



MARITIME SAFETY COMMITTEE  
81st session  
Agenda item 23

MSC 81/23/2  
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## WORK PROGRAMME

### Bridge navigational watch alarm system (BNWAS)

#### Note by the Bahamas and Denmark

#### SUMMARY

**Executive summary:** This document proposes that a bridge navigational watch alarm system is added to the carriage requirements for shipborne navigational systems and equipment in SOLAS regulation V/19.2.2.3. The purpose of the proposed alarm is to enhance the safety of navigation taking into account the human element. No change of manning of the bridge is intended

**Action to be taken:** Paragraph 15

**Related documents:** SOLAS regulations V/15.7 and V/19.2.2, resolution MSC 128(75), MSC 71/20/4, MSC 71/20/12, MSC 79/20/1 and MSC 79/23, paragraph 20.28, the accident report from the cargo ship Karen Danielsen's collision with the Great Belt Bridge on 3 March 2005

#### Introduction

1 On 3 March 2005, a cargo ship with a gross tonnage of 3,120, registered in the Bahamas, failed to follow its planned track. Apparently there was a lack of control on the ship's navigation bridge. The result was a collision with the combined road and railway bridge across the Great Belt in Denmark. The forward mast, two large deck cranes, the top of the accommodation including all of the navigation bridge and the funnel of the ship were destroyed. The chief officer, who was on duty on the ship's navigation bridge, was killed when the ship's navigation bridge was demolished by the impact. The ship's master and cook were seriously injured. In the accident report it is reported that the chief officer, who was the OOW, had an excessive blood alcohol level. The bridge across the Great Belt also sustained damage and was closed to traffic for six hours until the damage to the structure had been checked.

2 The ship was equipped with a bridge navigational watch alarm system (BNWAS) of a simple type, but it was switched off. Had the BNWAS been functioning, this would have signalled to the master or another responsible officer that the navigation officer on duty was not alert. That could have prevented the ship from colliding with the bridge across the Great Belt.

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3 A number of groundings and collisions related to navigational watch-keeping on board ships have been analysed. The result of the analysis showed that an operational bridge navigational watch alarm (BNWAS) would have prevented many of the accidents. In co-operation with the shipping industry, a BNWAS that does not cause inconvenience to the operator has been developed. The system complies with resolution MSC.128(75) on Performance standards for a bridge navigational watch alarm system (BNWAS), which has been found to be effective and adequate. The system may include sensors that detect activity on the bridge, so that the Officer of the Watch (OOW) does not have to press a reset button at regular intervals. The system is now required in Danish ships with a length of 15 metres and above with a wheelhouse, with the exception of passenger ships on domestic routes.

4 The purpose of a BNWAS is to monitor bridge activity and detect operator disability, which could lead to maritime accidents. The system monitors the awareness of the OOW and automatically alerts the master or another qualified OOW if for any reason the OOW becomes incapable of performing the OOW's duties. This purpose is achieved by a series of indications and alarms to alert first the OOW and, if there is no response, then to alert the master or another qualified OOW. Additionally, the BNWAS provides the OOW with a means of calling for immediate assistance if required.

### **Scope of the proposal**

5 It is proposed that SOLAS be amended to require that all ships of 150 gross tonnage and upwards and passenger ships irrespective of size shall be fitted with a BNWAS. The BNWAS shall be in operation when the ship is at sea. Exemption may be possible under certain circumstances. The purpose of the BNWAS is to enhance the safety of navigation taking into account the human element. No reduction in manning of the bridge is intended. IMO has adopted resolution MSC.128(75) on Performance standards for a bridge navigational watch alarm system (BNWAS). The Organization has, however, not adopted carriage requirements or guidelines for the use of such systems. A proposal for an amendment to SOLAS regulation V/19 is attached at annex. MSC 79 decided to instruct the DE Sub-Committee to amend the Code on alarms and indicators (resolution A.830(19)) to include among other alarms the BNWAS.

### **Need or compelling need**

6 An unacceptably high number of navigation errors happen because the officer on watch on the bridge is asleep or incapacitated. A BNWAS will in all such cases alert a backup navigator. Some ship owners install BNWAS on a voluntary basis, because they see a need for it. A few Member States, including Denmark, have already realized the benefits of a BNWAS and require it on a national basis, this contributes towards the prevention of collisions or groundings on these ships – it is not preventing ships of other flags from causing collisions and groundings. There is therefore a compelling need for an international requirement for a BNWAS on all ships.

### **Analysis of the issues**

7 Costs to the maritime industry will depend on the complexity of the system chosen. In its basic form a BNWAS installed on board a ship will cost about US\$1,500 per ship.

8 The legislative and administrative burdens at global level will be minimal, since the amendment is expected to be only one paragraph in SOLAS chapter V, regulation 19.

### **Benefits that would accrue from the proposal**

9 A BNWAS in operation on the ship's navigation bridge would contribute greatly to minimize the risk of ship accidents caused by an OOW becoming incapacitated during the watch and this would harmonize the proactive stance already taken by certain member States.

### **Priority and target completion date**

10 The fitting of BNWAS aims at preventing collisions, groundings and foundering of ships and prevents injury and loss of life at sea. The aim clearly calls for the subject to be given high priority.

11 It is expected that the carriage requirements could be finalized within two sessions of the NAV Sub-Committee.

### **Criteria for general acceptance**

12 IMO has developed and adopted performance standards for a bridge navigational watch alarm system (resolution MSC.128(75)). The use of the BNWAS therefore falls within the scope of the subject safety of navigation, which is within scope of the objectives of IMO. However, requirements to fit and operate BNWAS in ships are missing.

13 The benefits of BNWAS will be that the risk of ships sailing for periods of time without a vigilant OOW is minimized. This clearly justifies the proposed action.

### **Identification of committee/subsidiary body(ies) essential to complete the work**

14 The development of the proposed amendment to SOLAS, chapter V, regulation 19, falls naturally within the scope of the NAV Sub-Committee. It is estimated that the small addition to regulation V/19 could be finalized in two sessions of the Sub-Committee.

### **Action requested of the Committee**

15 The Committee is invited to add the following new high-priority item to the work programme of the Sub-Committee on Safety of Navigation: "Carriage requirements for a bridge navigational watch alarm system (BNWAS)". It is recommended that this item be referred to the next session of NAV, so that the requirement may be finalized as early as possible.

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ANNEX

**PROPOSAL FOR AMENDING SOLAS, CHAPTER V, REGULATION 19 TO INCLUDE  
A CARRIAGE REQUIREMENT FOR A BRIDGE NAVIGATIONAL WATCH ALARM  
SYSTEM (BNWAS)**

The Bahamas and Denmark propose that the following paragraph be added to regulation V/19.2.2:

**Regulation 19**

After subparagraph 2.2.2, the following new subparagraph is added:

- “3 a bridge navigational watch alarm system (BNWAS) complying with standards not inferior to those adopted by the Organization<sup>\*</sup>. The BNWAS shall be in operation whenever the ship is at sea.”

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\* Refer to the recommendation adopted by the Organization by resolution MSC.128(75) on Performance standards for a bridge navigational watch alarm system (BNWAS).