



Safety Advisory Bulletin 06-02

Oil Transfer Rates

Spill Prevention, Preparedness, and Response Program (Spills)

Ecology has investigated three recent oil spills that occurred during bunkering (ship fueling) operations. These spills shared common elements. In each case:

- The Person-in-Charge (PIC) of the transfer on the receiving ship was the Chief Engineer, and the ship was bunkering from a tank barge moored along side;
- The Declaration of Inspection (DOI) signed by the Chief Engineer contained a note indicating that the delivering barge would adjust the transfer rate at the direction of the receiving ship;
- The receiving vessel's PIC allowed the actual transfer rate to substantially exceed the planned transfer rate; and
- Fuel oil overflowed through a tank vent, filled fixed containment, and flowed overboard to the water.

In two of the cases:

- The tankerman aboard the barge received a specific request by the receiving ship's personnel to increase the transfer rate; and
- The Chief Engineer was new to the ship and had not previously bunkered the ship.

The following table shows the receiving vessel's planned transfer rate, the actual transfer rate calculated post-spill, and the percent by which the actual transfer rate exceeded the planned rate.

Planned Rate	Actual Rate	Percent by which Actual Rate exceeded Planned Rate
300 cubic meters per hour	472 cubic meters per hour	57%
250 cubic meters per hour	376 cubic meters per hour	50%
180 metric tonnes per hour	284 metric tonnes per hour	58%

Fortunately, monitoring of the deck (which is required by Washington's Procedures for Safe Bunkering) and quick action to shut down the transfer once the overflow was noted limited the size of the spills.

Significant Lessons Learned

- Fuel tanks must be sounded at regular intervals appropriate to the bunker operation and the stage of bunkering taking place (for example: starting, steady flow and topping-off). The soundings should be recorded and sounding records retained in the bunkering file.
- The receiving vessel's PIC must frequently calculate and record the rate of transfer based on the soundings. Recorded transfer rates should be retained in the bunkering file.
- The receiving vessel's PIC should compare the calculated transfer rate to the planned rate and, if the transfer rate is higher than planned, should contact the delivering vessel or facility immediately to reduce it.

- The maximum transfer rate to be achieved during particular stages of bunkering (for example: starting, steady flow and topping-off) should be carefully discussed by the PICs during the pre-transfer conference.
- The receiving vessel's PIC should prepare a pre-loading plan for bunkering that includes a planned rate of transfer. The planned rate should comply with company standards, be at or below the maximum rate allowable for the tanks to be filled, and give consideration to the time it takes for ship's personnel to detect and correct any problems encountered.
- The planned transfer rate should not be exceeded without careful consideration of the potential impacts to safety, increased vigilance, increased monitoring and increased communication. A PIC of a receiving vessel choosing exceed the planned rate bears an increased responsibility to ensure the transfer operation remains safe and free of spills.
- Should a PIC of a receiving vessel or delivering vessel or facility be relieved during a bunkering operation, the PIC should conduct a hand-over briefing and communicate the following to relieving personnel about the transfer rate:
 - the planned maximum transfer rate;
 - the current calculated transfer rate;
 - any planned changes to the transfer rate;
 - the expectation for monitoring and control of the transfer rate; and
 - any procedures for communicating the transfer rate agreed to with the other PIC involved in the operation.
- A relieving PIC should review and sign the DOI prior to taking over during a bunkering operation.
- A relieving PIC should personally verify the transfer rate prior to taking over during a bunkering operation.
- Should a PIC of a delivering vessel or facility discover through the sounding of tanks or other means that the transfer rate exceeds the planned transfer rate, that PIC should notify the receiving vessel's PIC and slow the transfer rate.
- The scheduling of a bunkering operation should allow ample time to complete the operation at a safe transfer rate. Time constraints should not drive the need for an increased transfer rate.
- Company policies and procedures for bunkering should clearly place safety and environmental protection over commercial considerations in order of precedence.

For more information, contact:

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Washington State Procedures for Safe Bunkering
[\[http://www.ecy.wa.gov/pubs/wac31740.pdf\]](http://www.ecy.wa.gov/pubs/wac31740.pdf)