

# **Imtech Bridge Guard Test specification**

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Author: Vince Kerckhaert

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## References

IMO Res.A.694(17), MSC.128(75), MSC.191(79), IEC 60945 (2002) inc. corr.1 (2008), IEC 61162 Series, IEC 62288 Ed.1.0 (2008), IEC 62616 (2010) , IEC 61696-1 IEC FDIS Ed.2 TC80-690 FDIS VDR, IEC 61924-2 NEN-EN-IEC Ed.1 2012-12

## Introduction

This is the test specification for the BNWAS. It sums up the requirement with their respective test specifications.

## Abbreviations list

|       |  |
|-------|--|
| BNWAS | Bridge Navigational Watch Alarm System |
| Td    | Time dormant                           |

## Methods of testing and required test results

### General

For the purpose of testing, a BNWAS is required comprising a visual indication (4.2.2), examples of first (4.2.3), second and third stage alarm equipment (4.2.4), examples of reset devices (5.2.2), an Emergency Call function (4.1 c)) and Installation documentation (5.4). It will be necessary for testing to have access to the means of selecting the operation mode (4.1 a)) and the means of selecting the duration of the dormant period (4.1 b)).

The BNWAS shall be installed in the test facility using interconnection and input cabling and methods representative of a normal installation.

### General requirements

The BNWAS shall be tested against the general requirements contained in IEC 60945 for the equipment category “protected” or “exposed”, as applicable. For the purposes of IEC 60945 the following definitions apply:

**Performance test:** Operation of the BNWAS without acknowledgement including measurement of the timings shown in Figure 1. The required result is that the BNWAS operates correctly producing the first, second and third stage alarms and that the timings are achieved with an accuracy of 5 % or 5 s whichever is less.

**Performance check:** Operation of the BNWAS with acknowledgement after the first stage bridge audible alarm. The required result is that the BNWAS correctly produces the first stage bridge audible alarm and then resets.

### Display of information

The BNWAS shall be tested as applicable against the general requirements for all displays contained in IEC 62288.

### Operational tests

The requirements given in Clauses 3, 4, 5 and 6 shall be verified as follows.



# 1. Test against IEC 60945 (with paragraph numbers)

## 1.1 (4.2.1.5) screen displays and indications

(See 6.1.5)

Displays shall present the simplest information consistent with their function, information irrelevant to the task shall not be displayed, and extraneous text and graphics shall not be present. As a minimum English language shall be used.

Menus shall be grouped according to the task. Items of any kind which appear the same shall

behave consistently. The user shall not have to remember information when moving from one

part of a menu to another.

In all operations, the system state shall be observable with essential data displayed. All information required by the user to perform an operation shall be available on the current display. Any mode in use shall be distinctively identified by the display(s). It shall be possible at any step of a screen supported operation to return with one action to the original status before the operation was started.

Feedback timing shall be consistent with the task requirements. There shall be a clear feedback from any action within a short time. Where a perceptible delay in response occurs, visible indication shall be given.

Displayed text shall be clearly legible to the user and easy to understand. Simple natural language shall be used wherever possible. The equipment shall employ marine terminology. Where additional on-line help is available it shall be in task dependent form, easy to search and list the steps to be carried out.

All information shall be presented on a background of high contrast, emitting as little light as possible at night, so that it does not degrade the night vision of the officer of the watch.

| Requirement specific test  | Tested |
|--|--------|
| <p>a) Check that menus are grouped according to the task environment. Check that hierarchical menu structures have been designed to minimize the number of steps required and that the user has an indication of current position in the menu.</p> <p>b) If menu selections are made of keyed codes, check that each code is the first letter or letters of the displayed option label rather than an arbitrary letter.</p> <p>c) Check that a menu displays only those options currently available in the current context to the user. Check that menu items are highlighted when the cursor passes over them.</p> <p>d) Check that for menu items that can be in an "On" or "Off" state the "On" state should be indicated by making the item perceptually distinct and that selection of menu items with "On" and "Off" states change their state.</p> <p>e) Check that items which appear the same behave consistently by, for instance,</p> |        |

- checking for consistent display format and selection logic in hierarchical menus,
- checking that menus used in different displays are consistent,
- checking that menus are displayed in consistent screen locations,
- checking for consistent input prompts and checking that labels are consistent.

