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VDES - CHALLENGES AND APPLICATIONS OF THE NEXT GENERATION MARITIME NARROWBAND SATELLITE COMMUNICATION SYSTEM

Abstract

VHF Data Exchange System (VDES), the 2.0 version of AIS, is a new generation of low-orbit narrowband maritime communication system with international unified standards. The VDES is seen as an effective and efficient use of radio spectrum, building on the capabilities of AIS and addressing the increasing requirements for data through the system. New techniques providing 32 times the raw data rates than those used for AIS are a core element of VDES. Furthermore, the VDES network protocol is optimized for data communication so that each VDES message is transmitted with a high confidence of reception. It can be applied in vessel-shore-satellite communication, global stereoscopic observation, and environmental monitoring scenarios, by providing secure maritime communication. The frequency allocation for VDES was approved by the International Telecommunication Union (ITU) in 2019. HEAD Aerospace became one of the pioneers in deploying VDES satellites starting 2020 and has up to now four VDES satellites in orbit. During the conference a preliminary large-scale system construction design, satellite design, payload research and development, space-ground joint testing, as well as the trial application and challenges of VDES in the fields of maritime weather forecast, Arctic navigation aid and ship-ship two-way communication would be shared in IAC 2023.