

Subject

Implementation of Bridge Navigational Watch Alarm System (BNWAS) (Excluding Japanese-flagged ships)

ClassNK

Technical Information

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To whom it may concern

Paragraphs 2.2.3 and 2.2.4 relating to the Bridge Navigational Watch Alarm System (BNWAS) were added to SOLAS Chapter V/19 at MSC86 in June 2009. A Bridge Navigational Watch Alarm System (BNWAS) required to be installed on all ships from 1 July 2011.

This ClassNK Technical Information is intended to provide information regarding the requirements related to the implementation of BNWAS for seagoing ships.

1. Applicable ships

These new requirements shall apply to the following types of ships:

- (1) All cargo ships of 150GT and upwards; and
- (2) Passenger ships irrespective of size.

2. Application due date

The due dates for ships to be fitted with a BNWAS are as follows:

- (1) Ships constructed on or after 1 July 2011, not later than the initial Safety Equipment Survey (SE survey);
- (2) Passenger ships constructed before 1 July 2011, not later than the first SE survey after 1 July 2012;
- (3) Cargo ships of 3,000 GT and upwards constructed before 1 July 2011, not later than the first SE survey after 1 July 2012;
- (4) Cargo ships of 500 GT and upwards constructed before 1 July 2011, not later than the first SE survey after 1 July 2013;
- (5) Cargo ships of 150 GT and upwards constructed before 1 July 2011, not later than the first SE survey after 1 July 2014; and
- (6) Ships constructed before 1 July 2011 but delivered after the due dates of (2) to (5) above, not later than the initial SE Survey

3. Performance standards and type-approval for BNWAS

- (1) Summary of IMO Performance Standards MSC.128(75):
 - (i) The system shall comply with environmental test requirements;
 - (ii) The system should incorporate the following operational modes: Automatic, Manual On and Manual Off;

(To be continued)

NOTES:

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- (iii) The dormant period, visual indication, first stage audible alarm, second stage remote audible alarm and third stage remote audible alarm should follow the operational sequence of IMO standards.
- (iv) The electric power required by the system should be supplied from both an AC source and a DC source.
- (v) Initiation of the reset function may be generated by means other than a reset button.
- (2) Type approval of BNWAS
A BNWAS is to be of a type approved by the Administration

4. Guidelines for BNWAS Installation

- (1) Reset devices:
 - (i) At least one reset device should be provided near each conning position in the wheelhouse.
More reset devices may be provided to the workstations for navigation, manoeuvring and monitoring in order for safe and effective operation, if desired.
A reset function may be initiated by motion sensors and navigational equipment such as radar, auto-pilot, ECDIS, INS, etc.
 - (ii) One reset device should be provided to each bridge wing.
Where it is easy to reset a first stage alarm by a reset device located nearby in the wheelhouse, reset devices are not required to be fitted at bridge wings.
- (2) Visual indicators and First stage audible alarms
 - (i) A visual indicator and first stage audible alarm are to be provided in the wheelhouse.
When they are combined with a reset device, individual visual indicators and first stage alarms are not required.
 - (ii) A visual indicator and first stage audible alarm are to be provided in the bridge wings.
Where a reset device is not provided in the case of 1(ii) above, the following functions are required:
 - Flashing indicator in the wheelhouse should be visible from an operational position on the bridge wing; and
 - First audible alarm in the wheelhouse should be audible from an operational position on the bridge wing.
- (3) Second stage audible alarms and Third stage audible alarms
 - (i) Second stage audible alarms should be located in the Captain's bedroom and Deck officer's cabins.
In cases where there are three deck officers on board, one deck officer for duty may be selected from the main panel and the alarm in the Captain's bedroom may be changed to a third stage one.
 - (ii) Third stage alarms should be located in the Officer's Mess room, Saloon, Recreation room and Ship's office.
- (4) BNWAS should be supplied by both an AC source (Main and Emergency source) and a DC source (ship's batteries or batteries contained within the device).
- (5) BNWAS for ships constructed on or after 1 July 2011 are to be connected with the following mandatory equipment required by SOLAS.

