

VESSEL OPERATION AND NAVIGATION

AIS at last?

Organisations such as IMO and IALA are finally beginning to talk seriously about Automatic Identification Systems, but more people should get involved in the debate, says Fred Pot

Automatic Identification System (AIS), in its simplest form, consists of a VHF radio transmitter that sends out a ship's name, position, course and speed, along with other data. It also has two radios that receive this information from nearby ships thus allowing them to be plotted as vectors ('targets') on an electronic chart. Like radar, positions are updated frequently enough to be useful in avoiding collisions, but unlike radar AIS can 'see' around hills and eliminate blind spots caused by coastal topography.

A coast state authority can receive, plot and log this information if it establishes AIS base stations and repeaters along its coast. It can also use AIS to interrogate a ship for its identity, the nature of its cargo, its destination and its ETA. The Marine and Port Authority of Singapore (MPA), intends to take this one step further; it wants to receive complete voyage plans, including intended routes.

AIS can be used much like any modem to send and receive digital information including e-mail and DGPS/GLONASS corrections, but its capacity is limited to about 9.6 kilobits per second per VHF channel and, so far, only two channels are being used. AIS' range is about 10 to 15 nautical miles, but this range will shrink when its capacity is overloaded.

Proposed Requirements

It is likely that the International Maritime Organisation (IMO) will require all ships constructed after July 2002 to be outfitted with an AIS transponder. By July 2003 all passenger ships and tankers will be required to carry one, followed by all other ships over 50,000 GRT by July 2004. Smaller ships will be required to carry one by July 2007.

Between 2002 and 2007 authorities will transmit AIS position updates for ships within VTS radar range that have yet to install AIS. These updates will not only consist of position data but also the ship's static and voyage-related data.

Non-SOLAS boats will not be required to carry an AIS transponder, nor are authorities planning to provide them with a 'virtual' transponder, which is unfortunate because these boats are much more likely than SOLAS ships to be involved in near-misses and collisions.

Unresolved AIS policy Issues

To improve safe navigation, coast state authorities are pushing hard for the establishment of AIS because it will allow them to greatly expand the areas they control beyond those currently covered by VTS radar stations at a small incremental cost.

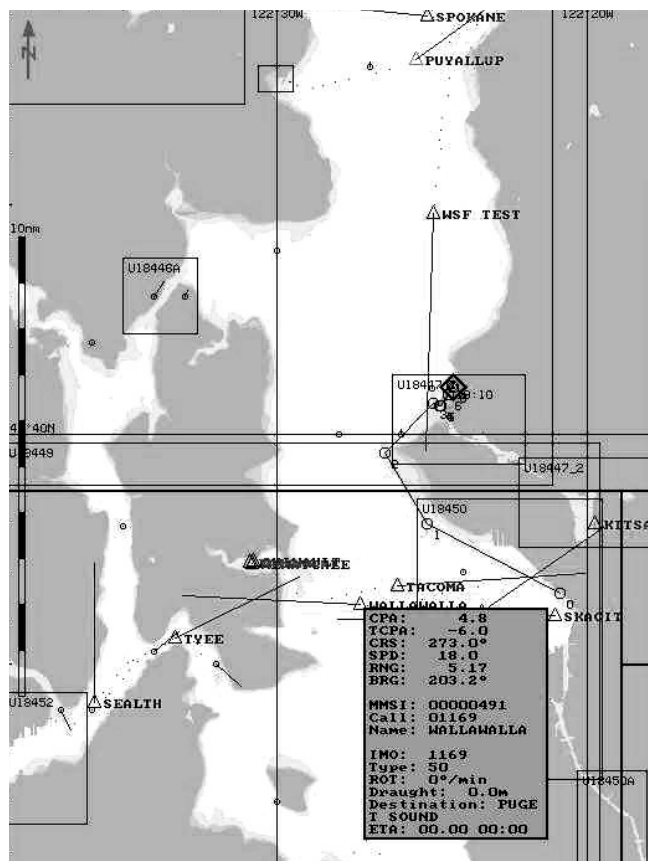
They will also be able to handle significantly more traffic with their existing VTS Centre staff, as an AIS test by the Port of

accompli: an AIS standard that is designed by and for authorities.

It is plausible that flag and port states will police installation of AIS transponders, but it is less clear whose duty it will be to enforce transponder operation and maintenance, i.e. ensuring that transponders are turned on during the voyage and that they work properly. Apart from static data (call sign, name, etc.), voyage specific data (draft, tow configuration, destination, ETA, hazardous cargo information, etc.) will have to be kept up to date in the transponder. Who, apart from the bridge team, is in a position to ensure that this information is correct and entered in a timely fashion? VTS Centre staff? Ship's log inspectors? Pilots?

Fortunately, ship operators will derive direct and visible safe navigation benefits from installing, operating and maintaining an onboard AIS transponder. Therefore, few are expected to skimp on the required resources, irrespective of official carriage requirements.

Port and flag state enforcement of AIS will reduce the number ships that do not operate AIS properly or do not meet the carriage requirement, but authorities should realise that this will require significant enforcement resources. Even if these can be marshaled, the voluntary co-operation of ship operators will still be needed to make AIS work. A further impediment is that even willing ship operators will not always be able to control what the bridge team does. Therefore, in order to successfully implement AIS, it needs to be designed to provide significant benefits to the bridge team.



AIS can help in avoiding collisions

Singapore has proven. In 1999 MPA completed a pilot project to evaluate the performance of such a system and the results from the pilot test indicated that AIS ship transponders could practically halve the amount of time spent by a VTS operator on verbal communications.

For these reasons, authorities participating in IMO, IALA, ITU and IEC delegations and committees are leading the charge to establish AIS. Ship operators and suppliers of traditional navigation equipment, on the other hand, have been reacting to rather than leading this process. ECDIS suppliers have only recently woken up to AIS. Ship operators, too, should involve themselves with planning the roll-out of AIS or be faced with a *fait*

The affect on pilotage requirements

Most pilot organisations exposed to AIS are in favour of its deployment. They see AIS as a way to enhance the professionalism of their craft. By taking responsibility for the validity of static and voyage data in the AIS transponder, interpreting information received from AIS (target position updates, environmental conditions, the status of aids to navigation, etc.) and sending and receiving vessel traffic related e-mails, pilots solidify the legitimacy of their services.

Ship operators, on the other hand, believe that AIS will bring about less expensive pilotage-like services, especially in remote and