f) Check that the user does not have to remember information from one part of a dialogue to another

g) Check that the system employs marine terminology conforming with the SMCPs where appropriate.

h) Check that displayed text is easy to understand wherever possible.

i) Check that where additional on-line help is available it is in task dependent form, easy to search and list the steps to be carried out.

j) Check that in all operations the system state is observable with essential data displayed.

k) Check that all information required by the user to perform an operation is available on the current display.

l) Check that feedback timing is consistent with the task requirements. Check that there is a clear feedback from any action within a short time. Check that where a perceptible delay in response occurs, a visible indication is given.

m) Check that it is possible at any step of a screen supported operation to return with one action to the original status before the operation was started.

n) Check that any mode in use is distinctively identified by the display.

o) Check that displays present the simplest information consistent with their function, information irrelevant to the task is not displayed, and extraneous text and graphics are not present.

p) Check that displayed text is clearly legible to the user. Check that the font and size of alphanumeric characters are consistent. For any font used, check that it is possible to clearly distinguish between the characters: X and K, T and Y, I and L, I and 1, O and Q, S and 5 and U and V.

q) Check that the unit of measure is indicated for any data.

r) Check that all information is presented on a background of high contrast.

s) Check that highlighting is easily recognizable and is disabled when it is no longer applicable.

|   |  |
|---|--|
| <p>Check that flashing is only used to signal an alarm and that only a small percentage of the screen is flashing at any one time. Check that if a user is required to read alarm text a marker symbol shall flash rather than the text. Check that no more than two flash rates are used and that they are then time synchronized.</p> |  |
|---|--|

## 1.2 (4.2.1.7) Safety of operation

(See 6.1.7)

The system shall attempt to prevent ascertainable user-action error from occurring. All actions that may cause irreversible errors shall require a confirmation before proceeding. When an action causes a detectable error, the system shall give clear feedback such as by including UNDO and/or REDO options where possible.

Equipment shall make use of any quality indication contained in the input from other systems or sources.

The user is to have available means to return to a known safe state with a single action.

| Requirement specific test   | Tested |
|---|--------|
| <p>a) Check that the system attempts to prevent ascertainable user-action error from occurring.</p> <p>b) Check that all actions that may be irreversible, require a confirmation before proceeding.</p> <p>c) Check that when an action causes a detectable error the system gives clear feedback such as by including UNDO and/or REDO options where possible.</p> <p>d) Check that the EUT makes use of any quality indication contained in the input from other systems or sources.</p> <p>e) Check that the user has available means to return to a known safe state with a single action.</p> |        |

## 1.3 (4.2.2.2) Alarms and indicators

(See 6.2.2)

The equipment shall be provided with facilities, which permit the testing of all operational indicators (alarm, warning and routine), displays and audible devices required by the relevant equipment standard.

Warning and alarm indicators shall show no light in normal condition (indication of a safe situation). Alarm indications shall be red, or if on displays, red or otherwise highlighted.

If alarm messages are displayed on colour VDUs, the alarm status shall remain visible in the event of a failure of one colour of the display system.

The sound pressure level of an audible alarm 1 m from the source shall be at least 75 dB(A) but not greater than 85 dB(A).

| Requirement specific test   | Tested |
|---|--------|
| a) Check that the EUT is provided with facilities which permit the testing of all operational indicators (alarm, warning and routine), displays and audible devices. Check audible alarms as described in 11.1.<br>b) Check that alarm indications are red, or if on displays, red or otherwise highlighted.<br>c) Check that warning and alarm indications show no self-illumination, except to outline the alarm area on CRT or LCD displays, in the "safe" condition, and that any indirect illumination is low enough to avoid false indications. |        |

## 1.4 (4.2.3) Software

### 1.4.1 (4.2.3.3) Monitoring

(See 6.3.3)

Means shall be provided to monitor the operational software and stored data of the equipment automatically. The check should be carried out during system start-up and at regular intervals, as indicated in the manufacturer's documentation. In the case of a non-automatically recoverable error or failure, the system shall release an independent alarm observable to the user on the workstation.

| Requirement specific test  | Tested |
|--|--------|
| Check documentation for compliance with 4.2.3.3. The manufacturer shall provide information on how to produce a non-recoverable error. Carry out the non-automatically recoverable error according to the above information. Check that the alarm can be recognized as noted in the manufacturers documentation.<br>NOTE This test can be waived if the manufacturer gives a written explanation of how the equipment watchdog operates and a written declaration is given to the test-house of how this function works and that the behaviour of the watchdog complies with the noted requirements. |        |

