

MARINE GUIDANCE NOTE

MGN165 Amendment 1 (F) FISHING VESSELS: Risk of Flooding

Notice to all Designers, Builders, Certifying Authorities, Classification Societies, Agents, Brokers, Owners, Employers, Skippers and Crew of Fishing Vessels.

This notice should be read with the Fishing Vessel (Code of Practice) Regulations 2017 No. 943, MSN1871 (F) The Code of Practice for the Safety of Fishing Vessels of less than 15m Length Overall, MSN1872 (F) The Code of Safe Working Practice for the construction and use of Fishing Vessels of 15m Length Overall to less than 24m Registered Length, MGN570 Fishing Vessels: Emergency Drills and MGN571 Fishing Vessels – Prevention of Man Overboard.

Summary

This notice:

- provides guidance on bilge systems, during construction and operation, to help reduce the number of vessels and lives lost as a result of flooding;
- preventative maintenance around all aspects of the vessel integrity and pumping arrangements is critical against the risk of flooding
- recommends owners and skippers to consider using additional or alternative equipment, such as salvage pumps, propeller shaft-mounted pumps and secondary bilge alarms, to reduce the risk of catastrophic flooding;
- provides guidance on the actions to take in the event of flooding.

1. Introduction

- 1.1 MAIB investigations into fishing vessel losses continue to show flooding as the primary cause. Between 2016 and 2023, 79 vessels were involved in flooding or foundering incidents. Of these, 24 vessels were lost.
- 1.2 In addition to the risks of water causing the vessel to sink as it loses buoyancy, if water gets into a vessel and cannot escape, this can cause free surface effect. The water will move from one side to the other and cause the vessel to heel and eventually capsize, which can occur very rapidly. Water may also raise the centre of gravity. In addition, it will reduce the freeboard and increase the chances of more water getting on deck, leading to a situation that may get out of control.
- 1.3 Downflooding is also a key cause of vessel losses and make it unlikely the vessel can be saved. To prevent this watertight doors, hatches and windows, and other closing devices must be maintained in good working order and you must ensure all watertight and weathertight doors are closed when not in use;
- 1.4 Flooding is preventable, but if not prevented, in most cases can be controlled. If discovered early, leaking pipes can be isolated and the flooding controlled by pumping out the affected space. Flooding can be rapid and late discovery leaves no time to treat the cause. An <u>efficient bilge alarm can be critical in</u> <u>providing early warning of flooding.</u>
- 1.5 No alarm or pumping system, however efficient, is fully reliable on its own. Good practice requires regular checks and function tests of bilge alarms and pumps, together with regular checks of hull and pipework to prevent potential leaks or failures developing.

2. REDUCING THE RISK – DURING CONSTRUCTION AND REFITS

2.1 General

• Any modifications to a vessel shall meet the relevant Construction and Outfit Standards or Standards or a Recognised Organisation appropriate to the length of the vessel.

2.2 Bulkheads/Openings

- Ensure that the main bulkheads are as watertight as practicable, to prevent (or at least delay) a flood from spreading to other compartments;
- If the vessel is leaning to one side, for example whilst bringing catch on board, ensure that water openings are not underwater at that angle of heel;
- Be aware of compartments which may be at risk of water spreading to them;
- DO NOT make additional penetrations through main bulkheads unless absolutely necessary;
- Clearly label ("TO BE KEPT CLOSED AT SEA") all doors which contribute to the watertight integrity of the vessel.

2.3 Sea Valves/Pipework

- Try to keep the number of sea inlet valves to a minimum;
- Valves and fittings should be manufactured from a suitable¹ material.
- Avoid unnecessary bends in sea water pipework;
- Position sea valves where they can be easily and quickly closed. Fit extended spindles if necessary, to ensure that sea intake valves can be closed without having to remove floor plates;
- Ensure everyone knows location of all sea valves

¹ * "Suitable" means a ductile and corrosion resistant material e.g. bronze, gunmetal, stainless steel, alphabrasses (containing 70% copper or more and effectively inhibited from de-zincification).

- Develop an at least monthly regime to function test and grease all overboard valves
- Fit clear labels to identify sea valves;
- DO NOT fit flexible sections of piping in seawater lines unless designed and fitted to withstand vibration. Such sections should be made from reinforced neoprene rubber and secured with stainless steel clips (at least two at each end). The date of manufacture should be clearly marked to identify renewal dates in accordance with the manufacturers' instructions (typically every 5 years).

2.4 Bilge Alarms

• Position floats or level sensors to bilge alarm systems in accessible positions but where they cannot be damaged and low enough to provide early warning of flooding.

2.5 Bilge Valves/Strainers

- Fit bilge valves so they can easily be reached in an emergency;
- Fit clear labels to identify bilge valves;
- Fit and position all bilge strainers (mud boxes) in the engine room, so they can be cleaned easily;
- Fit grids over the fish hold slush well or some other form of coarse strainer;
- Fit a bilge isolating valve in the engine room for the fish hold, to allow cleaning of the strainer even if the hold is flooded.

