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**DEVELOPMENT OF AMENDMENTS TO SOLAS CHAPTERS IV AND V AND
PERFORMANCE STANDARDS AND GUIDELINES TO INTRODUCE VHF DATA
EXCHANGE SYSTEM (VDES)**

Report of the Correspondence Group

Submitted by JAPAN

SUMMARY

Executive summary: This document provides the report of the Correspondence Group on VHF Data Exchange System (VDES).

Strategic direction, if applicable: 2

Output: 2.28

Action to be taken: Paragraph 22

Related documents: SOLAS Chapter V, NCSR 11/9 and NCSR 11/19

Background

1 The Sub-Committee on Navigation, Communication and Search and Rescue (NCSR), at its eleventh session, re-established a correspondence group on VHF Data Exchange System (VDES) under the coordination of Japan (NCSR 11/19, paragraph 9.16).

2 The coordinator of the Correspondence Group (the Group) would like to thank the representatives of the following Member States and observers for their participation in the Correspondence Group: Argentina, Australia, Canada, China, Denmark, Finland, Germany, Ireland, Japan, Liberia, Marshall Islands, Netherlands (Kingdom of the), New Zealand, Norway, Republic of Korea, Türkiye, Russia, the United Kingdom, the United States, EC, INTERTANKO, IALA, ITF and IMSO.

3 The Group undertook the consideration of matters included in its terms of reference, taking into account the comments and decisions made at NCSR 11. The Group conducted its

work by correspondence and also convened one virtual meeting, as a complement to the usual email correspondence.

Draft amendments to SOLAS

4 The Group considered the draft amendments to SOLAS chapter V, especially option 1, inserting words “or VDES” after “AIS” and option 3, inserting words “VDES, or other means”. The majority supported option1 and the group finalized the draft amendments with option 1.

5 During the consideration, a question was raised whether the words “an approved surveyor” on SOLAS regulation V/18.9 was appropriate since MSC.1/Circ.1252 *Guidelines on annual testing of the automatic identification system (AIS)* used the words “a qualified radio inspector”. The group found that the words “a qualified radio inspector” used on MSC.1/Circ.1252 was not just any qualified radio inspector, the inspector should be authorised by the administration or a recognized organization according to the circular and decided to retain the original word “an approved surveyor”.

6 In addition to the amendments to SOLAS chapter V, the group identified that amendments to the record of equipment for passenger ship safety (form P), the record of equipment for cargo ship safety (form E) and the record of equipment for cargo ship safety (form C) in the appendix 1 were also needed as consequential amendments to chapter V.

7 Regarding the removal of the application dates defined by SOLAS regulations from V/19.2.4.1 to V/19.2.4.4, one member pointed out that any amendments to a mandatory instrument had to clarify the application date and scheme for filling out the check/monitoring sheet as required by MSC.1/Circ.1500/Rev.3 at the last stage of the work. The member suggested to add an additional paragraph stating “Alternatively, VDES may be acceptable for AIS,” while keeping the existing phase-in dates. However, the Group could not consider the suggestion due to time constraint.

8 The draft amendments to SOLAS were set out in Annex 1 of this document.

Draft performance standards

9 The Group further developed the draft performance standards of shipborne VDES based on the document submitted to NCSR 11 (NCSR11/9, ANNEX 3).

10 The major differences from the base document are as follows:

- .1 Message priorities were deleted because of the decision made at NCSR 11 to not amend SOLAS Chapter IV,
- .2 For the presentation interface, VDES should include a keyboard and display, not limited to minimum display as defined in Resolution A.1106(29) to allow the use of a more capable display, and
- .3 Integrity and authentication were added to enable more robust security.

11 One member proposed to consider that the description of the human machine interface (Paragraph 14 of the draft guidelines) should be revised to be similar with IEC

definition (IEC 63514 draft) at the last round but due to time constraint, the Group could not consider the proposal.

12 The draft performance standards of shipborne VDES were set out in Annex 2 of this document.

Operational guidelines

13 The Group also further developed the draft guidelines for the operational use of shipborne VDES based on the document submitted to NCSR 11 (NCSR11/9, ANNEX 4).

14 The Group considered that one of the key elements for the implementation of VDES communication was a sharing scheme of applications in international level and recommended the Sub-Committee to consider the establishment of such scheme under the Organization (Paragraph 16 of the draft guidelines).

15 The draft Guidelines for the operational use of shipborne VHF Data Exchange System (VDES) were set out in Annex 3 of this document.

Consequential amendments

16 The Group investigated IMO instruments, identified the following mandatory and non-mandatory instruments that needed to be amended as the consequence of the amendments to SOLAS and developed the draft amendments as set out in Annexes of this document:

.1 Draft amendments to mandatory instruments

- .1 Draft amendments to the international code of safety for high speed craft, 2000 (2000 HSC Code) (Resolution MSC.97(73)), Annex 4
- .2 Draft amendments to the international code of safety for high speed craft, 1994 (1994 HSC Code) (Resolution MSC.119(74)), Annex 5
- .3 Draft amendments to the international code for ships operating in polar waters (Polar Code) (Resolution MSC.385(94)), Annex 6
- .4 Draft amendments to the international maritime solid bulk cargoes (IMSBC) code (Resolution MSC.462(101)), Annex 7

.2 Draft amendments to non-mandatory instruments

- .1 Draft amendments to the proper use of VHF channels at sea (Resolution A.954(23)), Annex 8
- .2 Draft amendments to guidelines for ship operating in polar waters (Resolution A.1024(26)), Annex 9
- .3 Draft amendments to survey guidelines under the harmonized system of survey and certification (HSSC), 2021 (Resolution A.1156(32)), Annex 10
- .4 Draft amendments to procedures for port state control (Resolution A.1185(33)), Annex 11

- .5 Draft amendments to the recommendation on performance standards for an universal shipborne automatic identification system (AIS) (Resolution MSC.74(69), annex 3), Annex 12
- .6 Draft amendments to performance standards for shipborne simplified voyage data recorders (S-VDRs) (Resolution MSC.163(78)), Annex 13
- .7 Draft amendments to the performance standards for the presentation of navigation-related information on shipborne navigational display (Resolution MSC.191(79), as amended), Annex 14
- .8 Draft amendments to the revised performance standards for radar equipment (Resolution MSC.192(79)), Annex 15
- .9 Draft amendments to adoption of amendments to the code of safety for dynamically supported craft, as amended (Resolution MSC.224(82)), Annex 16
- .10 Draft amendments to the revised performance standards for electronic chart display and information system (ECDIS) (Resolution MSC.232(82)), Annex 17
- .11 Draft amendments to the revised performance standards for integrated navigation system (Resolution MSC.252 (83) and Resolution MSC.452 (99)), Annex 18
- .12 Draft amendments to code of safety for special purpose ships, 2008 (Resolution MSC.266(84)), Annex 19
- .13 Draft amendments to the revised performance standards for shipborne voyage data recorders (VDRS) (Resolution MSC.333 (90)), Annex 20
- .14 Draft amendments to recommendation for the protection of AIS VHF Link (Resolution MSC.347(91)), Annex 21
- .15 Draft amendments to performance standards for a shipborne integrated communication system (ICS) when used in the global maritime distress and safety system (GMDSS) (Resolution MSC.517 (105)), Annex 22
- .16 Draft amendments to performance standards for electronic chart display and navigation system (ECDIS) (Resolution MSC.530 (106)), Annex 23
- .17 Draft amendments to guidelines on ergonomic criteria for bridge equipment and layout (MSC.1/Circ.982), Annex 24
- .18 Draft amendments to general principles and recommendations for knowledge, skills and training for officers on wing-in-ground (WIG) craft operating in both displacement and ground effect modes (MSC.1/Circ.1162), Annex 25
- .19 Draft amendments to guidelines on annual testing of voyage data recorders (VDR) and simplified voyage data recorders (S-VDR) (MSC.1/Circ.1222/Rev.1), Annex 26

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- .20 Draft amendments to guidelines on annual testing of the automatic identification system (AIS) (MSC.1/Circ.1252), Annex 27
 - .21 Draft amendments to non-mandatory guidelines on security aspects of the operation of vessels which do not fall within the scope of SOLAS chapter XI-2 and the ISPS code (MSC.1/Circ.1283), Annex 28
 - .22 Draft amendments to guidance in relation to certain types of ships which are required to transmit LRIT information on exemptions and equivalents and on certain operation matters (MSC.1/Circ.1295), Annex 29
 - .23 Draft amendments to ECDIS – guidance for good practice (MSC.1/Circ.1503/Rev.1), Annex 30
 - .24 Draft amendments to guidelines for shipborne position, navigation and timing (PNT) data processing (MSC.1/Circ.1575), Annex 31
 - .25 Draft amendments to unified interpretation of the provisions of SOLAS relating to the annual testing of the VDR, S-VDR, AIS and EPIRB (MSC.1/Circ.1576), Annex 32
 - .26 Draft amendments to guidelines for wing-in ground craft (MSC.1/Circ.1592), Annex 33
 - .27 Draft amendments to guidelines for standardization of user interface design for navigation equipment (MSC.1/Circ.1609), Annex 34
 - .28 Draft amendments to guidance for navigation and communication equipment intended for use on ships operating polar waters (MSC.1/Circ.1612), Annex 35
 - .29 Draft amendments to guidelines for safety measures for fishing vessels of 24 M in length and over operating in polar waters (MSC.1/Circ.1641), Annex 36
 - .30 Draft amendments to guidelines for safety measures for pleasure yachts of 300 gross tonnage and above not engaged in trade operating in polar waters (MSC.1/Circ.1642), Annex 37
 - .31 Draft amendments to list of certificates and documents required to be carried on board ships, 2022 (FAL.2/Circ.133, MEPC.1/Circ.902, MSC.1/Circ.1646, LEG.2/Circ.4), Annex 38
 - .32 Draft amendments to guidelines for the harmonization of GMDSS requirements for radio installations on board SOLAS ships (COMSAR.1/Circ.32/Rev.2), Annex 39
 - .33 Draft amendments to AIS safety-related messaging (COMSAR.1/Circ.46), Annex 40
 - .34 Draft amendments to guidelines for the installation of a shipborne automatic identification system (AIS), as amended (SN.1/Circ.227 and SN.1/Circ.245), Annex 41

- .35 Draft amendments to guideline for the presentation of navigation-related symbols, terms and abbreviations (SN.1/Circ.243/Rev.2), Annex 42
- .36 Draft amendments to guidance on the use of the UN/LOCODE in the destination field in AIS message (SN.1/Circ.244), Annex 43
- .37 Draft amendments to guidance on the use of AIS application-specific messages (SN.1/Circ.289), Annex 44
- .38 Draft amendments to guidance for the presentation and display of AIS application-specific messages information (SN.1/Circ.290), Annex 45

17 Regarding the consequential amendments, the following comments were expressed but due to time constraint, the Group could not reach the conclusion.

- .1 The amendments to the resolution MSC.74(69) were seemed to not be directly related to the introduction of VDES.
- .2 Regarding the amendments to MSC.1/Circ.1252, it was questionable whether the guidelines were applied to only AIS component of VDES or whole VDES i.e. ASM, VDE-TER and VDE-SAT.
- .3 Regarding the amendments to SN.1/Circ.227 and 245 on long range function, the replacement of Inmarsat-C to RMSS was unnecessary since this showed an example.

18 In addition to the consequential amendments, editorial corrections such as update of reference document numbers were also made.

Check and monitoring sheet required by MSC.1/Circ.1500/Rev.3

19 The Group developed the check and monitoring sheet for the process of amending the convention and related mandatory instruments required by MSC.1/Circ.1500/Rev.3 as set out in Annex 46.

IMO Space

20 The Group would like to thank the Secretariat for making IMO Space available. The Group actively used the web-based work space to facilitate its deliberations and found it very useful, in particular for document sharing and distribution as well as notifying Group participants when a new document was uploaded or a comment was made on an existing document.

21 From the coordinator's point of view, the following improvements were suggested:

- .1 since a correspondence group normally worked round by round, creation of file by each round would be beneficial;
- .2 due to a large number of consequential amendments, the coordinator decided to not upload the consequential amendments to avoid cluttering the Space therefore creation of files by categories of amendments would also be beneficial; and
- .3 online meeting host capability could be introduced.

Action requested to the Sub-Committee

22 The Sub-Committee is requested to consider the report of the Correspondence Group on VDES and act as appropriate.

ANNEX 1

DRAFT AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED

CHAPTER V SAFETY OF NAVIGATION

Regulation 18 – Approval, surveys and performance standards of navigational systems and equipment and voyage data recorder

2 Systems and equipment, including associated back-up arrangements, where applicable, installed on or after 1 July 2002 to perform the functional requirements or regulation 19 and 20 shall conform to appropriate performance standards not inferior to those adopted by the Organization. **

** Refer to the following recommendations adopted by the Organization by the resolution indicated:
Recommendation on general requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids (resolution A.694(17));
Recommendation on Performance Standards for gyro-compass (resolution A.424(XI));
Recommendation on Performance Standards for radar equipment (resolution MSC.64(67), annex 4);
Performance Standards for automatic radar plotting aids (resolution A.823(19));
Recommendation on Performance Standards for Electronic Chart Display and Information System (ECDIS) (resolution A.817(19), as amended by resolution MSC.64(79), annex 5 and MSC.86(70), annex 4, as appropriate;
Recommendation on accuracy standards for navigation (resolution A.529(13));
Recommendation on Performance Standards for shipborne Loran-C and Chayka receiver (resolution A.818(19));
Recommendation on Performance Standards for shipborne global positioning system receiver equipment (resolution A.819(19), as amended by resolution MSC.112(73);
Recommendation on Performance Standards for GLONASS receiver equipment (resolution MSC.53(66)), as amended by resolution MSC.113(73);
Recommendation on Performance Standards for DGPS and DGLONASS maritime radio beacon receiver equipment (resolution MSC.64(67)), annex 2, as amended by resolution MSC.114(73);
Recommendation on Performance Standards for combined GPS/GLONASS receiver equipment (resolution MSC.74(69), annex 1, as amended by resolution MSC.115(73);
Recommendation on Performance Standards for heading control system (resolution MSC.64(67), annex 3);
Recommendation on Performance Standards for track control system (resolution MSC.74(69), annex 2);
Recommendation on Performance Standards for universal shipborne automatic identification system (AIS) (resolution MSC.74(69), annex 3);
Recommendation on Performance Standards for VHF data exchange system (VDES) (resolution MSC.XXX(XXX));
Recommendation on Performance Standards for echo-sounding equipment (resolution A.224(VII), as amended by resolution MSC.74(69), annex 4);
Recommendation on Performance Standards for devices to indicate speed and distance (resolution A.824(19), as amended by resolution MSC.96(72);
Performance Standards for rate-of-turn indicator (resolution A.526(13));
Recommendation on unification of Performance Standards for navigation equipment (resolution A.575(14));
Recommendation on methods of measuring noise levels at listening posts (resolution A.343(IX));
Recommendation on Performance Standards for radar reflectors (resolution A.384(X));
Recommendation on Performance Standards for magnetic compasses (resolution A.382(X));
Recommendation on Performance Standards for daylight signalling lamps (resolution MSC.95(72));
Recommendation on Performance Standards for sound reception systems (resolution MSC.86(70), annex 1);
Recommendation on Performance Standards for marine transmitting magnetic heading devices (TMHDs) (resolution MSC.86(70), annex 2);
Recommendation on Performance Standards for voyage data recorders (VDRs) (resolution A.861(20));
Recommendation on Performance Standards for marine transmitting heading devices (THDs) (resolution MSC.116(73));
Performance Standards for a bridge navigational watch alarm systems (BNWAS) (resolution MSC.128(75)).

9 The automatic identification system (AIS) or VHF data exchange system (VDES) shall be subjected to an annual test. The test shall be conducted by an approved surveyor or an approved testing or servicing facility. The test shall verify the correct programming of the ship static information, correct data exchange with connected sensors as well as verifying the radio performance by radio frequency measurement and on-air test using e.g., a Vessel Traffic Service (VTS). A copy of the test report shall be retained on board the ship.

Regulation 19 – Carriage requirements for shipborne navigational systems and equipment

2 Shipborne navigational equipment and systems

2.4 All ships of 300 gross tonnage and upwards engaged on international voyages and cargo ships of 500 gross tonnage and upwards not engaged on international voyages and passenger ships irrespective of size shall be fitted with an automatic identification system (AIS) or VHF data exchange system (VDES), as follows:

- ~~.1 ships constructed on or after 1 July 2002;~~
- ~~.2 ships engaged on international voyages constructed before 1 July 2002:~~
 - ~~.2.1 in the case of passenger ships, not later than 1 July 2003;~~
 - ~~.2.2 in the case of tankers, not later than the first survey for safety equipment* on or after 1 July 2003;~~
 - ~~.2.3 in the case of ships, other than passenger ships and tankers, of 50,000 gross tonnage and upwards, not later than 1 July 2004;~~
 - ~~.2.4 in the case of ships, other than passenger ships and tankers, of 300 gross tonnage and upwards but less than 50,000 gross tonnage, not later than the first safety equipment survey** after 1 July 2004 or by 31 December 2004, whichever occurs earlier; and~~
- ~~.3 ships not engaged on international voyages constructed before 1 July 2002, not later than 1 July 2008;~~
- ~~.4 the Administration may exempt ships from the application of the requirements of this paragraph when such ships will be taken permanently out of service within two years after the implementation date specified in subparagraph .2 and .3;~~
- .5¹ AIS or VDES shall:**
 - .1 provide automatically to appropriately equipped shore stations, other ships and aircraft information, including the ship's identity, type, position, course, speed, navigational status and other safety-related information;
 - .2 receive automatically such information from similarly fitted ships;
 - .3 monitor and track ships; and
 - .4 exchange data with shore-based facilities.
- ~~.6 the requirements of paragraph 2.4.5 shall not be applied to cases where international agreements, rules or standards provide for the protection of navigational information; and~~
- .7² AIS or VDES shall be operated taking into account the guidelines adopted by the Organization.* Ships fitted with AIS or VDES shall maintain AIS or VDES in operation at all times except where international agreements, rules or standards provide for the protection on navigational information.**

Regulation 19-1 – Long-range identification and tracking of ships

4.2 Ships, irrespective of the date of construction, fitted with an automatic identification system (AIS) or VHF data exchange system (VDES), as defined in regulation 19.2.4, and operated exclusively within sea area A1, as defined in regulation IV/2.1.12⁵, shall not be required to comply with the provisions of this regulation.

* Refer to the Guidelines for the on-board operational use of shipborne Automatic Identification System (AIS) adopted by the Organization by resolution A.917(22), as amended by resolution A.956(23) A.1106(29) and the Guidelines for the operational use of VHF Data Exchange System (VDES) adopted by the Organization by resolution A.XXX(XX).

APPENDIX 1 Certificates

RECORD OF EQUIPMENT FOR PASSENGER SHIP SAFETY (FORM P)

Section 5 (*Details of navigational systems and equipment*), paragraph 4.1, add new words “or VHF Data Exchange System (VDES)” after a word “(AIS)”.

