



AIS was formally introduced in 2001, yet the use of AIS data on board remains a matter of some uncertainty. Because the International Regulations for Preventing Collisions at Sea (1972), more commonly known as COLREGS, predate AIS by almost three decades, they naturally make no reference to AIS and only discuss radar. Consequently, many officers and Masters – erring on the side of caution – take the view that AIS information SHOULD NOT be used for collision avoidance.

This over-zealous interpretation of the rules possibly stems from marine academies and such like following the letter of the law rather than its spirit. Navigation hardware supplier Totem is of the opinion that AIS information SHOULD be used for collision avoidance.

Readers who are clued up on their COLREGS will quickly point out that reluctance to trust AIS is misguided, citing rule 7(a), which states 'every vessel shall use all available means appropriate'. But mariners are not supposed to be legal experts. They should not be forced into a position where they have to consider all possible interpretations of the rules foisted upon them.

In order to further understand this issue, one must go back to the guidelines originally issued by IMO on the 'Use of AIS in Collision Avoidance Situations' in November 2001 (IMO Res A.917 (22)), which, incidentally, are set to be revised in 2014.

The guidelines state that 'AIS is an additional source of navigational information', and further that 'AIS can assist in tracking it [a detected ship] as a target'. In combination with the COLREGS requirement that the Officer of the Watch (OOW) should use 'all available means', it can be concluded that IMO intended AIS to be used for collision-avoidance purposes.

However, a word of caution should be given: the guidelines also warn that the mariner

A collision of interpretations

AIS can play an invaluable role in collision avoidance, but mariners are sometimes unsure whether they should follow its advice

should not rely on AIS alone, and should not use the AIS as an excuse to slacken his lookout or responsibility. This statement agrees fully with COLREGS requirements for good seamanship and proper lookout.

The reader should also be aware that, in interpreting AIS data by ECDIS systems, the good practice is to use the target positions only and not trust the SOG (Speed Over Ground) and COG (Course Over Ground) computed and sent by the target's AIS transmitter. Those parameters are calculated separately using the Kalman algorithm, as is customary with ARPA systems.

Item 40 of the AIS guidelines

clearly state that 'AIS information may be used to assist in collision avoidance decision-making'.

Totem says that the decision support tools incorporated into its ECDIS are invaluable in this task. The tools provide the OOW with a recommended course of action, either the exact course change or the exact speed change that is necessary to avert a collision. This more methodical approach to decision-making – based on both AIS and ARPA information – results in the right decision being made more of the time, says the company. The OEM adds that the Totem ECDIS is compliant both with IMO guidelines (particularly items 40.1, 41 and 43) and with the COLREGS.

The value of Totem ECDIS' decision making capabilities in close proximity situations was demonstrated in a real situation onboard a fast car carrier in the North Sea. The vessel was steaming on a course of 120°T at 15.7 knots, with about a dozen targets in close proximity (Fig 1). The system advised turning 18° to starboard and steer 140°T, in order to stay 0.5 miles from all targets (Fig 2). By following this advisory, the OOW maintained a safe distance from the targets.

Decision support tools are already used for other aspects of navigation, notably for grounding avoidance and route planning. The adoption of ECDIS for collision avoidance tools is a natural progression. The view held by some navigators – namely 'we know the rules of the road, we don't need the machine to tell us what to do' – is still in evidence. But if everybody knows the rules, then why do we have so many collisions? 

▼ Fig 1: (top) The vessel is surrounded by targets

▼ Fig 2: (bottom) By changing course, the ship maintained a safe distance

