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

1 The Maritime Safety Committee, at its 111th session (13 to 22 May 2026), adopted by resolution MSC.583(111), 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 to comply with the existing requirements of the automatic identification system (AIS). Relevant performance standards for VDES were also developed and disseminated by resolution MSC.593(111).

2 Recognizing that AIS is one of the four components of VDES, which allows the existing AIS to coexist with VDES, with a view to providing timely guidance for the onboard operational use of VDES, the Committee approved the *Guidelines for the onboard operational use of shipborne VHF data exchange system (VDES)* set out in the annex.

3 Member States are invited to bring these Guidelines to the attention of all concerned, and to take into account the Guidelines when using shipborne VDES for operational use.

ANNEX

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

Purpose

1 These guidelines have been developed for the safe and effective use of the 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 the information contained within these guidelines.

2 VDES has four components comprising 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 *Revised guidelines for the onboard operational use of shipborne automatic identification systems (AIS)* (resolution A.1106(29)).

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 distress and safety communication under the Global Maritime Distress and Safety System (GMDSS) that are protected by the ITU Radio Regulations, including appendix 15. Moreover, the frequencies used by VDE-SAT (Earth-to-space and space-to-Earth) are allocated only on a secondary basis. The user should not consider the data and information received by VDES as GMDSS information.

5 VDES itself is a communication equipment that exchanges digital data between other VDES stations. VDES equipment may be connected with other navigational equipment or systems, such as radar, Electronic Chart Display and Information System (ECDIS) and Integrated Navigation System (INS) and may also be connected to other equipment, such as an onboard computer, in order to work as a communication system. Therefore, these guidelines are aimed at users, operators and stakeholders of VDES both on board and ashore, providing guidance to ensure the safe and efficient operational use of VDES as a whole communication system.

6 AIS is a stand-alone system that is also a component of VDES. However, any additional functionalities or communication capabilities provided by VDES beyond its AIS component, even if offering similar functions or services to AIS, are not to be considered equivalent to AIS under SOLAS regulations.

CAUTION

Not all ships carry AIS or VDES.

The officer of the watch (OOW) 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 transmitting AIS information.

The OOW 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.

7 The SOLAS Convention requires AIS or VDES to be fitted on certain ships. In addition, specific ship types (e.g. warships, naval auxiliaries and ships owned/operated by Governments) are not required to be fitted with AIS or VDES. Also, small ships (e.g. leisure craft, fishing boats) and certain other ships may be exempt from carrying AIS or VDES. Moreover, ships fitted with AIS or VDES might have the equipment switched off. Users should note that the information provided by AIS or VDES may not be complete and may not accurately represent the location and movement of all shipping in the vicinity. Caution on the inherent limitations of AIS or VDES and their use in collision avoidance should therefore be observed.

Objective of VDES

8 VDES is intended to enhance the safety of life at sea, the safety and efficiency of navigation and the protection of the 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. Therefore, the purpose of VDES is to exchange digital data between ships, 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 systems connected to VDES and portrayed on appropriate displays such as ECDIS.

