangers of working while tired (fatigued).
- The PIC of a vessel receiving fuel should have enough time to learn about (or re-learn) the vessel’s oil transfer procedures, the fuel piping system, and the status of the piping, valves, and fuel tanks before fueling.
- Vessel crewmembers should receive training as required by Washington’s rules for safe bunkering and be prepared to carry out their duties as part of a bunkering team.
- The receiving vessel PIC should ensure the fueling team understands the importance of closely watching the vents of fuel tanks, especially when those tanks are topped-off.
- The PIC should receive training on the use of the company’s operations and response manuals and be ready to do what the manuals say.

Bunkering/Fueling Spills: Contributing Factors



COMMUNICATION

- At the end of the transfer, when draining a fuel hose into a vessel's tank, the delivering and receiving PICs should work together to make sure fuel does not burp out through the tank vents.
- Declaration of Inspection forms should provide space for the initials of both the delivering and receiving PICs for each item on the form.
- A receiving vessel PIC should notify the delivering PIC of the vessel's total fuel capacity during the pre-transfer meeting, so the deliverer follows the correct sections of the oil transfer rules.
- Delivering and receiving PICs of fueling operations should carefully review and talk about the pre-loading plan.
- When an oil spill occurs, delivering and receiving PICs should use communication systems available to them (voice, radio, air horn) to notify all involved personnel right away.
- Vessels' engineering crews should keep detailed hand-over notes so that a vessel returned to service after a lay-up period (long period of no activity) has a maintenance and operation record (including fuel oil system operation) that a new crew can review.
- A delivering PIC should provide an air horn to the receiving vessel PIC during the pre-transfer meeting as a back up to radio and voice communication.

PROCEDURES

- Company policies and procedures should require PICs to consider any unplanned shutdown during fueling to be a possible emergency. If a PIC is unable to get more information safely and quickly about the reason for a shutdown from the person on the other side of the transfer, procedures should direct them to immediately ask for additional help.
- Operators of commercial vessels of less than 300 gross tons should use the Washington State rules for safe bunkering as a guide to improve the safety of fueling operations aboard their vessels, even though they are not required to do so.
- Personnel, including the PICs, should get time off for enough rest prior to fueling operations.
- Receiving vessel crewmembers should measure and record fuel tank levels at regular periods.
- A receiving vessel PIC should use tank level information to calculate and record the rate of oil transfer.



- A receiving vessel PIC should compare the calculated transfer rate to the planned rate and check out any unexpected differences right away.
- Mobile deliverers should require that tank truck drivers or dispatchers make sure that they have permission to deliver fuel to a vessel at a waterfront facility by contacting the owner, operator, or local authority responsible for the facility before the delivery.
- A copy of the operations and response manuals should be in each delivering tank truck for use by PICs.
- Fueling procedures should include the legal requirement for oil transfers, but also provide additional information to PICs specific to their operation.
- Fueling procedures should be in writing and updated when changes to the vessel's fueling system occur or when experience leads to better procedures.
- Vessel fueling procedures should:
 - Describe the duties of each person involved in fueling operations by position/title.
 - Assign a person, called a deck rover watch, specifically to watch the deck and vents for oil spills.
 - Show the location of every fuel oil tank vent, and describe the required containment for each.
 - Show the locations of scuppers/freeing ports and describe the method of plugging/blocking them.
 - State the level at which topping-off begins and the maximum fill level for each fuel tank.
 - State the maximum rates for safely filling and for topping-off each fuel tank.
- Describe special or unusual parts or behaviors of the fuel tanks or their fill and vent piping.
- Describe added steps needed to keep fueling safe when the vessel's trim or list is unusual.
- Contain a pre-loading plan that includes the items required by Washington's rules.
- Require that PICs complete all parts of the pre-loading plan before each fuel transfer.
- Require testing of all fuel tank high-level alarms before each fuel transfer.
- Require a check of the fuel oil piping and valve line-up before starting any fuel transfer.
- Describe procedures for regularly checking the fuel tank levels.
- Require fuel tank level checks at the start of transfer operations to make sure that fuel is only going into the tanks expected.
- Require fuel tank level checks after closing the valves of each filled tank to ensure that the fuel levels do not change.
- Prohibit more than one oil transfer at the same time (fueling and lube oil loading for example) unless the PICs use more people to make sure both transfers happen safely.

