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VDES Alliance G-1001:

Guideline on definition, assignment, and use of VDES satellite details

Approved by the Board of Directors in the meeting on 2023-11-16.

1. Introduction

The VDES Alliance strives to be a global association consisting of maritime authorities, organizations, and industry members, who cooperate in testing and promoting the use of VHF Data Exchange (VDES) technologies.

VDES is a much faster AIS with terrestrial VDE and global coverage with satellite VDE. The VDES Alliance drives global VDES integration and testing efforts to enable services facilitated by VDES to be used by as many stakeholders as possible as soon as possible.

To help VDES adoption by the maritime community, the VDES alliance members also cooperate on marketing of the VDES technology and strive to develop methods for efficient use of the VDES technology. This guideline has been created by VDES Alliance contributing members.

1.1. Scope of this document

This document provides guidelines for definition and assignment of VDES satellite details. VDES satellite details include information on use of IDs in the VDES satellite bulletin board, operational information such as orbit, service areas, operational status and administrative information such as satellite owner and operator with contact information.

1.2. Revision Information

Date	Version	Considered by	Change
2023-11-16	1	VDES Alliance Board of Directors	Approved for publication by the VDES Alliance

1.3. References

[RD 1] Recommendation ITU-R M.2092-1: Technical characteristics for a VHF data exchange system in the VHF maritime mobile band

2. Definition of VDES satellite details

This section defines the various VDES satellite details and provides brief explanation on their use and level of coordination required in their assignment.

2.1. Satellite ID

The Satellite ID is used in the satellite bulletin board (SBB) that is transmitted by all VDES satellites. See the latest version of Recommendation ITU-R M.2092 for its definition.

The Satellite ID is linked to the Network ID, see Section 2.2, and should be unique for each satellite with the same Network ID. VDES satellites with different Network IDs can have the same Satellite ID.

Satellite ID is coordinated and assigned within a VDES satellite network by the network operator. Coordination of Satellite IDs between VDES satellite network operators is not needed.

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2.2. Network ID

The Network ID is used in the satellite bulletin board (SBB) that is transmitted by all VDES satellites. See the latest version of Recommendation ITU-R M.2092 for its definition.

A VDES satellite operator should use the same Network ID on all satellites within a VDES satellite network. The Network ID is unique for each VDES satellite network. A VDES satellite operator should only operate one network and as such only use one Network ID.

Network ID should be coordinated among VDES satellite operators to ensure different VDES satellite networks do not use the same Network ID.

In the case where two or more VDES satellite operators are not able to come to agreement on coordinated use of Network ID for their VDES satellites networks, the operators may petition the VDES Alliance Board of Directors to resolve the dispute.

2.3. Roaming ID

The Roaming ID is used in the satellite bulletin board (SBB) that is transmitted by all VDES satellites. See the latest version of Recommendation ITU-R M.2092 for its definition.

The Roaming ID is linked to the Network ID, see Section 2.2, and should provide indication if a VDES satellite with one Network ID can be used interchangeably with a VDES satellite with another Network ID. This possibility would typically require a network sharing agreement between the affected VDES satellite operators. A Roaming ID of "0" should be used by satellites that do not accept network sharing.

Network sharing and use of Roaming ID should be coordinated among VDES satellite operators.

In the case where two or more VDES satellite operators are not able to come to agreement on coordinated use of Roaming ID for their VDES satellites networks, the operators may petition the VDES Alliance Board of Directors to resolve the dispute.

2.4. Satellite catalog number

The Satellite Catalog Number (SATCAT), also known as NORAD (North American Aerospace Defense) Catalog Number, NORAD ID, USSPACECOM object number or simply catalog number, is a sequential nine-digit number assigned by the United States Space Command (USSPACECOM) in the order of launch or discovery to all artificial objects in the orbits of Earth and those that left Earth's orbit.

The Satellite Catalog Number provide a way to uniquely identify a VDES satellite and allows both users of a VDES satellite, the VDES satellite operator and other VDES satellite operators to easy access updated orbital parameters for the satellite in question through various online tools and services.

Satellite Catalog Number is assigned to a VDES satellite by the United States Space Command (USSPACECOM). Coordination of Satellite Catalog Number between VDES satellite network operators is not needed.

2.5. ITU Satellite Network Filing Name

The International Telecommunication Union (ITU), a specialized agency of the United Nations, through its Radiocommunication Sector (ITU-R) manages the international radio-frequency spectrum and satellite orbit resources. This is done through regulatory procedures for frequency coordination, notification and registration. For satellites the required regulatory procedures are organized around a Satellite Network Filing.

For a VDES satellite to be allowed to use the satellite VDES frequencies, it requires an associated Satellite Network Filing. A Satellite Network Filing is a tool to obtain international recognition of a VDES satellite network and is submitted to ITU-R by the notifying administration of the VDES satellite operator. The Satellite Network Filing Name is submitted with the initial Satellite Network Filing to the ITU-R.

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Coordination of Satellite Network Filing Name between VDES satellite operators should be handled through the regular ITU-R regulatory procedures for frequency coordination, notification and registration.