Description of VDES

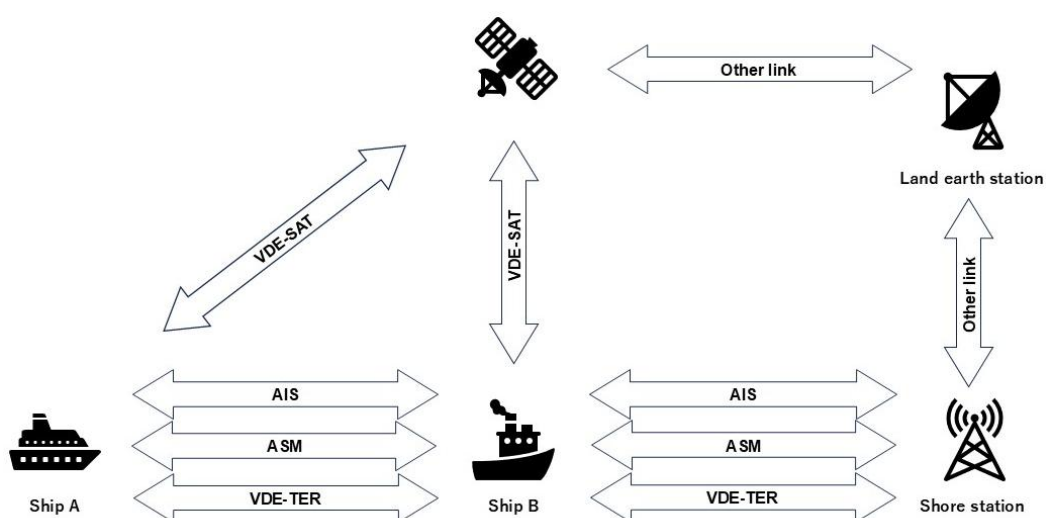


Figure 1 – VDES overview

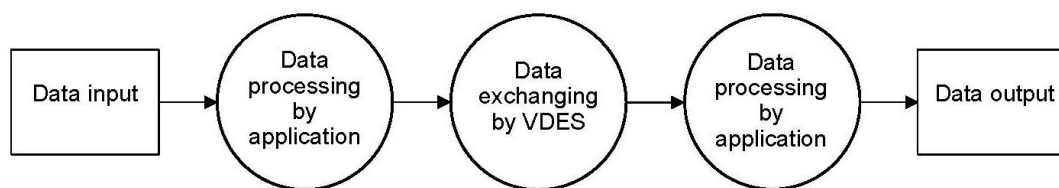


Figure 2 – Data flow using VDES

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

10 VDES should give the highest priority to the AIS position reporting and safety-related information.

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

12 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) for safety reasons such as port or harbour operations, the communication range may be reduced or limited to AIS-only communication.

13 VDE-SAT has the potential to offer global coverage, contingent on satellite orbits and the number of satellites deployed, and the availability of 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.

Application-Specific Messages (ASM)

14 VDES, like AIS, can send and receive Application-Specific Messages (ASM) using AIS channels (AIS 1 and AIS 2). For ASM, reference should be made to the *Guidance on the use of AIS Application-Specific Messages* (SN.1/Circ.289) and the *Guidance for the presentation and display of AIS Application-Specific Messages information* (SN.1/Circ.290).

15 VDES contains a designated ASM component using designated VHF channels (ASM 1 and ASM 2) with a transmission rate of 19.2 kbps, which is higher than AIS. This ASM component was originally designed to migrate ASM in AIS to the ASM component of VDES in order to avoid overload of AIS VHF Data Link (VDL).

16 Therefore, administrations are encouraged to use VDES ASM when overload of AIS VDL is observed. However, since not all ships carry VDES even when transmitting AIS information, the administrations should take careful consideration before using VDES ASM.

Operational use of VDES

17 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 regulation I/14 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) and the International Safety Management (ISM) Code. In addition, the shoreside users should be familiarized with its operation through education and training on the equipment and system.

Human-machine interface

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

Messages and applications

19 Messages exchanged through VDES are AIS messages defined in the most recent version of the Recommendation ITU-R M.1371, ASM messages defined in the *Guidance on the use of AIS application-specific messages* (SN.1/Circ.289), or messages regionally or locally registered by authorities or the International Organization for Marine Aids to Navigation (IALA)² and other data or message structure approved by the authorities.

20 In order to ensure the worldwide harmonized implementation of message exchange among VDES, these data or message structures should be approved by the authority and the authority is encouraged to share the data or message structure with its associated application to other authorities.

21 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.

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

23 Applications to the messages should be developed in accordance with the *Guideline on software quality assurance and human-centred design for e-navigation* (MSC.1/Circ.1512).

Cybersecurity

24 In order to ensure appropriate cyber risk management on VDES, the user should understand and comply with the *Guidelines on maritime cyber risk management* (MSC-FAL.1/Circ.3, as revised).

25 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.

¹ 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.

² IALA Guideline R0144 and G1095 Harmonized Implementation of Application-Specific Messages (ASM).

Integrity and Authentication

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

Reference documents

- International Convention for the Safety of Life at Sea, 1974, chapter V.
 - *Revised guidelines for the onboard operational use of shipborne automatic identification systems (AIS)* (resolution A.1106(22)).
 - *Introduction of VHF data exchange system (VDES) into the IMO regulatory framework* (resolution MSC.592(111)).
 - *Performance standards for shipborne VHF data exchange system (VDES)* (resolution MSC.593(111)).
 - ITU Radio Regulations, appendix 18, table of transmitting frequencies in the VHF maritime mobile band.
 - Technical characteristics for a VHF data exchange system in the VHF maritime mobile band (The most recent version of Recommendation ITU-R M.2092).
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