2.6 Bilge Lines

• Avoid unnecessary bends in bilge lines, keeping them straight and direct.

2.7 Refits

- Inspect the outer hull closely each time the vessel is slipped, paying close attention to any signs of wastage, damage, caulking and fastenings;
- Inspect sea water pipework closely each time vessel is slipped, paying close attention to bends, "sumps" (e.g. the bottom of sea strainer boxes) and those pipes which are not easily accessible;
- If in doubt about the condition of the sea water pipework, have an ultrasonic inspection carried out and renew those pipes found to be wasted by more than 25-30% of the original wall thickness.

3. REDUCING THE RISK – TRAINING

- 3.1 Ensure crew members undergo induction training when joining a vessel and that this training is continually refreshed. This will ensure the crew are aware of:
 - the actions to take to reduce the risks whilst the vessel is at sea
 - the checks to be made when an alarm is raised
 - how to identify where water may be entering the vessel and how to stop or slow water ingress
 - how to respond dependent on the extent of flooding and risk to the vessel
- 3.2 Induction training will:
 - Increase the likelihood of the vessel surviving the flooding incident
 - Increase the time available to receive equipment to prevent vessel loss
 - Increase the time available for potential rescue

4. REDUCING THE RISK - DURING OPERATION

- Always investigate <u>immediately</u> the cause of high level bilge alarms;
- Watertight doors, hatches and windows, and other closing devices must be maintained in good working order;
- Ensure all watertight and weathertight doors are closed when not in use;
- Vents and air intakes should be as high and near the centreline of the vessel as possible, to minimise the possibility of water getting in through them.
- Regularly (at least weekly) test the bilge pumps and bilge system;
- Test bilge alarms daily;
- Regularly (at least monthly) open and close all bilge and sea water valves, to ensure they don't "seize";
- Keep sea water valves closed when not in use;
- Permanently repair any leaking sea water pipe as soon as possible. Do not rely on temporary repairs and find out if the other sea water pipes are in a similar condition and require renewal;
- Ensure crew members are familiar with sea water side valves and bilge systems. As a reminder, keep a plan at the engine room entrance, identifying the position of sea inlet valves;
- Regularly (several times a day) check compartments not fitted with bilge alarms;

- Regularly (at least weekly) clean bilge strainers;
- Keep the engine room and fish hold free of rubbish, which could choke the bilge system;
- Keep freeing ports clear of blockages and obstructions;
- Check sea valves (including overboard non-return valves) whenever the vessel is slipped.

5. Mandatory Requirements

- 5.1 The requirements for bilge pumps and alarms are contained in Chapter 4 of the following Codes:
 - MSN1871 (F) The Code of Practice for the Safety of Fishing Vessels of less than 15m Length Overall;
 - MSN1872 (F) The Code of Safe Working Practice for the Construction and Use of Fishing Vessels of 15m Length Overall to less than 24m Registered Length;
 - MSN1873 (F) The Code of Practice for the Construction and Safe Operation of Fishing Vessels of 24m Registered Length and Over.

6. ARE THE PUMPS ON YOUR VESSEL ADEQUATE?

6.1 These Codes set out the minimum capacity for pumping bilges. There is no guarantee that the statutory minimum is adequate for dealing with serious hull or pipework failure. Alternative_supplementary means of pumping bilges are available, such as salvage pumps and propeller-shaft mounted pumps. Use of such equipment is highly recommended.

7. CONSIDER CARRYING MORE EQUIPMENT THAN THE REGULATIONS REQUIRE

- 7.1 A range of bilge pumps and alarms are available. To help reduce the consequences of flooding, in addition to mandatory requirements, <u>consider one</u> <u>or more of the following options</u>, if the Code applicable to your vessel does not already require:-
 - Install an efficient bilge alarm in the fish hold and any other compartment below the waterline; sensors shall also be fitted in any compartment which has a bilge suction if the level of bilge water cannot be readily checked visually without entering the compartment

- Fit secondary bilge alarms, positioned at a higher level to the main bilge alarm. This will reinforce the main alarm;
- Fit secondary bilge alarms, fed from a separate supply, that incorporate an alarm visible from outside the vessel (e.g. an orange "strobe" light);
- When available, fit electronic bilge level monitoring systems in addition to conventional "float switch" alarm;
- Fit "circuit healthy" indicators on bilge alarm circuits to ensure that the alarm system is working correctly (similar idea to navigation light failure alarms);
- Fit a power pump driven by main machinery provided that the propeller shafting can be readily disconnected or provided that a controllable pitch propeller is fitted;
- Consider installing CCTV in positions throughout the vessel where ingress of water can easily be seen
- Install "submersible" pumps, which continue to operate whilst submerged in water.
- Where practical, fit remotely operated clutches to engage engine driven bilge pumps;
- Carry a portable salvage pump. This can "double-up" as a firefighting pump in a "dead ship" situation. However, <u>MGN 659 (M+F) Amendment 2 The</u> <u>Merchant Shipping and Fishing Vessels (Entry into Enclosed Spaces)</u> <u>Regulations 2022</u> should be read as operating this pump in an enclosed space can lead to fatal carbon monoxide poisoning;
- Auto pumps are not to be fitted in spaces with oil.
- Portable Salvage Pumps should therefore be:
 - i) Used in a well-ventilated space, preferably on deck, where the exhaust fumes will be released to outside the vessel;
 - ii) Permanently rigged, or readily available, with direct attachment to permanent suction lines (to prevent the need for hoses to be fed through open hatches/ doors);
 - iii) Given due consideration concerning the storage of fuel, particularly petrol driven versions (i.e. adequate ventilation provided, fit for purpose storage canisters and away from sources of ignition).