RECORD OF EQUIPMENT FOR CARGO SHIP SAFETY (FORM E)

Section 3 (*Details of navigational systems and equipment*), paragraph 4.1, add new words “or VHF Data Exchange System (VDES)” after a word “(AIS)”.

RECORD OF EQUIPMENT FOR CARGO SHIP SAFETY (FORM C)

Section 5 (*Details of navigational systems and equipment*), paragraph 4.1, add new words “or VHF Data Exchange System (VDES)” after a word “(AIS)”.

ANNEX 2

DRAFT PERFORMANCE STANDARDS FOR SHIPBORNE VHF DATA EXCHANGE SYSTEM (VDES)

1 Scope

1.1 These performance standards specify the requirements for the shipborne VHF Data Exchange System (VDES) for the use of VDES equipment on-board vessels

1.2 The VDES equipment integrates four communication components and their functions. These communication components are the automatic identification system (AIS) component, application specific messages (ASM) component, terrestrial component of VHF data exchange (VDE-TER) and the satellite component of VHF data exchange (VDE-SAT).

1.3 VDES should be capable of providing information exchange between ships, ships and shore authorities and services, automatically with minimal involvement of ship's personnel and with a high level of availability and security¹.

1.4 VDES should be able to provide the following functions:

- .1 exchanging data to improve safety, security and efficiency of navigation and protection of marine environment;
- .2 as a means for coastal States to request and obtain information about a ship and its cargo and/or passengers;
- .3 as a means for providing maritime services in the context of e-navigation; and
- .4 provide means for standardized and automated reporting in accordance with MSC.1/Circ.1595².

1.5 The installations, in addition to meeting the requirements of the ITU Radio Regulations, applicable ITU-R Recommendations and the general requirements set out in resolutions A.694(17) and MSC.191(79), as amended should comply with these performance standards.

2 Equipment Functionalities

2.1 The general functions of VDES equipment (see figure 1) are as follows:

- .1 The AIS should not be interfered by other communication means within the VDES, ensuring accurate AIS position reporting and the provision of safety related information;
- .2 VDES should allow the flexibility to prioritize some applications and, consequently, adapt some parameters of the transmission (robustness or capacity) while minimizing system complexity;
- .3 VDES should give its highest priority to AIS position reporting and safety

¹ High level of security can be achieved by implementing authentication of data and encryption where necessary.

² MSC.1/Circ.1595 *E-NAVIGATION STRATEGY IMPLEMENTATION PLAN – UPDATE 1*

related information, followed by second priority to ASM, third priority to VDE-TER and then to VDE-SAT;

- .4 The AIS component of VDES should be capable of providing all modes of operation as described in Recommendation ITU-R M.1371;
- .5 VDES should be capable of exchanging data between ship-to-ship, ship-to-shore, shore-to-ship, ship-to-satellite and satellite-to-ship;
- .6 VDES should be capable of implementing software/firmware updates;
- .7 VDES should be capable of separately disabling VDE-SAT, VDE-TER, or ASM;
- .8 VDES should be capable of changing its transmission power from the default setting to a low setting (1 W) or stopping transmission except for the AIS component when operations such as loading or discharging dangerous cargo require it; and
- .9 VDES should be capable of temporarily disabling VDE-SAT transmission when receiving a message from AIS or VDES shore station within its coverage area.

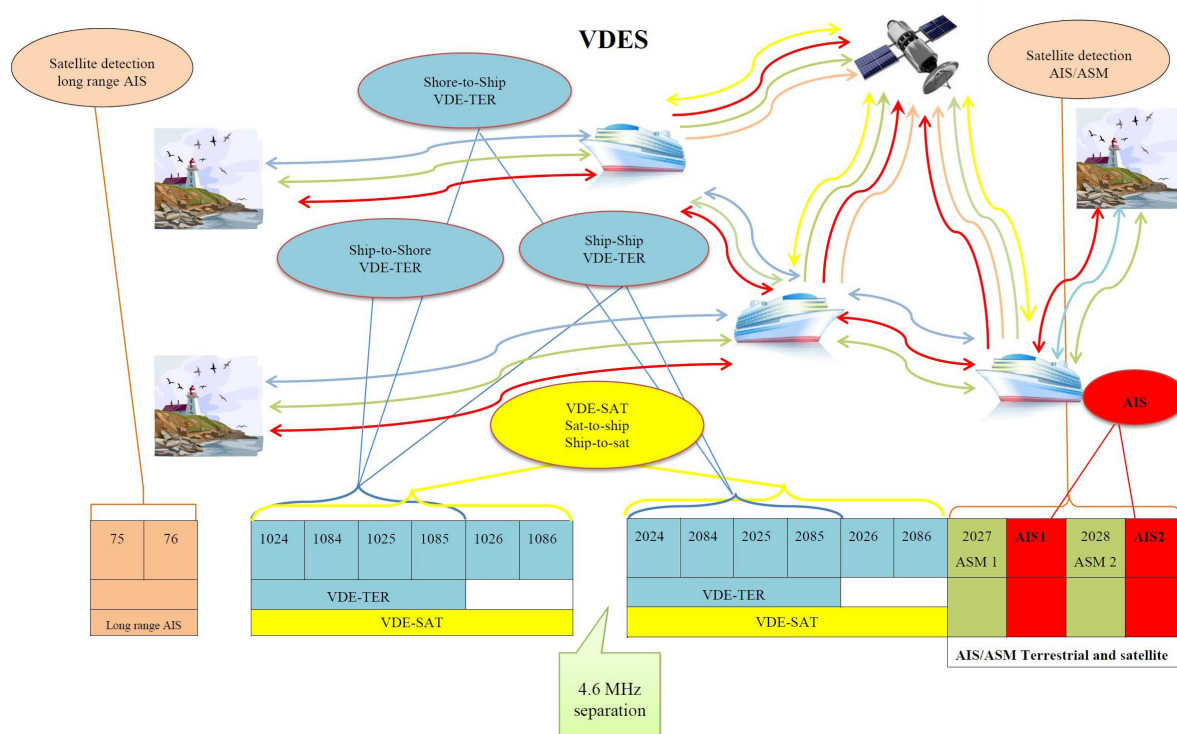


Figure 1: VDES functions

2.2 The AIS component of VDES should comply with the requirements set out in resolution MSC.74(69), annex 3, as amended and Recommendation ITU-R M.1371.

2.3 The ASM component of VDES should provide a robust and efficient terrestrial data transfer link, enabling the transmission of a wide variety of messages, including application

specific messages currently transmitted by AIS³. These messages should be encoded in accordance with Recommendation ITU-R M.1371 Annexes for “*Application specific messages*” and “*Automatic identification system messages*”, as well as Recommendation ITU-R M.2092 Annex on “*Common technical elements of VHF data exchange system*” and the technical characteristics should meet the requirements specified in Recommendation ITU-R M.2092 Annex on “*Technical characteristics of the application specific message channels for the VHF data exchange system in the VHF maritime band*”.

2.4 The VDE-TER function of VDES should provide an efficient terrestrial data transfer link. The technical characteristics should comply with Recommendation ITU-R M.2092 Annex on “*Common technical elements of VHF data exchange system*” and with the Annex on “*Technical characteristics of VHF data exchange-terrestrial in the maritime mobile band*”.

2.5 The VDE-SAT function of VDES should provide an efficient satellite data transfer link. The technical characteristics should meet the requirements specified in Recommendation ITU-R M.2092 Annex of “*Common technical elements of VHF data exchange system*” and with the Annex on “*Technical characteristics of VHF data exchange-satellite operating in the VHF maritime mobile satellite band*”.

3 Capability

3.1 VDES should support the functions of AIS, ASM, VDE-TER and VDE-SAT specified in this performance standard in addition to the components specified in resolution MSC.74(69), annex 3, as amended.

3.2 In addition, VDES should be capable of:

- .1 using the communication mode which is commanded over the presentation interface;
- .2 receiving digital data according to Recommendation ITU-R M.2092 and output through the presentation interface;
- .3 transmitting digital data according to Recommendation ITU-R M.2092 as inputted from the presentation interface;
- .4 operating continuously under all modes of operations.

4 Presentation interface

4.1 VDES should include a keyboard and display for configuration, monitoring and control.

4.2 VDES should provide at least one interface conforming to an appropriate international marine interface standard⁴.

5 Identification

5.1 All VDES stations should be uniquely identified with a unique numerical identifier as defined by the most recent version of Recommendation ITU-R M.585 on *Assignment and use of identities in the maritime mobile services*.

³ See SN.1/Circ.289 and those identified by IALA List of reference for ASM

⁴ IEC 61162 series

6 Information

6.1 VDES communication consists of AIS, ASM and other information

6.2 AIS information is defined by resolution MSC.74(69), annex 3, as amended and should be exchanged by the AIS component of VDES.

6.3 Other information is information other than AIS, ASM and should be exchanged by VDE-TER and VDE-SAT component of VDES⁵.

7 Security

7.1 Cyber Security

.1 Since VDES is networked with other navigational/communication equipment or systems on board, appropriate cyber security measures conforming to international standards such as IEC 61162-460 and IEC 63154 should be provided.

7.2 Integrity and Authentication

.1 VDES should be capable of verifying digital signature for ensuring the integrity of the data and the identity of the sender.

.2 VDES should be capable of providing authentication of position reports.

8 Operational Readiness Time

The system should be operational within two minutes after being switched on by the user.

9 Power supply

VDES and associated equipment should be powered by the ship's main and emergency sources of electrical energy. In addition, it should be possible to operate VDES and associated equipment from a reserve source of electrical energy.

⁵ Guidelines for the operational use of VHF Data Exchange System (VDES) adopted by the Organization by resolution MSC.XXX(X).

ANNEX 3

DRAFT GUIDELINES FOR THE OPERATIONAL USE OF SHIPBORNE VHF DATA EXCHANGE SYSTEM (VDES)

Purpose

1 These guidelines have been developed for the safe and effective use of shipborne VHF Data Exchange System (VDES), in particular to inform the mariner and shore based station operators about the operational use, limits and potential use of VDES including the international sharing of VDES applications. Consequently, VDES should be operated taking into consideration these guidelines.

2 VDES has four communication components comprising of **Automatic Identification System (AIS)**, **Application Specific Messages (ASM)**, **VHF Data Exchange terrestrial (VDE-TER)** and **VHF Data Exchange satellite (VDE-SAT)**.

3 The AIS component of VDES is equivalent to AIS as defined in SOLAS regulation V/19 and should be operated and used in accordance with the Resolution A.1106 (29) *Revised guidelines for the onboard operational use of shipborne automatic identification systems (AIS)*, as amended.

4 Although VDES is capable of transmitting and receiving digital data on safety/security related information, the frequencies allocated for VDES are not used for GMDSS distress and safety communication that are protected by ITU-R Radio Regulations Appendix 15 and related articles of the Radio Regulations. Moreover, the frequencies used by VDE-SAT (Earth-to-space and space-to-Earth) are only allocated on a secondary basis. The user should not consider the data and information received by VDES as GMDSS information.

5 VDES itself is radiocommunication equipment and exchanges digital data between other VDES stations. VDES equipment may be connected with other navigational equipment or systems such as radar, ECDIS, INS and may also be connected to other equipment such as onboard computer in order to work as whole communication system. Therefore, these guidelines are aimed at users, operators and stakeholders of VDES both onboard and ashore for providing guidance to ensure the safe and efficient operational use of VDES as a whole communication system.

6 AIS is a stand alone system which is also a component of VDES, however the other components of VDES, being the ASM, VDE terrestrial and VDE satellite, do not have the same status under SOLAS V/19.

CAUTION

Not all ships carry AIS or VDES

The officer of the watch (OOV) should always be aware that other ships, in particular leisure craft, fishing boats and warships, and some coastal shore stations including Vessel Traffic Service (VTS) centres, might not be fitted with VDES even when fitted with AIS

The OOV should always be aware that AIS or VDES fitted on other ships, under certain circumstances, may be switched off on the master's professional judgement.

Objective of VDES

7 VDES is intended to enhance safety of life at sea, the safety and efficiency of navigation and the protection of marine environment by means of exchange of data between maritime stations, ship-to-ship, ship-to-shore, shore-to ship, ship-to-satellite and satellite-to-ship. SOLAS regulation IV/4 requires that ship is capable of transmitting and receiving general communications and SOLAS regulation V/19 requires that AIS exchanges data ship to ship and with shore-based facilities. Therefore, the purpose of VDES is to exchange digital data between ship to ship, ship to shore directly or via satellite in addition to fulfilling the requirements of AIS. The digital data exchanged by VDES will be processed using applications installed in other equipment or system connected to VDES and portrayed on appropriate displays such as ECDIS.

Description of VDES

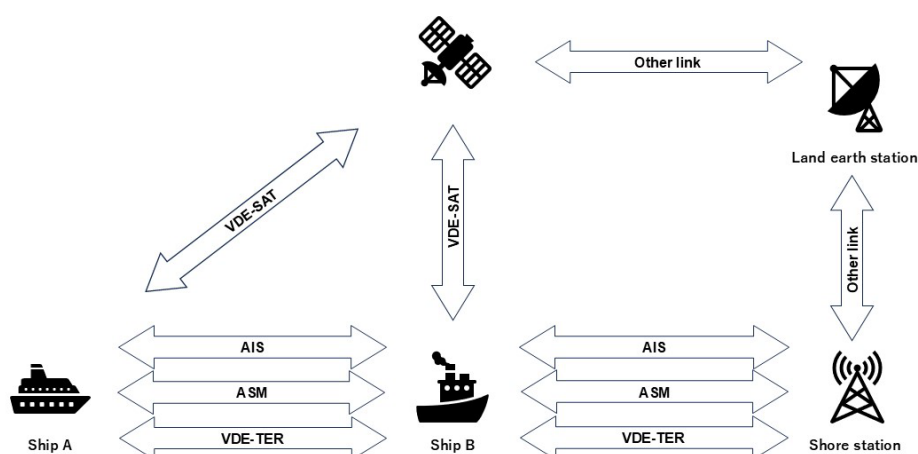


Figure 1 – VDES overview

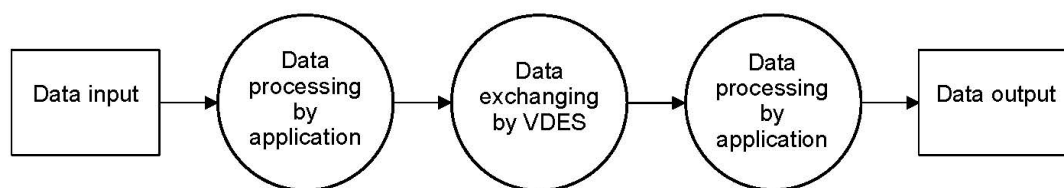


Figure 2 – Data flow using VDES

8 VDES can exchange digital data by automatically selecting one of its four communication components between ship and ship, ship and shore and ship and satellite (see Figure 1). The data exchanged by VDES will be processed by application installed in the external equipment or system for human-to-machine or machine-to-machine communication (See Figure 2).

9 VDES should give the highest priority to the AIS position reporting and safety related information

10 VDES generally achieves higher data transmission rates than AIS by employing wider bandwidths and advanced modulation methods. In a 100kHz channel, VDE-TER, specifically, achieves a maximum raw data rate up to 32 times greater than AIS.

11 VDES is able to communicate with other VDES stations within VHF range. However, when advanced modulation methods are used, the range may be reduced. Additionally, when the transmission power of shipborne VDES is set to low (1 W) or disabled (except for AIS), due to safety reasons such as port or harbor operations, the communication range may be reduced or limited to AIS-only communication.

12 The VDE-SAT has the potential to offer global coverage, contingent on satellite orbits and the number of satellites deployed and earth/ground stations. If VDE-SAT is used, then interference to terrestrial signals needs to be considered in relation to the service area of the VDE-SAT.

Operational use of VDES

13 The use of VDES is implemented by the operation of the external equipment or system using its applications. Therefore, the ship's crew should be familiarized with the operation of the equipment or system in accordance with the regulation I/14 of STCW and ISM code. In addition, the shore side users should be familiarized with its operation through education and training of the equipment or system.

Human machine interface

14 Navigational information sent via VDES and presented on a display for navigation-related data should comply with the performance standards set out in Resolution MSC.191(79) *Performance standards for the presentation of navigational information on shipborne navigation displays*, as amended and the interim guidelines set out in MSC.1/Circ.1593 *Interim guidelines for the harmonized display of navigation information received via communication equipment*. The symbols used in the display are defined in SN.1/Circ.243 *Guidelines for the presentation of navigation-related symbols, terms and abbreviations*, as revised, or other relevant international standards⁶, therefore, the user should be familiarized with these symbols.

⁶ IHO Publication S-52 - Specifications for Chart Content and Display Aspects of ECDIS and S-101 – Portrayal Catalogue (see appendix 1) and S-98 and IEC 62288/Ed.3

Messages and applications

15 Messages exchanged through VDES are AIS messages defined in the most recent version of the Recommendation ITU-R M.1371, ASM messages defined in SN.1/Circ.289 *Guidance on the use of AIS application-specific messages*, as revised, or regionally or locally registered by authorities or the International Organization for Marine Aids to Navigation (IALA) and other messages approved by authorities.

16 In order to ensure the world-wide harmonized implementation of message exchange by VDES, these messages should be approved by the authority and the authority is encouraged to share the message with its associated application to other authorities through international sharing mechanism such as Global Integrated Shipping Information System (GISIS) maintained by the Organization.

17 A core capability of VDES is to provide secure AIS functionality by ensuring the integrity and authenticity of transmitted AIS messages. VDES also supports the use of virtual aids to navigation (vAtoN), extending their coverage by utilizing satellite capabilities. In addition to these core functions, VDES can be used as a communication platform for various other services, contributing to improved maritime safety, security, and operational efficiency.

18 When a message is related to Maritime Services in the context of e-navigation listed in MSC.1/Circ.1595 *E-navigation strategy implementation plan – update 1*, the authority is encouraged to contact the domain coordinating body before submitting to the Organization for the coordination with other similar messages in order to avoid the duplication of similar messages.

19 Applications to the messages should be developed in accordance with the guideline defined in MSC.1/Circ. 1512 *Guideline on software quality assurance and human-centered design for e-navigation*.

Cybersecurity

20 In order to ensure the appropriate cyber risk management on VDES, the user should understand and comply with the guidelines set out in MSC-FAL.1/Circ. 3 *Guidelines on maritime cyber risk management*.

21 In order to secure communication through VDES, it is recommended to utilize digital identities to authenticate and encrypt messages (when necessary), ensuring data integrity and trust between users of the system.

Integrity and Authentication

22 When VDES is used for ensuring the integrity of the data and the identity of the sender by verifying digital signature, the provision of the digital signature should be implemented by the authority.

