



# UNITED STATES COAST GUARD

U.S. Department of Homeland Security

## **MARINE SAFETY ALERT**

Assistant Commandant for Marine Safety, Security and Stewardship

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Alert 1-08

### **Maintaining Vessel Watertight Integrity**

This Safety Alert addresses two issues: watertight integrity and high level bilge alarms.

Recently a marine casualty involving a fishing vessel in the Bering Sea resulted in multiple fatalities and complete loss of the vessel. A Marine Board of Investigation is currently examining the various circumstances surrounding the casualty. Although the investigation is not complete, testimony indicates the flooding of the vessel may have been exacerbated due to open or leaking watertight doors and other compartmental deficiencies which impacted the vessel's overall watertight integrity.

As a result of this and other similar casualties, the U. S. Coast Guard **strongly recommends vessel owners and operators:**

#### **WATERTIGHT INTEGRITY**

Ensure all watertight decks and bulkheads are inspected periodically to verify that there are no unprotected openings or improper penetrations that will allow progressive flooding and that closure devices (e.g. watertight doors, duct closures, etc.) are in place and in working order.

Ensure all crewmembers are familiar with the locations of the watertight doors (WTDs) and weather tight closures throughout their vessels. Knowing the locations of such WTDs and weather tight closures should be part of the crewmember vessel familiarization process.

Ensure WTDs and hatches are closed while at sea and as otherwise specified in the stability guidance provided to the master or individual in charge. The importance of keeping WTDs and hatches closed should be emphasized on a regular basis (e.g. at safety meetings). WTDs and hatches should be opened only briefly to allow passage and labeled appropriately to remind crewmembers to close them. If they must remain open to permit work, WTDs and hatches should be attended at all times so that they can immediately be closed. Any WTDs permitted to be open while the vessel is underway should be secured during drills to ensure they work properly.

Implement a WTD inspection program to ensure each WTD is regularly inspected and properly maintained. As part of the inspection of each WTD, the following should be examined: straightness of the knife edge; the door assembly for twisting or warp-age; evidence of loose, missing seized or damaged components; permanent set in gasket material, cracks in the gasket; gaps at gasket joints; paint, rust, or other foreign material on gaskets, knife-edges and working parts; binding and difficult operations; and loose or excessively tight dogs. Rotating spindles of the dog, handles and hinges, and other points of friction should be lubricated to prevent seizing and allow proper closure. If fitted, the spindle packing should also be examined.

Ensure watertight hatches, dogged manholes, bolted manhole covers, and access plates are given similar examinations, focusing on the sealing surfaces and the method by which the hatch is secured. Gasket materials should be replaced whenever they are found insufficient. Regardless of the type of hatch or access, every component that secures the device, such as dogs, wing nuts, or bolts should be inspected, lubricated and free, and repaired or replaced as necessary to ensure they operate properly. As with watertight doors, hatches and accesses should be labeled to indicate they remain closed while underway. Most importantly, all securing devices must be used when the hatch or access is closed. Improper closure of a hatch will not prevent flooding.

Ensure compartments and external hull structures fitted with ventilation ducts that have hinged covers with gaskets, hinges, sealing surfaces and securing mechanisms are regularly inspected and properly maintained (see above for guidance).

Ensure electrical cables and conduits, piping runs, remote valve actuators, and other components that penetrate watertight bulkheads, decks, and compartments are inspected frequently and properly maintained. Each may have a unique sealing method involving glands with packing assemblies, penetration seals, or other methods. Frequent inspection and proper maintenance of these various fittings and assemblies will assist in minimizing the possibility of progressive flooding.

## BILGE AND HIGH WATER ALARMS

Ensure water accumulation is minimized and all spaces are kept dry unless permitted by the stability instructions provided to the master or individual in charge.

Ensure bilge high level alarms are arranged to provide the earliest warnings of abnormal accumulation. The high level bilge alarms should be set as low as possible to the deck or bilge well and positioned along the centermost area of the compartment or in a location at which the fluids will gravitate to first. In areas where bilge water routinely accumulates, the bilge high level alarms should be placed just above the point where under normal working conditions the accumulation would be pumped to a holding tank, overboard, or through an oily water separation system if required. Alarms may be fitted with short time delays to prevent nuisance alarms caused by the rolling and pitching of the vessel.

Ensure all crewmembers understand the importance of minimizing water in the bilges.

Provide the funding, labor, spare parts, and vessel availability necessary to ensure leakages stemming from machinery, equipment and other components are kept to a minimum at all times in accordance with good marine practice.

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