

Focus on: Vessel loss of propulsion incidents



A tug boat and an oil tanker practice emergency assistance maneuvers. The goal of this maneuver is for the tug to stop the forward movement of the oil tanker. This maneuver would be used if the oil tanker had a loss of propulsion.

WHY IT MATTERS

In 2016, there were about 7,267 entering transits of regulated cargo, passenger, and tank vessels into Washington and 49 LOP incidents. This equates to one LOP about every 150 entering transits. While the number of LOPs may appear to be small, each one had the potential to trigger events that could lead to an oil spill.

Contact information

Department of Ecology
Spill Prevention, Preparedness,
and Response Program
PO Box 47600
Olympia, WA 98504
360-407-7455
ecology.wa.gov/SpillsProgram

The Washington Department of Ecology Spills Program collects information on loss of propulsion (LOP) incidents that have the potential to impact Washington waters. An LOP is the failure of the propulsion system to propel the vessel as designed. The shutdown of a vessel's propulsion system to complete repairs while underway is also considered a loss of propulsion. From January 2012 through May 2017, there were 169 instances where a covered¹ vessel reported an LOP.

Reviewing loss of propulsion incidents

After receiving notice of an LOP, Ecology's Spills Program makes inquiries and collects information to determine the location, vessel type, impacted vessel system(s), and the underlying issue(s) associated with the propulsion loss. Of the 169 LOPs reviewed between 2012 and 2017, 99 were total LOPs (no propulsion) and 70 were partial LOPs (reduction in propulsion).

Future loss of propulsion tracking

We will continue to document and periodically update the underlying issues and vessel systems associated with the propulsion losses in Washington waters. Our goal is to increase awareness of these events within the local maritime community and to work together to develop and share recommendations to prevent future incidents.

¹ Covered vessels include tank vessels, cargo vessels >300GT (including fishing and freight vessels), and passenger vessel >300GT with a fuel capacity of at least 6,000 gallons carrying passengers for compensation. A full definition can be found in WAC 173-182-030.

Underlying issues in loss of propulsion incidents

The LOPs we documented did not typically include enough information to reliably determine incident “causes” or “contributing factors.” For this analysis, we categorized underlying issues by five broad categories.

Operation and maintenance (54 LOPs): The information pointed to a failure based on how the system was maintained, installed, repaired, or operated. Of these 54 incidents, 23 were associated with the main engine fuel system.

Equipment failure (29 LOPs): The information pointed to a specific physical failure of an engineering component that could not be attributed to a deficiency of operation or maintenance. Of these 29 LOPs, six were associated with the main engine fuel system.

Procedural error (16 LOPs): A specific procedural mistake on the part of the crew was cited as a problem.

Equipment design (1 LOP): System design was cited as a problem.

Unknown/not determined (69 LOPs): Could not be discerned from the information available.

Summary

Trends in LOP incidents were observed in terms of the impacted vessel system(s) and the underlying issue(s): 45 LOPs involved the main engine fuel system, and 54 LOPs were associated with an underlying operations and maintenance issue. Vessel location did not appear to significantly influence LOP occurrence.

Preventing loss of propulsion incidents

Recommendations for LOP prevention are available in the Propulsion Loss Prevention section of the [Puget Sound Harbor Safety Plan](#). The Puget Sound Harbor Safety Plan also includes prevention recommendations related to enhanced maintenance procedures and pre-arrival tests and recommended actions to take in the event of a propulsion or steering loss. The [Lower Columbia River Harbor Safety Plan](#) contains a list of immediate recommended actions following a reduction of propulsion or steering.

Additional recommendations for LOP prevention can be found in the USCG Marine Safety Alert 13-15 on Ultra Low Sulfur Fuel Oil & Compliance.

Location of LOP incidents (169 incidents between January 2012 and May 2017):

- 40% in the Columbia River
- 46% in Puget Sound and the Strait of Juan de Fuca
- 14% offshore

Type of vessel involved in LOP (169 incidents between 2012 and May 2017):

- 59% bulkers and other noncontainer dry cargo ships not listed below
- 18% containerships
- 8% roll-on/roll-off vessels
- 7% tanks ships and barges
- 8% other vessels (fishing, ferries, tug, passenger, etc.)

Vessel systems impacted by LOP

Of the 138 cases where an impacted vessel system could be identified in the data (there were 31 unknowns), the most frequently impacted system was the main engine fuel system (45 LOPs). Main engine fuel system problems were often associated with fuel injectors (19 of 45). Other frequently impacted vessel systems identified were:

- Main engine control (15)
- Main engine (13)
- Main engine start (10)
- Main engine exhaust (10)
- Main engine lubrication (8)
- Main engine cooling (6)

Special accommodations

To request ADA accommodation, including materials in a format for the visually impaired, call Ecology at 360-407-7211 or visit <https://ecology.wa.gov/accessibility>. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at 877-833-6341.