THE JOURNAL OF NAVIGATION (2004), **57**, 181–188. © The Royal Institute of Navigation
DOI: 10.1017/S0373463304002772 Printed in the United Kingdom

AIS – A Pilot's Perspective

Captain Colin R. Pratt

(*Tees Bay Pilots*)

(Email: colin.pratt@tiscali.co.uk)

Captain Geoff Taylor

(*International Maritime Pilots' Association*)

This paper formed the basis of a highly successful talk at the RIN's AIS 03 in Church House London on 24th/25th November 2003. The authors are Tees Bay Pilots and have used their expertise and knowledge to survey and examine the introduction and progress of AIS.

KEY WORDS

1. AIS. 2. Pilotage.

1. INTRODUCTION. Let us begin by saying how pleased we are to be associated with this seminar and the work of the two organisations. Our recent participation in Nautical Institute seminars confirms for us the validity of a specific pilotage input. Pilots across the world are adept at incorporating technology into their everyday routine and AIS is no exception. Whilst regulators and manufacturers have their proper role in producing and controlling new technology it is the user who is faced with the task of choosing and adapting equipment to their specific needs. A caveat at this point is that whilst we have knowledge of and some familiarity with the working systems and practises of pilots in other countries and the UK we do not propose to speak on their behalf. Pilotage is, by definition, a local issue and the experts for each port are the people who should be consulted; After all, that is what they are paid for!

In common with our colleagues in other pilotage districts around the world, we on the Tees are constantly looking at and assessing the ever-changing world of best working practises, technology and all areas that affect the many aspects of pilotage. We believe it is this wide and open view, together with the willingness of today's pilots to embrace new ideas that gives us the ability to provide a valuable and efficient service to the ports and ship owners. It is with this in mind that we have been closely following the progress and implementation of AIS and the inherent benefits it can bring to the man 'on the spot'.

2. USING AIS DATA. To utilise AIS data the pilot has a choice of a number of routes:

- *Own* '*carry aboard*' *laptop and transponders*.
  This involves the transportation of a small case that typically contains a laptop,

Figure 1. A typical Portable Pilot Assistant.

transponders and a power source. There are many variations on a theme but a good example would be that of the Innovative Portable Pilot Assistant project in Europe and the Pilot Portable Units in the United States (see Figure 1). The benefits of this system are that the unit is totally self-contained and presents a readily familiar user interface containing port specific data to the pilot.

- *Portable PC that utilises the Pilot Port*.
  This permits any laptop or portable PC to utilise data from the ships equipment, which, in turn, can be displayed in a format familiar to the pilot and, where required, used in software specifically designed for a particular port. The benefits of this system being that 'carry aboard' units can be smaller and therefore have less weight. This, of course, is a major consideration where a pilot transfer is carried out in adverse conditions.
- *Ships Equipment Only*.
  The pilot in this case relies solely on the displays and information provided onboard the vessel. The benefits are that no individual portable equipment is required.

How each pilotage district chooses to approach the above is of course dependant on many operational factors including traffic patterns and nature of the vessels trading to the port as well as the level and nature of the local VTS service and the topography of the port itself. Some may choose one or a combination of options. This is highlighted by the development programs currently being undertaken by our colleagues in the UK and indeed around the world. For our part on the Tees, we have decided on the combination of using the Pilot Port and Ships equipment and are currently working with Dolphin Maritime in developing port specific software that will be used on the Psion Netpad that is shown in Figure 2.

In deciding on the type of equipment to use and how we were going to develop the software, in particular that which is related to AIS, we decided to carry out a short survey on vessels entering the Tees. This was primarily to identify a number of vessels that we could use to trial the software and also to note where a 'pilot port' was fitted and if our colleagues considered it to be in a useful position. It was during this period

Figure 2. The Psion Netpad, a portable unit for use with the on-board Pilot Port.

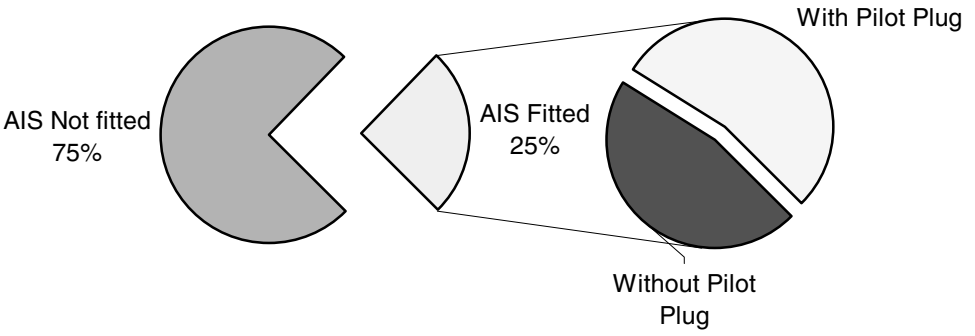

Figure 3. AIS fitted. Survey results in July 2003.

