



FINDINGS OF CONCERN

Office of Investigations and Casualty Analysis

February 26, 2024
Washington, DC

Findings of Concern 003-24

WATERTIGHT ENVELOPES AND OPEN PILOT DOORS

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. In the early morning hours of an outbound departure, a roll-on/roll-off (RO-RO) vessel departed port loaded with 4,200 vehicles on board with an open pilot door. While underway as the vessel turned to starboard, the rudder became non-responsive to helm commands given by the embarked Pilot and applied by the helmsman. The vessel unexpectedly heeled to port as the rudder and propeller came out of the water, and the bridge team was unable to correct for the heeling. The vessel began to take on water and experienced progressive downflooding almost immediately after the initial heel. As the downflooding occurred, the sustained heel passed 60 degrees and the vessel capsized within minutes. As the vessel heeled, the open pilot door allowed a large volume of water into the vessel through the opening, a 2 x 2 meter opening, which exacerbated the heel and capsized. Crewmembers became trapped in the engine room of the vessel by the ingress of water through their only available means of escape, which flooded due to the open pilot door. With the pilot door closed, the ingress of water would have been significantly reduced, allowing more time for crewmembers to respond to the incident and prepare to abandon ship rather than trapping multiple crewmembers in the engine room. The trapped crewmembers waited more than 72 hours to be located and rescued from the vessel.

Contributing Factors and Analysis. The vessel departed port on numerous occasions with the pilot door open. This is a common practice for RO-RO vessels while in or outbound from port. Safety of Life at Sea (SOLAS) regulation II-1/22 gives some discretion to Masters to open watertight doors during operations; however, these watertight doors should be closed as soon as the door is not in use. This is especially true for doors that are part of the exterior watertight envelope of the vessel.

Devastating downflooding from the open pilot door would have continued unabated if the vessel had not eventually grounded as it capsized. If the incident had occurred in deeper water, the downflooding from the pilot door would have likely led to the loss of the entrapped crewmembers.

Findings of Concern. The Coast Guard has identified the following mitigation tactics that owners and operators of RO-RO vessels can take to avoid this risk:

- Discontinue the practice of leaving the pilot door open for extended periods.



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

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- Maintain the watertight envelope of the vessel until an opening is necessary for operations and then resecure promptly.
- Review company policies on the opening and closing of pilot doors and other watertight doors with vessel crewmembers.

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 (CG-INV) by email at HQS-SMB-CG-INV@uscg.mil.