



# CERTIFICATION NOTES

No. 2.9

Type Approval Programme 7-866.30

## ENGINEER'S ALARM AND WATCH CALL SYSTEM

MAY 2000

DET NORSKE VERITAS

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DET NORSKE VERITAS operates a worldwide network of survey stations and is authorised by more than 120 national administrations to carry out surveys and, in most cases, issue certificates on their behalf.

### **Standards for Certification**

Standards for Certification (previously Certification Notes) are publications that contain principles, acceptance criteria and practical information related to the Society's consideration of objects, personnel, organisations, services and operations. Standards for Certification also apply as the basis for the issue of certificates and/or declarations that may not necessarily be related to classification.

A list of Standards for Certification is found in the latest edition of the Introduction booklets to the "Rules for Classification of Ships", the "Rules for Classification of Mobile Offshore Units" and the "Rules for Classification of High Speed and Light Craft". In "Rules for Classification of Fixed Offshore Installations", only those Standards for Certification that are relevant for this type of structure, have been listed.

The list of Standards for Certification is also included in the current "Classification Services – Publications" issued by the Society, which is available on request. All publications may be ordered from the Society's Web site <http://exchange.dnv.com>.

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## 1. Scope

Type approval is a programme for certifying that a product type is in conformity with a set of predetermined requirements.

The requirements are based on the Rules for Classification of Ships, Mobile Offshore Units, High Speed, Light Craft and Naval Surface Craft.

The procedure for assessment of conformity of manufactured products (production) is not part of the scope for the type approval programme.

This type approval programme gives the requirements on which DNV bases its type approval of Engineer's alarm and watch call system.

## 2. Conformity Assessment of Design of Product Type

### 2.1 Procedure

Type approval procedure consists of the following elements:

- design assessment
- type testing
- certificate retention survey.

### 2.2 Documents to be submitted

The following documentation is to be submitted in triplicate:

- 1) Drawings showing the inter-relationship between all parts of the equipment.
- 2) Drawings, schematics and functional description as necessary to describe the various parts of the equipment.
- 3) Information on redundancy, test facilities, failure detection facilities (automatic and manual), data security, maintenance and periodical testing.
- 4) Description of the physical and logical interface including I/O configuration.
- 5) List of all main software modules installed with name and version number.
- 6) Description of all software modules installed.
- 7) Drawings/picture showing the MMI of all visual display units and user input devices.
- 8) Power supplies incl. details on transformers, rectifiers, etc.
- 9) Specification of enclosure material.
- 10) Environmental test program and results.
- 11) Performance test program and results.
- 12) Special operational limitations if any.
- 13) Operation and installation manuals.
- 14) Routine testing specification.
- 15) Software quality assurance plan.
- 16) Product marking.

When applying for a type approval an Application for Type Approval Form No.: 90.01a. is to be submitted duly filled in.

### 2.3 Design requirements

The Engineer's alarm and watch call system shall comply with relevant requirements of the following publications:

- The Rules for Classification of Ships and Mobile Offshore Units, Pt.6 Ch.3 - Periodically Unattended Machinery Space and The Rules for Classification of High Speed, Light Craft and Naval Surface Craft, Pt.6 Ch.1 Periodically Unattended Machinery Space.
- The Rules for Classification of Ships/High Speed, Light Craft and Naval Surface Craft/Mobile Offshore Units, Pt.4 Ch.5 - Instrumentation and automation.
- DNV Standard for Certification No. 2.4 - Environmental test specification for instrumentation and automation equipment.
- IMO resolution A.830(19) - Code on alarms and indicators.

### 2.4 Requirements to identification of type of product with certificate

The manufacturer is to specify type, type number, model, etc., which completely identifies the product and its components according to drawings/equipment specification. All optional features for which type approval is requested are to be listed, either by separate type numbers or by suffixes to the equipment's basic type number.

All drawings and descriptions are to be marked with drawing reference number, item name, issue date, etc., which identify the documentation as such.

The final product shall be provided with visible marking, giving at least the following information:

- identification of manufacturer
- equipment type number or model identification
- serial number
- production year
- safe installation distance from magnetic compass
- power consumption/supply voltage
- software version identification.

### 2.5 Elements of type approval

#### 2.5.1 Design assessment

Design assessment is to assess that the design of the product conforms to the rules and standards as described in item 2.3 above.

#### 2.5.2 Type testing (TT)

When design assessment has been carried out, type testing according to an approved test programme is to be carried out in the presence of a surveyor from DNV.

Detailed test reports based on a relevant test programme and carried out in the presence of an independent surveyor from a recognised authority may be accepted.

The type testing is based on:

- visual inspection

- performance type testing
- environmental type testing.

#### *2.5.2.1 Performance type testing*

Tests are to be carried out to verify that the performance of the test sample conforms to the requirements of the rules and standards listed in 2.3.

#### *2.5.2.2 Environmental type testing*

Tests are to be carried out to verify that the test sample conforms to the requirements of DNV Rules for Classification of Ships and DNV Standard for Certification No. 2.4. Prior to testing the laboratory shall be verified and accepted by DNV. Guidance for form of test report is EN45001.