## 1.5 (4.7.2) Maintenance of software

Equipment shall be so designed that maintenance of software can be readily carried out on board. Maintenance shall be supported by labelling in accordance with 4.9 (Marking and identification). No user retraining shall be necessary after maintenance. On board documentation shall be updated with the software maintenance to reflect any changes introduced.

| Requirement specific test | Tested |
|---------------------------|--------|
| Confirm by observation.   |        |



## **2. Test against IEC 62288 (with paragraph numbers)**

Non actual rules that apply solely to the BNWAS.

### **2.1 Display of information**

The BNWAS shall be tested as applicable against the general requirements for all displays contained in IEC 62288.

### **2.2 Operational tests**

The requirements given in Clauses 3, 4, 5 and 6 shall be verified

### 3. Test against IEC 62616 (with paragraph numbers)

#### Performance requirements

#### 3.1 (3.1) Functionality

##### 3.1.1 (3.1.1) Operational modes

(128/A4.1.1.1) *The BNWAS shall 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)*

NOTE The Automatic mode is not suitable for use on a ship conforming with regulation SOLAS V/19.2.2.3 which requires the BNWAS to be in operation whenever the ship is underway at sea.

| Requirement specific test | Tested |
|---------------------------|--------|
| Confirm by observation.   |        |

##### 3.1.2 (3.1.2) Operational sequence of indications and alarms

##### 3.1.2.1 (3.1.2.1) Dormant period

(128/A4.1.2.1) *Once operational, the alarm system shall remain dormant for a period of between 3 and 12 min ( $T_d$ ). See Figure 1.*

(128/A4.1.2.2) *At the end of this dormant period, the alarm system shall initiate a visual indication on the bridge.*

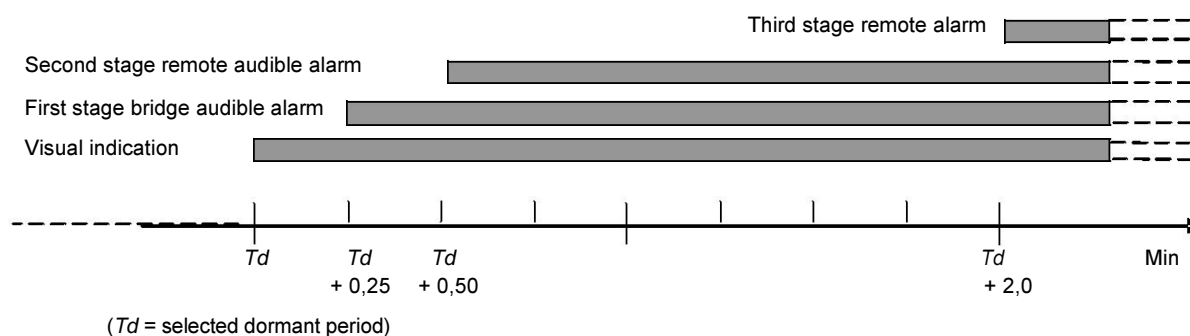


Figure 3-1: Alarm sequence without acknowledgements

| Requirement specific test  | Tested |
|--|--------|
| Set the BWNAS to Manual ON. Set the dormant period ( $T_d$ ) to 3 min and check that a visual indication is produced at the end of this period. Repeat the procedure for a dormant period ( $T_d$ ) of 6 min and 12 min. |        |
| Check that the $T_d$ can not be set to less than 3 min and more than 12 min.   |        |

### 3.1.2.2 (3.1.2.2) First stage bridge audible alarm

(128/A4.1.2.3) *If not reset, the BNWAS shall additionally sound a first stage audible alarm on the bridge 15 s after the visual indication is initiated.*

| Requirement specific test                                       | Tested |
|---|--------|
| These requirements are confirmed by the IEC 60945 tests in 7.2. |        |

### 3.1.2.3 (3.1.2.3) Second stage remote audible alarm

(128/A4.1.2.4) *If not reset, the BNWAS shall 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.*

| Requirement specific test                                       | Tested |
|---|--------|
| These requirements are confirmed by the IEC 60945 tests in 7.2. |        |