8. EFFECTIVE USE OF THE BILGE PUMPING SYSTEM

- Close the sea suction after any priming of bilge pumps.
- Stop the bilge pump when pumping bilges is finished.
- Close all bilge valves when not in use.

9. WHAT TO DO IN AN EMERGENCY

- 9.1 <u>The Fishermen's Safety Guide</u>, published by the Maritime and Coastguard Agency (MCA) provided guidance to help crews develop flood action plans, and <u>Marine Guidance Notice (MGN) 570 Amendment No.1 (F): Fishing</u> <u>Vessels: Emergency Drills</u> provided drill scenarios to practice such plans.
- 9.2 The following provides guidance on the actions required. These actions are generic and may vary from vessel to vessel and it is recommended that you identify the requirements particular to your vessel through practice drills.

Primary Action	Secondary Action	Vessel Dependent Action	Skipper should be aware of
Inform Coastguard via DSC Immediately	 Send DSC Alert and follow up with VHF call 		Be aware of correct procedure
Prepare for Emergency	Don Warm clothing and lifejacket		 Understand most suitable place to store lifejacket Access lifejacket quickly Know how to don lifejacket Be aware of suitable clothing Deal with flooding first. Do not recover gear before dealing with flooding.
Make Contingency Plans	Ensure crew are aware of any contingency plans should situation change and vessel cannot be saved		Abandon ship drillsHow to prepare LSA
Check for Water ingress	Check all potential locations and amount of water ingress when first aware of emergency.	 Start Bilge pumps Monitor bilge pumps and alarms 	 Be aware of how to check alarms Be aware of methods for stopping water ingress Be aware how to take tank soundings Be aware that misidentifying the source of

	 Maintain regular checks of compartments for water ingress during emergency Shut the right sea valve. <u>If in doubt,</u> <u>close all sea</u> valves <u>until the</u> <u>flooding stops.</u> Take tank soundings, it might be a fore peak tank breach rather than a hold 		 the water ingress will mean that the vessel remains at risk. Be aware of locations where it is not possible to prevent water reaching other compartments
Inform Coastguard of ongoing situation	 Maintain regular contact with Coastguard and inform of any changes to the vessels situation 		Be aware of correct procedure
Prepare to fight flooding	 Collect damage control kit Check bilge pumps are discharging on a regular basis to ensure water is being removed from vessel 	 Consider if bailer/ bucket will remove water Consider if pumps will cope Consider if additional pumps will help Request portable pumps 	 Be aware of bilge pump capabilities Be aware how to operate bilge pumps Be aware how to use damage control kit Be aware of how to clear blockages in bilge pumps
Prepare LSA		 Secure liferaft in safe area Provide safe means of boarding 	 Know how to release and deploy liferaft
Consider Abandon Ship	 Close oil and fuel vents Consider stability of vessel Deploy EPIRB/PLB 		

- 9.3 Drills should be carried out at least monthly. The drill will refresh basic safety training and add an element of reality of working as part of a team on board the vessel. To ensure a safe and effective drill, it is important that as many of the regular crew are present as possible.
- 9.4 Drills cannot replace the written risk assessment but are a vital part of the necessary control measures within that risk assessment.
- 9.5 It is essential that all crew members undertake drills and play their part in the safe day to day running of the vessel.

- 9.6 In addition to ensuring as many of the crew attend, it is important that they are engaged and involved in the drill scenarios.
- 9.7 A debrief session should take place after each drill to identify weaknesses, areas for improvement as well as what went well.
- 9.8 Use drills as an additional opportunity to inspect emergency gear and test equipment.
- 9.9 The lifejackets and immersion suits on board a recent incident involving the Guiding Star were stored in crew cabins that had flooded, rendering them inaccessible before abandonment. <u>MGN 570 (F)</u> advises fishermen to consider suitable storage locations for lifejackets.

10. PREVENTION AT ANCHOR OR IN HARBOUR

- Close all sea suction valves;
- Avoid "squeezing" wooden vessels in harbour, whenever practicable. This can damage the caulking and lead to a sprung plank.

More information

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