THE SIRC COLUMN

If it works properly, the benefits of AIS could be huge

The new Automatic Identifcation System has the potential to revolutionise the process of collision avoidence, says Phil Belcher of the Seafarers' International Research Centre. But will it?

It's 0200 on a dark wet night in the South China Sea when you overhear a familiar call on the VHF.

"Ship on my port side, range 5 miles, course 136, speed 13 knots. This is the ship on your starboard side, come in please."

"This is the *Black Sheep*, what is your position?"

You hear the radio conversation continuing for a few more minutes as the two ships attempt to identify themselves, work out if they are the ones at risk of collision and decide what to do. However, without positive identification there is always a danger that the ships talking to each other are not actually the ones in conflict. So what can be done about this sort of situation? Well the obvious answer is for people to just follow the collision regulations and not mess around calling everyone on the VHF.

But we live in the real world where compliance with the collision regulations is less than full. Furthermore, according to the US Vessel Bridge-to-Bridge Radiotelephone Act (1971), ships should, as a matter of routine, contact other ships in order to seek clarification of their actions. This is where the new Automatic Identification System (AIS) should come into its own and has the potential to revolutionise collision avoidance.

AIS is a system intended to allow the passage of navigational information between ships and the shore. All ships over 300 gt will have to carry AIS equipment by July of this year. The equipment consists of a unit which holds static data relating to the identity of the ship, inputted by a shore technician, coupled with additional data which are inputted onboard. This additional information consists of such items as voyage details, cargo, people on board, draught, defects and anything else which could be of interest to shore authorities. In addition to this information, the unit will transmit ship movement details using a gyro and GPS input.

The unit transmits a message containing this data every minute by VHF and this is received by all other AIS units in the vicinity. Therefore, if you are on the bridge and you want to find out information about that ship on your port side, you would look at the AIS display and it would be there. So, for example, if you are going through the Dover Strait heading for Rotterdam and you are unsure about where a ship ahead is heading for, you can find out at the touch of a button. Armed with the information you can then adopt a course which does not obstruct the other ship. Also, if you feel the need to call up another ship, then you can be secure in the knowledge that it is the right one. Furthermore, this system works independently of radar and so can display information about ships around bends in rivers and is not susceptible to target swap.

AIS information is also received by coastal states, vessel traffic services (VTS) operators and port authorities. This gives them the benefits of a full picture of what is going on around their ports or coast. Coastal states will know what cargoes are being carried and ports will have a better idea of when a ship will arrive. In addition, VTS authorities will be able to identify automatically what ships are passing through their area, independent of radar, which can be degraded by the weather conditions or geography.

Post-September 11 security considerations have also been a factor in the implementation of this system. The US Coast Guard views AIS as one of the means by which it can keep an eye on what ships are passing through its waters. It has stated that they will target additional resources into the investigation of any non-AIS transmitting ships. By this it means that any ship passing through its area of responsibility, that was not using AIS, would be suspected of being involved in criminal activities. Therefore, if you go past the US coast and do not turn on the unit, then expect a visit by scary people, wearing black and carrying big guns.

So that is the theory: detailed, unambiguous information about every other AIS-equipped ship within VHF range. Everybody knows where every other ship is going, how they are manoeuvring, what their identity is and what they are carrying. But is that actually how it would be? Many VTS operators have already reported that between 60 and 80 per cent of all AIS messages contain errors. These errors range from draught of vessel to the ship's call sign. Furthermore, while there is a requirement under the Safety of Life at Sea (SOLAS) convention to carry the equipment, there is no requirement to turn it on.

This is, however, a good thing because would you really want everyone in the vicinity of the Malacca Straits to know what you are carrying? But putting aside these concerns, one probable consequence of knowing the identity of other ships will be a massive rise in VHF communication. It is difficult to predict if that will have a positive or negative effect upon collision avoidance. However, I would bet that there will be a collision soon which the lawyers will blame upon the use of AIS. We will then be able to add the term "AIS assisted collision" to the nautical phrasebook.

But where does that leave us? I stated that AIS has the potential to revolutionise the process of collision avoidance. I am not entirely convinced that it will. It could well turn out to be just another piece of equipment that sits on the bridge, beeps every now and then, which the second mate forgets to update. But, it could also be that piece of equipment that is used by the officer of the watch as an additional tool to prevent collisions in the same way as an ARPA does, but with the added assurance of unambiguous information. So if it does work properly, and is used correctly, then the benefits to the bridge team could be huge.