



United States Coast Guard

Marine Safety Alert

Assistant Commandant for Prevention

Department of Homeland Security

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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, significant safety issues associated with the progressive flooding of the vessel have been identified. 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 recent incident and due to other related recent casualties, the U. S. Coast Guard **strongly recommends vessel owners and operators to:**

WATERTIGHT INTEGRITY

Ensure all watertight decks and bulkheads are inspected periodically to ensure that there are no unprotected openings or improper penetrations that will allow progressive flooding and to verify 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 closure should be part of the crewmember vessel familiarization process.

Ensure WTDs are kept shut in accordance with the vessel's stability letter or booklet or as directed by the vessel's master (if closure and compartment segregation requirements are not documented) when the vessel is sea. The importance of keeping WTDs closed for specific areas of the vessel should be emphasized on a regular basis (e.g. at safety meetings). WTDs should be labeled appropriately to remind crewmembers to close them. WTDs not normally closed and 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 include proper inspection and maintenance. 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, gasket cracks, gaps at gasket joints; paint, rust, or other foreign material on gaskets, knife-edges and working parts; binding and difficult operations, 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.



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Watertight hatches, dogged manholes, bolted manhole covers, or access plates should be given similar examinations, focusing on the sealing surfaces and the method in 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 which secures the device, such as dogs, wing nuts, or bolts should be inspected, lubricated and free, and repaired or replaced as necessary. As with watertight doors, certain hatches and accesses should be properly labeled to indicate closure 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.

Some compartments and external hull structures may be fitted with ventilation ducts that have hinged covers that require similar maintenance of the gasket, hinges, sealing surfaces and securing mechanisms. Electrical cables and conduits, piping runs, remote valve actuators, and other components may penetrate watertight bulkheads, decks, and compartments. 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 progressive flooding into other spaces.

BILGE ALARMS

Ensure Bilge High Level Alarms are arranged to provide the earliest warnings of abnormal accumulation.

Under normal conditions for compartments which typically have no water ingress or accumulation, 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, and above the level an installed automatic bilge pump would activate. This would ensure alarms floats are not installed so low as to create nuisance alarms or so high they alarm too late.

In other areas of a vessel, such as machinery spaces where bilge ingress and accumulation routinely occur, the bilge high level alarms should be placed just above the "normal" highest bilge level carried by the vessel. The normal highest bilge level carried by the vessel should be considered as the height of bilges where under normal working conditions the accumulation would be pumped to a holding tank, overboard, or through an oily water separation system if required. As in the previous paragraph, the alarm should be positioned along the centermost area of the compartment or in a location(s) at which the fluids will gravitate to first. Alarms may be fitted with short time delays to prevent nuisance alarms caused by the rolling and pitching of the vessel.

Ensure bilge accumulation is kept to a minimum at all times. Stability letters and instructions are generally based on keeping bilges dry. Owners and operators should ensure appropriate crewmembers understand this, and remove bilge accumulation whenever it exceeds the normal



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working accumulation. The high bilge alarm should not be used as the indicator that the bilge accumulation must be removed.

Owners and operators should also provide various resources, such as funding, labor, spare parts, and schedule flexibility to ensure leakages stemming from machinery, equipment and components are kept to a minimum at all times in accordance with good marine practice.

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