#### **2.5.3 Routine tests (RT)**

The routine tests, including commissioning tests on board, constitute the final production control and the manufacturers standard RT are to be described in the submitted documentation. These tests are normally carried out by the manufacturer or his representative unless otherwise is stated on the type approval certificate.

## **2.6 Type approval certificate**

When the design assessment and type testing are successfully completed, a type approval certificate will be issued to the manufacturer for the conformity of the design of the product type.

### **2.6.1 Certification retention survey**

Certificate retention survey is required in front of renewal of type approval certificate. The objective is to verify that the product has not been altered with respect to design and functions covered by the type approval.

### **2.6.2 Renewal of type approval certificate**

At least three months before the period of validity expires, the certificate-holder has to apply for renewal of the certificate.

Upon receipt of the request for renewal, DNV will perform a certificate retention survey as stated above.

The certificate retention survey report will constitute the basis for renewal of the type approval and the issuance of a new certificate.

### 3. Appendix A

#### Table of type tests for Engineer's alarm and watch call system

Recommended test procedures are specified in the following publications or made from:

- Rules for Classification as described in 2.3.
- Standard for Certification No. 2.4, Environmental test specification for instrumentation and automation equipment.
- IMO resolution A.830(19), Code on alarms and indicators.

Tests are to be carried out at test sites approved by the Society. The manufacturer shall, unless otherwise agreed, set up the equipment and ensure that it is operating normally before type testing commences.

<i>E. Environmental tests</i>				
No	Test	Specification of test	TT	RT
E.1	Dry heat test	CN 2.4 - 3.7 (not required if 3.8 is performed)	x	
E.2	Low temperature test (Cold test)	CN 2.4 - 3.9	x	
E.3	Damp heat test	CN 2.4 - 3.8	x	
E.4	Vibration test	CN 2.4 - 3.6	x	
E.5	Acoustic noise test (may be waived if it is evident that the EUT satisfy the test)	IEC 945 - 11.1 (peak level is not to exceed 62 dB(A))	x	
E.6	Power supply variation test	CN 2.4 - 3.4, 3.5, 3.13, 3.14.2/3 (IEC 92-504)	x	
E.7	Electrostatic discharge test	CN 2.4 -3.14.6	x	
E.8	Enclosure (minimum IP22)	IEC 529	x	
E.9	Insulation resistance test	CN 2.4 – 3.12	x	
E.10	High voltage test	CN 2.4 – 3.12	x	
E.11	Radiated susceptibility	CN 2.4 – 3.14.5	x	
E.12	Conducted susceptibility	CN 2.4 – 3.14.4	x	
E.13	Compass safe distance	ISO/R 694 method B, or IEC 945, 11.2	x	
E.14	Conducted emissions	IEC 60945, 9.2	x	
E.15	Radiated emissions	CISPR 16-1, CISPR 16-2	x	

<i>P. Performance tests: Watch call system</i>				
P.1	The alarm system is to be continuously powered and is to have an automatic changeover to a stand-by power supply in case of loss of normal power supply. The capacity of the stand-by power supply is to be sufficient for at least 30 minutes operation.	Rules for Ships, Pt.6 Ch.3 Sec.2 C101	x	
P.2	Any alarm condition in the engine room is to initiate an alarm on the bridge with individual or group indication. The visual alarm signal is to remain visible until acknowledged in the engine room.	Rules for Ships, Pt.6 Ch.3 Sec.2 C201	x	
P.3	Alarm conditions within one group is not to prevent alarms being initiated in other groups. New alarms within a group are not to be blocked by acknowledged existing alarms.	Rules for Ships, Pt.6 Ch.3 Sec.2 C202	x	
P.4	The alarm systems on the bridge and in the accommodation are to be so designed that the more frequent faults, such as power failure or broken connections to the engine room, initiate an alarm. <b>Guidance note:</b> Separate cable-connections for visual and acoustic signals may be accepted as alternative to live current self monitoring. <b>---e-n-d---o-f---G-u-i-d-a-n-c-e---n-o-t-e---</b>	Rules for Ships, Pt.6 Ch.3 Sec.2 C203	x	
P.5	Any alarm condition in the engine room is to initiate an alarm in the watch-keeping engineer's cabin and officer's mess and day room. Acknowledgement in the cabin is to be indicated on the bridge when the engine room is unattended.	Rules for Ships, Pt.6 Ch.3 Sec.2 C301	x	
P.6	All alarms in the engine room are to initiate an alarm on the bridge, individual or group.	Rules for Ships, Pt.6 Ch.3 Sec.3 B101		

P.7	An individual alarm is required for: <ul style="list-style-type: none"><li>– automatic shutdown of the main boiler</li><li>– automatic shutdown and/or slowdown of the propulsion machinery</li><li>– request for manual shutdown and/or slowdown of the propulsion machinery</li><li>– power failure in the bridge alarm system</li><li>– power failure in the bridge control system.</li></ul>	Rules for Ships, Pt.6 Ch.3 Sec.3 B102	x	
P.8	Audible alarm level.	IMO resolution A.830(19)	x	
P.9	Signal characteristics.	IMO resolution A.830(19)		