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Ships and marine technology — Systems for the detection of persons while going overboard from ships (Man overboard detection)

Navires et technologie maritime — Systèmes pour la détection des personnes passant par-dessus bord (détection d'un homme à la mer)

PROOF/ÉPREUVE

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 1, *Maritime safety*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The lack of standardized man overboard (MOB) detection system requirements has made it difficult for end users to objectively evaluate the safety and effectiveness of such systems. This document addresses these issues by clearly defining the technical specifications for the equipment, thereby allowing manufacturers to develop systems against a common set of requirements and enabling end-users to evaluate the safety, effectiveness, performance and reliability of MOB detection systems.

This document provides a method to verify that a system operates to the required performance in a specified environmental window (Table 1) and against a manikin of the size described in 5.24. Systems that are operational outside the prescribed environmental conditions or used to detect people that do not conform to the effective manikin size can suffer some degradation in performance. It is not currently possible to quantify that degradation.

Ships and marine technology — Systems for the detection of persons while going overboard from ships (Man overboard detection)

1 Scope

This document specifies technical requirements for systems designed to detect a person who has gone overboard from a ship.

This document does not cover man overboard (MOB) detection systems that require the passengers or crew to wear or carry a device to trigger an MOB event.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60945:2002, *Maritime navigation and radiocommunication equipment and systems — General requirements — Methods of testing and required test results*

IEC 61162 (all parts), *Maritime navigation and radiocommunication equipment and systems — Digital interfaces*

IMO Resolution A., 1021(26), Code on alerts and indicators, 2009

IMO Resolution MSC., 302(87), Bridge alert management

IMO Resolution MSC, 337(91), Adoption Of The Code On Noise Levels On Board Ships

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
accessible open area
area of the ship accessible to either passengers or crew and open to the outside, where a person who fell would end up overboard

3.2
active state
state in which the system is on

3.3
alarm action
action available within the system when a MOB alert or alarm is triggered or changes status

3.4
control station
equipment that provides the facilities for human observation and control of the MOB detection system

3.5
data
information captured and/or generated by the MOB detection system

Note 1 to entry: Data can be in either a raw or a processed form and includes basic (e.g. text, numeric, Boolean), composite (e.g. array, class, and list) and multimedia (e.g. images, audio, and video) data types.

3.6
environmental vibration
periodic motion of equipment installed aboard ships as a result of environmental forces

3.7
false alarm
system activation not caused by an actual MOB event

3.8
heading
angle between the direction in which the ship's bow is pointing and a reference direction, e.g. true north, expressed in degrees, usually from 000° clockwise through 360°

3.9
laboratory
body that performs one or more of the following activities:

— testing

— calibration

— sampling associated with subsequent testing or calibration

[SOURCE: ISO/IEC 17025:2017, 3.6, modified — Note 1 to entry has been omitted.]

3.10
man overboard event
MOB event
incident in which person(s) has accidently or intentionally gone over the side/front/back of a ship and into the water

3.11
man overboard verification data
MOB verification data
system *data* (3.5) that may be used by user to acknowledge, deny, confirm or terminate a MOB alert or alarm at the *control station* (3.4)

3.12
nominal operating conditions
set of ship and environmental conditions

Note 1 to entry: See Table 1.

Table 1 — Nominal operating conditions

Condition	Value
Wave height	0 m to 2,5 m
Precipitation	None
Ship speed over ground	0 knots to 25 knots

3.13
sensor unit
device or system of devices that detects and responds to one or more physical stimuli

3.14
underway
not at anchor, made fast to the shore, or aground

4 Abbreviated terms

ECDIS	electronic chart display and information system
MOB	man overboard
RAID	redundant array of independent disks
S-VDR	simplified voyage data recorder
VDR	voyage data recorder

5 Requirements

5.1 General

The testing outlined in this document shall be conducted by a laboratory meeting the requirements of ISO 17025 or may be conducted by the manufacturer, provided the tests conducted by the manufacturer are approved by a laboratory meeting the requirements of ISO 17025 or classification society that complies with the applicable unified interpretations and requirements posted by the International Association of Classification Societies (IACS) or other recognized organization.