Reference documents

- SOLAS convention, chapter V
- Performance standards for shipborne VHF Data Exchange System (VDES) (MSC.XXX(YY))

- ITU Radio Regulations, appendix 18, table of transmitting frequencies in the VHF maritime mobile band
- Technical characteristic for a VHF data exchange system in the VHF maritime mobile band (The most recent version of Recommendation ITU-R M.2092)

ANNEX 4

DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT, 2000 (2000 HSC CODE) (MSC.97(73))

13.15 Automatic identification system

13.15.1 Craft shall be provided with an automatic identification system (AIS) or VHF data exchange system (VDES).

13.15.2 AIS or VDES shall:

- .1 provide automatically to appropriately equipped shore stations, other vessels and aircraft information, including the craft's identity, type, position, course, speed, navigational status and other safety-related information;
- .2 receive automatically such information from similarly fitted vessels;
- .3 monitor and track vessels; and
- .4 exchange data with shore based facilities.

13.15.3 The requirements of 13.15.2 shall not apply where international agreements, rules or standards provide for the protection of navigational information.

13.15.4 AIS or VDES shall be operated taking into account the guidelines adopted by the Organization.

Annex 1

3 Details of navigational systems and equipment

15 Automatic identification system (AIS) or VHF data exchange system (VDES)

ANNEX 5

DRAFT AMENDMENTS TO THE INTERNATIONAL CODE OF SAFETY FOR HIGH-SPEED CRAFT (1994 HSC CODE) (MSC.119(74))

13.15 Automatic identification system

13.15.1 Craft shall be provided with an automatic identification system (AIS) or VHF data exchange system (VDES).

13.15.2 AIS or VDES shall:

- .1 provide automatically to appropriately equipped shore stations, other vessels and aircraft information, including the craft's identity, type, position, course, speed, navigational status and other safety-related information;
- .2 receive automatically such information from similarly fitted vessels;
- .3 monitor and track vessels; and
- .4 exchange data with shore based facilities.

13.15.3 The requirements of 13.15.2 shall not apply where international agreements, rules or standards provide for the protection of navigational information.

13.15.4 AIS or VDES shall be operated taking into account the guidelines adopted by the Organization.

Annex 1

3 Details of navigational systems and equipment

15 Automatic identification system (AIS) or VHF data exchange system (VDES)

ANNEX 6

DRAFT AMENDMENT TO THE INTERNATIONAL CODE FOR SHIPS OPERATING IN POLAR WATERS (POLAR CODE) (RESOLUTION MSC.385(94))

PART I-B

ADDITIONAL GUIDANCE REGARDING THE PROVISIONS OF THE INTRODUCTION AND PART I-A

11 Additional guidance to chapter 10 (Communication)

11.1.2 VHF is still largely used for communication at sea, but only over short distances (line of sight) and normally only for voice communication. HF and MF are also used for emergency situations. Digital VHF, mobile phone systems and other types of wireless technology offer enough digital capacity for many maritime applications, but only to ships within sight of shore-based stations, and are, therefore, not generally available in polar waters. AIS or VDES could also be used for low data-rate communication, but there are very few base stations, and the satellite-based AIS system is designed for data reception only. VDES has a satellite component (VDE-SAT) and could be used for both uplink and downlink communication but the channels allocated for VDE-SAT is secondary allocation and should not be used for GMDSS communication.

ANNEX 7

DRAFT AMENDMENT TO THE INTERNATIONAL MARITIME SOLID BULK CARGOES (IMSBC) CODE (RESOLUTION MSC.462(101))

APPENDIX 1 INDIVIDUAL SCHEDULES OF SOLID BULK CARGOES

DIRECT REDUCED IRON (A) Briquettes, hot-moulded

Clean-up

Accumulations of dust from this cargo on deck or in proximity to cargo spaces shall be removed as quickly as possible. Consideration shall be given to carefully cleaning exposed radiocommunication equipment to which dust from the cargo might adhere, such as radar, radio aerials, VHF installations, AIS, VDES and GPS. Hosing with seawater shall be avoided.

DIRECT REDUCED IRON (B) Lumps, pellets, cold-moulded briquettes

Clean-up

Accumulations of dust from this cargo on deck or in proximity to cargo spaces shall be removed as quickly as possible. Consideration shall be given to carefully cleaning exposed radiocommunication equipment to which dust from the cargo might adhere, such as radar, radio aerials, VHF installations, AIS, VDES and GPS. Hosing with seawater shall be avoided.

DIRECT REDUCED IRON (C) (By-product fines)

Clean-up

Accumulations of dust from this cargo on deck or in proximity to cargo spaces shall be removed as quickly as possible. Consideration shall be given to carefully cleaning exposed radiocommunication equipment to which dust from the cargo might adhere, such as radar, radio aerials, VHF installations, AIS, VDES and GPS. Hosing with seawater shall be avoided.

ANNEX 8

DRAFT AMENDMENTS TO THE PROPER USE OF VHF CHANNELS AT SEA (RESOLUTION A.954(23))

1.6 Automatic identification system (AIS)/ VHF data exchange system (VDES)

AIS or VDES is used for the exchange of data in ship-to-ship communications and also in communication with shore-based facilities. The purpose of AIS or VDES is to help identify vessels; assist in target tracking; simplify information exchange (e.g. reduce verbal reporting); and provide additional information to assist situation awareness. AIS or VDES may be used together with VHF voice communications. AIS should be operated in accordance with resolution A.917(22), as amended by resolution A.956(23) 1106(29) on Revised Guidelines for the onboard operational use of shipborne automatic identification systems (AISs). VDES should be operated in accordance with resolution MSC. XXX(YY) on Guidelines for the operational use of shipborne VHF data exchange system (VDES).

ANNEX 9

DRAFT AMENDMENTS TO GUIDELINES FOR SHIPS OPERATING IN POLAR WATERS (RESOLUTION A.1024(26))

12.7 Automatic identification system (AIS)

All ships should be provided with automatic identification system (AIS) or VHF data exchange system (VDES).

ANNEX 10

DRAFT AMENDMENTS TO SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION (HSSC), 2021 (RESOLUTION A.1156(32))

ANNEX

Table of contents

GENERAL

5.12 Survey of the automatic identification system (AIS) or VHF data exchange system (VDES)

5 AMPLIFICATION OF TERMS AND CONDITIONS

5.12 Survey of the automatic identification system (AIS) or VHF data exchange system (VDES)

The survey of the automatic identification system or VHF data exchange system should always be carried out by a qualified radio surveyor who has necessary knowledge of the requirements of SOLAS 74, the International Telecommunication Union's Radio Regulations and the associated performance standards for radio equipment. The survey of the automatic identification system should be carried out using suitable test equipment capable of performing all the relevant measurements required by and in accordance with the Guidelines on annual testing of the automatic identification system (AIS) and VHF data exchange system (VDES) (MSC.1/Circ.1252/Rev. 1).

ANNEX 11

DRAFT AMENDMENTS TO PROCEDURES FOR PORT STATE CONTROL, 2023 (RESOLUTION A.1185(33))

Appendix 9

GUIDELINES FOR PORT STATE CONTROL RELATED TO LRIT

2.1 LRIT equipment is required by the provisions of SOLAS 1974 regulation V/19-1, and the Revised performance standards and functional requirements for the long-range identification and tracking of ships (resolution MSC.263(84)/Rev.1), as amended, and requires all passenger ships, cargo ships (including high-speed craft) over 300 gross tonnage and mobile offshore drilling units (MODUs) to send LRIT position information at least every six hours. Ships fitted with an automatic identification system (AIS) or VHF data exchange system (VDES) and operated exclusively within sea area A1 are not required to comply with LRIT. Sea area A1 is defined by SOLAS 1974 regulation IV/2.1.15 as "an area within the radiotelephone coverage of at least one VHF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government".

Appendix 12

LIST OF CERTIFICATES AND DOCUMENTS

75 AIS or VDES test report (SOLAS reg.V/18.9);

ANNEX 12

DRAFT AMENDMENT TO THE RECOMMENDATION ON PERFORMANCE STANDARDS FOR AN UNIVERSAL SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEM (AIS) (RESOLUTION MSC.74(69))

3.1 The AIS should comprise:

- .1 a communication processor, capable of operating ~~over a range of~~ on-designated four maritime frequencies channels (AIS 1, AIS 2, 75 and 76), with an appropriate channel selecting and switching method, in support of both short and long range applications

ANNEX 13

DRAFT AMENDMENT TO PERFORMANCE STANDARDS FOR SHIPBORNE SIMPLIFIED VOYAGE DATA RECORDERS (S-VDRS) (RESOLUTION MSC.163(78))

AIS/VDES Data

5.4.8 If it is impossible to obtain radar data³ then AIS or VDES target data should be recorded as a source of information regarding other ships. If radar data is recorded, AIS or VDES information may be recorded additionally as a beneficial secondary source of information on both other and own ship.

ANNEX 14

DRAFT AMENDMENTS TO THE PERFORMANCE STANDARDS FOR THE PRESENTATION OF NAVIGATION-RELATED INFORMATION ON SHIPBORNE NAVIGATIONAL DISPLAYS (RESOLUTION MSC.191(79))

6.4 Presentation of target information

6.4.1 General

6.4.1.1 Target information may be provided by radar target tracking and/or by reported target information from the Automatic Identification System (AIS) or VHF data exchange system (VDES).

6.4.1.2 The operation of the radar target tracking function and the processing of reported AIS or VDES information, including the number of targets presented, related to screen size, is defined within the Performance standards for radar equipment, as adopted by the Organization. The presentation of radar target tracking and AIS or VDES information is defined within these performance standards.

6.4.1.3 As far as practical, the user interface and data format for operating, displaying and indicating radar tracking and AIS or VDES information should be consistent

6.4.3 Filtering of AIS/VDES sleeping targets

6.4.3.1 To ensure that the clarity of the total presentation is not substantially impaired, it should be possible to filter the presentation of sleeping AIS or VDES targets (e.g. by target range, CPA/TCPA or AIS target class A/B, etc.)

6.4.3.2 If a filter is applied, there should be a clear and permanent indication. The filter criteria in use should be readily available.

6.4.3.3 It should not be possible to remove individual AIS or VDES targets from the display.

6.4.4 Activation of AIS/VDES targets

6.4.4.1 If zones for the automatic activation of AIS or VDES targets are provided, they should be the same as for automatic radar target acquisition, if available. Any user defined zones (e.g. acquisition/activation zones) in use should be presented in graphical form.

6.4.4.2 . In addition, sleeping AIS or VDES targets should be automatically activated when meeting user defined parameters (e.g. target range, CPA/TCPA or AIS target class A/B).

6.4.5 Graphical presentation

6.4.5.1 Targets should be presented with their relevant symbols according to SN/Circ.243.

6.4.5.2 AIS or VDES information should be graphically presented either as sleeping or activated targets.

6.4.5.3 The course and speed of a tracked radar target or reported AIS or VDES target

should be indicated by a vector that clearly shows the predicted motion. The vector time (length) should be consistent for presentation of any target regardless of its source.

6.4.5.4 The course and speed of a tracked radar target or reported AIS or VDES target should be indicated by a vector that clearly shows the predicted motion. The vector time (length) should be consistent for presentation of any target regardless of its source.

6.4.5.5 The orientation of the AIS or VDES target symbol should indicate its heading. If the heading information is not received, the orientation of the AIS or VDES symbol should be aligned to the COG. When available, the turn or rate of turn (ROT) indicator and/or the path prediction should indicate the manoeuvre of an activated AIS or VDES target.

6.4.5.6 A consistent common reference point should be used for the alignment of tracked target symbols and AIS or VDES target symbols with other information on the same display.

6.4.5.7 On large scale/low range displays, a means to present a true scale outline of an activated AIS or VDES target should be provided.

6.4.5.8 It should be possible to display the past positions of activated targets.

6.4.6 Target data

6.4.6.1 A target selected for the display of its alphanumeric information should be identified by the relevant symbol. If more than one target is selected for data display, the symbols and the corresponding data should be clearly identified.

6.4.6.2 There should be a clear indication to show that the target data is derived from radar or AIS or VDES or from a combination of these.

6.4.6.3 For each selected tracked radar target the following data should be presented in alphanumeric form: Source(s) of data, measured range of target, measured bearing of target, predicted target range at the closest point of approach (CPA), predicted time to CPA (TCPA), true course of target, true speed of target. Additional target information should be provided on request.

6.4.6.4 For each selected AIS or VDES target the following data should be presented in alphanumeric form: Source of data, ship's identification, position and its quality, calculated range of target, calculated bearing of target, CPA, TCPA, COG, SOG, navigational status. Ship's heading and rate of turn should also be made available. Additional target information should be provided on request.

6.4.6.5 If the received AIS information is incomplete, the absent information should be clearly indicated in the target data field as missing.

6.4.6.6 The data should be displayed and continually updated, until another target is selected for data display or until the window is closed.

6.4.6.7 Means should be provided to present own ship AIS or VDES data on request.

6.4.6.8 The alphanumeric displayed data should not obscure graphically presented operational information.

6.4.7 Operational alarms

6.4.7.1 A clear indication of the status of the alarms and of the alarm criteria should be given.

6.4.7.2 A CPA/TCPA alarm of a tracked radar or activated AIS or VDES target should be clearly indicated and the target should be clearly marked by a dangerous target symbol.

6.4.7.3 If a user defined acquisition/activation zone facility is provided, a target entering the zone should be clearly identified with the relevant symbol and for tracked radar targets an alarm should be given. The zone should be identified with the relevant symbology, and should be applicable to tracked radar and AIS or VDES targets.

6.4.7.4 The last position of a lost target should be clearly marked by a lost target symbol on the display, and the lost target alarm should be given. The lost target symbol should disappear if the signal is received again, or after the alarm has been acknowledged. There should be a clear indication whether the lost target alarm function for AIS or VDES targets is enabled or disabled.

6.4.8 AIS/VDES and radar target association

6.4.8.1 An automatic target association function serves to avoid the presentation of two target symbols for the same physical target. If target data from AIS or VDES and radar tracking are both available and if the AIS or VDES and radar information are considered as one target, then as a default condition, the activated AIS target symbol and the alphanumeric AIS or VDES target data should be automatically selected and displayed. The user should have the option to change the default condition to the display of tracked radar targets and should be permitted to select either radar tracking or AIS or VDES alphanumeric data.

6.4.8.2 If the AIS or VDES and radar information are considered as two distinct targets, one activated AIS or VDES target and one tracked radar target should be displayed. No alarm should be raised.

6.4.9 AIS/VDES presentation status

The AIS or VDES presentation status should be indicated as follows:

Function	Cases to be presented		Presentation
AIS or VDES ON/OFF	AIS or VDES processing switched ON / graphical presentation switched OFF	AIS or VDES processing switched ON / graphical presentation switched ON	Alphanumeric or graphical
Filtering of sleeping AIS or VDES targets (6.4.3)	Filter status	Filter status	Alphanumeric or graphical
Activation of Targets (6.4.4)		Activation criteria	Graphical

CPA/TCPA Alarm (6.4.7)	Function ON/OFF CPA/TCPA Criteria Sleeping targets included	Function ON/OFF CPA/TCPA Criteria Sleeping targets included	Alphanumeric and graphical
Lost Target Alarm (6.4.7)	Function ON/OFF Lost target filter criteria	Function ON/OFF Lost target filter criteria	Alphanumeric and graphical
Target Association (6.4.8)	Function ON/OFF Association criteria Default target priority	Function ON/OFF Association criteria Default target priority	Alphanumeric

7.2 Radar display

7.2.1 General

7.2.1.1 Radar video, tracked radar targets and AIS or VDES targets should not be substantially degraded, masked or obscured by other presented information.

7.2.3 Display of maps on radar

Map graphics may be displayed, but should not substantially degrade, mask or obscure the radar video, tracked radar targets and AIS or VDES targets.

APPENDIX

DEFINITION

Activated AIS/VDES target	A target representing the automatic or manual activation of a sleeping target for the display of additional graphically presented information.
AIS/VDES target	A target generated from an AIS or VDES.
Associated target	A target simultaneously representing a tracked radar target and AIS or VDES target having similar parameters (e.g. position, course, speed) and which comply with an association algorithm.
CCRP	The Consistent Common Reference Point is a location on own ship, to which all horizontal measurements such as target range, bearing, relative course, relative speed, closest point of approach (CPA) or time to closest point of approach (TCPA) are referenced, typically the conning position of the bridge.
Dangerous target	A target with a predicted CPA and TCPA that violates values preset by the operator. The respective target is marked by a "dangerous target" symbol.
Display base	The level of information which cannot be removed from the ECDIS display, consisting of information which is required at all times in all geographic areas and all circumstances. It is not intended to be sufficient for safe navigation.
ENC	Electronic Navigational Chart. The database standardized as to content, structure and format according to relevant IHO standards and issued by, or on the authority of, a Government.
Heading	Direction in which the bow of a ship is pointing expressed as an angular displacement from north.
Important indication	A marking of an operational status of displayed information which needs special attention, e.g. information with low integrity or invalid information.
Lost target	A target representing the last valid position of a target before its data was lost. The target is displayed by a "lost target" symbol.

Operational display area	Area of the display used to graphically present chart and radar information, excluding the user dialogue area. On the chart display this is the area of the chart presentation. On the radar display this is the area encompassing the radar image.
Past positions	Equally time-spaced past position marks of a tracked or reported target and own ship. The co-ordinates used to display past positions may be either relative or true.
Sleeping AIS/VDES target	A target indicating the presence and orientation of a vessel equipped with AIS or VDES in a certain location. The target is displayed by a "sleeping target" symbol. No additional information is presented until activated.
Selected target	A target selected manually for the display of detailed alphanumeric information in a separate data display area. The target is displayed by a "selected target" symbol.
Standard display	The level of information that should be shown when a chart is first displayed on ECDIS. The level of the information it provides for route planning or route monitoring may be modified by the mariner according to the mariner's needs.
Trial manoeuvre	Facility used to assist the operator to perform a proposed manoeuvre for navigation and collision avoidance purposes, by displaying the predicted future status of all tracked and AIS or VDES targets as a result of own ship's simulated manoeuvres.
User dialogue area	An area of the display consisting of data fields and/or menus that is allocated to the interactive presentation and entry or selection of operational parameters, data and commands mainly in alphanumeric form.
User selected presentation	An auxiliary presentation configured by the user for a specific task at hand. The presentation may include radar and/or chart information, in combination with other navigation or ship related data.

ANNEX 15

DRAFT AMENDMENTS TO THE REVISED PERFORMANCE STANDARDS FOR RADAR EQUIPMENT (RESOLUTION MSC.192(79))

1 SCOPE OF EQUIPMENT

The radar equipment should assist in safe navigation and in avoiding collision by providing an indication, in relation to own ship, of the position of other surface craft, obstructions and hazards, navigation objects and shorelines.

For this purpose, radar should provide the integration and display of radar video, target tracking information, positional data derived from own ship's position (EPFS) and geo referenced data. The integration and display of AIS or VDES information should be provided to complement radar. The capability of displaying selected parts of Electronic Navigation Charts and other vector chart information may be provided to aid navigation and for position monitoring.

