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## **FISHING VESSELS: PREVENTION OF MAN OVERBOARD**

### **Notice to all Owners, Operators, Managing Agents, Skippers and Crew**

*This note replaces MGN 430 (F) and should be read in conjunction with MGN 570 Emergency Drills, MSN 1871 The Code of Practice for the Safety of Small Fishing Vessels, MSN 1872, The Code of Safe Working Practices for the Construction and Use of 15m Length Overall to less than 24m Registered Length Vessels, and MSN 1873, The Code of Practice for the Construction and Safe Operation of Fishing Vessels of 24m Registered length and over.*

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#### **Summary**

This Note provides guidance on how to prevent Man Overboard situations from occurring.

The Note discusses why Cold Water Shock and Hypothermia make it vital that man overboard is avoided at all costs.

The note provides guidance on how to assess the risks of going overboard and preventing it from happening. Attached to the Note is a Risk Review Document which will allow you to assess the risks around your vessel and record how you control these.

The aim should always be to remove the risk of going overboard. However, where this is not possible, the Note provides guidance on the wearing of Personal Flotation Devices and safety lines.

#### **Introduction**

- 1.1. Recent Marine Accident Investigation Branch investigations have highlighted the importance of drills when dealing with emergencies. However, as well as responding to emergencies, it is important to consider how potential emergencies can be prevented from happening.
- 1.2. For this reason, in 2017, the MCA have commenced a Concentrated Inspection Campaign to help fishermen consider how to prevent man overboard incidents as well as conducting drills to respond effectively to them.



- 1.3. This Note therefore is intended to provide advice on how to prevent man overboard from occurring.
- 1.4. With the introduction of MSN 1871, vessels under 15m are also now required to conduct regular drills, including vessels that are single handed. This Note should also be read alongside MGN 570 on Emergency Drills which provides guidance to both single handed and crewed vessels on how to practice drills.

## **2.0 Why Prevention of Man Overboard is vital**

- 2.1 In the ten years to 2015, 83 fishermen lost their lives and of these 38 were man overboard. In 2016, the MAIB investigated a further six fatal accidents which involved man overboard.

### **2.2 FALLING OVERBOARD IS ALWAYS LIKELY TO RESULT IN DEATH DUE TO COLD WATER SHOCK AND LIMITED SURVIVAL TIME IN THE SEA.**

- 2.3 Firstly, unless a person is rescued within 5 minutes, it is highly likely that they will be either unable to help themselves or will be unconscious. The stages that a person in the water goes through are:

#### **Stage 1 - Cold Shock - Death can occur within 5 minutes**

- On immersion, the victim experiences hyperventilation and increases in blood pressure and pulse rates;
- This increases the risk of drowning or heart failure;
- Pulse rates and breathing do not return to normal until after about five minutes of immersion.

#### **Stage 2 - Swimming Failure - Death can occur within 10-15 minutes**

- If the victim survives the cold shock stage, then the cold water rapidly cools the nerves and muscles of the limbs. This causes inability to conduct simple survival actions requiring manual dexterity such as climbing into a life raft, holding a becketed line or unwrapping and firing a flare;.
- When attempting to swim without the aid of a lifejacket, the body angle of attack traveling through the cold, dense water is increased. Scientific tests have shown that at the start of a swim the angle of attack is likely to be 18° and at the point of failure will have reached 35°. At the same time, swimming strokes become shorter, more rapid and uncontrolled;
- This results in drowning through swimming failure as the victim becomes increasingly vertical in the water, the leg movements become ineffective, the victim becomes exhausted, inhales the next wave and drowns;
- **Swimming ability in warm water bears no relationship to that in cold water.**

#### **Stage 3 - Hypothermia - Death after 30 minutes**

- As the deep body temperature falls, the victim will lapse into unconsciousness;



- Death may occur in two ways - drowning through incapacitation, and cardiac arrest.

#### Stage 4 - Death during or soon after rescue

- About 20% of rescued survivors die. Most die from drowning in the process or soon after rescue;
- For the hypothermic victim who has been in the water for some time, being pulled out of the water, particularly in a vertical position causes a massive loss of blood pressure. This is complicated by the reinstatement of gravity, decreasing blood volume, increased blood viscosity and a diminished work capacity of the cold heart.
- **In laymen's terms this is really a massive faint from which the cold victim cannot recover.**

### **3.0 Identifying and Preventing Man Overboard**

3.1 Although MGN 570 provides guidance on responding to emergencies, it is clear that falling overboard is highly likely to result in death and therefore it is better to prevent Man Overboard from happening.

3.2 To do this, as well as practicing drills, there should be training on board for man overboard to do the following:

- To prove continuous perception of the risks in involved in fishing operations
- To prevent a person from falling overboard.