### 3.1.2.4 (3.1.2.4) Third stage remote audible alarm

(128/A4.1.2.5) *If not reset, the BNWAS shall 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.*

| Requirement specific test                                       | Tested |
|---|--------|
| These requirements are confirmed by the IEC 60945 tests in 7.2. |        |



### 3.1.2.5 (3.1.2.5) Alarm alternatives

(128/A4.1.2.6) *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.*

(128/A4.1.2.7) *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.*

Installation set-up facilities shall be provided to inhibit the third stage alarm and to increase the delay between the second and third stage alarms to 3 min.

| Requirement specific test                     | Tested |
|---|--------|
| Confirm by inspection of documented evidence. |        |

### 3.1.3 (3.1.3) Reset function

#### 3.1.3.1 (3.1.3.1) Description of reset function

(128/A4.1.3.2) *The reset function shall, 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 shall be re-initiated to run for its full duration from the time of the reset.*

Single operator action is defined as activating a hard-key or soft-key including any necessary cursor movement.

| Requirement specific test  | Tested |
|--|--------|
| Set the BNWAS to Manual ON. Set the dormant period ( $T_d$ ) to 3 min and initiate the equipment and allow the equipment to produce the third stage alarm. Check that with a single operator action it is possible to cancel the visual indication and all audible alarms. Check that the equipment has reset and produces a visual indication after a further period of 3 min. Reset the equipment to cancel this indication. After a period of 2 min reset the equipment. Check that the equipment produces a visual indication after a further period of 3 min. |        |

### 3.1.3.2 (3.1.3.2) Initiation of reset function

(128/A4.1.3.3) *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.*

For the purposes of this standard, mental alertness means consciously intended operations or movements for which there is no risk of automatic generation by vibration or by movement of the ship.

NOTE The IMO subcommittee on the safety of navigation at its 55<sup>th</sup> session (NAV 55/21) described three methods for the reset function as follows:

- 1) by a single operator action from a device forming an integral part of the BNWAS, for example a manually operated button or a touch screen; or
- 2) by external inputs from other equipment registering physical activity, for example sensors preferably detecting the presence and movements of a human body or floor pressure pads detecting movement of a human; or
- 3) by external inputs from other equipment registering mental alertness of the OOW, for example speech recognition sensors or changes in the operation of the manual controls of bridge equipment.

| Requirement specific test   | Tested |
|---|--------|
| <p>Confirm by inspection of documented evidence that a single operator action will initiate a reset of the BWNAS.</p> <p>Confirm by inspection of documented evidence that input ports are available for connection of external reset devices from other equipment capable of registering physical activity and mental alertness of the OOW for example motion detectors.</p> <p>If these input ports are digital interfaces conforming to IEC 61162 confirm by inspection of documented evidence that the reset operates only if the information has been derived from a physical activity.</p> <p>NOTE The sentence EVE (General event message) is designed to transmit actions by the crew on the bridge. The tag code field should be set as "BNWAS" and the event description field should be set as "Operator activity".</p> <p>Example \$RAEVE,,BNWAS,Operator activity*hh&lt;CR&gt;&lt;LF&gt;</p> |        |

### 3.1.3.3 (3.1.3.3) Continuous activation

(128/A4.1.3.4) *A continuous activation of any reset device shall not prolong the dormant period or cause a suppression of the sequence of indications and alarms.*

| Requirement specific test   | Tested |
|---|--------|
| <p>Set the BNWAS to manual ON. Set the dormant period (<math>T_d</math>) to 3 min and initiate the equipment and allow the equipment to produce a visual indication. Reset the equipment to cancel this indication and continually activate all the examples provided of the reset devices. Check that a visual indication is produced after a period of 3 min.</p> |        |

### 3.1.4 (3.1.4) Emergency call facility and transfer of alarms

(128/A4.1.4) 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.

Installation set-up facilities shall be provided for an "Emergency Call" system.

Facilities shall also be provided to immediately actuate the "Emergency Call" system from other equipment capable of transferring an unacknowledged alarm by contact closure or equivalent circuit, or an IEC 61162 interface using the ALR sentence.

NOTE Examples of equipment which are capable of transferring alarms include Integrated Navigation Systems and Track Control Systems.