The radar, combined with other sensor or reported information (e.g. AIS or VDES), should improve the safety of navigation by assisting in the efficient navigation of ships and protection of the environment by satisfying the following functional requirements:

TABLE 1
Differences in the performance requirements for
various sizes/categories of ship/craft to which SOLAS applies

Size of ship/craft	<500 gt	500 gt to <10,000 gt and HSC<10,000 gt	All ships/craft ≥10,000 gt
Minimum operational display area diameter	180 mm	250 mm	320 mm
Minimum display area	195 x 195 mm	270 x 270 mm	340 x 340 mm
Auto acquisition of targets			Yes
Minimum acquired radar target capacity	20	30	40
Minimum activated AIS or VDES target capacity	20	30	40
Minimum sleeping AIS or VDES target capacity	100	150	200
Trial Manoeuvre			Yes

5.24.2 The target information may be provided by the radar target tracking function and by the reported target information from the Automatic Identification System (AIS) or VHF Data Exchange System (VDES).

5.24.3 The operation of the radar tracking function and the processing of reported AIS or VDES information is defined in these standards.

5.24.4 The number of targets presented, related to display size, is defined in Table 1. An indication should be given when the target capacity of radar tracking or AIS or VDES reported target processing/display capability is about to be exceeded.

5.24.5 As far as practical, the user interface and data format for operating, displaying and indicating AIS or VDES and radar tracking information should be consistent.

5.25.2.1 In addition to the requirements for processing of targets reported by AIS or VDES, it should be possible to track and provide full presentation functionality for a minimum number of tracked radar targets according to Table 1.

5.26 Automatic Identification System (AIS) or VHF Data Exchange System (VDES) Reported Targets

5.26.1 General

Reported targets provided by the AIS or VDES may be filtered according to user-defined parameters. Targets may be sleeping, or may be activated. Activated targets are treated in a similar way to radar tracked targets.

5.26.2 AIS or VDES Target Capacity

In addition to the requirements for radar tracking, it should be possible to display and provide full presentation functionality for a minimum number of sleeping and activated AIS or VDES targets according to Table 1. There should be an indication when the capacity of processing/display of AIS or VDES targets is about to be exceeded.

5.26.3 Filtering of AIS or VDES Sleeping Targets

To reduce display clutter, a means to filter the presentation of sleeping AIS or VDES targets should be provided, together with an indication of the filter status. (e.g. by target range, CPA/TCPA or AIS or VDES target class A/B, etc.). It should not be possible to remove individual AIS or VDES targets from the display.

5.26.4 Activation of AIS or VDES Targets

A means to activate a sleeping AIS or VDES target and to deactivate an activated AIS or VDES target should be provided. If zones for the automatic activation of AIS or VDES targets are provided, they should be the same as for automatic radar target acquisition. In addition, sleeping AIS or VDES targets may be automatically activated when meeting user defined parameters (e.g. target range, CPA/TCPA or AIS or VDES target class A/B).

5.26.5 AIS or VDES Presentation Status

TABLE 4

The AIS or VDES presentation status should be indicated as follows:

Function	Cases to be Presented	Presentation
----------	-----------------------	--------------

AIS or VDES ON/OFF	AIS or VDES processing switched ON/ graphical presentation switched OFF	AIS or VDES processing switched ON/ graphical presentation switched ON	Alphanumeric or graphical
Filtering of sleeping AIS or VDES targets	Filter status	Filter status	Alphanumeric or graphical
Activation of Targets		Activation criteria	Graphical
CPA/TCPA Alarm	Function ON/OFF Sleeping targets included	Function ON/OFF Sleeping targets included	Alphanumeric and graphical
Lost Target Alarm	Function ON/OFF Lost target filter criteria	Function ON/OFF Lost target filter criteria	Alphanumeric and graphical
Target Association	Function ON/OFF Association criteria Default target priority	Function ON/OFF Association criteria Default target priority	Alphanumeric

5.27 AIS or VDES Graphical Presentation

5.27.1 AIS or VDES targets that are displayed should be presented as sleeping targets by default.

5.27.2 The course and speed of a tracked radar target or reported AIS or VDES target should be indicated by a predicted motion vector. The vector time should be adjustable and valid for presentation of any target regardless of its source.

5.28 AIS/VDES and Radar Target Data

5.28.1 It should be possible to select any tracked radar or AIS or VDES target for the alphanumeric display of its data. A target selected for the display of its alphanumeric information should be identified by the relevant symbol. If more than one target is selected for data display, the relevant symbols and the corresponding data should be clearly identified. There should be a clear indication to show that the target data is derived from radar or from AIS or VDES.

5.28.3 For each selected AIS or VDES target the following data should be presented in alphanumeric form: Source of data, ship's identification, navigational status, position where available and its quality, range, bearing, COG, SOG, CPA and TCPA. Target heading and reported rate of turn should also be made available. Additional target information should be provided on request.

5.28.4 If the received AIS or VDES information is incomplete, the absent information should be clearly indicated as “missing” within the target data field.

5.28.6 Means should be provided to present own ship AIS or VDES data on request.

5.29.5 It should be possible to enable or disable the lost target alarm function for AIS or VDES targets. A clear indication should be given if the lost target alarm is disabled.

If the following conditions are met for a lost AIS or VDES target:

- The AIS or VDES lost target alarm function is enabled.
- The target is of interest, according to lost target filter criteria.
- A message is not received for a set time, depending on the nominal reporting rate of the AIS or VDES target.

5.30 AIS/VDES and Radar Target Association

5.30.1 If the target data from AIS or VDES and radar tracking are both available and if the association criteria (e.g. position, motion) are fulfilled such that the AIS or VDES and radar information are considered as one physical target, then as a default condition, the activated AIS or VDES target symbol and the alphanumeric AIS or VDES target data should be automatically selected and displayed.

5.30.2 The user should have the option to change the default condition to the display of tracked radar targets and should be permitted to select either radar tracking or AIS or VDES alphanumeric data.

5.30.3 For an associated target, if the AIS or VDES and radar information become sufficiently different, the AIS or VDES and radar information should be considered as two distinct targets and one activated AIS or VDES target and one tracked radar target should be displayed. No alarm should be raised.

5.33.6 A malfunction of the source of chart data should not affect the operation of the radar/AIS/VDES system.

6.1.4 The following are defined as primary radar control functions and should be easily and immediately accessible:

Radar Standby/RUN, Range scale selection, Gain, tuning function (if applicable), Anti-clutter rain, Anti-clutter sea, AIS or VDES function on/off, Alarm acknowledge, Cursor, a means to set EBL/VRM, display brightness and acquisition of radar targets.

6.3.2 Operating Instructions

The operating instructions should contain a qualified explanation and/or description of information required by the user to operate the radar system correctly, including:

- methods applied to display AIS or VDES targets and any limitations;

6.3.3.2 Documentation should describe the basis of AIS or VDES filter criteria and AIS/VDES/radar target association criteria.

8.1 Input Data

The radar system should be capable of receiving the required input information from:

- an Automatic Identification System (AIS) or a VHF Data Exchange System (VDES); or

9.6 Failure of AIS or VDES Information

In the absence of AIS or VDES signals, the equipment should display the radar video and target database.

Appendix 2 - Definitions

Activated AIS or VDES target	<p>A target representing the automatic or manual activation of a sleeping target for the display of additional graphically presented information. The target is displayed by an “activated target” symbol including:</p> <ul style="list-style-type: none">● a vector (COG / SOG);● the heading; and● ROT or direction of turn indication (if available) to indicate initiated course changes.
Activation of an AIS or a VDES target	<p>Activation of a sleeping AIS or VDES target for the display of additional graphical and alphanumerical information.</p>
AIS or VDES target	<p>A target generated from an AIS or a VDES message. See activated target, lost target, selected target and sleeping target.</p>
Associated target	<p>If an acquired radar target and an AIS or VDES reported target have similar parameters (e.g. position, course, speed) complying with an association algorithm, they are considered to be the same target and become an associated target.</p>
Acquisition/activation zone	<p>A zone set up by the operator in which the system should automatically acquire radar targets and activate reported AIS or VDES targets when entering the zone.</p>
Lost AIS or VDES target	<p>A target representing the last valid position of an AIS or a VDES target before the reception of its data was lost. The target is displayed by a “lost AIS target” or “lost VDES target” symbol.</p>
Sleeping AIS or VDES target	<p>A target indicating the presence and orientation of a vessel equipped with AIS or VDES in a certain location. The target is displayed by a “sleeping target” symbol. No additional information is presented until activated.</p>
VDES	<p>VHF Data Exchange System</p>

ANNEX 16

**DRAFT AMENDMENTS TO ADOPTION OF AMENDMENTS TO THE CODE OF SAFETY
FOR DYNAMICALLY SUPPORTED CRAFT, AS AMENDED
(RESOLUTION MSC.224(82))**

ANNEX

**AMENDMENTS TO THE CODE OF SAFETY FOR
DYNAMICALLY SUPPORTED CRAFT, AS AMENDED**

**CHAPTER 13
RADIOCOMMUNICATION AND NAVIGATIONAL EQUIPMENT**

13.10 Automatic identification system or VHF data exchange system

13.10.1 Craft should be provided with an automatic identification system (AIS) or a VHF data exchange system (VDES). As follows:

- ~~.1 in the case of passenger craft, no later than 1 July 2008;~~
- ~~.2 in the case of cargo craft of 3,000 gross tonnage and upwards, no later than 1 July 2008; and~~
- ~~.3 in the case of cargo craft of less than 3,000 gross tonnage, no later than 1 July 2008.~~

13.10.2 AIS or VDES should:

13.10.4 AIS or VDES should be operated taking into account the guidelines adopted by the Organization.⁷

⁷ Refer to Guidelines for the onboard operational use of shipborne automatic identification systems (AIS), adopted by the Organization by resolution A.947(22)1106(29) and Guidelines for the operational use of shipborne VHF data exchange system (VDES), adopted by the Organization by the resolution MSC.XXXX(YY).

ANNEX 17

DRAFT AMENDMENT TO THE REVISED PERFORMANCE STANDARDS FOR ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEMS (ECDIS) (RESOLUTION MSC.232(82))

- 1.6 The ECDIS display may also be used for the display of radar, radar tracked target information, AIS, VDES and other appropriate data layers to assist in route monitoring.
- 7.1 Radar information and/or AIS information and/or VDES information may be transferred from systems compliant with the relevant standards of the Organization. Other navigational information may be added to the ECDIS display. However, it should not degrade the displayed SENC information and it should be clearly distinguishable from the SENC information.
- 7.2 It should be possible to remove the radar information, AIS information, VDES information and other navigational information by single operator action.

ANNEX 18

DRAFT AMENDMENT TO THE REVISED PERFORMANCE STANDARDS FOR INTEGRATED NAVIGATION SYSTEM (RESOLUTION MSC.252(83) AND RESOLUTION MSC.452(99))

3.5 Acceptance of INS as navigational equipment

Table 2

Allow for accepting the INS as	INS in compliance with	
	Tasks and functions (Para of this standard)	Applicable modules of specific equipment standards as specified in the Appendices of the document
Radar system	Collision avoidance (7.4)	Radar PS (Res. MSC.192(79)) (Modules specified in Appendix 3) Module A: "Sensor and Detection" Module B: "Operational requirements" Module C: "Design and Technical requirements"
ECDIS	Route planning (7.2) Route monitoring (7.3)	ECDIS PS (Res. MSC.232(82)) Module A: "Database" Module B: "Operational and functional requirements"
Heading control system (HCS)	Navigation control data (7.5) or Navigation status and data display (7.7)	Res. A.342, as amended - MSC.64(67), Annex 3
Track control system, (TCS)	Navigation control data and track control (7.5.3 and 8.6, 8.7)	Track Control Res. MSC.74(69), Annex 2 (Modules specified in Appendix 4) Module B: "Operational and functional requirements"
Presentation of AIS or VDES data	Collision avoidance (7.4) Navigation control data (7.5)	MSC.74 (69), Annex 3 MSC.XXX(YY)
Echo sounding system	Route monitoring (7.3)	MSC.74(69), Annex 4
EPFS	Navigation control data (7.5) or Navigation status and data display (7.7)	GPS Res. A.819(19), as amended, MSC.112(73) or GALILEO, Res. MSC.233(82) or GLONAS, Res. MSC.53(66), as amended MSC.113(73)
SDME	Navigation control data (7.5) or Navigation status and data display (7.7)	Res. MSC.96(72)
NAVTEX or other IMO-recognized equipment accommodating other providers of GMDSS terrestrially-based services	Meteorological warnings (7.2.3) Navigation and SAR warnings (7.3.2) Ice warnings (7.3.2)	MSC.148(77)
Recognized mobile satellite service enhanced group calling system	Meteorological warnings (7.2.3) Navigation and SAR warnings (7.3.2) Ice warnings (7.3.2)	A.807(19), as amended by MSC.68(68), annex 4 and MSC.306(87)

7.3 Task "Route monitoring"

7.3.2 Additional mandatory functions

The INS should provide capability for

- optionally overlaying radar video data on the chart to indicate navigational objects, restraints and hazards to own ship in order to allow position monitoring evaluation and object identification,
- determination of deviations between set values and actual values for measured under-keel clearance and initiating an under-keel clearance alarm, if fitted,
- the alphanumeric display the present values of Latitude, Longitude, heading, COG, SOG, STW, under-keel clearance, ROT (measured or derived from change of heading),
- AIS or VDES reports of AtoNs,
- Coastal and NAVAREA navigational warnings,
- search and rescue (SAR) warnings,
- Coastal and METAREA meteorological warnings,
- ice warnings
- Maritime Safety Information overlay functions,

7.3.3 Optional Functions

For navigational purposes, the display of other route-related information on the chart display is permitted, e.g.,

- Tracked radar targets and AIS or VDES targets
- AIS or VDES binary and safety-related messages
- initiation and monitoring of man-over-board and SAR manoeuvres (search and rescue and man-over-board modes)
- tidal and current data
- weather data
- ice data, and
- the operator may appropriately filter the display of Maritime Safety Information messages.

7.4.2.2 Target association and target data integration

If target information from multiple sensors/sources (radar and AIS or VDES; 2 radar sensors) are provided on one task station:

- the possibility of target association should be provided for mutual monitoring and to avoid the presentation of more than one symbol for the same target,
- the association of AIS or VDES and radar targets should follow the requirements of resolutions MSC.192(79) and MSC.191(79),
- common criteria should be used for raising target related alerts, e.g., CPA/TCPA.

7.5.2.1 For manual control of the ship's primary movement the INS navigation control display should allow at least to display the following information:

- under keel clearance (UKC) and UKC profile
- STW, SOG, COG
- position
- heading, ROT (measured or derived from change of heading)

- rudder angle
- propulsion data
- set and drift, wind direction and speed (true and/or relative selectable by the operator), if available
- the active mode of steering or speed control
- time and distance to wheel-over or to the next waypoint
- safety related messages: e.g. AIS or VDES safety-related and binary messages, Maritime Safety Information messages.

7.7.1 Mandatory data display functions

The INS should provide the following data display functions:

- presentation of mode and status information
- presentation of the ship's static, dynamic and voyage-related AIS or VDES data
- presentation of the ship's available relevant measured motion data together with their "set - values"
- presentation of received safety related messages, such as AIS or VDES safety-related and binary messages, Application Specific Messages (ASM), Maritime Safety Information messages
- presentation of INS configuration
- presentation of sensor and source information.

7.7.2 Mandatory data management functions

The INS should provide the following management functions:

- setting of relevant parameters
- editing AIS or VDES own ship's data and information to be transmitted by AIS or VDES messages.

7.7.3 Optional data display functions

The INS may provide on demand:

- tidal and current data
- weather data, ice data
- additional data of the tasks Navigation control and Route monitoring and AIS or VDES target data.

12.7.3 Collision avoidance

In the case of failure of:

- Heading information
- Speed through the water information
- Course and speed over ground information
- Position input information
- Radar video input information
- AIS or VDES input information,

the INS should operate as defined in the operational Module B4 of the proposed modular structure for radar performance standards as set out in appendix 3.

26.1.2 The following equipment and systems, if installed, and not incorporated in the INS should be also included in the alert management as far as possible:

- heading information system
- heading/track control system
- electronic position-fixing systems
- speed and distance measuring equipment
- radar with target tracking functions
- ECDIS
- AIS or VDES
- echo sounding equipment
- GMDSS equipment
- relevant machinery alarms for early warning.

Appendix 6

DEFAULT DISPLAY CONFIGURATIONS

Task "Collision avoidance"

Function	Setting
Band	X-band, if selectable
Gain and anti-clutter functions	Automatically optimized
Tuning	Automatically optimized
Range	6 nm
Fixed rings	Off
VRMs	One VRM on
EBLs	One EBL on
Parallel index lines	Off or last setting, if applied
Display mode of the radar picture	True motion, north-up
Off-centring	Appropriate look-ahead
Target trails	On
Past positions	Off
Radar target tracking	Continued
Vector mode	Relative
Vector time	6 min
Automatic radar target acquisition	Off
Graphical AIS or VDES reported target display	On
Radar and AIS or VDES Target fusion	On
Operational alarms (except collision warnings)	Off
Collision warnings	On (limits CPA 2 nm; TCPA 12 min)
Display of maps, navigation lines and routes	Last setting
Display of charts	Off

ANNEX 19

**DRAFT AMENDMENT TO CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 2008
(RESOLUTION MSC.266(84))**

ANNEX

CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 2008

APPENDIX

**Record of Equipment for the Special Purpose Ship Safety Certificate
(Form SPS)**

5 Details of navigational systems and equipment

Item 4 Automatic identification system (AIS) or VHF data exchange system

ANNEX 20

DRAFT AMENDMENT TO THE REVISED PERFORMANCE STANDARDS FOR SHIPBORNE VOYAGE DATA RECORDERS (VDRS) (RESOLUTION MSC.333(90))

5.5.17 AIS/VDES

All AIS or AIS component of VDES data should be recorded.

ANNEX 21

DRAFT AMENDMENT TO RECOMMENDATION FOR THE PROTECTION OF THE AIS VHF DATA LINK (RESOLUTION MSC.347(91))

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 functions of adopting performance standards and technical specifications for radio and navigational equipment, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

RECALLING FURTHER resolution MSC.74(69), annex 3: Recommendation on Performance Standards for Universal Shipborne Automatic Identification System (AIS) as revised,

RECALLING FURTHERMORE resolution MSC.XXX(YY): Performance Standards for VHF Data Exchange System (VDES),

REALIZING the application of AIS devices to safety of navigation as well as security,

NOTING that the International Telecommunication Union Sector for Radiocommunications (ITU-R) recognizes a Class A category of AIS which meets the requirements of resolution MSC.74(69) as revised, as well as a Class B and other categories of AIS which do not meet the requirements of resolution MSC.74(69), annex 3 as revised,

NOTING ALSO that Class A devices and VDES are intended to meet the requirements for compulsory AIS fitting under the 1974 SOLAS Convention, and that Class B devices are intended to meet the needs of ships which fit AIS on a voluntary basis,

NOTING FURTHER the benefit of Class B and other AIS devices,

RECOGNIZING that the radio channels used by AIS and VDES, particularly AIS 1 (161.975 MHz) and AIS 2 (162.025 MHz), are regarded as an AIS network, and that any disruption to those channels by any one AIS device could affect the operation of all AIS devices on that network,

RECOGNIZING FURTHER the compelling need to ensure the integrity of the AIS VHF data link,

1. RECOMMENDS that:

- .1 any device which transmits on the radio channels allocated for AIS and AIS component of VDES, should meet the appropriate requirements of Recommendation ITU-R M.1371;

- .2 all such transmitting devices should be approved by the Administration;
and
 - .3 Administrations should take the steps necessary to ensure the integrity
of the radio channels used for AIS and AIS component of VDES
in their waters.
2. REVOKES resolution MSC.140(76).

