

GMDSS TASK FORCE INFORMATION BULLETIN

APPLICABILITY OF THE GMDSS TO WARSHIPS

Background

Warships of all nations, as public vessels, are technically exempt from the requirements of the Safety of Life at Sea (SOLAS) treaty as it relates to implementation of the Global Maritime Distress and Safety System (GMDSS). There are, however, valid reasons why the governments should elect to fit these warships with selected items of GMDSS equipment. Indeed, the U.S. Army, the U.S. Coast Guard and the Military Sealift Command, have outfitted their major vessels for GMDSS.

Overseas, most Coast Guard vessels and the fleets of nations with small navies have also been outfitted for GMDSS. The U. S. Navy has not yet announced its position on the extent to which it will participate in the GMDSS. This Information Bulletin has been developed to make the case for at least partial Navy participation and identifies appropriate GMDSS systems which should be considered as a contribution to maritime safety generally or to meet Navy requirements for interoperability and homeland security.

VHF Marine Radios with DSC

Navy ships carry VHF Marine Radios to facilitate harbor services communications and bridge-to-bridge communications with other ships. This has been demonstrated to be a necessity to avoid collisions and minimize interference to navy operations. GMDSS has changed the way VHF radios are used by adding Digital Selective Calling (DSC) features. DSC is being employed to improve the range and reliability of making contact with ships. Vessels may send a DSC call on Ch-70 requesting a suitable voice channel for follow-on response. DSC can be used to selectively call another ship whose identification number is known or to call all ships within range. SOLAS compliant vessels now watch Ch-70 for DSC calls but will continue to guard channel 16 indefinitely to assure interoperability with non-SOLAS vessels.

MF/HF Radios with DSC

DSC frequencies are available in the maritime bands at medium and high frequency. These frequencies permit calls to all stations, a single station or a group/fleet call at all four message priorities from Routine to Distress. Commercial vessels subject to the SOLAS treaty must equip for MF operations with DSC and must choose either HF-DSC or one of the satellite systems (Inmarsat or Iridium) for safety communications on the high seas. There is no particular need for Navy ships to equip for MF/HF DSC unless they use MF/HF single sideband radiotelephone to initiate communications with SOLAS regulated shipping (see section on interoperability). The U.S. Coast Guard has discontinued MF services along the coasts but continues to operate HF services from seven long range Communications Stations.

GMDSS Satellite Services

A number of navy combatants and the larger naval auxiliaries are already equipped with Inmarsat Ship Earth Stations (SES) to meet general communications requirements. As of 2020, the Iridium system has been certified for GMDSS service and brings with it full global coverage including the polar regions that are not accessible by Inmarsat.

Inmarsat-C and Mini C are also certified as a qualified ship earth station for GMDSS and these systems carry the high seas marine safety broadcast, SafetyNET. Because SafetyNET is a required GMDSS service, the Inmarsat-C outfitting by SOLAS vessels is near universal (see also the section on SafetyNET). Inmarsat-C is also a proven system for Long Range Identification and Tracking (LRIT) of special interest vessels by maritime authorities.

NAVTEX Coastal Marine Broadcast System

The medium frequency NAVTEX broadcast system is used for coastal marine warnings and weather forecasts and reception has been mandatory for treaty vessels since 1993. Most developed countries operate a Navtex broadcast service for coastal warnings but those that don't can use the high seas satellite systems (Inmarsat and Iridium) to broadcast coastal warnings.

Inmarsat's SafetyNET Marine Broadcast System

The SafetyNET service is used for high seas marine warnings and for coastal warnings in those areas without Navtex service. The SafetyNET service is provided by the Inmarsat-C system using the Enhanced Group Call (EGC) technique. Ability to receive high seas marine safety broadcasts is mandatory for SOLAS vessels. While a receive-only Inmarsat-C SES would satisfy the requirement, a transmit and receive SES is usually fitted by SOLAS vessels since the small differential in cost provides redundancy which satisfies other GMDSS requirements.

Iridium's SafetyCast Marine Broadcast System

Iridium was obliged to develop its own High Seas broadcast system, SafetyCast, in order to be certified for GMDSS. Vessels can choose either satellite system but they should select SafetyCast if they need high latitude/polar warnings. There is a SafetyCast Manual describing the operation and it is understood that a certified Iridium GMDSS ship earth station is needed to receive the broadcasts.

Interoperability and Homeland Security Considerations

The ability to communicate with other ships is a fundamental principle of GMDSS to facilitate search and rescue operations involving multiple ships of different nationalities. Search and rescue operations often involve assistance by a navy ship that has been willingly granted for humanitarian reasons, and which can be facilitated with GMDSS communications systems.

There are other reasons for recommending limited GMDSS capability to meet navy requirements. The capability of interoperability is a navy requirement to support naval operations which these days often involve foreign combatants and foreign commercial shipping as well as U.S. ships of all types. The near universal fitting of GMDSS systems on commercial ships makes these systems obvious choices for interoperability. It is also believed that foreign naval vessels have equipped with selected GMDSS systems for the same reason and because most of them also have Coast Guard type missions and thus have a continuing need to interact with commercial vessels. Recent initiatives directing Navy support of homeland security measures, makes such interoperability capability even more compelling.

The Automatic Identification System (AIS)

AIS is not technically a GMDSS system since it was designed for Safety of Navigation but it is a mandatory requirement for SOLAS vessels and is fitted voluntarily by many others. AIS is a short range VHF system continuously broadcasting course, speed, position identification and other parameters. Since it's a primary collision avoidance system along with Radar and Bridge-to-Bridge radio, AIS is clearly needed by warships.

The GMDSS Task Force

This document was adopted 11 January 1996 and updated 14 May 2020 by the GMDSS Task Force, a U.S. Coast Guard sponsored group established to coordinate implementation problems, recommend their resolution, and disseminate GMDSS information.