



ASSESSMENT OF THE RESPONSE TO MARINE SAFETY RECOMMENDATION M96-09

Tunnel fire protection on Canadian self-unloaders

Background

In the early morning hours of 31 December 1994, a fire broke out in the conveyor belt system of the Canadian self-unloader *MV Ambassador* during the unloading of a cargo of rock phosphate. The fire subsequently spread to the vessel's accommodation, and the combined efforts of the ship's crew and several shore-based fire departments were required to bring the fire under control before it was fully extinguished, some 28 hours later. There was no damage to harbour installations, no serious injury and no reported pollution as a result of the fire.

The Board determined that, when the conveyors were stopped, a section of one of the conveyor belts ignited, probably because the belt was in contact with an overheated roller. The roller probably overheated due to a bearing failure or to being jammed with refuse which ignited after contacting the overheated bearing.

Board Recommendation M96-09 (25 November 1996)

In view of the inherent risk of tunnel fires in self-unloaders and the demonstrated inadequacy of existing on-board fire protection systems, the Board recommended that:

The Department of Transport review the requirements for fire protection systems for tunnel areas on Canadian self-unloaders, with a view to ensuring a capability for suppressing large fires.

M96-09

Transport Canada's Response to Recommendation M96-09

Transport Canada comment on 20 February 1997:

Marine Safety has been working with the Industry over the past few years to develop requirements which would address fixed extinguishing systems in the cargo tunnel and associated areas. Part of this effort resulted in the fitting and testing of a prototype system (sprinkler system) on the self-unloading vessel *MV James Norris*. The tests on the *MV James Norris* proved to be successful.

The choice of the fire-fighting medium to use in this type of vessel has been an area of concern. This concern is mainly due to the large area that is involved, the irregular arrangement of the areas and the fact that one type of medium (i.e. water) could adversely affect the vessels

stability when used in large volumes in the areas in question. There have been other tests conducted by a Canadian shipping company on one of their self-unloaders using high expansion foam as the medium which have shown significant promise. The company in question plans to fit a complete high expansion foam extinguishing system in the cargo tunnel area of one of their self-unloaders. This will allow further "fme tuning" tests to be conducted. The high expansion foam system has the advantage over a water based sprinkler system in that it does not cause a stability problem when released in large quantities in addition to its excellent fire suppression qualities.

Transport Canada response on 20 February 1997:

The Minister of Transport agrees with this recommendation. It is anticipated that following our review, which is currently underway, draft requirements will be completed addressing the installation of fixed extinguishing systems in the cargo tunnel and associated areas of self-unloaders.

Board assessment (26 May 1997)

TC has been working with the industry to develop new requirements for fixed fire extinguishing systems in the cargo tunnel and associated areas. Once test results of a prototype system are evaluated, TC will formulate draft requirements for the extinguishing systems. TC indicates that discussions are being held with the United States Coast Guard to ensure that Canadian and US requirements for these systems are compatible. TC also states that it will seek IMO support in addressing the international need for enhanced fire detection and extinguishing systems in the tunnel areas of self-unloaders.

With respect to the issue of readiness of existing fire stations onboard self-unloading vessels, a Ship Safety Bulletin will be issued to bring attention to this concern. All of the above actions could redress the safety deficiencies highlighted by Board recommendations M96-09 to M96-12. However, again no indication has been given with respect to forecast completion date.

The TSB considers TC's response to be **Satisfactory Intent**.

TSB action

The file was assigned an **Inactive** status in 1997. On 17 December 2013, the TSB changed the status to **Active** and requested that TC provide an update on the status of this recommendation.

Transport Canada's response to M96-09 (29 January 2014)

Transport Canada undertook a six-phase research study between 2001 and 2003 to evaluate the recommendation. The study reviewed the feasibility of fire protection options for tunnel areas on Canadian self-unloaders. It was concluded that the best option would be the use of fire detection along with manual hose stations for control of fire events in the tunnel space and an emphasis on effective manual fire-fighting capabilities. To address the concerns of stakeholders with regard to further development of standards, it was decided by the R&D Review and

Direction Committee of Marine Safety that a feasibility study should be conducted before a decision to proceed further with the development of additional requirements.

The feasibility study completed in March 2004 concluded, after reviewing the previous reports and interviewing stakeholders, that it has not been demonstrated that any fixed fire-fighting or detection system will be effective, as would be necessary to justify its installation costs, and that the improved procedural approaches to fire prevention that have been adopted voluntarily by the operators in recent years appear to be effective approaches to risk mitigation. Transport Canada had considered the conclusion of the study in 2004 and concurred with the findings, and therefore, no further regulatory amendments were pursued.

Board reassessment of the response to M96-09 (31 March 2014)

The Board notes TC's response that the "improved procedural approaches to fire prevention that have been adopted voluntarily by the operators in recent years appear to be effective approaches to risk mitigation." As recommended, TC reviewed the requirements for fire protection systems for tunnel areas on Canadian self-unloaders and ensured that procedures on board Canadian self-unloaders included procedures for the suppression of large fires.

Therefore, the assessment of the response to recommendation M96-09 has been changed to **Fully Satisfactory**.

Next TSB Action

The deficiency file is now **Closed**.