that a chance conversation at the last IMO MSC meeting made us aware of this seminar and the possibility of expanding our survey to highlight the current awareness of AIS and the process of implementation of the associated equipment. It also gave us an opportunity to take a snap shot of the user feedback at a relatively early stage in the hope that some aspects may be incorporated in the on-going development process. We would propose that the value of this survey and the associated comments lies in its 'raw nature'. The respondents are ordinary seafarers covering a genuine cross section of those on ships to which the regulations apply. We are keenly aware in common with the Nautical Institute of the need for valid user feedback as part of the process of technical development.

3. SURVEY. The survey itself was set out to be brief, quick to complete and carried out over a short control period. For this reason we enlisted the assistance of our colleagues in Southampton and carried out the survey during the month of July 2003. The combination of the two ports presented a good cross section of vessel types with minimum overlap. Obviously the opening questions sought to establish if AIS was actually fitted and operational and, from the pilotage aspect, was there a pilot plug available.

3.1. *AIS onboard.* Of the vessels surveyed in July 2003 we found that only 25% were currently fitted with some form of AIS (see Figure 3). At an early stage we became aware that, despite the notation in the IMO guidelines for the installation of AIS that 'A pilot input/output *is* part of an AIS Class A station', a number of ships did not have a Pilot Plug fitted. In fact on completion of the survey it was shown that only 51% with AIS actually had a plug fitted.

https://doi.org/10.1017/S0373463304002772 Published online by Cambridge University Press

Figure 4. Poorly located AIS unit.

It should be noted that a small number of Masters did state that, although there was no Pilot Plug at present, one would be fitted in the near future. However, it was encouraging to note that of the ships fitted with a Pilot Plug 87% were deemed by the pilot to have been fitted in a useful position, such as by a Bridge front table. Sadly, on a number of occasions the positioning of the AIS unit and/or the Pilot Plug was exceedingly poor and appeared more for the convenience of the installation technician rather than for the practical requirements of the end user. The unit displayed in Figure 4 shows an example of this.

This was placed in an almost inaccessible spot at the rear of the chart table. The use of, and the confidence in, this unit was seriously undermined by poor positioning together with the fact that the unit was not integrated with any other navigational equipment and that a Pilot Plug had not been fitted. In contrast, Figure 5 shows a Pilot Plug at the bridge front directly next to a table that would, of course, facilitate the pilot when using a portable pilot unit. The MKD was also placed in a position that allowed the bridge team to easily access the available data. Interestingly the Master refused to accept the original position suggested and had quite a difficult time persuading the installation technician to fit the equipment in the 'user friendly' position that we see here.

3.2. *Equipment integration*. Having established that a vessel had an AIS unit we looked at how the Shipowners viewed their obligation; would there be a trend to minimising costs by just fitting the basic or a more progressive view by looking to integrate AIS with ECDIS, radar or indeed both. It should be noted that we are aware there are many factors that affect the decision on how to proceed, principle factors being the level of existing equipment fit and software. In fact I have noted comments from Masters that they are waiting for a 'software upgrade' before integration is taken any further.

Figure 5. A well positioned MKD and Pilot Plug.

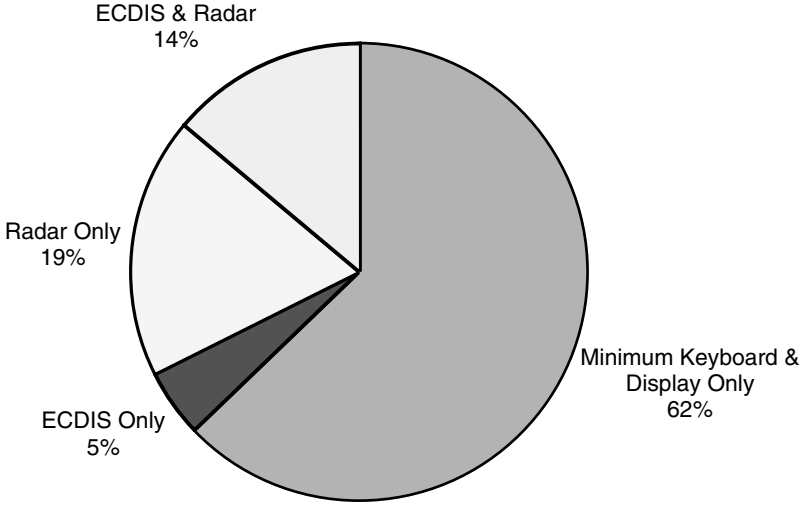

Figure 6. Integration of AIS.