3.3 Annexes A to C gives further details on how to identify situations where man overboard may occur and what you should do to address it. In particular, **Annex B provides a vessel outline alongside spaces in which to describe the risk areas or work activities. You can use this to walk around the vessel with your crew and identify the areas where man overboard may occur. Annex B also provides a table in which the control measures for each activity can be discussed with the crew and the action taken recorded**

3.4 Crewmembers should always be on guard against falling overboard as it is a major cause of fatalities. The pitch and roll of small vessels, the sudden accelerations, the conducting of complex fishing operations in exposed areas, the frequent hauling in and letting out of gear over the side or stern, the working on wet slippery decks and the inevitable fatigue which results from long working hours, are conditions which cause fatalities due to crew falling overboard.

### **4.0 When you cannot completely eliminate the risk**

4.1 When work is carried out where there is still any risk of falling overboard, or when work is carried out in an exposed area in adverse weather, a safety harness with a safety line attached should be used. The length of the safety line should be adjusted to prevent falling overboard. If the work is carried out where a safety harness and safety line cannot be used, other adequate precautions should be taken such as wearing a Personal Flotation Device (PFD). However, these won't stop you falling overboard, they will keep you afloat but unless you are recovered your chances of survival are slim. Please see MGN 570 for advice in Drills for recovering a Man Overboard.



- 4.2 The skipper should ensure that when a fishing vessel is under way, any work that would require himself or a crewmember to lean over the side should only be undertaken in cases of emergency.
- 4.3 Should such work be necessary, the person required to work over the side must wear a safety harness and be secured to the vessel, with at least one other person in close attendance. In the event of a vessel with only one crewmember and that person has to lean over the side while the vessel is under way, the safety harness worn by the person shall be attached to the vessel. There should also be an appropriate arrangement for the engine to be stopped should the person fall overboard.
- 4.4 You should also ensure that you wear a Personal Flotation Device and a Personal Locator Beacon. Personal Locator Beacons shall comply with EN 302 152 and be registered in accordance with The Merchant Shipping (EPIRB Registration) Regulations SI 2000, No. 1850 and Merchant Shipping Notice 1816 (M&F) – Mandatory Registration of Electronic Position indicating Radio Beacons (EPIRBs).
- 4.5 This will then alert the Coastguard and allow you to survive the effects of cold water, providing more time for you to be successfully rescued.
- 4.6 However, there are also circumstances where you might have to abandon ship or rescue someone else from the water who has fallen in from another vessel. By practising for these situations, you will be able to respond quickly and successfully.

## More Information

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## ANNEX A

### PREVENTING MAN OVERBOARD SITUATIONS

This Annex sets out how to identify situations where man overboard risks can occur and the measures that you can take to reduce or eliminate those risks.

#### **ACTION 1: Identify areas where regular work activity takes place within one metre of the deck edge.**

Pay particular attention to work activity relating to hauling, shooting or repairing gear. Decks and working areas, as well as, horizontal surfaces in the vicinity of ladders and doorways should be provided with anti-skid surfaces and kept clear of all loose gear liable to cause tripping.

To prevent slipping, decks and working places should be kept clean of oil and fish debris.

Should it be necessary for fishermen to climb on rails, etc. while fishing or performing work on nets, precautions should be taken for their safety. Safety harnesses or safety lines must be worn. It is preferable that the work activity be re-designed to eliminate the need to climb on rails.

#### **ACTION 2: Identify each work activity and how it can be changed to reduce risk.**

The 4 steps of a safety assessment are:

##### **Step 1: Identification of hazards**

Hazards should be identified and noted. This should be done with the involvement of all members of the crew. It may also be helped by taking into account information on known hazards provided by the competent authority or other credible sources e.g. MAIB Reports.

***To assist you, Annex B provides a vessel outline alongside spaces in which to describe the risk areas or work activities. You can use this to walk around the vessel with your crew and identify the areas where man overboard may occur. Annex B also provides a table in which the control measures for each activity can be discussed with the crew and the action taken recorded***

##### **Step 2: Assessment of hazards/determination of risk**

In this step, the objective is to determine those hazards that may cause a man to go overboard. Consideration might also be given to the likelihood of an accident as a result of this hazard. This will help the crew to establish the priority for taking action. It may be useful to use a simple means of assigning levels of importance and frequency to the risk.

Some suggested areas for detailed examination are included in Annex C.



### **Step 3: Taking action/exercising control**

Eliminate the hazard - The aim should be to eliminate significant hazards. An example would be to remove work activity from the deck edge.

Isolate the hazard - If it is not possible to eliminate a hazard completely, it should be isolated in order to separate crewmembers from the danger. For example, this could mean putting guards around moving parts.

