

Vessel Loss of Propulsion Incidents and Prevention Tips

Spill Prevention, Preparedness, and Response

The Washington State Department of Ecology collects information on commercial vessel loss of propulsion incidents in local waters. This focus sheet looks at the 227 loss of propulsion incidents reported by deep draft vessels locally between 2021 and 2025.

Reducing oil spill risk

We are committed to helping vessel operators and mariners prevent oil spills. We hope this summary of recent fuel-related propulsion issues gives you a starting point for discussions on how to ensure your vessel's fuel system continues to be well-functioning, and that loss of propulsion events are minimized.

How often do vessels lose propulsion?

Individual mariners may only experience a handful over the course of a career.

In Washington waters (including the Strait of Juan de Fuca, the Puget Sound, Grays Harbor, and the Columbia River), we see around 1 loss of propulsion out of every 126 transits.

Local loss of propulsion rates shift depending on which type of vessel you are sailing on. Bulk carriers and other general cargo vessels experienced the highest frequency of loss of propulsion per transit.

Vessel Type	Average rate of LOP per transit
Bulker/General Cargo	1 in 55 transits
Container	1 in 225 transits
Vehicle Carrier	1 in 244 transits
Tank Ship	1 in 322 transits
Cruise Ship	1 in 1,277 transits

Table 1: Average transits per loss of propulsion incident (2021-2025)

Fuel systems and loss of propulsion

Vessels most often cited their fuel system as the cause of loss of propulsion (32 percent). Fuel system issues can be broken down into fuel contamination, fuel injection, and fuel oil control system issues.

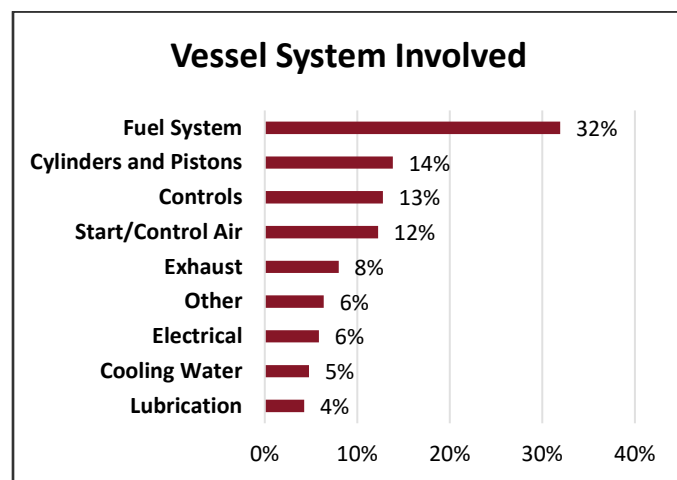


Figure 1: Primary system involved in recent loss of propulsion incidents in local waters (2021-2025).

Underlying causes of fuel system issues that caused local losses of propulsion

We reviewed the specific fuel related causes for reported losses of propulsion and found they related to contamination, delivery and injection issues, electronic control system issues, and other human factor related errors.

Fuel contamination issues

Fuel contamination was a regularly cited issue in our review of causal factors. Vessels reported:

- water in fuel oil service tanks
- bacterial growth or other fuel contamination clogging filters
- sludge released during fuel changeover
- suspected fuel contamination causing fuel oil pump and injector damage

Fuel delivery and injection issues

Injection related failures were another recurring cause of propulsion loss, often stemming from mechanical wear or sticking within the fuel delivery train. Reported issues include:

- excessive leaking through o-rings and seals
- stuck fuel rack actuator
- worn or scored plungers and barrels
- stuck puncture valves and spindle guides
- seized injector

Electronic control system issues

Faults in electronically controlled fuel-delivery components also contributed to propulsion failures. Vessels cited the following:

- leaking injection control units
- damaged cable on fuel injection valve actuator (FIVA) feedback sensor
- loss of electrical power to fuel injector

Human factor and other issues

Human factors and procedural errors also contributed to several propulsion issues. Some examples include:

- mistakenly activated quick closing valve
- malfunction of mechanical components of quick closing valves

Next steps

We will continue to collect information associated with the propulsion losses in Washington waters and produce summaries like this one.

PREVENTING FUEL SYSTEM RELATED LOSS OF PROPULSION

- Establish a fuel management system for effective settling, draining, purifying, and filtering.
- Ensure filters are in good working order.
- Closely monitor fuel oil tank levels and verify tank level indicator accuracy.
- Ensure sufficient fuel viscosity and fuel oil delivery pressure.

Figure 2: Suggested action steps to ensure a well-functioning fuel system based on causes of recent loss of propulsion incidents in local waters.

Our goal is to increase awareness of these events and to work with the maritime community to develop recommendations for the prevention of future incidents.

We look forward to your feedback. Please reach out to us with any questions or comments.

Loss of propulsion prevention resources

- [Focus on: Vessel loss of propulsion incidents \(December 2018\).](#)
- [Puget Sound Harbor Safety Plan Propulsion Loss Prevention Standard of Care](#)
- [Lower Columbia River Harbor Safety Plan Incident Management Guidelines](#)
- [US Coast Guard Marine Safety Alert 13-15 regarding ULSFO](#)
- [CG Safety Alert 01-11, Quick-Closing Valves, 31Jan2011](#)



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