ANNEX 14

RESOLUTION MSC.593(111)
(adopted on 21 May 2026)

PERFORMANCE STANDARDS FOR
SHIPBORNE VHF DATA EXCHANGE SYSTEM (VDES)

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, as well as amendments thereto, shall be performed by the Maritime Safety Committee on behalf of the Organization,

RECALLING FURTHER resolution MSC.570(109), by which the Committee adopted revised *Performance standards for a universal shipborne automatic identification system (AIS)* to improve the safety of navigation,

TAKING INTO ACCOUNT resolution MSC.583(111) by which the Committee adopted amendments to chapter V of the International Convention for the Safety of Life at Sea, 1974 ("the Convention"), introducing a VHF data exchange system (VDES) as an alternative shipborne navigational equipment and system to comply with the existing requirements of the automatic identification system (AIS),

TAKING ALSO INTO ACCOUNT MSC.1/Circ.1699 on *Guidelines for the onboard operational use of shipborne VHF data exchange system (VDES)*,

RECOGNIZING that AIS is one of the four components of VDES, which allows the existing AIS to coexist with VDES,

HAVING CONSIDERED, at its 111th session, the recommendation made by the Sub-Committee on Navigation, Communications and Search and Rescue at its twelfth session,

1 ADOPTS *Performance standards for a shipborne VHF data exchange system (VDES)*, set out in the annex to the present resolution;

2 RECOMMENDS that Governments ensure that shipborne VDES equipment conforms to performance standards not inferior to those specified in the present resolution.

ANNEX

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 components and their functions. These components are the automatic identification system (AIS) component, the application-specific messages (ASM) component, the 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 the ship's personnel and with a high level of availability and security.[1]

1.4 VDES should be capable of providing the following functions:

.1 exchanging data to improve safety, security and efficiency of navigation and protection of the marine environment;

.2 means for coastal States to request and obtain information about a ship and its cargo and/or passengers;

.3 means for providing Maritime Services in the context of e-navigation; and

.4 means for standardized and automated reporting in accordance with MSC.1/Circ.1595[2] and MSC.1/Circ.1610,[3] as amended.

1.5 The installations, in addition to meeting the requirements of the Radio Regulations, applicable ITU-R Recommendations and the general requirements set out in resolutions A.694(17)[4] and MSC.191(79),[5] 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:

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

2 *E-navigation Strategy Implementation Plan – Update 1.*

3 *Descriptions of Maritime Services in the context of e-navigation.*

4 *Recommendation on general requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids.*

5 *Recommendation on performance standards for the presentation of navigation-related information on shipborne navigational displays.*

.1 The AIS component should not be interfered with 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-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 an AIS or VDES shore station within its coverage area.

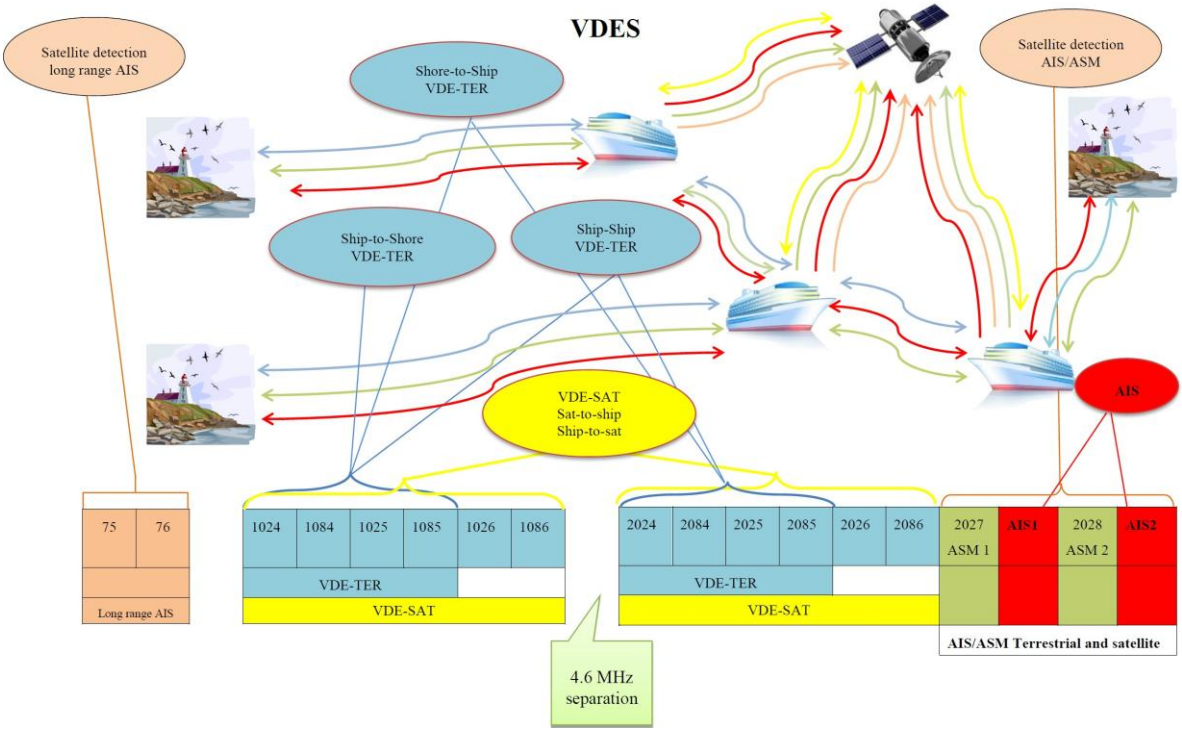

Figure 1: VDES functions

2.2 The AIS component of VDES should comply with the requirements set out in resolution MSC.570(109) 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 AIS.[6] These messages should be encoded in accordance with Recommendation ITU-R M.1371 annexes on *Application-specific messages* and *Automatic identification system messages,* as well as Recommendation ITU-R M.2092 annex on *Common technical elements of VDES* 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 VDES 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 VDES* 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 on *Common technical elements of VDES* and in 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 ASM, VDE-TER and VDE-SAT specified in this performance standard in addition to the AIS functions specified in resolution MSC.570(109).

3.2 In addition, VDES should be capable of:

.1 selecting the communication component which is controlled through the user interface;

.2 receiving digital data according to Recommendation ITU-R M.2092 and output through the user interface;

.3 transmitting digital data according to Recommendation ITU-R M.2092 as input via the user interface; and

.4 operating continuously under all modes of operation.

4 User interface

4.1 The human-machine interface should include a keyboard and display for configuration, monitoring and control.

4.2 To enable a user to access, select and display the information on a separate system, the VDES should be provided with at least one interface conforming to an appropriate international marine interface standard.[7]

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

7 IEC 61162 series, as applicable.

5 Identification

Shipborne 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*.

6 Information

6.1 VDES information consists of AIS, ASM and other information.

6.2 AIS information is defined by resolution MSC.570(109) and should be exchanged by the AIS component of VDES.

6.3 Other information is information other than AIS and ASM, and should be exchanged by VDE-TER and VDE-SAT components of VDES.[8]

7 Security

7.1 Cybersecurity

Since VDES is networked with other navigational/communication equipment or systems on board, appropriate cybersecurity 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 a digital signature to ensure the integrity of the data and the identity of the sender; and

.2 VDES should be capable of providing authentication of AIS messages.

8 Operational readiness time

VDES should be operational within two minutes of 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.

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[8] *Guidelines for the onboard operational use of shipborne VHF data exchange system (VDES)* (MSC.1/Circ.1699).