EQUIPMENT

- Identify "problem" fuel oil tanks prone to burps, overflows, or other difficulties for each vessel based on experience. The vessel operator should identify the cause of the problems and fix them.
- A company operating vessels should review the fuel oil system layout and valve locations aboard their vessels with their captains and engineers.

- If a fuel oil system review shows that the locations of fuel oil tank valves make their use difficult, consider changes to make the valves easier to reach.
- Tag-out any parts of a vessel's fuel oil system that are out of service for a short time through a formal lock-out/tag-out program.
- Parts of a vessel fuel system no longer used should be blocked-off (blanked-off) or removed.
- In order to prevent fuel overflows from spilling to water, companies operating tugboats and fishing vessels should develop ways to close-off completely freeing ports and scuppers, and any other large openings on their vessels' weather decks during fuel transfers.
- All fuel system valves, manifolds, and piping should be marked clearly with their use and the tanks that they serve. Maintain easy-to-read fuel system markings.
- Vessel fuel oil valves and manifolds should have enough lighting so that the PIC can see what they are for and if they are open or closed.
- When using sight glasses on a vessel's tanks to check fuel levels, consider having the topping-off and maximum safe fill levels clearly marked on the sight glass or the bulkhead next to it.
- Post an up-to-date line drawing of the fuel oil system at each of the vessel's fuel manifolds.
- Pre-booming a transfer operation greatly increases the amount of spilled oil that may be recovered (up to 80% more). A company operating vessels should consider pre-booming all transfer operations, including internal transfers, when it is safe and effective to do so.
- When fueling operations rely on a third party to supply oil spill response materials, a fuel deliverer's response plan should give information regarding the source of response materials and how to gain access to those materials in the event of a spill.
- Delivering facilities using alternative measures (measures used when the transfer is not pre-boomed) should have access to sufficient boom to surround the operation, and enough recovery equipment on site at every fuel oil transfer.

OVERSIGHT

- Companies should regularly monitor fuel transfers to ensure that PICs comply with fueling procedures and maximum tank levels.
- Chief engineers and officers should keep accurate Oil Record Books of vessels subject to MARPOL, ANNEX 1, and record all required oil-handling activities including oil spills.
- Vessel operators should audit Oil Record Books under the company Safety Management System.
- The vessel maintenance program should make sure that repairs and tests of fuel system equipment that could affect the safety of the ship and the marine environment are correct.
- Vessel operators should fully investigate any failure of a vessel's fuel oil system. Vessel operators with Safety Management Systems should conduct the review with the vessel's classification society and Safety Management System auditor.
- Fuel deliverers should keep their operations and response manuals up-to-date.

MORE SAFETY ADVISORY BULLETINS

- SAB 06-02:** Oil Transfer Rates (06-08-019)
- SAB 06-01:** Automatic Identification Systems (AIS) (06-08-010)
- SAB 00-01:** The Importance of Identifying and Addressing Root Causes of Equipment Malfunctions (00-08-015)
- SAB 97-01:** Deep Water Anchoring (00-08-004)
- SAB 96-01:** Shifting a Ship by Warping (00-08-003)
- SAB 94-03:** Piston Crown Maintenance (00-08-006)
- SAB 94-02:** Importance of Preventative Maintenance (00-08-007)
- SAB 94-01:** Potential Problems with Steam Turbine Throttle Controls (00-08-005)
- SAB 99-02:** Passage Planning for the Oregon and Washington Coasts: Special Considerations (99-256)
- SAB 99-01:** Traffic Separation Scheme and Puget Sound Vessel Traffic Service (99-253)
- SAB 98-01:** Shipboard Systems Modifications (98-252)

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