(To be continued)

- (i) Heading Control System and Track Control System
 - (ii) Voyage Data Recorder (VDR)
 - (6) With respect to small ships, BNWAS installations may be designed according to relaxed requirements in cases where such requirements are specified by the Flag State.
 - (7) An emergency call facility may be provided.
5. BNWAS installed before 1 July 2011
- (1) The BNWAS should be any of the following (i) to (iv):
 - (i) Type-approved equipment or equipment providing equivalent performance possessing a Declaration of Conformity issued by the product maker stating such.
 - (ii) Alarm and warning transfer systems which include a dormant period sequence for ships of one-man bridge operations already plan-approved by ClassNK.
 - (iii) Equipment exempted by the Flag State in accordance with SOLAS V/19 2.2.4.
 - (iv) Equipment approved for non-convention ships by the Flag State.
 - (2) Existing BNWAS installations

The Guidelines in 4 above are intended to be applied in cases where no Flag State instructions exist. However, this need not apply to relaxed requirements specified by Flag States.

In addition, drawings for existing BNWAS installations are not required to be submitted to ClassNK.
- Ship owners / Ship builders should be aware that the requirements related to existing BNWAS may be changed at Administration discretion and remain up to date on current BNWAS information.
6. BNWAS surveys
- (1) A BNWAS survey is carried out at the due date of a first SE survey on or after 1 July 2011 for ascertainment of the following:
 - (i) Type-approval by Authorities or approval by the Flag State.
 - (ii) Proper operation with appropriate power supply, reset function, visual indication, first audible alarm, remote audible alarm, etc.
 - (iii) Conformance with special requirements of the Flag State.
 - (2) After satisfactory completion of the SE survey, a SE certificate is issued with BNWAS added to the Form-E.
7. Further information on BNWAS will be posted the ClassNK website (<http://www.classnk.or.jp>) as it is made available.

(To be continued)

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Attachment:

1. IMO Resolution MSC.128(79) Performance Standards for BNWAS

ANNEX 11

**RESOLUTION MSC.128(75)
(adopted on 20 May 2002)**

**PERFORMANCE STANDARDS FOR A BRIDGE NAVIGATIONAL
WATCH ALARM SYSTEM (BNWAS)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article (28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECOGNIZING that, many operational bridge-related marine accidents could be averted if an effective and operational bridge navigational watch alarm system (BNWAS) was fitted to vessels,

RECOGNIZING FURTHER that, by the use of a Bridge Navigational Watch Alarm System (BNWAS) warnings will be given in case of the incapacity of the watchkeeping officer due to accident, sickness or in the event of a security breach, e.g. piracy and/or hijacking,

NOTING that the installation of such equipment is a relatively low-cost and an effective means of avoiding operational navigational accidents,

RECOGNIZING the need to prepare appropriate performance standards for BNWASs,

HAVING CONSIDERED the recommendation on the performance standards for BNWASs made by the Sub-Committee on Safety of Navigation at its forty-seventh session,

1. ADOPTS the Recommendation on Performance Standards for a Bridge Navigational Watch Alarm System, set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that BNWASs installed on or after 1 July 2003, conform to performance standards not inferior to those specified in the Annex to the present resolution.

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR A BRIDGE NAVIGATIONAL WATCH ALARM SYSTEM (BNWAS)

1 SCOPE

The purpose of a bridge navigational watch alarm system (BNWAS) is to monitor bridge activity and detect operator disability which could lead to marine accidents. The system monitors the awareness of the Officer of the Watch (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 he is not responding, then to alert the Master or another qualified OOW. Additionally, the BNWAS may provide the OOW with a means of calling for immediate assistance if required. The BNWAS should be operational whenever the ship's heading or track control system is engaged, unless inhibited by the Master.

2 REFERENCES

- IMO resolution A.830(19) Code on alarms and indicators
- IMO MSC/Circ.982 Guidelines on Ergonomic Criteria for Bridge Equipment and Layout
- IMO resolution A.694(17) General Requirements¹ for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids

3 DEFINITIONS

Bridge – Wheelhouse and bridge wings

4 OPERATIONAL REQUIREMENTS

4.1 Functionality

4.1.1 Operational modes

4.1.1.1 The BNWAS should incorporate the following operational modes:

- Automatic (Automatically brought into operation whenever the ship's heading or track control system is activated and inhibited when this system is not activated)
- Manual ON (In operation constantly)
- Manual OFF (Does not operate under any circumstances)

¹ IEC Publication 60945

4.1.2 Operational sequence of indications and alarms

4.1.2.1 Once operational, the alarm system should remain dormant for a period of between 3 and 12 min (Td).

4.1.2.2 At the end of this dormant period, the alarm system should initiate a visual indication on the bridge.

4.1.2.3 If not reset, the BNWAS should additionally sound a first stage audible alarm on the bridge 15 s after the visual indication is initiated.

