



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

FINDINGS OF CONCERN

Office of Investigations and Casualty Analysis

March 22, 2023
Washington, DC

Findings of Concern 008-23

PACKLESS/DRIPLESS SHAFT SEAL MAINTENANCE

Purpose. The U.S. Coast Guard issues findings of concern to disseminate information related to unsafe conditions that were identified as causal factors in a casualty and could contribute to future incidents. Findings of concern are intended to educate the public, state, or local agencies about the conditions discovered so they may address the findings with an appropriate voluntary action or highlight existing applicable company policies or state/local regulations.

The Incident. Recently, a small passenger vessel experienced rapid flooding through its shaft seal after the seal's collar backed away from the mounting flange. A potential tragedy was averted in this instance because the vessel, which had passengers onboard, had just pulled away from the dock and was able to return within minutes after the bilge alarms sounded. In this short amount of time, the vessel's engine compartment had accumulated two to three feet of water.

Contributing Factors and Analysis. The vessel shaft seal's collar had backed away because its set screws had been improperly re-installed during routine maintenance. This allowed water intrusion via the shaft seal.

Findings of Concern. Coast Guard investigators have identified the following measures to mitigate the risks associated with the contributing factors identified above:

- Vessel owners and operators should consult the manufacturer's manual, in addition to contacting the manufacturer, prior to performing maintenance on a vessel's shaft seal. Most shaft seal manufacturers have web sites that include installation and maintenance instructions and videos.
- Vessel owners and operators should keep in mind that some of the most commonly used seals require new set screws and thread sealant for the screws *every time* the collar is removed.
- Vessel owners and operators should be aware that some configurations require two set screws per threaded hole to create the locking effect. In this arrangement, screws are tightened against the shaft. Additional screws (one on top of the other) are tightened in place to create the "locking" effect.

Closing. These findings of concern are provided for informational purpose only and do not relieve any domestic or international safety, operational, or material requirements. For any questions or comments please contact the Office of Investigations and Casualty Analysis by email at HQS-SMB-CG-INV@uscg.mil.