ANNEX 22

DRAFT AMENDMENTS TO PERFORMANCE STANDARDS FOR A SHIPBORNE INTEGRATED COMMUNICATION SYSTEM (ICS) WHEN USED IN THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) (RESOLUTION MSC517(105))

4.11 When an automatic identification system (AIS) or a VHF data exchange system (VDES) is integrated or interconnected, the ICS should be capable of:

5.3.3 Where integration or interconnection with AIS or VDES is provided, maritime safety information should be provided and displayed.

ANNEX 23

DRAFT AMENDMENT TO PERFORMANCE STANDARDS FOR ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEMS (ECDIS) (MSC.530(106)/REV.1)

1.6 The ECDIS display may also be used for the display of radar, radar tracked target information, AIS, VDES and other appropriate data layers to assist in route monitoring.

7.1 Radar information and/or AIS or VDES information may be transferred from systems compliant with the relevant standards of the Organization. Other navigational information may be added to the ECDIS display. However, it should not degrade the displayed system database information and it should be clearly distinguishable from the system database information.

7.2 It should be possible to remove the radar information, AIS or VDES information and other navigational information by single operator action.

ANNEX 24

**DRAFT AMENDMENTS TO GUIDELINES ON ERGONOMIC CRITERIA FOR BRIDGE
EQUIPMENT AND LAYOUT (MSC/CIRC.982)**

APPENDIX 2

PROPOSED EQUIPMENT FOR WORKSTATIONS

Workstation for navigating and manoeuvring	
Equipment	Accessory
<ul style="list-style-type: none">● radar / radar plotting● ECDIS● automatic visual position indicator● information of position fixing systems● information of Automatic Ship Identification System (AIS) or VHF Data Exchange System (VDES)	

ANNEX 25

DRAFT AMENDMENTS TO GENERAL PRINCIPLES AND RECOMMENDATIONS FOR KNOWLEDGE, SKILLS AND TRAINING FOR OFFICERS ON WING-IN-GROUND (WIG) CRAFT OPERATING IN BOTH DISPLACEMENT AND GROUND EFFECT MODES (MSC/CIRC.1162)

- 3.7 For service on WIG craft of Types A and B, officers having an aviation base qualification should have satisfactorily completed an approved course of marine training and received a certificate, according to the requirements of the 1978 STCW Convention, at least in following areas of marine knowledge:
- GMDSS Radio (General Operators' Certificate (GOC) or Restricted Operators' Certificate (ROC) as appropriate);
 - ARPA;
 - ECDIS;
 - AIS or VDES;
 - Basic and/or Advanced Fire fighting;

ANNEX 26

**DRAFT AMENDMENTS TO GUIDELINES ON ANNUAL TESTING OF VOYAGE DATA
RECORDERS (VDR) AND SIMPLIFIED VOYAGE DATA RECORDERS (S-VDR)
(MSC.1/CIRC.1222/REV.1)**

APPENDIX

VOYAGE DATA RECORDER PERFORMANCE TEST REPORT

8 Interfaces: Operation and recording

AIS or VDES	All AIS or VDES data	
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ANNEX 27

DRAFT AMENDMENTS TO GUIDELINES ON ANNUAL TESTING THE AUTOMATIC IDENTIFICATION SYSTEM (AIS) (MSC.1/Circ.1252)

ANNEX

REVISED GUIDELINES ON ANNUAL TESTING THE AUTOMATIC IDENTIFICATION SYSTEM (AIS) AND AIS COMPONENT OF VHF DATA EXCHANGE SYSTEM (VDES)

- 1 The annual testing of the automatic identification system (AIS) and AIS component of VHF data exchange system (VDES) should be carried out by a qualified radio inspector authorized by the administration or a recognized organization.
- 2 The annual testing of the AIS or AIS component of VDES installation should include:
 - .1 installation details including antenna layout, initial configuration report, interconnection diagrams, provision of the pilot plug and power supply arrangements;
 - .2 checking the correct programming of the ships static information;
 - .3 the ability of the AIS and AIS component of VDES to receive ships dynamic information from the appropriate sensors;
 - .4 the ability to correctly input the ships voyage related data;
 - .5 a performance test of the equipment including radio frequency measurements; and
 - .6 an on-air test that the unit is working correctly using for example an appropriate Vessel Traffic Service (VTS) station or a suitable test equipment.
- 3 To accommodate performance test to align with the appropriate survey under the Harmonized System of Survey and Certification (HSSC), the annual testing may be carried out:
 - .1 up to 3 months before the due date of the passenger ship renewal survey or the cargo ship safety equipment renewal survey; and
 - .2 3 months before or after the due date of the cargo ship safety equipment periodical/annual survey (the maximum period between subsequent test is governed by the time window associated to the subsequent surveys, unless either certificate has been extended as permitted by SOLAS regulation I/14, in which case a similar extension may be granted by the Administration).
- 4 The annual testing should be recorded in the form of the model test report given in the appendix. If the language used is neither English, nor French, nor Spanish, the text should include a translation into one of these languages. A copy of the test report should be retained on board the ship.

APPENDIX

AUTOMATIC IDENTIFICATION SYSTEM (AIS) AND AIS COMPONENT OF VHF DATA EXCHANGE SYSTEM (VDES) TEST REPORT

Name of ship/call sign:	
MMSI number:	
Port of registry:	
IMO Number:	
Gross tonnage:	
Date keel laid:	

1. Installation details		
	Item	Status
1.1	AIS or AIS component of VDES transponder type:	
1.2	Type approval certificate	
1.3	Initial installation configuration report on board?	
1.4	Drawings provided? (Antenna-, AIS or AIS component of VDES-arrangement and block diagram)	
1.5	Main source of electrical power,	
1.6	Emergency source of electrical power,	
1.7	Capacity to be verified if the AIS or AIS component of VDES is connected to a battery	
1.8	Pilot plug near pilots operating position?	
1.9	120 V AC provided near pilot plug? (Panama and St. Lawrence requirement)	

2. AIS or AIS component of VDES programming - Static information		
2.1	MMSI number	
2.2	IMO number	
2.3	Radio call sign	
2.4	Name of ship	
2.5	Type of ship	
2.6	Ship length and beam	
2.7	Location of GPS antenna	

3. AIS or AIS component of VDES programming - Dynamic information		
3.1	Ships position with accuracy and integrity status (Source: GNSS)	
3.2	Time in UTC (Source: GNSS)	
3.3	Course over ground (COG) (will fluctuate at dockside) (Source: GNSS)	
3.4	Speed over ground (SOG) (zero at dockside) (Source: GNSS)	

3.5	Heading (Source: Gyro)	
3.6	Navigational status	
3.7	Rate of turn, where available (ROT)	
3.8	Angle of heel, pitch and roll, where available	

4.	AIS or VDES programming - voyage related information	
4.1	Ships draught	
4.2	Type of cargo	
4.3	Destination and ETA (at masters discretion)	
4.4	Route plan (optional)	
4.5	Short safety-related messages	

5.	Performance test using measuring instrument	
5.1	Frequency measurements AIS ch. 1 and 2, GMDSS ch. 70	
5.2	Transmitting output, AIS ch. 1 and 2, GMDSS ch. 70	
5.3	Polling information ch. 70	
5.4	Read data from AIS or AIS component of VDES	
5.5	Send data to AIS or AIS component of VDES	
5.6	Check AIS or AIS component of VDES response to "virtual vessels"	

6.	"On air" performance test	
6.1	Check reception performance	
6.2	Confirm reception of own signal from other ship/VTs	
6.3	Polling by VTS/shore installation	

Electromagnetic interference from AIS or AIS component of VDES observed to other installations?:		

Remarks:		

The AIS or AIS component of VDES has been tested according to IMO SN/Circ.227 and resolution MSC.74(69), annex 3

Name of Radio Inspector	Date and place	Name of Radio Inspector Company

ANNEX 28

DRAFT AMENDMENTS TO NON-MANDATORY GUIDELINES ON SECURITY ASPECTS OF THE OPERATION OF VESSELS WHICH DO NOT FALL WITHIN THE SCOPE OF SOLAS CHAPTER XI-2 AND THE ISPS CODE (MSC.1/CIRC.1283)

ANNEX

Part 1: Information for Member States and other authorities with responsibility for administering non-SOLAS vessels (other authorities)

5.5 Such an automated tracking system could include the Automatic Identification System (AIS), VHF Data Exchange System (VDES), Radio Frequency Identification Device (RFID) tags, Vessel Tracking Systems (VTS), and radar-based systems.

ANNEX 29

DRAFT AMENDMENTS TO GUIDANCE IN RELATION TO CERTAIN TYPES OF SHIPS WHICH ARE REQUIRED TO TRANSMIT LRIT INFORMATION ON EXEMPTIONS AND EQUIVALENTS AND ON CERTAIN OPERATIONAL MATTERS (MSC.1/CIRC.1295)

ANNEX

2.3 FPSOs and FSUs propelled by mechanical means of 300 gross tonnage and above fitted with automatic identification system (AIS) or VHF data exchange system and operating exclusively within sea area A1, should not be required to transmit LRIT information when engaged on international voyages.

3.2 Offshore supply vessels of 300 gross tonnage and above fitted with automatic identification system (AIS) or VHF data exchange system (VDES) and operating exclusively within sea area A1 should not be required to transmit LRIT information when engaged on international voyages.

4.2 Special purpose ships of 300 gross tonnage and above fitted with automatic identification system (AIS) or VHF data exchange system (VDES) and operating exclusively within sea area A1, should not be required to transmit LRIT information when engaged on international voyages.

5.1 A.494(XII)-ships fitted with automatic identification system (AIS) or VHF data exchange system (VDES) and operating exclusively within sea area A1, should not be required to transmit LRIT information when engaged on international voyages.

6.2.2 Ships fitted with automatic identification system (AIS) or VHF data exchange system (VDES) and operating exclusively within sea area A1, may, for the purpose of employment in another sea area A1, undertake a single voyage outside sea area A1 during the course of which may be exempted from the requirement to transmit LRIT information.

ANNEX 30

DRAFT AMENDMENTS TO ECDIS – GUIDANCE FOR GOOD PRACTICE (MSC.1/CIRC.1503/REV.1)

ANNEX

APPENDIX 3 GUIDANCE ON TRAINING AND ASSESSMENT IN THE OPERATIONAL USE OF ECDIS SIMULATORS

Detection of misrepresentation of information

11 Knowledge of the limitations of the equipment and detection of misrepresentation of information is essential for the safe use of ECDIS. The following factors should be emphasized during training:

- .9 potential errors in the display of:
- .2 radar data and ARPA and AIS or VDES information;

Operational use of ECDIS where AIS or VDES is connected

24 Knowledge and skills should be attained in:

- .1 interface with AIS or VDES;
- .2 interpretation of AIS or VDES data;

ANNEX 31

DRAFT AMENDMENTS TO GUIDELINES FOR SHIPBORNE POSITION, NAVIGATION AND TIMING (PNT) DATA PROCESSING (MSC.1/CIRC.1575)

ANNEX

GUIDELINES FOR SHIPBORNE POSITION, NAVIGATION AND TIMING (PNT) DATA PROCESSING

Purpose

1 The purpose of these Guidelines is to enhance the safety and efficiency of navigation by improved provision of position, navigation and timing (PNT) data to bridge teams (including pilots) and shipboard applications (e.g. AIS, VDES, ECDIS, etc.).

Appendix B

ABBREVIATIONS

UTC - Coordinated Universal Time
VDES - VHF Data Exchange System
VHF - Very High Frequency

ANNEX 32

DRAFT AMENDMENTS TO UNIFIED INTERPRETATION OF THE PROVISIONS OF SOLAS RELATING TO THE ANNUAL TESTING OF THE VDR, S-VDR, AIS AND EPIRB (MSC.1/CIRC.1576)

ANNEX

UNIFIED INTERPRETATION OF THE PROVISIONS OF SOLAS RELATING TO THE ANNUAL TESTING OF THE VDR, S-VDR, AIS, VDES AND EPIRB

SOLAS regulation V/18.9 – Annual performance test of automatic identification system (AIS) or VHF data exchange system (VDES)

Interpretation

The annual performance test of the AIS or VDES shall be carried out within the “time window” of the annual / periodical / renewal survey under the Harmonized System of Survey and Certification (HSSC), but not later than the date of completion of the survey for endorsement / renewal of the relevant Certificate.

ANNEX 33

DRAFT AMENDMENTS TO GUIDELINES FOR WING-IN-GROUND CRAFT (MSC.1/CIRC.1592)

ANNEX

GUIDELINES FOR WING-IN-GROUND CRAFT

CHAPTER 12 – NAVIGATIONAL EQUIPMENT

12.6 OTHER ELECTRONIC POSITIONING SYSTEMS

All craft should be fitted with appropriate electronic navigation equipment. This should include, as a minimum, Global Positioning System (GPS) receiver, Automatic Identification System (AIS), VHF Data Exchange System, Automatic Radar Plotting Aid (ARPA) and Electronic Chart Display and Information System (ECDIS). In assisted craft and small cargo craft, where the fitting of all of this equipment is impracticable, the Administration may accept alternative means of meeting the functions of this equipment, provided that such acceptance is shown by the SSA not to result in a hazardous or catastrophic effect.

12.14 AUTOMATIC IDENTIFICATION SYSTEM OR VHF DATA EXCHANGE SYSTEM

12.14.1 Craft should be provided with an automatic identification system (AIS) or a VHF data exchange system (VDES).

12.14.2 AIS or VDES should:

12.14.4 AIS or VDES should be operated taking into account the guidelines adopted by the Organization.

CHAPTER 17 – OPERATIONAL PROVISIONS

17.2.2 Route operational manual

The route operational manual should include at least the following information:

- .12 specific route conditions or requirements relating to position fixing, operations by night and in restricted visibility, including the use where practicable of radar, ARPA, GPS, ECDIS, AIS, VDES or other electronic aids to navigation; and

ANNEX 34

DRAFT AMENDMENTS TO GUIDELINES FOR THE STANDARDIZATION OF USER INTERFACE DESIGN FOR NAVIGATION EQUIPMENT (MSC.1/CIRC.1609)

ANNEX

GUIDELINES FOR THE STANDARDIZATION OF USER INTERFACE DESIGN FOR NAVIGATION EQUIPMENT

APPENDIX 2

NAVIGATION-RELATED TERMINOLOGY AND ICONS OF FUNCTIONS (HOT KEYS AND SHORTCUTS)

Explanation	Term	Abbreviation	Icon (hot key)
Toggle On/Off AIS	Automatic Identification System contacts on/off	AIS	AIS
Toggle On/Off VDES	VHF Data Exchange System contacts on/off	VDES	VDES
To "status and data display" tasks of the INS	Status and Data	STAT DISP	STAT DISP

APPENDIX 4

LIST OF FUNCTIONS THAT MUST BE ACCESSIBLE BY SINGLE OR SIMPLE OPERATOR ACTION

Table 1: Access to existing functions already defined
(IEC 62388:2012, IEC 62288:2014, IEC 61174:2015)

Function	Equipment	Access
Remove radar (image and tracked target), AIS, VDES and other target information overlaid over the ENC chart	ECDIS	Single operator action
Select AIS or VDES target information	Radar/ECDIS	Simple operator action
Remove AIS or VDES Area Notice	Radar/ECDIS	Single operator action

Table 2: Access to additional functions

Function	Equipment	Access
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All AIS or VDES targets to Sleep Mode	Radar/ECDIS	Simple operator action
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APPENDIX 5

DEFAULT AND USER SETTINGS

Table 1: ECDIS settings configured in response to "Default" selection

Function	Setting
Radar and AIS or VDES target association, if provided	On
Radar and AIS or VDES target association priority	AIS or VDES
AIS or VDES target filtering, if provided	Target range = 6 NM Target CPA = 4 NM Target TCPA = 24 min Target display = On Sleeping target display = Off AtoN display = On SART display = On Repeated target display= Off
AIS or VDES true target outline	Off
Display of AIS or VDES reported targets, if provided	On
AIS or VDES interrogation, if provided	Off

Table 2: Radar control settings configured in response to "Default" selection

Function	Setting
Graphical AIS or VDES reported target display	On
Radar and AIS or VDES target fusion	Association on, priority AIS or VDES

ANNEX 35

DRAFT AMENDMENTS TO GUIDANCE FOR NAVIGATION AND COMMUNICATION EQUIPMENT INTENDED FOR USE ON SHIPS OPERATING IN POLAR WATERS (MSC.1/CIRC.1612)

ANNEX

GUIDANCE FOR NAVIGATION AND COMMUNICATION EQUIPMENT INTENDED FOR USE ON SHIPS OPERATING IN POLAR WATERS

Abbreviations

VDR	- Voyage Data Recorder
VDES	- VHF Data Exchange System
VHF	- Very High Frequency

MODULE B – REQUIREMENTS FOR SPECIFIC EQUIPMENT

B.11 AIS or VDES

The AIS or VDES antennas should be protected against ice accretion as described in section A.2. Input data of critical input sensors should be handled as described in module C.

ANNEX 36

**DRAFT AMENDMENTS TO GUIDELINES FOR SAFETY MEASURES FOR FISHING
VESSELS OF 24 M IN LENGTH AND OVER OPERATING IN POLAR WATERS
(MSC.1/CIRC.1641)**

ANNEX

**GUIDELINES FOR SAFETY MEASURES FOR FISHING VESSELS
OF 24 M IN LENGTH AND OVER OPERATING IN POLAR WATERS**

**CHAPTER 10
SHIPBORNE NAVIGATIONAL EQUIPMENT AND ARRANGEMENTS**

10.2.8 Fishing vessels should be provided with automatic identification system (AIS) or VHF Data Exchange System (VDES).

ANNEX 37

DRAFT AMENDMENTS TO GUIDELINES FOR SAFETY MEASURES FOR PLEASURE YACHTS OF 300 GROSS TONNAGE AND ABOVE NOT ENGAGED IN TRADE OPERATING IN POLAR WATERS (MSC.1/CIRC.1642)

ANNEX

GUIDELINES FOR SAFETY MEASURES FOR PLEASURE YACHTS OF 300 GROSS TONNAGE AND ABOVE NOT ENGAGED IN TRADE OPERATING IN POLAR WATERS

CHAPTER 7 NAVIGATIONAL EQUIPMENT

7.8 Automatic identification system (AIS) or VHF data exchange system (VDES)

Yachts should be provided with automatic identification system (AIS) or VHF data exchange system (VDES).