2.6. Satellite orbit

The satellite orbit of the VDES satellite is initially given by the launch, but can be altered by performing orbital maneuvers. Also, over time various physical effects perturb and decay the orbit. The orbital parameters of a VDES satellite can be specified in various ways. However, as detailed parameters can be extracted from online resources by using the Satellite Catalog Number, only basic information elements for high level understanding are needed to be provided here:

- Altitude: Orbital altitude of the VDES satellite
- Inclination: Angle, in degrees, between the orbital plane and the equatorial plane.

Satellite orbit may be coordinated within a VDES satellite network by the network operator and among VDES satellite network operators to manage coverage and facilitate network sharing between VDES satellites and network operators.

2.7. Satellite name

Satellite name is assigned by the VDES satellite owner and should be unique. The satellite name may designate the whole satellite, or it could be a name designating the VDES payload on a satellite.

Satellite name may be coordinated within a VDES satellite network by the network operator and among VDES satellite network operators to avoid multiple VDES satellites with indistinguishable names.

2.8. Service areas

The Service areas are areas where the VDES satellite regularly provides services and data exchange can be expected to be possible within a reasonable time.

The Service areas of a VDES satellite are assigned by the VDES satellite operator, and should be designated using well-known names of relevant sea areas or according to the International Maritime Organization (IMO) definition of NAVAREAS.

Service areas may be coordinated within a VDES satellite network by the network operator and among VDES satellite network operators to manage coverage and facilitate network sharing between VDES satellites and network operators.

2.9. VDES functionality compliance

The functionality of VDES is defined in Recommendation ITU-R M.2092.

VDES functionality compliance for a VDES satellite is assigned by the VDES satellite network operator and should be designated according to the latest revision of Recommendation ITU-R M.2092 supported by the VDES satellite.

VDES functionality compliance may be coordinated within a VDES satellite network by the network operator and among VDES satellite network operators to manage coverage and facilitate network sharing between VDES satellites and network operators.

2.10. Operational status

The operational status of a VDES satellite should indicate the availability of the satellite for data exchange, and is assigned by the VDES satellite network operator.

VDES satellite network operators with network sharing agreements should exchange detailed operational information to support their operations. Thus, only basic information elements for high level understanding of the operational status of a satellite are needed to be provided here:

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- LEOP (Launch and Early Operational Phase): The VDES satellite is in the process of being commissioned and is not available for general data exchange.
- Operational: The VDES satellite is operational and is available for general data exchange.
- Under maintenance: The VDES satellite is undergoing maintenance and is currently not available for general data exchange.
- Out of service: The VDES satellite is no longer in service and not available for general data exchange.
- Unknown: Operational status of the VDES satellite and its availability for general data exchange are unknown.

Operational status may be coordinated within a VDES satellite network by the network operator and among VDES satellite network operators to manage coverage and facilitate network sharing between VDES satellites and network operators.

2.11. Satellite owner

The Satellite owner of the VDES satellite indicates the identity of the owner of the VDES satellite. Along with the name of the satellite owner, contact information in the form of an email address should be provided.

2.12. Satellite operator

The Satellite operator of the VDES satellite indicates the identity of the VDES network operator of the VDES satellite. Along with the name of the VDES network operator, contact information in the form of an email address should be provided.

3. Publication of VDES satellite details

This section provides guidelines for coordinated assignment of VDES satellite details.

The VDES satellite details of a VDES satellite should be assigned by the satellite owner or operator according to the guidelines provided in Section 2. After assignment the VDES satellite details should be submitted to the VDES Alliance Secretariat in the form and manner so designated by the VDES Alliance Secretariat.

The VDES Alliance Secretariat should review the submission of VDES satellite details. In the case of discrepancies, missing information or inconsistencies with existing VDES satellite registrations by the VDES Alliance, the VDES Alliance Secretariat should notify the VDES satellite owner or operator. The VDES satellite owner or operator should then be allowed to resubmit the VDES satellite details with the appropriate modifications.

The VDES Alliance Secretariat should review the resubmitted VDES satellite details. Should there still be discrepancies, missing information or inconsistencies with existing VDES satellite registrations by the VDES Alliance, the VDES Alliance Secretariat should again notify the VDES satellite owner or operator. The VDES satellite owner or operator should then be allowed a final resubmission of the VDES satellite details with the appropriate modifications.

In the situation where the first resubmission of VDES satellite details include inconsistencies with existing VDES satellite registrations by the VDES Alliance, the affected satellite owners or operators of the existing VDES satellite registrations by the VDES Alliance should also be notified. Both parties should be urged to coordinate VDES satellite details before a final submission of the VDES satellite details are made.

In the case that the VDES Alliance Secretariat has no comments to a submission, that submission of VDES satellite details should be classified as the final submission.

The VDES Alliance Secretariat should present the final submission, along with any relevant comments, to the VDES Alliance Board of Directors for approval before publication on the VDES Alliance website.

4. Revision of VDES satellite details

This section provides guidelines for coordinated revision and updating of VDES satellite details.

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In the situation where a VDES satellite owner or operator need to revise VDES satellite details that has been published, the same procedure as for initial submission should be followed. This procedure is provided in Section 3. However, only the revised information elements should be submitted.