4.1.2.4 If not reset, the BNWAS should additionally sound a second stage remote audible alarm in the back-up officer's and/or Master's location 15 s after the first stage audible alarm is initiated.

4.1.2.5 If not reset, the BNWAS should additionally sound a third stage remote audible alarm at the locations of further crew members capable of taking corrective actions 90 s after the second stage remote audible alarm is initiated.

4.1.2.6 In vessels other than passenger vessels, the second or third stage remote audible alarms may sound in all the above locations at the same time. If the second stage audible alarm is sounded in this way, the third stage alarm may be omitted.

4.1.2.7 In larger vessels, the delay between the second and third stage alarms may be set to a longer value on installation, up to a maximum of 3 min, to allow sufficient time for the back-up officer and/or Master to reach the bridge.

4.1.3 Reset function

4.1.3.1 It should not be possible to initiate the reset function or cancel any audible alarm from any device, equipment or system not physically located in areas of the bridge providing proper look out.

4.1.3.2 The reset function should, by a single operator action, cancel the visual indication and all audible alarms and initiate a further dormant period. If the reset function is activated before the end of the dormant period, the period should be re-initiated to run for its full duration from the time of the reset.

4.1.3.3 To initiate the reset function, an input representing a single operator action by the OOW is required. This input may be generated by reset devices forming an integral part of the BNWAS or by external inputs from other equipment capable of registering physical activity and mental alertness of the OOW.

4.1.3.4 A continuous activation of any reset device should not prolong the dormant period or cause a suppression of the sequence of indications and alarms.

4.1.4 Emergency call facility

Means may be provided on the bridge to immediately activate the second, and subsequently third, stage remote audible alarms by means of an “Emergency Call” push button or similar.

4.2 Accuracy

The alarm system should be capable of achieving the timings stated in section 4.1.2 with an accuracy of 5% or 5 s, whichever is less, under all environmental conditions.

4.3 Security

The means of selecting the Operational Mode and the duration of the Dormant Period (Td) should be security protected so that access to these controls should be restricted to the Master only.

4.4 Malfunctions, alarms and indications

4.4.1 Malfunction

If a malfunction of, or power supply failure to, the BNWAS is detected, this should be indicated. Means shall be provided to allow the repeat of this indication on a central alarm panel if fitted.

5 ERGONOMIC CRITERIA

5.1 Operational controls

5.1.1 A protected means of selecting the operational mode of the BNWAS.

5.1.2 A protected means of selecting the duration of the dormant period of the BNWAS.

5.1.3 A means of activating the “Emergency Call” function if this facility is incorporated within the BNWAS.

5.1.4 Reset facilities

Means of activating the reset function should only be available in positions on the bridge giving proper look out and preferably adjacent to visual indications. Means of activating the reset function should be easily accessible from the conning position, the workstation for navigating and manoeuvring, the workstation for monitoring and the bridge wings.

5.2 Presentation of information

5.2.1 Operational mode

The operational mode of the equipment should be indicated to the OOW.

5.2.2 Visual indications

The visual indication initiated at the end of the dormant period should take the form of a flashing indication. Flashing indications should be visible from all operational positions on the bridge where the OOW may reasonably be expected to be stationed. The colour of the indication(s) should be chosen so as not to impair night vision and dimming facilities (although not to extinction) should be incorporated.

5.2.3 First stage bridge audible alarm

The first stage audible alarm which sounds on the bridge at the end of the visual indication period should have its own characteristic tone or modulation intended to alert, but not to startle, the OOW. This alarm should be audible from all operational positions on the bridge where the OOW may reasonably be expected to be stationed. This function may be engineered using one or more sounding devices. Tone/modulation characteristics and volume level should be selectable during commissioning of the system.