ANNEX 38

**DRAFT AMENDMENT TO LIST OF CERTIFICATES AND DOCUMENTS REQUIRED
TO BE CARRIED ON BOARD SHIPS, 2022
(FAL.2/CIRC.133, MEPC.1/CIRC.902, MSC.1/CIRC.1646, LEG.2/CIRC.4)**

No.	Contents	Reference
	AIS or VDES test report The automatic identification system (AIS) or VHF data exchange system (VDES) shall be subjected to an annual test by an approved surveyor or an approved testing or servicing facility. A copy of the test report shall be retained on board and should be in accordance with a model form set out in the annex to MSC.1/Circ.1252/Rev.1	SOLAS 1974, regulation V/18.9; MSC.1/Circ.1252/Rev.1

ANNEX 39

DRAFT AMENDMENTS TO THE GUIDELINES FOR THE HARMONIZATION OF GMDSS REQUIREMENTS FOR RADIO INSTALLATIONS ON BOARD SOLAS SHIPS (COMSAR.1/CIRC.32/REV.2)

5.2.7 AIS or VDES VHF antennas should be installed safely away from interfering high-power energy sources like radar and other transmitting radio antennas, preferably at least 3 metres away from and out of the transmitting beam. Antennas should be sufficiently separated from potential sources of EMI such as LED navigation lights to avoid harmful degradation of the receiver performance. Vertical separation can be an effective mitigation measure.

5.2.8 AIS or VDES VHF antennas should be mounted directly above or below the ship's primary VHF radiotelephone antenna, with no horizontal separation and with minimum 2 metres vertical separation. If it is located on the same level as other antennas, the distance apart should be at least 5 metres.

6.1.2.3.3 Harmful interference to shipborne AIS or VDES equipment may be indicated by swapping the antenna cable connections between the AIS or VDES and VHF radio and then performing the VHF radiotelephone check as set out above. If the cabling configuration does not allow this check to be performed, the VHF radiotelephone check can be performed using a portable VHF transceiver held near the AIS antenna using the procedures set out in 6.1.2.1, noting that this is an even less sensitive approach. All antennas should be returned to their original configuration and tested to ensure normal operation

ANNEX 40

DRAFT AMENDMENTS TO AIS SAFETY-RELATED MESSAGING (COMSAR.1/CIRC.46)

ANNEX

USE OF AIS OR VDES SAFETY-RELATED MESSAGING IN DISTRESS SITUATIONS

1 AIS and AIS component of VDES standards include safety-related text messaging functionality in Class A devices and VDES as a requirement and as an option in Class B devices. If safety-related messaging is provided in Class B devices, it shall be only through the use of pre-configured messages. Certain models of AIS have provided pre-configured safety-related messages which include distress alert information.

2 The Sub-Committee on Navigation, Radiocommunications and Search and Rescue noted several limitations and concerns regarding the ability of these safety-related messages to mitigate distress situations, including, but not limited to, the following:

- .1 AIS or VDES text messaging is not part of the GMDSS. Its use for distress communications is not recognized internationally;
- .2 there is no related alerting or SAR infrastructure in place to accommodate transmissions of distress messages using AIS or VDES;
- .3 there are limited shore-based receivers. Although some Administrations have installed shore-based infrastructures for receiving AIS or VDES signals, those facilities do not necessarily include a means for receiving safety messages. Even where a means of receiving such messages exists, messages with preformatted distress information may not be recognized and handled as such;
- .4 the devices provide no facility for automatic repeats of an alert. AIS or VDES safety messages are transmitted only once, and if the signal is corrupted or interfered with in transmission, a situation not uncommon with AIS and VDES, the message may not be received;
- .6 no prioritization of messaging is available. In fact, the AIS and AIS component of VDES standard requires that safety-related messages be given the lowest priority in their transmission.

3 Mariners should be aware of the limitations in using AIS or VDES safety-related messages, and that they may not be received, recognized or acted upon by authorities or other mariners.

4 Safety-related messages transmitted through the GMDSS system are immediately reacted upon by an MRCC, while safety-related messages transmitted through the AIS or VDES system might not be received in a system offering continuous listening watch of the frequencies. Therefore initial safety-related messages should be transmitted through the GMDSS system if rescue or assistance is immediately needed.

5 The Sub-Committee on Navigation, Radiocommunications and Search and Rescue is of the view that AIS or VDES devices should be designed such that they cannot broadcast a pre-configured safety-related message (distress or otherwise), and it is recommended that AIS and VDES manufacturers and/or users should delete any pre-configured AIS or VDES

safety-related messages that could be used to indicate distress.

ANNEX 41

DRAFT AMENDMENTS TO GUIDELINES FOR THE INSTALLATION OF A SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEM (AIS), AS AMENDED (SN.1/CIRC.227 AND 245)

ANNEX

GUIDELINES FOR THE INSTALLATION OF A SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEM (AIS) AND VHF DATA EXCHANGE SYSTEM (VDES)

1 General

The Automatic Identification System (AIS) Class A and VHF Data Exchange System (VDES) is defined by IMO and has been made. AIS or AIS component of VDES are a carriage requirement by the latest revision of SOLAS chapter V. AIS and VDES provides information that may be used for the navigation of the ship. It is therefore essential that the information provided by AIS or VDES be reliable.

The AIS and VDES itself has have been standardised by the International Telecommunications Union (ITU) and the International Electrotechnical Commission (IEC) and is are subject to type approval. In order to fulfil the reliability requirements of information exchange, care should be taken to ensure that the AIS or VDES is correctly installed.

The guidelines take into account the following conventions, regulations, instructions and guidelines:

- IMO resolution MSC.74(69) Annex 3, Recommendation on performance standards for AIS.
- IMO resolution MSC.XXX(YY) Performance standards for shipborne VDES.
- ITU Radio Regulations (RR).

1.2 Documentation

For the AIS or VDES installation the following drawings shall be submitted:

- AIS or VDES arrangement drawing

2 AIS Installation

2.1 Interference to the Ship's VHF Radiotelephone

The AIS and VDES shipborne equipment, like any other shipborne transceiver operating in the VHF maritime band, may cause interference to a ship's VHF radiotelephone. Because AIS and VDES is are a digital systems, this interference may occur as a periodic (e.g. every 20 s) soft clicking sound on a ship's radiotelephone. This affect may become more noticeable when the VHF radiotelephone antenna is located near the AIS or VDES VHF antenna and when the radiotelephone is operating on channels near the AIS or VDES operating channels (e.g. channels 27, 28 and 86).

Attention should be paid to the location and installation of different antennas in order to obtain the best possible efficiency. Special attention should be paid to the installation of mandatory antennas like the AIS and VDES antennas.

2.2 VHF Antenna Installation

2.2.1 Location

Location of the mandatory AIS or VDES VHF antenna should be carefully considered. Digital communication is more sensitive than analogue/voice communication to interference created by reflections in obstructions like masts and booms. It may be necessary to relocate the VHF radiotelephone antenna to minimize interference effects.

To minimise interference effects, the following guidelines apply:

- The AIS or VDES VHF antenna should have omnidirectional vertical polarisation.
- The AIS or VDES VHF antenna should be placed in an elevated position that is as free as possible with a minimum of 2 metres in horizontal direction from constructions made of conductive materials. The antenna should not be installed close to any large vertical obstruction. The objective for the AIS or VDES VHF antenna is to see the horizon freely through 360°.
- The AIS or VDES VHF antenna should be installed safely away from interfering high-power energy sources like radar and other transmitting radio antennas, preferably at least 3 m away from and out of the transmitting beam.
- Ideally there should not be more than one antenna on the same level. The AIS or VDES VHF antenna should be mounted directly above or below the ship's primary VHF radiotelephone antenna, with no horizontal separation and with a minimum of 2 m vertical separation. If it is located on the same level as other antennas, the distance apart should be at least 10 m.

2.3 GNSS Antenna installation

Class A AIS or VDES should be connected to a GNSS antenna.

2.3.1 Location

Locate the antenna at least three meters away from and out of the transmitting beam of high-power transmitters (S-Band Radar and/or Inmarsat systems). This includes the ship's own AIS or VDES VHF antenna if it is designed and installed separately.

If a DGNSS system is included or connected to the AIS or VDES system, the installation of the antenna should be in accordance with IEC 61108-4, Ed 1, annex D.

2.3.2 Cabling

The coaxial cable between the antenna and the AIS or VDES shipborne station connector should be routed directly in order to reduce electromagnetic interference effects. The cable should not be installed close to high-power lines, such as radar or radio-transmitter lines or the AIS or VDES VHF antenna cable. A separation of one meter or more is recommended to avoid degradation due to RF-coupling. Crossing of antenna cables should be done at 90° to minimise magnetic field coupling.

2.4 Power source

The AIS or VDES should ideally be connected through an uninterrupted power supply (UPS) to the ship's power supply as defined in SOLAS chapter II-1.

2.5 Synchronization

After installation, the AIS or VDES should be synchronised properly on UTC and that position information, if provided, should be correct and valid.

3 Bridge Arrangement

3.1 bis Keyboard and display

The functionality described at the paragraph 3.1 should be applied to a keyboard and display of VDES.

3.2 Pilot plug

A pilot input/output port is part of an AIS Class A and a VDES station. A plug connected to this port should be installed on the bridge near the pilot's operating position so that a pilot can connect a Personal Pilot Unit (PPU).

3.3 Display system

If there is navigational equipment capable of processing and displaying AIS or VDES information such as ECDIS, radar or an integrated system available on board the ship, the AIS Class A or VDES mobile system may be connected to that system via the AIS or VDES Presentation Interface (PI). The PI (input/output) should meet the requirements of IEC 61162-2.

The display system can also include the functionality of an MKD and a keyboard and display, see 3.1 and 3.1 bis.

3.4 Installation of the BIIT (Built-in Integrity Test) function

The AIS and VDES requires that an alarm output (relay) be connected to an audible alarm device or the ships alarm system, if available.

Alternatively, the BIIT alarm system may use the alarm messages output on the PI, provided its alarm system is AIS or VDES compatible.

4 Dynamic data input

4.1 External Sensors

The AIS and VDES have interfaces (configurable as IEC 61162-1 or 61162-2) for position, heading and rate of turn (ROT) sensors. In general, sensors installed in compliance with other carriage requirements of SOLAS Chapter V should be connected to the AIS or VDES.⁸ The sensor information transmitted by AIS or VDES should be the same information being used for navigation of the ship. The interfaces should be configured as given in annex 3. Interfacing problems might occur if the existing sensors found on board do not have serial (IEC 61162) outputs.

⁸ Installation of the AIS or VDES does NOT establish a need to install additional sensors above carriage requirements.

If ROT information is not available from a ROT indicator, the direction of turn may (optionally) be derived from heading information through:

- The AIS or VDES itself (see annex 1).

4.5 Navigational Status

A simple means should be provided for the operator to input the ship's navigational status (e.g. underway using engine, at anchor, not under command, restricted in ability to maneuver, etc.) information into the AIS or VDES. The AIS or VDES may be connected to the ship's navigational status lights.

5 Static Information

5.1 Entered at initial installation of AIS or VDES

Information that should be entered at the initial installation of the AIS or VDES includes:

Access to **MMSI, IMO number** and other AIS or VDES controls (like power and channel settings) will be controlled, e.g. by password.

The **Call Sign, Name of Ship** and **Type of Ship** should be input to the AIS or VDES, either manually using the MKD or by means of IEC 61162 sentences "SSD" and "VSD" via the PI. Type of Ship information should be in accordance with the table given in ~~annex 2 (Table 18 from Rec. ITU-R M.1371-1)~~ the most recent version of the Rec. ITU-R M.1371 series.

5.2 Reference point of position

The AIS or VDES stores one "external reference point" for the external GNSS antenna position and one "internal reference point" if an internal GNSS is to be used as fallback for position reporting. The locations of these reference points have to be set during installation using values A, B, C, D; as described in paragraph 5.3.

Additionally, the content of the Ship Static Data ("SSD") sentence on the PI, including the "reference point for position" is being processed by the AIS or VDES, and the AIS' or VDES's memory for the "external reference point" is set in accordance with the content of this "SSD" (e.g. used by an INS).

6 Long-range function

The AIS' or VDES's long-range function needs a compatible long-range communication system (e.g. ~~Inmarsat-C~~ Recognised Mobile Satellite Service or MF/HF radio as part of the GMDSS).

If this is available, a connection between that communication system and the Class A mobile unit can be made. This connection is needed to activate the LR function of AIS and VDES. Its input/output port should meet the requirement of IEC 61162-2.

Annex 1

RATE OF TURN

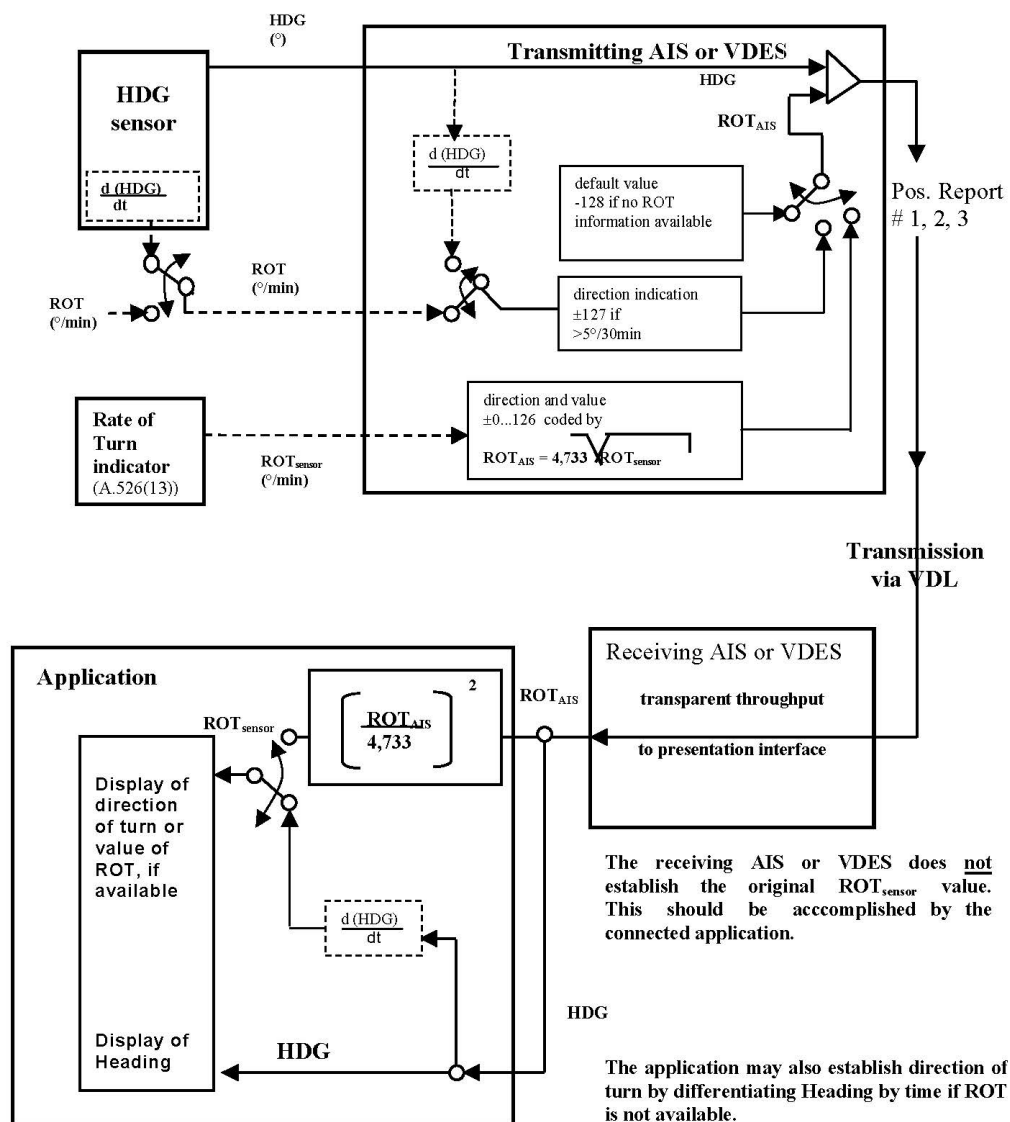
The AIS and VDES provides the Rate of Turn (ROT) information to other ships in order to early detect ships manoeuvres. There are two possible parameters indicating turning of a ship derived from two different sensors (see Figure 3: ROT sensor input):

If a Rate of Turn Indicator according to resolution A.526(13) is connected, the AIS or VDES should use this information to broadcast both direction and value of turn on the VDL.

If valid ROT or HDG data is available from other external sources (Gyro, INS,...), the AIS should use this information to broadcast the direction of turn on the VDL, if greater than 5° in 30 s (might also be implemented as 2.5° in 15 s by configuration); the AIS or VDES may also derive ROT information from HDG internally for that purpose.

Rate of Turn sensor input overview

The figure is replaced with the following figure.



ANNEX 42

DRAFT AMENDMENTS TO GUIDELINES FOR THE PRESENTATION OF NAVIGATION-RELATED SYMBOLS, TERMS AND ABBREVIATIONS (SN/CIRC.243/REV.2)



ANNEX 1

GUIDELINES FOR THE PRESENTATION OF NAVIGATION-RELATED SYMBOLS

APPENDIX

NAVIGATION-RELATED SYMBOLS

Table 3: AIS or VDES Symbols

Topic	Symbol	Description
AIS or VDES target (sleeping)		An isosceles, acute-angled triangle should be used. The triangle should be oriented by heading, or COG if heading missing. The reported position should be located at centre and half the height of the triangle. The symbol of the sleeping target should be smaller than that of the activated target.
Sleeping (activated) AIS or VDES target with neither reported heading nor COG		Sleeping (activated) AIS or VDES target with neither reported heading nor COG should be presented as acute isosceles triangle oriented toward the top of the operational display area with one line crossed through the symbol.
Activated AIS or VDES target including dangerous target		<p>An isosceles, acute-angled triangle should be used. The triangle should be oriented by heading, or COG if heading missing. The reported position should be located at centre and half the height of the triangle.</p> <p>The COG/SOG vector should be displayed as a dashed line with short dashes with spaces approximately twice the line width. Optionally, time increments may be marked along the vector.</p> <p>The heading should be displayed as a solid line thinner than speed vector line style, length twice of the length of the triangle symbol.</p> <p>Origin of the heading line is the apex of the triangle.</p> <p>The turn should be indicated by a flag of fixed</p>

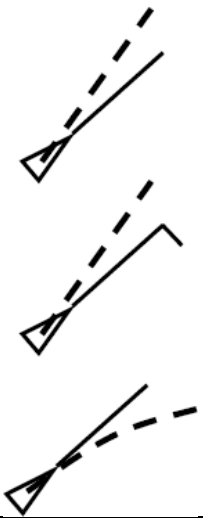

		length added to the heading line. A path predictor may be provided as curved vector. For a “Dangerous AIS/VDES Target” , bold, red (on colour display) solid triangle with course and speed vector, flashing until acknowledged.
AIS or VDES target – true scale outline		A true scale outline may be added to the triangle symbol. It should be: Located relative to reported position and according to reported position offsets, beam and length. Oriented along target’s heading. Used on low ranges/large scales.

