UNITED STATES COAST GUARD
U.S. Department of Homeland Security

MARINE SAFETY ALERT

Inspections & Compliance Directorate

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Safety Alert 20-25, CH1

RISK OF PROPULSION LOSS FROM MATERIAL FAILURE OF MAIN ENGINE EXHAUST GAS RECIRCULATION COOLER WELD

In response to valuable feedback received from maritime industry professionals following the publication of Marine Safety Alert 20-25, *Risk of Propulsion Loss from Material Failure of Main Engine Exhaust Gas Recirculation Cooling Weld*, the Coast Guard has reviewed and updated the recommended actions within this Alert. These revisions are intended to enhance the practicality and timeliness of the guidance, thereby increasing the likelihood that vessel operators can effectively implement the recommended safety measures. The Coast Guard remains committed to working collaboratively with industry stakeholders to promote safe and reliable vessel operations.

A Coast Guard inspected dredging vessel suffered a loss of propulsion on the starboard main diesel engine and subsequently required a tow into port. The subsequent investigation revealed that the engine's exhaust gas recirculation (EGR) cooler was cracked and leaking, which led to a high jacket water temperature alarm and an eventual shutdown of the starboard main engine. Coast Guard Marine Investigators traced the cause to a weld seam crack on the corner of the cooler belonging to a Wabtec Environmental Protection Agency (EPA) Tier 4/International Maritime Organization (IMO) Tier III Marine Engine. After reviewing the vessel's service history, Marine Investigators discovered that on six separate occasions over the previous two years, the vessel's Wabtec engine EGR cooler had failed due to a weld seam crack. Each failed cooler was well below its designated overhaul interval.

EGR cooler with location of weld failure indicated

Close-up of cracked weld

Through further investigation, it was determined that Wabtec Corporation was aware of this problem and later issued a service notification (dated December 2024) to alert their Channel Partners and dealers. The service notification was not issued directly to Wabtec's customers and end-users.

Because of the safety issues that may arise in the event of engine failure, the Coast Guard **strongly recommends** owners and operators of vessels

using Wabtec EPA Tier 4/IMO Tier III Marine Engines to:

- Closely monitor the condensate drain tank for the presence of cooling water, antifreeze, or other water treatment chemicals during engine operations, especially prior to entering or leaving port. The presence of cooling water at the condensate drains can be indicative of EGR cooler weld failures.

- Closely monitor the level of cooling water in engine expansion tanks during periods of both heavy load and low loads.

- Regularly inspect and clean the EGR cooler condensate drain hose and tubing.

- Ensure the inspection, servicing, and monitoring of EGR coolers and associated condensation drain tank are included in the vessel's Safety Management System or preventative maintenance program as applicable.

These recommendations are in place until Wabtec is able to develop a permanent solution to rectify the issue.

If a failure is found, or if the system experiences unusual or repeated high-temperature or low-pressure alarms, the Wabtec Channel Partner or the dealership where the system was purchased can be contacted for further guidance.

Through its Channel Partners and dealerships, Wabtec provided the following guidance to customers and end users:

- Make sure the cooling system water circuit pressures are set up correctly for the vessel's expansion tank height.

- Ensure off-engine piping is designed to avoid air pockets that could later enter the water side of the EGR cooler operation. These pockets can cause localized overheating that won't show up in water pressure readings.

- Always bleed air from the system after any work that requires draining coolant from the engine.

- Use proper cooling water treatment and corrosion inhibitors. Poor water quality can cause mineral buildup on heat transfer surfaces, reducing cooling efficiency.

- Watch for sudden drops or slow changes in EGR cooler water inlet pressure or engine water inlet pressure. Unusual pressure changes could indicate a leak allowing exhaust manifold pressure to enter the water side of the EGR cooler.

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