NOTE IACS is an organization that establishes, reviews, promotes and develops minimum technical requirements in relation to the design, construction, maintenance and survey of ships and other marine related facilities. It also assists international regulatory bodies and standards organizations to develop, implement and interpret statutory regulations and industry standards in ship design, construction and maintenance, with a view to improving safety at sea and the prevention of marine pollution.

The intent of the following requirements is to measure the system level of performance in the intended, nominal operational environment.

Annex A provides additional recommendations for guidance to those developing, installing, testing and using MOB detection systems.

5.2 Principle of operation

An MOB system shall operate in accordance with the principles described in this subclause.

The MOB system sensors shall detect persons and other objects passing through the detection zone (see 5.7). Processing or analysis of the raw data may be conducted in the sensor(s), a server, the control station or any combination of the three.

Once the analysis is complete, the system shall have automatically excluded any event that is not a man overboard event (plus allowable rate of false alarms). For each event that passes the threshold for an MOB event, the system shall generate an indication. A human operator shall be required to review the event and determine if the event is a man overboard event or a false alarm.

False alarms shall be recorded in the system with a comment from the operator on the cause. This will be used to further develop understanding of the behaviour of such systems during normal operations and varied environmental conditions.

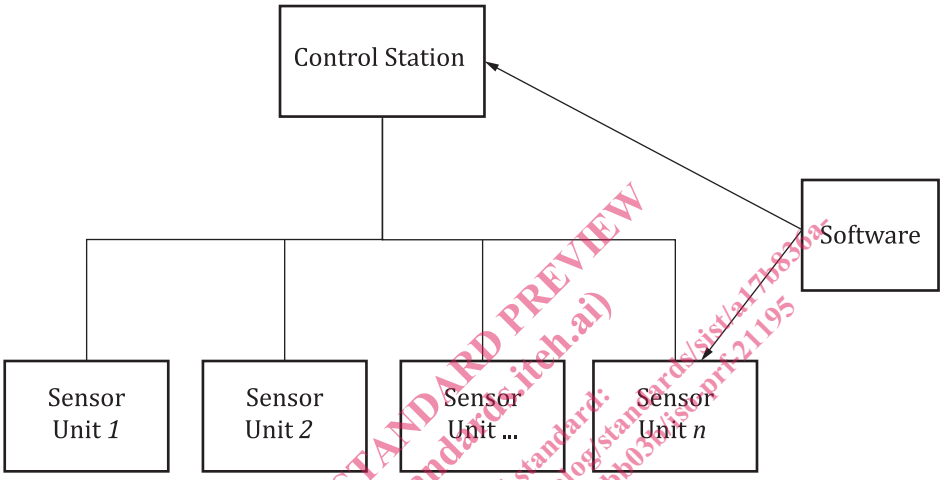
Man overboard events shall remain active on the control station until marked complete by a human operator with comments on outcome.

The MOB system shall be designed with the possibility to connect to integrated navigation systems (ECDIS) to display geospatially referenced MOB event markers.

The MOB system shall be designed with input interfaces for time, position and available environmental data.

5.3 System description

A general MOB detection system described in this document consists of a control station, sensor units, cables and associated software (Figure 1).



NOTE Depending on the system, the associated software can be installed on the control station and/or sensor units.

Figure 1 — Block diagram of a general MOB detection system with logical links

5.4 Control station

The system shall include a control station where alarms and data can be reviewed.

The system shall have the capability for an operator to manually select an imaging sensor and timeline for playback at the control station.

5.5 Design and testing

5.5.1 General

The MOB system shall be designed and tested to comply with the requirements of IEC 60945 for protected or exposed components as appropriate for each system sub-assembly.

Specific requirements described in 5.5.2 to 5.5.8.

5.5.2 Light emitting system components

The intensity of light emitting system components located or installed in the bridge area shall be fully dimmable and capable of being controlled at the control station.