Table 4: Associated target symbols

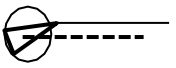
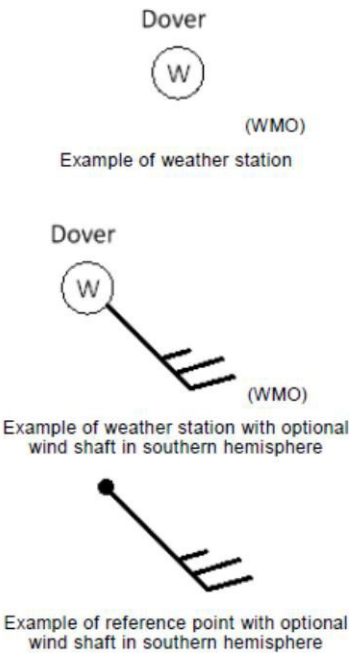


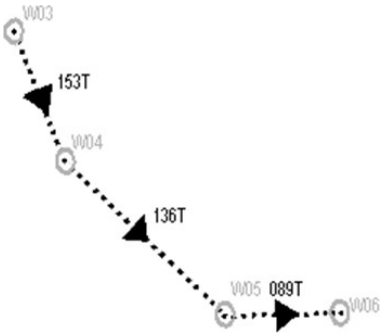
Topic	Symbol	Description
Associated target		The user may select to present associated targets (i.e. activated AIS or VDES targets associated with tracked radar targets) as either activated AIS or VDES target symbols (see symbol: “Activated AIS/VDES Target Including Dangerous Target”) or tracked radar target symbols (see symbol: “Tracked Target including Dangerous Target”).
Associated target alternative AIS or VDES target symbol		Alternatively, activated AIS or VDES target symbols representing associated targets may be modified by circumscribing a circle around the symbols’ isosceles triangle.

Table 5: Other symbols



Topic	Symbol	Description
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<p>Meteorological information</p>		<p>Meteorological information symbols consist of two parts:</p> <ul style="list-style-type: none"> the weather station symbol; and reference point and the wind shaft. <p>The weather station symbol should be presented as a circle with “W” inscribed inside it. The circle should be centred at the position derived from the site location report binary message. The circle should not be more than 6 Mm in diameter, drawn using a thin solid line style and using the same basic colour as AIS AtoN. The reference point symbol should be presented as a dot. The dot should be more drawn using a thin solid line style and using the same basic colour as AIS AtoN. Alphanumeric text may be used to label the weather station.</p> <p>The optional wind shaft should be used to represent wind force and direction as defined by WMO No.485, Appendix II-4, the surface plotting model. If wind force and direction is not available then there should be no environmental symbol. The wind shaft should be not more than 3 times the diameter of the weather station symbol. The length of barbs and pennants should not exceed the diameter of the weather station symbol. The wind shaft should be drawn using a thick solid line style and using the same basic</p>
<p>Topic</p>	<p>Symbol</p>	<p>Description</p>



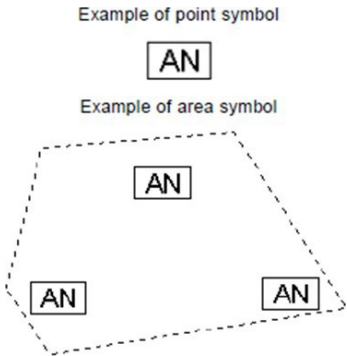
		<p>colour as AIS AtoN. The wind shaft is directed along the axis of the wind towards the centre of the station circle and stops at its circumference. Wind is represented by barbs and solid pennants. The full barbs representing 5 m s⁻¹ or 10 kn, the half barbs representing 2.5 m s⁻¹ or 5 kn and the solid pennant representing 25 m s⁻¹ or 50 kn. All pennants and barbs lie to the left (clockwise) of the wind shaft in the northern hemisphere and to the right (counter clockwise) of the wind shaft in the southern hemisphere. Barbs are at an angle of 110° to 130° from the wind shaft. Pennants are triangles with their bases on the wind shaft. A calm should be indicated by a circle drawn around the weather station circle. Missing wind speed should be indicated by placing an “x” at the end of the wind shaft in lieu of the wind barbs.</p> <p>Note that the source of meteorological information may be AIS ASM or VDES function identifier 26 or 31 (SN.1/Circ.289/Rev.1), etc.</p>
<p>Tidal and water level information</p>		<p>Tidal and water level information symbol consist of three parts:</p> <ul style="list-style-type: none"> • tidal symbol; • tidal flow symbol; • tidal gauge symbol. <p>The tidal symbol should be presented as a diamond with “T” inscribed inside it. The diamond should be centred at the position derived from the site location report binary message. The diamond should be drawn using a thin solid line style and using the same basic colour as AIS AtoN.</p> <p>The optional tidal flow part of the symbol should be used to represent tidal speed and direction. If tidal speed and direction is not available then there should be no tidal flow symbol. The tidal flow symbol should be drawn to the direction of the tidal current and</p>

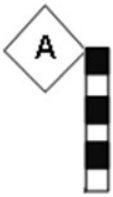

		<p>using the same basic colour as AIS AtoN.</p> <p>The optional tidal gauge part of the symbol should be used to represent availability of water level information. If water level is not available then there should be no tidal gauge symbol. The tidal gauge symbol should be drawn using a thick solid line style, transparent fill and using the same basic colour as AIS AtoN.</p> <p>Note that the source of tidal information may be AIS or VDES ASM function identifier 31 (SN.1/Circ.289/Rev.1), etc.</p>
Topic	Symbol	Description
Signal station		<p>Signal station should be presented as a diamond centred at the reported position of the signal station. The sides of the diamond should be the same basic colour as the AIS AtoN symbol.</p> <p>The symbol should be labelled with text “SS” centred in the diamond and the colour of the label should be the same colour as the symbol.</p> <p>Note that a signal station is a station capable of transmitting marine traffic signals. The source of signal station may be AIS or VDES ASM function identifier 19 (SN.1/Circ.289/Rev.1), etc.</p>
Route information broadcast		<p>Route information is as a series of waypoints connected by one or more legs. Leg lines on the route information should be drawn using a thin dotted line style. They should have a centred solid triangle with equal length of each side and should be the same basic colour as the AIS atoN symbol. Solid triangle is centred on visible part of each leg.</p> <p>Leg lines on the route information may be labelled adjacent to their line with their course. The label should not</p>

		<p>interfere with text used to label the waypoint. Alphanumeric text used to label a leg line should be the same colour as the leg line.</p> <p>The colour of route type "mandatory route" should be different from other route types.</p> <p>Note that the source of route information may be AIS or VDES ASM function identifier 27 or 28 (SN.1/Circ.289/Rev.1), etc.</p>
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Topic	Symbol	Description
Berthing data		<p>Berthing assignment should be presented as a box with the "BERTH" inscribed inside it. The box should be centred at the position derived from the berthing data message. The box should be drawn using a thick solid line style and should be the same basic colour as the AIS AtoN symbol.</p> <p>Note that the source of berthing data may be AIS or VDES ASM function identifier 20 (SN.1/Circ.289/Rev.1), etc.</p>
Clearance time to enter port		<p>Clearance time to enter port should be presented as a box with the "CTE" inscribed inside it. The box should be centred at the position derived from clearance time to enter port data message. The box should be drawn using a thick solid line style and should be the same basic colour as the AIS AtoN symbol.</p> <p>Note that the source of clearance to enter port may be AIS or VDES ASM function identifier 18 (SN.1/Circ.289/Rev.1), etc.</p>

Topic	Symbol	Description
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<p>Berthing data</p>		<p>Berthing assignment should be presented as a box with the “BERTH” inscribed inside it. The box should be centred at the position derived from the berthing data message. The box should be drawn using a thick solid line style and should be the same basic colour as the AIS AtoN symbol.</p> <p>Note that the source of berthing data may be AIS or VDES ASM function identifier 20 (SN.1/Circ.289/Rev.1), etc.</p>
<p>Clearance time to enter port</p>		<p>Clearance time to enter port should be presented as a box with the “CTE” inscribed inside it. The box should be centred at the position derived from clearance time to enter port data message. The box should be drawn using a thick solid line style and should be the same basic colour as the AIS AtoN symbol.</p> <p>Note that the source of clearance to enter port may be AIS or VDES ASM function identifier 18 (SN.1/Circ.289/Rev.1), etc.</p>
<p>Area notice</p>		<p>Area notice point symbol should be presented as a box with “AN” inscribed inside it. The box should be centred at the position derived from Area notice message. The box should be drawn using a thick solid line style and should be the same basic colour as the AIS AtoN symbol.</p> <p>Area notice area symbol should be presented as a series of lines bounding a geographic area. Connecting lines should be drawn using the thin dashed line style and using the same basic colour as the symbol itself. The area should be filled with a sparse pattern of Area notice point symbols. Drawing priority of Area notice symbol is below Maritime Safety Information (MSI).</p> <p>Note that the source of the area notice may be AIS or VDES ASM function identifier 22 or 23 (SN.1/Circ.289/Rev.1), etc.</p>

<p>Air gap</p>		<p>Air gap symbols consist of two parts:</p> <ul style="list-style-type: none"> • the air gap symbol • the air gap gauge symbol <p>The air gap symbol should be presented as a diamond with “A” inscribed inside it. The diamond should be centred at the position derived from the site location report binary message. The diamond should be drawn using a thin solid line style and using the same basic colour as AIS AtoN.</p> <p>The air gap gauge part of the symbol should be used to represent availability of air gap information. If air gap is not available then there should be no air gap gauge symbol. The air gap gauge symbol should be drawn using a thick solid line style, transparent fill and using the same basic colour as AIS AtoN.</p> <p>Note that the source of the air gap/air draught information may be AIS or VDES ASM function identifier 26 (SN.1/Circ.289/Rev.1), etc.</p>
<p>Environmental report</p>		<p>The environmental report symbol should be presented as a diamond with “ENV” inscribed inside it. The diamond should be centred at the position derived from the site location report binary message. The diamond should be drawn using a thin solid line style and using the same basic colour as AIS AtoN.</p> <p>Note that the source of environmental information may be AIS or VDES ASM function identifier 26 or 31 (SN.1/Circ.289/Rev.1), etc.</p>

ANNEX 2

GUIDELINES FOR THE PRESENTATION OF NAVIGATION-RELATED TERMS AND ABBREVIATIONS

3 Application

3.1 These Guidelines apply to all shipborne navigational systems and equipment including radar, ECDIS, AIS, VDES, INS and IBS. When navigation-related information is displayed as text, the standard terms or abbreviations listed in the appendix should be used, instead of using terms and abbreviations which are currently contained in existing performance standards.

APPENDIX

LIST OF STANDARD TERMS AND ABBREVIATIONS

Term	Abbreviation	Abbreviation	Term
Very Low Frequency	VLF	USR SET	Select User Settings
VHF Data Exchange System	VDES	UTC	Universal Time, Coordinated
Vessel Aground (applies to AIS)	GRND	UWE	Vessel Underway Using Engine (applies to AIS)
Vessel at Anchor (applies to AIS)	ANCH	VAR	Variation
Vessel Constrained by Draught (applies to AIS)	VCD	VCD	Vessel Constrained by Draught (applies to AIS)
Vessel Engaged in Diving Operations (applies to AIS)	DIVE	VDES	VHF Data Exchange System
Vessel Engaged in Dredging or Underwater Operations (applies to AIS)	DRG	VDR	Voyage Data Recorder

ANNEX 43

DRAFT AMENDMENTS TO GUIDANCE ON THE USE OF THE UN/LOCODE IN THE DESTINATION FIELD IN AIS MESSAGES (SN.1/CIRC.244/REV.1)

ANNEX

GUIDANCE ON THE USE OF THE UN/LOCODE IN THE DESTINATION FIELD IN AIS OR VDES MESSAGES

1 The Automatic Identification System (AIS) or VHF Data Exchange System (VDES) is a working system for ship identification and tracking that has the capability to transfer predefined messages to other ships and shore stations. One such message includes a text field designated for destination.

2 The mariner is able to enter the ship's destination into the AIS or VDES at the start of each voyage, and to keep this information updated. Evidence shows that mariners are using different names for the same location when entering destination data in their AIS or VDES units. This situation leads to confusion and inefficiency in data interchange. Therefore, there is a need to harmonize data input when entering port information, by adopting an available universal protocol.

3 The AIS or VDES field for the destination allows for "free text" of up to 20 characters. This results in numerous variations in the spelling of the same port, making it difficult for other ships and shore authorities to identify the port uniquely. Also the use of the data in information systems is difficult or impossible without considerable manual effort.

ANNEX 44

DRAFT AMENDMENTS TO GUIDANCE ON THE USE OF AIS APPLICATION-SPECIFIC MESSAGES (SN.1/CIRC.289)

ANNEX

GUIDANCE ON THE USE OF AIS AND VDES APPLICATION-SPECIFIC MESSAGES

1 Summary of AIS and VDES Application-Specific Messages

1.1 This document provides an overview of the purpose and scope of AIS and VDES Application-Specific Messages, and provides guidance on their use. AIS and VDES Application-Specific Messages described in this document are recommended for broad international use.

1.2 Table 1 provides a list of the AIS and VDES binary messages contained in SN/Circ.236 and the revised/new AIS and VDES Application-Specific Messages contained in this Guidance.

Table 1
Summary of AIS and VDES Application-Specific Messages
recommended for international use

1.3 The following system-related messages described in Annex 5 to Recommendation ITU-R M.1371-35 are also recommended for international use:

2 System requirements

2.4 VDES Application-Specific Messages are transmitted and received by shipborne mobile VDES devices and VDES base stations using dedicated ASM channels (ASM 1 and 2). However, VDES Application-Specific Messages can be also transmitted and received by VDE-TER or VDE-SAT channels if necessary.

2.5 The display of the information transmitted by VDES Application-Specific Messages requires also external hardware and dedicated software in addition to the VDES equipment.

2.6 The generation and transmission of VDES Application-Specific Messages also requires dedicated software and suitable equipment for entering the information.

3 Purpose and scope of AIS and VDES Application-Specific Messages

3.1 bis VDES was developed by integrating the functions of VHF data exchange (VDE) comprising both terrestrial and satellite components, application specific messages (ASM) and the automatic identification system (AIS) in order to ensure the protection of AIS while making efficient use of the spectrum and enable the implementation of e-navigation.

3.2 AIS and VDES Application-Specific Messages may be either addressed or broadcasted. The technical characteristic and the structure of the AIS Application-Specific Messages are specified in Recommendation ITU-R M.1371 and those of VDES Application Specific Messages are specified in Recommendation ITU-R M.2092. The content and format

of the AIS Application-Specific Messages were tailored to different applications and were defined by the International Maritime Organization (IMO)

3.2.1 The transmission of any addressed AIS or VDES Application-Specific Message prompts a system acknowledgement on the VHF Data Link (VDL) by the receiving AIS or VDES station. This acknowledgement should not be confused with a user acknowledgment.

3.3 To avoid system overload, the number of AIS or VDES Application-Specific Messages and the frequency of transmission should be limited. Therefore, AIS or VDES Application-Specific Messages should be approved only if there is a compelling operational need for them. These messages have to be distinguished from "Addressed Safety-related Messages" and "Broadcast Safety-related Messages" both of which allow the exchange of format-free ASCII-text.

3.5 AIS and VDES Application-Specific Messages may provide a variety of capabilities for pre-defined information packages. For example:

- ships to report information to other ships and shore stations;
- shore stations to report navigation information, conditions and warnings; and
- ship reporting to be simplified.

3.5.1 It is also possible to interrogate a ship for a specific message and automatically receive the requested information, provided that the ship has the appropriate equipment installed. Moreover, AIS and VDES Application-Specific Messages may reduce verbal communications and enhance reliable information exchange and reduce operator's workload. AIS and VDES Application-Specific Messages are not intended to replace standard services such as the Global Maritime Distress and Safety System (GMDSS) and Search and Rescue Services (SAR).

4 Use of AIS and VDES Application-Specific Messages

4.1 The use of AIS or VDES Application-Specific Messages is permissible. AIS or VDES Application-Specific Messages may be created based on automatically generated or manual input. Pre-defined forms may be used to generate a message.

4.1.1 Since the use of AIS Application-Specific Messages places an additional load on the VDL, care must be taken to ensure the integrity of the VDL and not to impair the main functions of AIS. In this regard, longer AIS Application-Specific Messages and frequently transmitted messages have a greater impact on the VDL.

4.1.2 ASM channels of VDES were originally developed for migration of AIS Application-Specific Messages to VDES Application-Specific Messages in order to avoid the overload of AIS VDL. Therefore, the administrations are encouraged to use VDES Application-Specific Messages when the overload of AIS VDL is observed. However, since not all ships carry VDES even when fitted with AIS, the administration should take a careful consideration before using VDES Application-Specific Messages.

4.2 To ensure the safe use of the VDL, it may be beneficial that Contracting Governments appoint one national administration with a task to monitor and coordinate the use of the VDL within its area of responsibility. Slot utilizations should be monitored to determine the feasibility of using AIS or VDES Application-Specific Messages in the intended area. Further, this monitoring process should be conducted on an ongoing basis.

4.3 Although shipborne AIS or VDES equipments are capable of receiving AIS or VDES Application-Specific Messages, they may not be properly processed and displayed. SN.1/Circ.290/Rev.1 provides general Guidance for the presentation and display of AIS and VDES Application-Specific Messages.

ANNEX

AIS AND VDES APPLICATION-SPECIFIC MESSAGES

RECOMMENDED FOR INTERNATIONAL USE

2 Dangerous cargo indication

Table 2.1
Dangerous cargo indication – addressed

Parameter	No. of bits	Description
Sequence Number	2	0 - 3; refer to ITU-R M.1371-35, Annex 2, § 5.3.1.
IAI	16	DAC = 001; FI = 25 (See ITU-R M.1371-35, Annex 5, § 2.1).

3 Tidal window

Table 3.1
Tidal window

Parameter	No. of bits	Description
Sequence Number	2	0 - 3; refer to ITU-R M.1371-35, Annex 2, § 5.3.1.

4 Extended ship static and voyage-related data

Table 4.1
Extended ship static and voyage-related data (broadcast)

Parameter	No. of bits	Description
IAI	16	DAC = 001; FI = 24 (See ITU-R M.1371-35, Annex 5, § 2.1).

5 Number of persons on board

Table 5.1
Number of persons on board

Parameter	No. of bits	Description
-----------	-------------	-------------

Sequence Number	2	0 - 3; refer to ITU-R M.1371-35, Annex 2, § 5.3.1.
IAI	16	DAC = 001; FI = 16 (See ITU-R M.1371-35, Annex 5, § 2.1).