IMO Resolution MSC.252(83), paragraph 20.5.1 states: *After a time defined by the user unless otherwise specified by IMO, an unacknowledged alarm should be transferred to the bridge navigational watch alarm system (BNWAS), if available. The unacknowledged alarm should remain visible and audible.*

IMO Resolution MSC.74(69) annex 2, paragraph 5.3.4 states: *In the case of any failure or alarm status received from the position-fixing sensor, the heading sensor or the speed sensor in use: 1) an alarm should be generated at the track control system; 2) the system should automatically provide guidance to the user of a safe steering mode; and 3) a back-up navigator alarm should be given if a failure or alarm status is not acknowledged by the officer of the watch (user) within 30 s.*

| Requirement specific test                     | Tested |
|---|--------|
| Confirm by inspection of documented evidence. |        |

### 3.2 (3.2) Accuracy

(128/A4.2) The alarm system shall be capable of achieving the timings stated in 3.1.2 with an accuracy of 5 % or 5 s, whichever is less, under all environmental conditions.

| Requirement specific test                                    | Tested |
|--|--------|
| This requirement is confirmed by the IEC 60945 tests in 7.2. |        |

### 3.3 (3.3) Security

(128/A4.3) The means of selecting the Operational Mode and the duration of the Dormant Period ( $T_d$ ) shall be security protected so that access to these controls should be restricted to the Master only.

| Requirement specific test   | Tested |
|---|--------|
| Confirm by observation that selection of the operational mode and dormant period is protected by unauthorised access such as by a password or a key-lock. |        |

### 3.4 (3.4) Malfunctions, alarms and indications

(128/A4.4.1) *If a malfunction of, or power supply failure to, the BNWAS is detected, this shall be indicated. Means shall be provided to allow the repeat of this indication on a central alarm panel if fitted.*

NOTE See also 5.3 where there is a requirement for this indication to be powered from a battery maintained supply.

| Requirement specific test  | Tested |
|--|--------|
| Remove the power supply to the equipment and check that there is an indication that the equipment is not operational.  |        |
| Confirm by inspection of documented evidence that facilities are provided for the repeat of this information through relay contacts or an IEC 61162 interface.   |        |
| Check documented evidence for any facilities provided to check malfunction of the equipment such as time clock errors, serial interface errors, lack of continuity through remote alarms, reset devices, battery failure etc. and confirm by inspection or measurement that an indication is provided to show that the equipment is not operational. |        |

## Ergonomic criteria requirements

### 3.5 (4.1) Operational controls

The following controls are required:

- a) (128/A5.1.1) *A protected means of selecting the operational mode of the BNWAS.*
- b) (128/A5.1.2) *A protected means of selecting the duration of the dormant period of the BNWAS.*
- c) (128/A5.1.3) *A means of activating the "Emergency Call" function if this facility is incorporated within the BNWAS.*

| Requirement specific test                  | Tested |
|--|--------|
| Confirm by observation. (See also 7.4.10.) |        |

### 3.6 (4.2) Presentation of information

#### 3.6.1 (4.2.1) Operational mode

(128/A5.2.1) *The operational mode of the equipment shall be indicated to the OOW.*

| Requirement specific test | Tested |
|---------------------------|--------|
| Confirm by observation.   |        |

#### 3.6.2 (4.2.2) Visual indications

(128/A5.2.2, see also Annex A) *The visual indication initiated at the end of the dormant period shall take the form of a flashing indication. The colour of the indication(s) shall be chosen so as not to impair night vision and dimming facilities (although not to extinction) shall be incorporated.*

| Requirement specific test | Tested |
|---------------------------|--------|
| Confirm by observation.   |        |

### 3.6.3 (4.2.3) First stage bridge audible alarm

(128/A5.2.3, see also Annex A) *The first stage audible alarm which sounds on the bridge at the end of the visual indication period shall have its own characteristic tone or modulation intended to alert, but not to startle, the OOW. This function may be engineered using one or more sounding devices. Tone/modulation characteristics and volume level shall be selectable during commissioning of the system.*

| Requirement specific test  | Tested |
|--|--------|
| <p>Confirm by observation and measurement of the sound pressure level. The sound pressure level 1 m from the source shall be at least 75 dB(A) but not greater than 85 dB(A).</p> <p>NOTE This test derives from IEC 60945 and has been carried out in 7.2.</p> <p>Confirm by inspection of documented evidence that the tone/modulation characteristics and volume level are capable of being selectable.</p> |        |