5.2.4 Second and third stage remote audible alarm

The remote audible alarm which sounds in the locations of the Master, officers and further crew members capable of taking corrective action at the end of the bridge audible alarm period should be easily identifiable by its sound and should indicate urgency. The volume of this alarm should be sufficient for it to be heard throughout the locations above and to wake sleeping persons.²

6 DESIGN AND INSTALLATION

6.1 General

The equipment should comply with IMO resolutions A.694(17), A.813(19), their associated international standards³ and MSC/Circ.982 regarding Guidelines for Ergonomic Criteria for Bridge Equipment and Layout.

6.2 Specific requirements

6.2.1 System physical integrity

All items of equipment forming part of the BNWAS should be tamper-proof so that no member of the crew may interfere with the system's operation.

6.2.2 Reset devices

Reset devices should be designed and installed so as to minimise the possibility of their operation by any means other than activation by the OOW. Reset devices should all be of a uniform design and should be illuminated for identification at night.

² IMO Resolution A.830(19)

³ IEC Publication 60945

6.2.3 Alternative reset arrangements may be incorporated to initiate the reset function from other equipment on the bridge capable of registering operator actions in positions giving proper look out.

6.3 Power supply

The BNWAS should be powered from the ship's main power supply. The malfunction indication, and all elements of the Emergency Call facility, if incorporated, should be powered from a battery maintained supply.

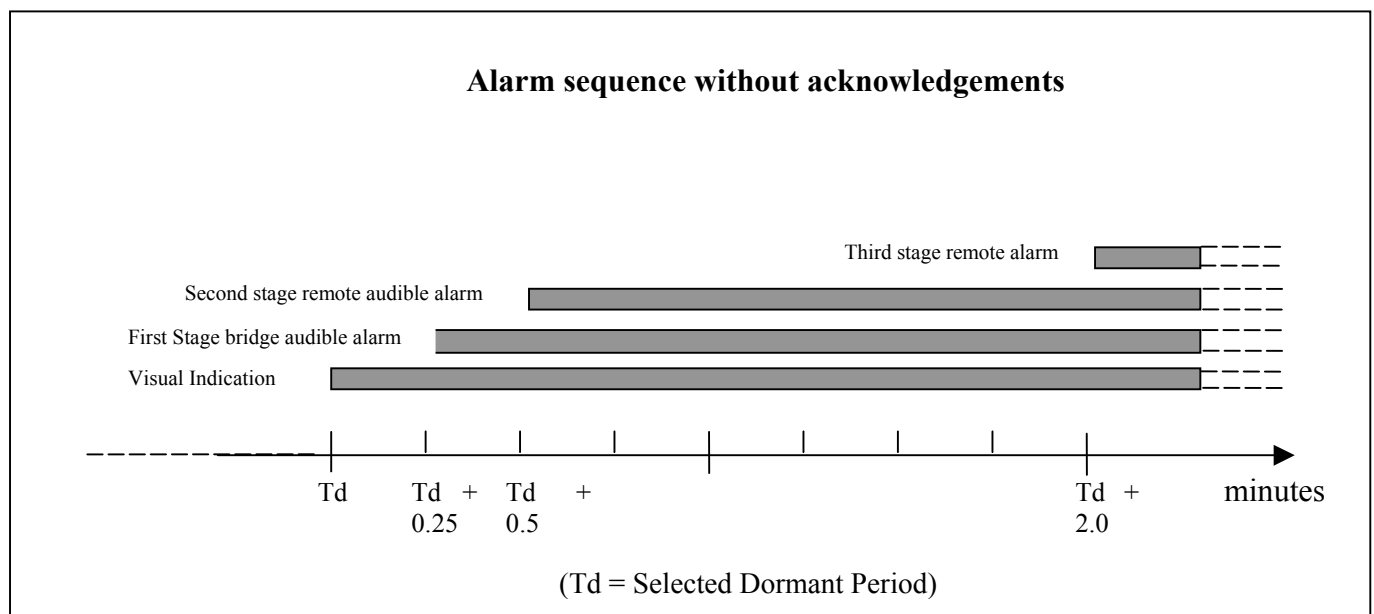
7 INTERFACING

7.1 Inputs

Inputs should be available for additional reset devices or for connection to bridge equipment capable of generating a reset signal by contacts, equivalent circuits or serial data.⁴

7.2 Outputs

Output(s) should be available for connection of additional bridge visual indications and audible alarms and remote audible alarms.



⁴ IEC Publication 61162