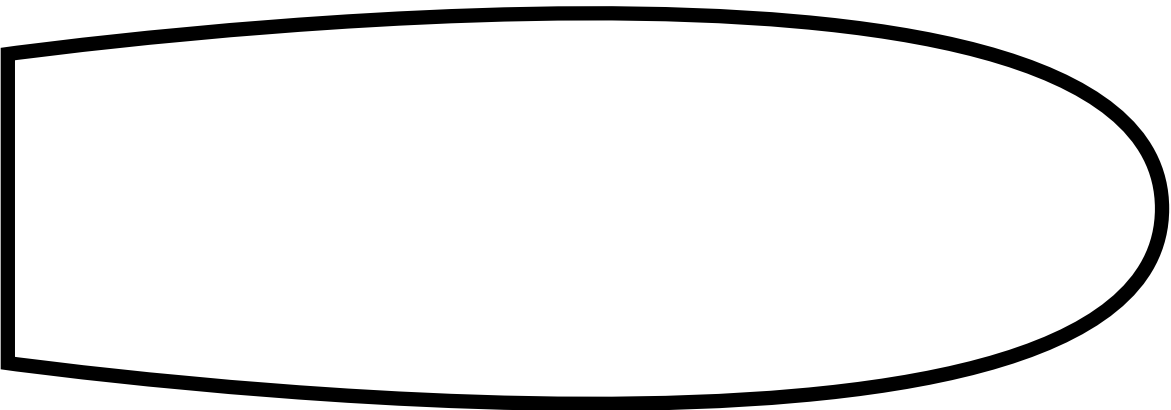
Minimize the risk - If it is not possible to eliminate or isolate the hazard, action should be taken to minimize the possibility that it will cause harm or, at least, to reduce the harm caused. For example, this could be done by providing protective clothing and equipment. It may also call for training, including on-board training, and a discussion of how to improve procedures to improve their safety. The involvement of the crew is **CRUCIAL** in this part of the process: (1) the person closest to the operation may be in the best position to find solutions; (2) a discussion of the problem and potential solutions will be enhanced by having the benefit of the ideas of several persons; (3) this will contribute to building a positive “safety culture” on the vessel.

### **Step 4 Review of the hazard**

The process of safety assessment and management is **continuous**. As noted above, the hazards will vary with each vessel. Furthermore, the hazards will change on that vessel when conditions change.

For example, if the type of fishing operation changes, if there is a change in the crew, if a new piece of equipment is installed, this may change some of the hazards on board and perhaps also the risks associated with those hazards. Therefore, the hazards, the risks involved, and the action to be taken should be reviewed, in whole or in part, when conditions change. It is also advisable that they be reviewed on a periodic basis.





**Description of Risk Area / Process**

<b>1</b>	
<b>2</b>	
<b>3</b>	
<b>4</b>	
<b>5</b>	
<b>6</b>	

Walk around the vessel and identify the locations where it would be possible for a MOB incident to occur. Remember to include how the vessel works at sea including the fishing operations.

Once found draw a link to the numbered boxes and write a short description of the risk including who is at risk of falling overboard.

Complete the second page to identify current and future measures that will reduce the risk to the minimum you can achieve.





Number	Control Measures	PFD ON	Structural or procedural changes to be implemented
<b>1</b>			
<b>2</b>			
<b>3</b>			
<b>4</b>			
<b>5</b>			
<b>6</b>			

## Mitigation

Where the risk of falling overboard has not been removed completely a PFD must be worn on this vessel.

Regular Drills and onboard training is part of the vessels means of preventing and reacting to emergencies onboard.



## ANNEX C

**Guidance on what can be done to the vessel to prevent crew, including those on single handed vessels, falling overboard.**

**THIS GUIDANCE IS NOT INTENDED TO BE COMPREHENSIVE AND YOU SHOULD ASSESS THE RISKS FOR YOUR OWN VESSEL AND ACT ACCORDINGLY**

### Deck Surfaces

The surface of all decks shall be so designed or treated as to minimize the possibility of personnel slipping and falling overboard. In particular, decks of working areas, such as in machinery spaces, in galleys, at winches, around net and seine drums, and where fish is handled as well as at the foot and head of ladders and in front of doors, shall be provided with particularly effective anti-skid surfaces. (Wooden decks without anti-skid covering shall not be regarded as satisfying the requirements for anti-skid surfaces.)

Ropes and lines should be separated from where crew stand to avoid the risk of standing in a bight or inside a line under tension. Should problems occur with ropes and lines, vessels should have an agreed procedure and crew should not enter the area until it is safe to do so.

### What to wear in areas of increased risk

When work is carried out or the crew move about in areas with an increased risk of falling over board, suitable safety measures shall be taken, such as the use of lifelines, working jackets, PFDs or other suitable equipment. The work should only be carried out if fully satisfactory surveillance has been established.

