



REASSESSMENT OF THE RESPONSE TO MARINE SAFETY RECOMMENDATION M92-05

Effectiveness of bilge drainage systems

Background

The *Northern Osprey* had departed Mulgrave, Cape Breton, Nova Scotia, on 15 June 1990, bound for shrimp fishing grounds off of eastern Labrador.

While manoeuvring in ice-infested waters, on 27 June, the vessel sustained damage to its shell plating on the starboard bow in the vicinity of a common bulkhead between a fuel oil tank and the fish hold. As a result of this, fuel oil gained entry to the fish hold, followed some hours later by sea water.

The Transportation Safety Board of Canada (TSB) determined that, while operating in ice conditions, it is most probable the vessel was holed due to contact with the ice. The holing was not detected and, in an effort to remove oil from the fish hold because it could not be effectively pumped, the watertight subdivision was lost when a manhole cover to the pipe tunnel and an access door from the pipe tunnel to the engine-room were removed/opened to drain the oil, and not replaced/closed. Sea water then flooded the hold and engine-room, and the vessel was lost.

The Board concluded its investigation and released report M90M4020 on 21 October 1992.

Board Recommendation M92-05 (October 1992)

The vast majority of Canadian fishing vessels on the east coast, similar to the *Northern Osprey*, routinely operate in sea ice and are therefore prone to damage. Since 1976, off the coasts of Newfoundland and Labrador, at least 42 fishing vessels, including the *Northern Osprey*, have reported ice damage. Four fishing vessels sank as a direct result of ice damage. Adequate bilge pumping facilities and proper damage control procedures have averted the loss of lives and property in several occurrences.

When vessels operate in conditions of snow, sea fog, freezing rain, sea spray, etc., ice may accumulate on riggings and superstructures. Such ice formation can adversely affect the stability of the vessel by altering the vessel's centre of gravity. High seas, wind, water on deck, etc. have similar adverse effects on a vessel's stability. Any inability to adequately drain water from any compartment, apart from the threat of sinking, could further reduce a vessel's stability due to the free surface effect. (Free surface effect is the detrimental effect which a partially filled tank or compartment can have on the stability of a vessel, due to the shifting of liquid as the vessel heels, reducing the vessel's capability to return to the neutral position.) The *Northern Osprey's* fish hold bilge suction system was inoperative at the time of the occurrence, probably due to ice in the system; it was not designed for draining the bilge in refrigerated conditions.

The *Large Fishing Vessel Inspection Regulations* require that bilge suction, piping and means for drainage be so arranged that any water that enters a watertight compartment can be pumped out. However, the regulations do not distinguish between refrigerated and non-refrigerated compartments. New *Marine Machinery Regulations* promulgated on 01 May 1990 contain provisions and specifications concerning drainage of refrigerated spaces; however, it is understood that these new regulations do not apply to large fishing vessels.

In view of the potential impact on a fishing vessel's seaworthiness and stability of any accumulated bilge water in refrigerated compartments, the Board recommended that:

The Department of Transport amend the pertinent regulations to ensure that bilge drainage systems are effective for all watertight compartments, including refrigerated spaces on fishing vessels, where below freezing temperatures may occur.

TSB Recommendation M92-05

Transport Canada's response to Recommendation M92-05 (February 1993)

The Minister of Transport reported that they do not agree with this recommendation for the following reasons:

- The requirements contained in Classification Society rules for refrigerated holds are primarily for cargo vessels carrying a refrigerated class notation. The class requirements are to take care of drainage from evaporators when in the defrost mode, not to pump out large accumulations of water when the space is in a refrigerated condition. A bilge pumping installation is intended to dewater and take care of minor leakages, drain accumulations, etc. It is not designed as a damage control system and therefore would be unable to cope with a large ingress of water.
- The alterations required to install such a system in an existing vessel would be complex and expensive and would also impact on the cost of new construction without significantly improving safety.
- There is no reference to refrigerated space bilge systems in the proposed Protocol to the International Torremolinos Convention on the Safety of Fishing Vessels. At this time, Canada is not aware of any intention to incorporate such a requirement in the Convention. In the event that the future requirements of the Convention exceed our present regulatory regime, consideration will be given to amending the regulations accordingly.

Transport Canada (TC) rejected Recommendation M92-05, stating that they would reconsider the recommendation on the conclusion of discussions related to the proposed Protocol to the International Torremolinos Convention on the Safety of Fishing Vessels.

Board assessment of the response to Recommendation M92-05 (March 1993)

Transport Canada does not agree with the recommendation suggesting that the installation of such a bilge drainage system in existing vessels would be expensive and complex without significantly improving safety.

Further, the response focuses on current requirements or non-requirements established by the Classification societies and by the International Maritime Organization (IMO). It does not address the safety deficiency identified in this occurrence. The response suggests that since the IMO (Protocol to the International Torremolinos Convention on the Safety of Fishing vessels) has not made proposals to incorporate such a drainage system requirement, no consideration is contemplated to amending the Department's regulations. In so doing, the Department of Transport is not addressing the reality of the harsh environment in which Canadian fishing vessels operate. Canadian requirements may be different from many of the member administrations of the IMO.