7 Clearance time to enter port

Table 7.1
Clearance time to enter port (addressed)

Parameter	No. of bits	Description
Sequence Number	2	0 - 3; refer to ITU-R M.1371-35, Annex 2, § 5.3.1.
Name of port and berth	120	Name of the port and berth. Maximum 20 characters 6 bits ASCII as defined in ITU-R M. 1371-35, Table 44. "@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@" = not available = default

8 Marine traffic signal

Table 8.1
Marine traffic signal

Parameter	No. of bits	Description
Name of signal station	120	Maximum 20 characters 6 bits ASCII as defined in ITU-R M. 1371-35, Table 44. "@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@" = not available = default

9 Berthing data

Table 9.1
Berthing data (addressed)

Parameter	No. of bits	Description
Sequence Number	2	0 - 3; refer to ITU-R M.1371-35, Annex 2, § 5.3.1.
Name of birth	120	20 characters 6 bits ASCII as defined in ITU-R M. 1371-35, Table 44.

10 Weather observation report from ship

10.4.1 The WMO Weather observation report from ship message is intended for ships which have been recruited by national meteorological services to undertake weather observations at sea in accordance with the provisions of SOLAS chapter V, regulation 5, and the World Meteorological Organization's Voluntary Observing Ship (VOS) Scheme. Because national meteorological services are the intended primary users of this message it has been developed to reflect the coding principles prescribed by WMO in its Binary Universal Form for the Representation of meteorological data (BUFR), and as contained in Part B of WMO Publication No.306, (Manual Codes, Volume I.2). The parameters coded in this message are therefore not fully compatible with the recommendations set out in ITU M.1371-35.

Table 10.1
Weather observation report from ship

Parameter	No. of bits	Description
Geographic Location	120	20 characters 6 bits ASCII as defined in ITU-R M. 1371-35, Table 44.

11 Area notice

Table 11.1
Area notice – (broadcast)

Parameter	No. of bits	Description
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated (see ITU-R M.1371-35, Annex 2, § 4.6.1). 0 - 3 0 = default 3 = do not repeat anymore

Table 11.2
Area notice – (addressed)

Parameter	No. of bits	Description
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated (see ITU-R M.1371-35, Annex 2, § 4.6.1). 0 - 3 0 = default 3 = do not repeat anymore
Sequence number	2	Refer to ITU-R M.1371-35, Annex 2, § 5.3.1 0 – 3

Table 11.10
Associated text

Parameter	No. of bits	Description
Text	84	14 characters 6-bits ASCII characters, as defined in ITU-R M. 1371-35, Table 44. If less than 14 characters are required, then the remainder of the field should be filled with "@" characters.

12 Environmental

Table 12.1
Environmental

Parameter	No. of bits	Description
-----------	-------------	-------------

Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated (see ITU-R M.1371-35, Annex 2, § 4.6.1). 0 - 3 0 = default 3 = do not repeat anymore
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Table 12.6
Station ID Report

Parameter	No. of bits	Description
Name	84	Agency reference number. Fourteen characters 6-bits ASCII as defined in ITU-R M.1371-35, Table 44.

13 Route information

Table 13.2
Route information – (addressed)

Parameter	No. of bits	Description
Sequence Number	2	0 - 3; refer to ITU-R M.1371-35, Annex 2, § 5.3.1.
IAI	16	DAC = 001; FI = 28 (See ITU-R M.1371-35, Annex 5, § 2.1).

14 Text description

Table 14.3
Text description – (addressed)

Parameter	No. of bits	Description
Sequence Number	2	0 - 3; refer to ITU-R M.1371-35, Annex 2, § 5.3.1.
IAI	16	DAC = 001; FI = 30 (See ITU-R M.1371-35, Annex 5, § 2.1).

ANNEX 45

DRAFT AMENDMENTS TO GUIDANCE FOR THE PRESENTATION AND DISPLAY OF AIS APPLICATION-SPECIFIC MESSAGES INFORMATION (SN.1/CIRC.290)

ANNEX

PRESENTATION AND DISPLAY OF AIS AND VDES APPLICATION-SPECIFIC MESSAGES INFORMATION

Introduction

At present, there is no specific guidance or standards related to the presentation and display of AIS and VDES Application-Specific Messages information on shipborne equipment or systems. While the Minimum Keyboard Display (MKD) is capable of displaying text messages, it was never intended for the graphical display and presentation of AIS or VDES Application-Specific Messages information. However, there are a number of general and equipment-specific international standards that have been adopted by IMO, IHO and IEC that contain "guidance" related to the presentation and display of various types of shipborne navigation-related information.

Standards/Guidelines

General

Performance Standards for the Presentation of Navigation-related Information on Shipborne Navigational Displays, resolution MSC.191(79) as amended, 6 December 2004.

Guidelines for the Presentation of Navigation-related Symbols, Terms and Abbreviations, SN.1/Circ.243/Rev.2, 15 December 2004 14 June 2019.

Presentation of Navigation-related Information on Shipborne Navigational Displays – General Requirements, methods of testing, required test requirements. IEC 62288, Edition 42.0, July 2008 May 2020.

Equipment-Specific

There are specific equipment/system standards that have been adopted by IMO, IHO and IEC that contain "guidance" related to the presentation/display of shipborne navigation-related information. However, most were adopted prior to resolution MSC.191(79), as amended, SN/Circ.236289/Rev.1, or IEC 62288 being issued. Eventually, these equipment-specific performance standards will need to be "updated" in order to comply with the overall harmonized requirements contained in resolution MSC.191(79), as amended. In the interim, there does not appear to be any existing requirement that would preclude the presentation/display of any of the AIS or VDES Application-Specific Messages applications contained in SN/Circ.236289/Rev.1 or the revised/new messages. However, it will not be possible to reach a general consensus about the consistent and uniform display of AIS binary messages until the performance standards for individual shipboard equipment and systems are aligned with resolution MSC.191(79), as amended.

ECDIS

Revised Performance Standards for ECDIS, resolution MSC.232(82), 2006. Specifications for Chart Content and Display Aspects of ECDIS, IHO S-52, Ed. 4.2, Appendix 2, Colour and Symbol Specifications for ECDIS, March 2004.

Performance Standards for ECDIS, resolution MSC.530(106)/Rev.1, 2024

Radar

Performance Standards for Radar Equipment, resolution MSC.192(79), 2004, as amended.

INS

Performance Standards for an Integrated Navigation System (INS), resolution MSC.86(70), Annex 3.

Revised Performance Standards for Integrated Navigation System (INS), resolution MSC.252(83).

Integrated Navigation Systems (INS) – Operational and performance requirements, methods of testing and required test results. IEC 61294, Ed. 1, 2004.

AIS

Performance Standards for a Universal Shipborne Automatic Identification System (AIS), resolution MSC.74(69), Annex 3, 19 May 1998, as amended.

~~Guidelines for the Onboard Operational Use of Shipborne Automatic Identification Systems (AIS), resolution A.917(22), 25 January 2002.~~

Revised Guidelines for the Onboard Operational Use of Shipborne Automatic Identification Systems (AIS), resolution A.1106(29), 14 December 2015

~~Display of AIS Target Information, SN/Circ.217, 11 July 2001.~~

~~Guidance of the Application of AIS Binary Messages, SN/Circ.236, 28 May 2004.~~

Guidance on the use of AIS and VDES Application-Specific Messages, SN.1/Circ.289/Rev.1, DD MM YYYY

VDES

Performance Standards for Shipborne VHF Data Exchange System (VDES), Resolution MSC.XXX(YY), DD MM YYYY

Guidelines for Operational Use of Shipborne VHF Data Exchange System (VDES), Resolution MSC.XXX(YY), DD MM YYYY

Guidance on the use of AIS and VDES Application-Specific Messages, SN.1/Circ.289/Rev.1, DD MM YYYY

Guiding Principles for the Presentation/Display of AIS and VDES Application-Specific Messages

At this time, it is premature to propose specific presentation and display standards for AIS and VDES Application-Specific Messages. More experience is needed in order to determine how AIS or VDES Application-Specific Messages information should be displayed in conjunction with other chart-related and operational information. Further, the presentation and display of AIS and VDES Application Specific Messages information should conform to the concept of operation envisioned for e-navigation. As currently defined:

Most likely, AIS and VDES Application-Specific Messages will become means to achieve many of the core objectives of e-navigation (NAV 54/25, annex 12):

In the interim, the following guiding principles should apply to the display of AIS and VDES Application-Specific Messages information both for shipborne equipment/systems (e.g., ECDIS, radar and INS) and for shore-based systems (e.g., VTS Centre console):

ANNEX 46

CHECK/MONITORING SHEET FOR THE PROCESS OF AMENDING THE CONVENTION AND RELATED MANDATORY INSTRUMENTS (PROPOSAL/DEVELOPMENT)

Part I - Submitter of proposal (refer to paragraph 3.2.1.1) *

1	<i>Submitted by (document number and submitter)</i> MSC 102/21/4 submitted by Japan, Singapore and Norway
2	<i>Meeting session</i> MSC 102
3	<i>Date (date of submission)</i> 10 February 2020

Part II – Details of proposed amendment(s) or new mandatory instrument (refer to paragraphs 3.2.1.1 and 3.2.1.2)*

1	<i>Strategic direction</i>
Strategic direction: 2	
2	<i>Title of the output</i>
DEVELOPMENT OF AMENDMENTS TO SOLAS CHAPTERS IV AND V AND PERFORMANCE STANDARDS AND GUIDELINES TO INTRODUCE VHF DATA EXCHANGE SYSTEM (VDES)	
3	<i>Recommended type of amendments (MSC.1/Circ.1481) (delete as appropriate)</i>
• Exceptional circumstances	
4	<i>Instruments intended for amendment (SOLAS, LSA Code, etc.) or developed (new code, new version of a code, etc.)</i>
SOLAS	
5	<i>Intended application (scope, size, type, tonnage/length restriction, service (International/non-international), activity, etc.)</i>
All ships of 300 gross and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages, passenger ships irrespective of size	
6	<i>Application to new/existing ships</i>
Both	
7	<i>Proposed coordinating sub-committee</i>
The Sub-Committee on Navigation, Communications and Search and Rescue	

* Parts I and II should be completed by the submitter of a proposed new amendment, to the fullest extent possible.

8	<i>Anticipated supporting sub-committees</i>
None	
9	<i>Time scale for completion</i>
Target completion year: 2025	
10	<i>Expected date(s) for entry into force and implementation/application</i>
1 July 2028	
11	<i>Any relevant decision taken or instruction given by the Committee</i>
None	

RECORD FORMAT

The following records should be created and kept updated for each regulatory development.⁹

The records can be completed by providing references to paragraphs of related documents containing the relevant information, proposals, discussions and decisions.

1 Title (number and title of regulation(s))	
	SOLAS regulation V/18 (Approval, surveys and performance standards of navigational systems and equipment and voyage data recorder) SOLAS regulation V/19 (Carriage requirements for shipborne navigational systems and equipment) SOLAS regulation V/19-1 (Long-range identification and tracking of ships) SOLAS Appendix 1 (Form P, E, C)
2 Origin of the requirement (original proposal document)	
	MSC 102/21/4 (Japan, Singapore and Norway)
3 Main reason for the development (extract from the proposal document)	
	Introduction of VHF Data Exchange System (VDES) as equivalent of AIS
4 Related output	
	Performance standards for shipborne VDES Guidelines for the operation use of VDES Consequential amendments
5 History of the discussion (approval of work programmes, sessions of sub-committees, including CG/DG/WG arrangements)	
	<ul style="list-style-type: none"> MSC 103 approved the new work MSC 106 approved the work programme NCSR 10 established the correspondence group NCSR 11 agreed to not amend SOLAS chapter IV because it was premature, extended the target completion year and re-established the correspondence

⁹ For the draft amendments to be considered and finalized by sub-committees in plenary within one session, the Secretariat may be requested, when necessary, to complete the records for regulatory development after the session, instead of establishing a specific working/drafting group. "Minor corrections" (C/ES.27/D, paragraph 3.2(vi)) may be excluded from application of the provisions for completion of the records for regulatory development.

group	
6	Impact on other instruments (codes, performance standards, guidance circulars, certificates/records format, etc.)
	<ul style="list-style-type: none">• The international code of safety for high-speed craft, 2000 (2000 HSC Code) (Resolution MSC.97(73))• The international code of safety for high-speed craft, 1994 (1994 HSC Code) (Resolution MSC.119(74))• The international code for ships operating in polar waters (Polar Code) (Resolution MSC.385(94))• The international maritime solid bulk cargoes code (IMSBC Code) (Resolution MSC.462(101))• The proper use of VHF channels at sea (Resolution A.954(23))• Guidelines for ships operating in polar waters (Resolution A.1024(26))• Survey guidelines under the harmonized system of survey and certification (HSSC), 2021 (Resolution A.1156(32))• Procedures for port state control, 2023 (Resolution A.1185(33))• The recommendation on performance standards for an universal shipborne automatic identification system (AIS) (Resolution MSC.74(69), annex 3, as amended)• Performance standards for shipborne simplified voyage data recorders (S-VDRs) (Resolution MSC.163(78))• The performance standards for the presentation of navigation-related information on shipborne navigational display (Resolution MSC.191(79), as amended)• The revised performance standards for radar equipment (Resolution MSC.192(79))• Adoption of amendments to the code of safety for dynamically supported craft, as amended (Resolution MSC.224(82))• The revised performance standards for electronic chart display and information system (ECDIS) (Resolution MSC.232(82))• The revised performance standards for integrated navigation system (Resolution MSC.252 (83) and Resolution MSC.452 (99))• Code of safety for special purpose ships, 2008 (Resolution MSC.266(84))• The revised performance standards for shipborne voyage data recorders (VDRS) (Resolution MSC.333 (90))• Recommendation for the protection of AIS VHF Link (Resolution MSc.347(91))• Performance standards for a shipborne integrated communication system (ICS) when used in the global maritime distress and safety system (GMDSS) (Resolution MSC.517 (105))• Performance standards for electronic chart display and navigation system (ECDIS) (Resolution MSC.530 (106))• Guidelines on ergonomic criteria for bridge equipment and layout (MSC.1/Circ.982)• General principles and recommendations for knowledge, skills and training for officers on wing-in-ground (WIG) craft operating in both displacement ad ground effect modes (MSC.1/Circ.1162)• Guidelines on annual testing of voyage data recorders (VDR) and simplified voyage data recorders (S-VDR) (MSC.1/Corc.1222/Rev.1)• Guidelines on annual testing of the automatic identification system (AIS) (MSC.1/Circ.1252)• Non-mandatory guidelines on security aspects of the operation of vessels which do not fall within the scope of SOLAS chapter XI-2 and the ISPS code

	<p>(MSC.1/Circ.1283)</p> <ul style="list-style-type: none"> • Guidance in relation to certain types of ships which are required to transmit LRIT information on exemptions and equivalents and on certain operation matters (MSC.1/Circ.1295) • ECDIS – guidance for good practice (MSC.1/Circ.1503/Rev.1) • Guidelines for shipborne position, navigation and timing (PNT) data processing (MSC.1/Circ.1575) • Unified interpretation of the provisions of SOLAS relating to the annual testing of the VDR, S-VDR, AIS and EPIRB (MSC.1/Circ.1576) • Guidelines for wing-in ground craft (MSC.1/Circ.1592) • Guidelines for standardization of user interface design for navigation equipment (MSC.1/Circ.1609) • Guidance for navigation and communication equipment intended for use on ships operating polar waters (MSC.1/Circ.1612) • Guidelines for safety measures for fishing vessels of 24 M in length and over operating in polar waters (MSC.1/Circ.1641) • Guidelines for safety measures for pleasure yachts of 300 gross tonnage and above not engaged in trade operating in polar waters (MSC.1/Circ.1642) • List of certificates and documents required to be carried on board ships, 2022 (FAL.2/Circ.133, MEPC.1/Circ.902, MSC.1/Circ.1646, LEG.2/Circ.4) • Guidelines for the harmonization of GMDSS requirements for radio installations on board SOLAS ships (COMSAR.1/Circ.32/Rev.2) • AIS safety-related messaging (COMSAR.1/Circ.46) • Guidelines for the installation of a shipborne automatic identification system (AIS), as amended (SN.1/Circ.227 and SN.1/Circ.245) • Guideline for the presentation of navigation-related symbols, terms and abbreviations (SN.1/Circ.243/Rev.2) • Guidance on the use of the UN/LOCODE in the destination field in AIS message (SN.1/Circ.244) • Guidance on the use of AIS application-specific messages (SN.1/Circ.289) • Guidance for the presentation and display of AIS application-specific messages information (SN.1/Circ.290)
7	Technical background
7.1	<i>Scope and objective (to cross check with items 4 and 5 in part II of the checklist)</i>
	Amendments to SOLAS chapter IV and V and developments of performance standards and guidelines for introduction of VDES into SOLAS.
7.2	<i>Technical/operational background and rationale (e.g. summary of FSA study, if available, or engineering challenge posed)</i>
	The concept of VDES was originally developed by ITU and IALA for digital data exchange in maritime mobile VHF band as enhancement of AIS. After various studies, experiments and test beds including launch of satellite, ITU WRC-15 and 19 allocated all necessary channels for VDES. IMO considered VDES as one of methods for implementing e-navigation (MSC.1/Circ.1595). IEC is now developing the test standard for VDES and it is expected to be completed soon. Commercial products of VDES are now available in market. Since VDES includes AIS as one of the components, VDES can be used as AIS.
7.3	<i>Source/derivation of requirement (non-mandatory instrument, industry standard, national/regional requirement)</i>

SOLAS regulation V/19.2.4	
7.4	<i>Short summary of requirement (what is the new requirement – in short and lay terms)</i>
	Existing requirements in SOLAS regulation V/19.2.4 requires carriage of AIS for all ships of 300 gross tonnages and upwards engaged on international voyage and cargo ships of 500 gross tonnages and upwards not engaged on international voyage and passenger ships irrespective of size. The amendments to SOLAS chapter V allow to carry VDES as equivalent of AIS and are expected to enter into force on 1 July 2027.
7.5	<i>Points of discussions (controversial points and conclusion)</i>
	Amendments to SOLAS chapter IV was premature.

CHECKLIST FOR THE IDENTIFICATION OF CAPACITY-BUILDING IMPLICATIONS

1 For Administrations

- ☒ Is new legislation required? Yes
- ☒ Is there a requirement for new equipment and/or systems? Yes
 - Does equipment manufacturing capacity exist internationally? Yes
 - Do equipment repair/servicing facilities exist internationally? Yes
 - Is there capacity to develop new systems? Yes
- ☒ Will the implementation require additional financial resources? Yes
- ☒ Is there a need for additional human resources or new skills? Yes
- ☒ Will there be a need to upgrade current infrastructure? Yes
- ☒ Is there enough lead time towards implementation? Yes
- ☒ Will a rapid implementation procedure be adopted? No
- ☒ Is there a substantial modification of existing standards? No
- ☒ Will a guide to implementation be needed? No

2 For the industry

- ☒ Would the industry require new and/or enhancement of existing systems? Yes
 - Does capacity exist internationally to develop new systems? Yes
- ☒ Is there a need for additional training of seafarers? No
 - Do related and validated training courses exist? No
 - Are sufficient simulation training courses available internationally? No
- ☒ Will there be a requirement for new equipment? Yes
 - Does manufacturing capacity exist internationally? Yes
- ☒ Is there repair/servicing and/or retrofitting and does maintenance capacity exist internationally? Yes