### 3.6.4 (4.2.4) Second and third stage remote audible alarm

(128/A5.2.4) *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 shall be easily identifiable by its sound and should indicate urgency. The volume of this alarm shall be sufficient for it to be heard throughout the locations above and to wake sleeping persons as described in IMO resolution A.830(19).*

| Requirement specific test   | Tested |
|---|--------|
| <p>Confirm by observation and measurement of the sound pressure level. The sound pressure level 1 m from the source shall be at least 75 dB(A) but not greater than 120 dB(A).</p> <p>NOTE These sound pressure levels are defined in IMO Resolution A.830(19).</p> |        |

## Design and installation requirements

### 3.7 (5.1) General

(128/A6.1) *The equipment shall comply with IMO resolutions A.694(17), A.813(19), their associated international standard IEC 60945 and MSC/Circ.982 regarding Guidelines for Ergonomic Criteria for Bridge Equipment and Layout.*

| Requirement specific test  | Tested |
|--|--------|
| These requirements have been confirmed by tests to IEC 60945 and IEC 62288. (See 7.2 and 7.3.) |        |

### 5.2 (5.2) Specific requirements

#### 3.7.1 (5.2.1) System physical integrity

(128/A6.2.1) *All items of equipment forming part of the BNWAS shall be tamper-proof so that no member of the crew may interfere with the system's operation.*

| Requirement specific test  | Tested |
|--|--------|
| Confirm by inspection of documented evidence. (See also 7.4.10.) |        |

#### 3.7.2 (5.2.2) Reset devices

(128/A6.2.2) *Reset devices shall be designed and installed so as to minimise the possibility of their operation by any means other than activation by the OOW. Manual reset devices shall all be of a uniform design and shall be illuminated for identification at night.*

(128/A6.2.3) *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.*

| Requirement specific test                                       | Tested |
|---|--------|
| Confirm by inspection of documented evidence. (See also 7.4.6.) |        |

### 3.8 (5.3) Power supply

(128/A6.3) *The BNWAS shall be powered from the ship's main power supply. The malfunction indication, and all elements of the Emergency Call facility, if incorporated, shall be powered from a battery maintained supply.*

| Requirement specific test   | Tested |
|---|--------|
| Confirm by inspection of documented evidence and measurement that when the supply of power is removed from the equipment the malfunction indication and Emergency Call facility operates for a period of 6 h. |        |

### 3.9 (5.4) Installation documentation

The installation documentation shall include appropriate information so that the requirements of Annex A can be fulfilled by the installer of the equipment.

| Requirement specific test  | Tested |
|--|--------|
| Confirm by inspection that appropriate installation requirements are included. |        |

### Interfacing requirements

#### 3.10 (6.1) Inputs

128/A7.1) *Inputs shall 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 as described in IEC 61162.*

Additionally, inputs shall be available for operating the emergency call system as described in 3.1.4.

| Requirement specific test                     | Tested |
|---|--------|
| Confirm by inspection of documented evidence. |        |

#### 3.11 (6.2) Outputs

(128/A7.2) *Output(s) shall be available for connection of additional bridge visual indications and audible alarms and remote audible alarms.*

An output shall also be available for connection to central alarm panels to repeat the malfunction indication as required in 3.4 by contacts, equivalent circuits or an IEC 61162 compliant interface.

Additionally, the BNWAS shall provide an interface according to IEC 61162-1, ALR sentence, with the following message content:

- hhmmss.ss: this part may be left blank if the BNWAS does not include UTC time information
- xxx: Designation of source of alarm or source of reset command. The automatic mode is designated as "000".
- A: A = Dormant period exceeded  
V = Dormant period not exceeded
- A: A = Alarm acknowledged V = Alarm unacknowledged
- c - - c: BNWAS mode (see 3.1.1): c1; c2; c3  
c1 = AUT or MAN or OFF  
c2 = Dormant period in min, (03 – 12)  
c3 = Alarm stage: 1, 2 or 3.

Example

\$BNALR,,000,A,V,C1=AUT;C2=03;C3=1\*hh<CR><LF>

The alarm message shall be sent with any change of the BNWAS settings for mode or dormant period, and with any activated and reset alarm.

NOTE IMO Resolution A.861(20), paragraph 5.4.9 states: *This should include the status of all mandatory alarms on the bridge.*

| Requirement specific test                     | Tested |
|---|--------|
| Confirm by inspection of documented evidence. |        |