At present, the Canadian *Large Fishing Vessel Inspection Regulations* require that bilge suction, piping and means for drainage be so arranged that any water that enters a watertight compartment can be pumped out. However, the regulations do not distinguish between refrigerated and non-refrigerated compartments. New Canadian *Marine Machinery Regulations* promulgated on 01 May 1990 contain provisions and specifications concerning drainage of refrigerated spaces; however, it is understood that these new regulations apply only to commercial vessels, not necessarily to large fishing vessels.

The purpose of Recommendation M92-05 was to amend the existing regulations to ensure that bilge drainage systems are effective for refrigerated spaces on fishing vessels; where below freezing temperatures may occur. Since the Department of Transport currently has no intention to improve bilge drainage system requirements for refrigerated areas, the safety deficiency will persist, perhaps resulting in further accidents.

Therefore, the Board considers the response to Recommendation M92-05 **Unsatisfactory**.

Transport Canada's response to Recommendation M92-05 (November 2006)

TC's update, dated November 2006, indicated that as part of its Phase 2 of the Regulatory Reform, TC will be developing new *Large Fishing Vessel Regulations*. TC intends to address this issue by adopting and referencing the Torremolinos Convention in the regulations.

TC did not agree with this recommendation. A bilge pumping installation is intended to dewater and take care of minor leakages. It is not designed as a damage control system and therefore would be unable to cope with a large ingress of water. Alterations required to install such a system in an existing vessel would be complex and expensive.

Board reassessment of the response to Recommendation M92-05 (March 2007)

The regulations, now being referred to as the *Fishing Vessel Regulations*, are anticipated to be published in *Canada Gazette*, Part I by December 2007. The 1993 Torremolinos Protocol was adopted on 02 April 1993; however, its entry into force will be one year after 15 States with at least an aggregate fleet of 14,000 vessels of 24 metres in length and over, have ratified the Protocol. The Convention's regulations apply to new vessels, built on or after date of entry into force of the Protocol. As of October 2006, there were 12 contracting states with an aggregate fishing fleet of 24 m in length and over, which does not meet the minimum to bring the convention into force.

Given TC's indication to address the inability to drain water from flooded compartments by only adopting an international convention that appears unlikely to come into force for some time, if at all, the safety deficiency associated with flooded compartments will not be substantially reduced or eliminated. There are about 529 Canadian fishing vessels greater than 24 metres listed in Transport Canada's Vessel Registration Query System.

The response is considered **Unsatisfactory**.

Further action is unwarranted as TC has consistently indicated no other steps that may be taken, other than adopting and making reference to an international convention, which is not likely to come into force for some time and applies only to new builds. Hence the residual risk associated with the inability to drain water from a flooded compartment will remain.

Transport Canada's response to Recommendation M92-05 (December 2014)

A technical and legal review of section 14(6) of the *Large Fishing Vessel Inspection Regulations* (which contains the provision relevant to bilge drainage systems) confirms that the current regulatory requirements are sufficient to address Recommendation M92-05 and that no amendments to these regulations are necessary.

The technical and legal review of section 14(6) of the *Large Fishing Vessel Inspection Regulations* demonstrates that no distinction is provided for refrigerated and non-refrigerated compartments. The section, therefore, applies to any watertight compartment – whether that compartment is refrigerated or not.

Furthermore, no provisions in the regulations provide requirements that would specifically exclude refrigerated compartments. The conclusion is that section 14 does not exclude refrigerated spaces.

In light of the technical and legal review, Transport Canada Marine Safety and Security (TCMSS) will communicate with inspectors through flagstate.net to verify efficient bilge drainage systems are provided in all watertight compartments, including refrigerated spaces, and that these systems are functional under the full range of anticipated temperatures. A Ship Safety Bulletin will be prepared and published shortly to make operators aware of this requirement.

TC may incorporate the Cape Town Agreement in its regulatory framework for the Canadian domestic fleet. This will include the development of requirements for large fishing vessels, including Canadian modifications as appropriate. TCMSS intends to merge *Large Fishing Vessel Inspection Regulations* into the proposed Fishing Vessel Safety Regulations – in doing so, TCMSS will consider reviewing the wording of the provisions related to bilges drainage system to clarify these requirements.

TCMSS considers that this recommendation should be given a “fully satisfactory” status by the TSB.

Transport Canada's response to Recommendation M92-05 (December 2015)

Transport Canada's response provided no new information.

Board reassessment of the response to Recommendation M92-05 (March 2016)

TC's update of 2014 indicated that its technical and legal reviews of section 14(6) of the existing *Large Fishing Vessel Inspection Regulations* determined that it already incorporates the requirement for bilge drainage systems to be effective in all watertight compartments, including refrigerated spaces on fishing vessels, where below freezing temperatures may occur.

TC has indicated that its inspectors will be verifying that bilge drainage systems are provided in all watertight compartments of large fishing vessels, and that operators are being made aware of the existing requirement via Ship Safety Bulletin 01/2016 (20 January 2016), Large Fishing Vessels – Efficient Bilge Drainage Systems in all Watertight and Refrigerated Spaces.

The assessment of this response is changed to **Fully Satisfactory**.

Next TSB action

The deficiency file is **Closed**.