### Removing the person from the area of risk

It should always be considered whether the task could be carried out in a way that removes the person from the area of risk, for example by conducting the task by mechanical means.

Leaning over the side of the vessel should be avoided at all costs, identify means that will remove the need to do this.

### Bulwarks and Guardrails

Efficient bulwarks or guard rails shall be fitted on all exposed parts of the working deck and on superstructure decks if they are working platforms. The height of bulwarks or guard rails above deck shall be at least 1 m. There should be no gaps or lowpoints except when these are needed for operational reasons, and then they should only be open for the minimum time possible.

The minimum vertical distance from the deepest operating waterline to the lowest point of the top of the bulwark, or to the edge of the working deck if guard rails are fitted shall ensure adequate protection of the crew from water shipped on deck.



Clearance below the lowest course of guard rails shall not exceed 230 mm. Other courses shall not be more than 380 mm apart, and the distance between stanchions shall not be more than 1.5 m. In a vessel with rounded gunwales, guard rail supports shall be placed on the flat of the deck. Rails shall be free from sharp points, edges and corners and shall be of adequate strength.

Stern trawlers shall be provided with suitable protection such as doors, gates or nets at the top of the stern ramp at the same height as the adjacent bulwark or guard rails. When such protection is not in position a chain or other means of protection shall be provided across the ramp.

For other trawlers, the aft bulwarks may be omitted provided that the vertical distance from the deepest operating waterline to the edge of the working deck is at least 1800 mm and offers adequate protection of the crew from water shipped on deck, that there is a continuous gunwale from the starboard to the port side at a maximum height of 1000 mm, and that the other safety measures are in each individual case. Such safety measures shall not be limited to, but may consist of, for example,

- The distance from the net hauling equipment to the gunwale being at least 1000 mm;
- the width of the hole in the bulwark being minimized as much as possible through the insertion of moveable bars with a mutual distance of maximum 400 mm or pound boards of sufficient strength to resist the sea;
- an edge with a height of at least 50 mm being provided in the hole against the vessel's side or the like, or herringbones (flat bars with a length of at least 5 mm with an angle of 45 degrees to the side astern) being welded on covering at least 500 mm from the vessel's side astern against the net hauling equipment; the deck between drums and gunwale being extraordinarily non-skid.

When gear is not being launched or hauled in through the hole, three chains or wires shall be placed from the port side to the starboard side with solid fastenings in the side as well as where there is a fixed bulwark amidships. The clearance below the lower chain or wire may not exceed 230 mm, and the distance between the other chains or wire may not exceed 380 mm.

An approved working jacket or a working suit with an approved means of buoyancy shall be used when work is being carried out in the area.

#### Visibility of working areas

From the wheelhouse it shall be possible to view all workplaces on the weather deck. Where it is necessary to ensure such visibility, the wheelhouse shall be provided with windows to the floor. The wheelhouse shall be positioned at a height such that visibility is not prevented or restricted by equipment, etc. installed on deck. On existing vessels, visibility shall be provided from the vessel's manoeuvring platform of the places on the vessel where the crew is engaged in launching and hauling in fishing gear and bringing the catch on board.



Where it is not possible for technical reasons to ensure full visibility from the vessel's manoeuvring platform, a video surveillance system shall be installed suitable for maritime use.

Where it is not possible to establish proper visual and audible communication between the workplace and the bridge, a suitable and reliable communication system shall be established.

### **Lighting**

All passageways, all working spaces and all working areas on board the vessel shall be well lit. The lighting shall be sufficient to ensure that the work may be carried out with full regard to health and safety.

The amount of light shall be sufficient for distinguishing details. The light shall create suitable contrast conditions and may not blind.

The lighting on the deck may not obstruct the visibility from the wheelhouse.

### **Winches**

Winches shall, as far as practicable, be designed, guarded and fenced so that moving parts may not cause personal injury. All protective devices shall have the required strength.

Fairleads shall be provided with protection devices or other equally effective approved safety arrangements capable of offering protection against personal injury.

If technically possible, wires along the deck shall be carried in pipes or be covered in an equally safe way. They shall be placed so that passage on deck may take place with full regard to safety.

It shall be possible to reverse winches. Operating handles shall automatically return to the neutral position when released and be provided with a locking device or shielding preventing unintentional activation.

### **Net hauling equipment**

Net hauling equipment shall be installed so that persons cannot get jammed.

The passageway between bulkheads, deckhouses or the like and fully rolled up hauling equipment with nets shall as a minimum be 600 mm.

Precautions shall be taken to prevent trawl boards and trawl separation devices from accidentally swinging inboard, e.g. by erecting one or more movable protective bars, pipe clamps or the like at the gallows.

When working in way of moving equipment crew must be aware of the risks of loose items on clothing.

