



THE USE OF VHF RADIO COMMUNICATION AND AIS FOR COLLISION AVOIDANCE

Information Notice 34

*Notice to Shipowners, Ship Operators, Managers, Masters,
Owners' Representatives and Recognised Organisations*

The Directorate would like to draw the attention of all concerned to the Marine Safety Investigation Report [No. 07/2020](#), highlighting the potential safety risks involved in VHF radio communication between vessels and reliance on AIS information, for the purpose of collision avoidance.

The use of VHF for collision avoidance

The International Regulations for Preventing Collisions at Sea 1972 ("COLREGS"), as amended, provides general rules to be followed in order to avoid collisions at sea where good seamanship should complement these rules. There has been a significant number of collisions where misuse of VHF radio equipment and AIS information has been established to be a contributory factor.

The COLREGS, however, does not specify exactly the role of VHF and other navigational aids, other than the use of 'all available means' when keeping a proper lookout. To this effect, the use of VHF radio equipment for the purposes of anti-collision is strongly discouraged. Anti-collision measures agreed upon via VHF radio communications may not always be appropriate and may lead to a catastrophic situation.

Therefore, it is important to be reminded that all Masters and navigation watch-keeping officers on Maltese flagged ships and all ships navigating in Maltese territorial waters shall be vigilant against the use of VHF communications as a means of avoiding collisions and shall take note of the following risks:

- The agreed actions between two or more vessels, made over the VHF radio to avoid collision and without considering the risks of such an agreed action, may not comply with the requirements of the COLREGS. This may also have an effect on other vessels in the vicinity who are observing fully the requirements of the COLREGS. Such actions may lead to the development of a close quarters situation or to a collision;

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- Agreement reached via VHF radio communication between vessels for collision avoidance could be misunderstood or misinterpreted due to language difficulties, imprecise or ambiguous expressions;
- Uncertainty may exist over the identity of approaching vessels, when navigating in restricted visibility, during period of darkness, and in circumstances when there is more than one vessel.
- A natural phenomenon known as Tropospheric Propagation may cause radio signals to travel in the part of the atmosphere adjacent to the surface and extending up to some 7,620 metres. Such signals are thus directly affected by weather conditions extending over some miles. This may improve the strength of VHF radio signals over distances greater than normal such that a vessel attempting to communicate with a vessel in its vicinity, may receive a response from another vessel, which is in a similar situation, but which is located several miles away.
- Important messages in the conversation through VHF radio could be interrupted or are not being received clearly due to busy radio traffic, squelch control, static noise and interference of radio communication;
- The loss of valuable time in trying to make contact on VHF radio or else having a lengthy conversation on VHF radio instead of taking appropriate and immediate action, in ample time, to comply with the COLREGS and to avoid a collision.
- Identification of vessels without AIS information may be difficult during night-time, in restricted visibility or when there are more than two vessels in the vicinity within the VHF radio range.

General use of VHF apparatus

Although VHF at sea makes an important contribution to navigational safety, its misuse may cause serious interference and may become a danger to safety at sea. The use of marine VHF equipment must be in accordance with the adopted IMO ‘performance standards’ [Resolution A.803\(19\)](#) and also with the International Telecommunications Union (ITU) Radio Regulations. Moreover, communication using this equipment should be in accordance with the IMO guidelines on the ‘Proper use of VHF channels at Sea’ - [Resolution A.954\(23\)](#).

It is recommended that masters and watchkeeping Officers on board Maltese flagged vessels observe the IMO guidelines on VHF Communication at sea (Resolution A.954 (23) for the proper use of VHF channels whilst communicating with coast radio stations and upon receiving instructions from Vessel Traffic Services (VTS).





The use of AIS for collision avoidance

The purpose of AIS is to help identify ships, assist in target tracking, assist in search and rescue operation, simplify information exchange (e.g. reduce verbal mandatory ship reporting) and to provide additional information to assist situation awareness. AIS is installed on most commercial vessel in accordance with the requirements of SOLAS regulation V/19, however, AIS derived information should be used diligently. The IMO revised guidelines on the operational use of AIS are promulgated through IMO Resolution [A.1106\(29\)](#).

Although AIS equipment provides additional navigation information for collision avoidance decision making, it is not a replacement for other navigational and anti-collision information which is derived from marine radar plotters or other methods of systematic observation. The primary electronic anti-collision instruments are Radar and ARPA. Due to the high risk of confusion, misunderstandings and misinterpretation, VHF radio and AIS should not be relied upon singularly for collision avoidance.

This Administration is of the view that identification of a target by AIS does not completely remove the danger of collision. Decisions with regards to collision avoidance should be made strictly in accordance with the requirements of the COLREGS. Furthermore, there are no provisions in the COLREGS for the use of AIS information, and decisions in such situations should be based primarily on visual and/or radar observations and information. It is possible that if over reliance is placed on AIS information the OOW could be in breach of Rule 7(c) – “assumptions made on the basis of scanty information”.

Not all vessels are fitted with AIS, particularly small craft and fishing vessels. Other floating objects which may appear to be conspicuous on a radar screen may not be displayed by AIS. AIS will, however, sometimes be of a great assistance, when it makes it possible to be able to detect and identify targets which may be within an area of a radar shadow sector.

It is imperative that all Masters and watch-keeping officers always bear in mind the following when AIS is used in the ship to ship mode for anti-collision purposes:

- AIS is an additional source of navigational information. It does not replace, but supports, navigational systems such as radar target-tracking and VTS;
- The use of AIS does not negate the responsibility of the OOW to comply at all times with the Collision Regulations, particularly rule 7 when determining whether a risk of collisions exists.’
- The availability and display of AIS data should not be given priority over the data produced by systematic radar target-tracking (e.g. ARPA).
- AIS target data will only be based on the target vessels’ course and speed over ground whilst for compliance with the COLREG such data must be based on the vessels’ course and speed through the water.
- The quality and reliability of position data obtained from targets will vary depending on the accuracy of the transmitting vessel’s GNSS equipment.

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- The use of AIS on board ship is not intended to have any special impact on the composition of the navigational watch, which should be determined in accordance with the STCW Convention and COLREGS.
- AIS positions are derived from the target's GNSS receiver, usually GPS. This may not coincide exactly with the target as detected by radar.
- Received AIS data is whatever another vessel transmits and is subject to potential errors.
- A recent development of AIS is the ability to provide synthetic AIS targets and virtual navigation marks enabling coastal authorities to provide an AIS symbol on the display in any position. Mariners should note that this ability could lead to the appearance of "virtual" AIS targets. It is advised that Mariners are to exercise vigilance when an AIS target is not complemented by a radar target.

The Safety Investigation Report aims to establish the circumstances and safety factors of an accident as a basis to make recommendations, in order to minimize the risk of such reoccurrences.

Masters and operators of Maltese registered ships are advised to follow the recommendations contained therein.

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08 June 2020

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