As can be seen the general trend is towards fitting only the minimum keyboard and display, however, our initial prognosis that we would see either radar or ECDIS integration proved incorrect; it can be clearly seen that some 14% of vessels had AIS on both navigational aids. Further to this, comments received during and after the survey has indicated that a number of companies appear to be looking at integrating AIS with both ECDIS and radar.

3.3. *Installation programme*. The following chart shows the current and proposed programme of installation per ship type.

In view of the implementation date for tankers (first survey for safety equipment on or after 1st July 2003) we predicted that the bulk liquid sector would be ahead in respect of equipment installation. This proved to be the case with almost 50% of the ships surveyed already having AIS onboard. The only others to have equipment already onboard were the car carrier/ro-ro ships. The general cargo and bulk sector did not produce any surprises either, not only in the fact that no ships surveyed in

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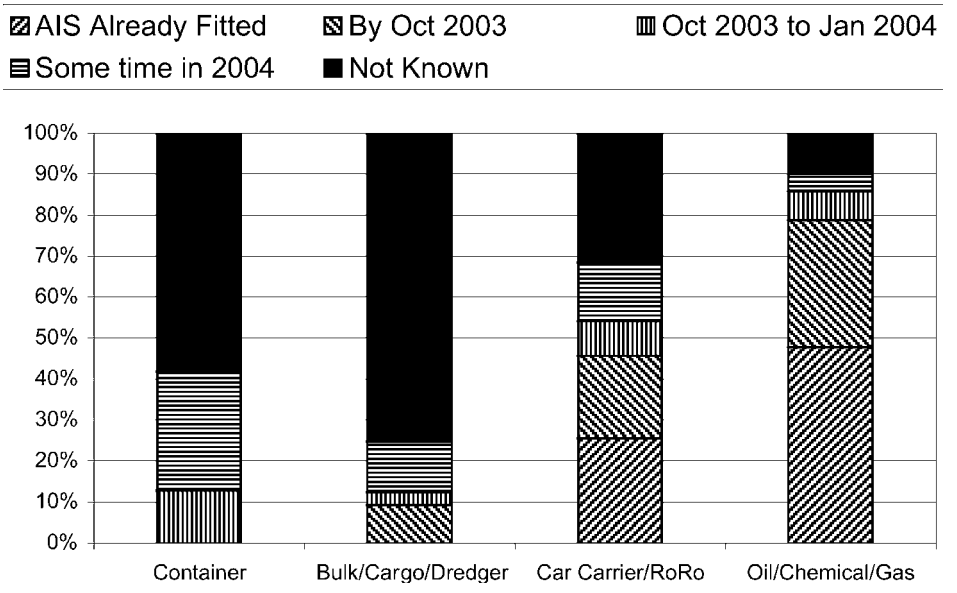

Figure 7. Installation Programme.

Southampton and the Tees during July had a unit fitted, but also that this sector gave the largest percentage of unknown fitting dates. We did, however, expect to see some progress in the container sector, given that the largest feedback came from the modern vessels handled in Southampton. In fact a number of ships officers on these ships knew little of or indeed had heard nothing about AIS. One Master stated that it would only be fitted when absolutely necessary.

4. THE MASTERS' THOUGHTS. 'What are the Master and Officers Views?' This is one of the key questions that has often been overlooked which, thankfully, is now being addressed by seminars such as this and those held by the Nautical Institute; not only on the issue of AIS but also in areas such as bridge design and the use of integrated systems. We sought to elicit some thoughts on AIS by asking the Masters views on the following:

- Does the Master consider AIS is a useful aid/tool to navigation?
  84% of replies indicated that there was a positive outlook on AIS being a useful addition to the available Bridge equipment. This was emphasised by comments such as:
  - 'Useful to ID ships for calling on VHF'
    A considerable number made this as their first or only response with only one Master making reference to the use of the MMSI number.
  - 'Useful on "blind corners" particularly in the Norwegian Fjords'
    This of course mirrors the experiences of our colleague Benny Petterson in the Swedish archipelago. This is one of the areas that makes AIS a particularly interesting aid to Pilots.

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- 'Very useful in confined waters'
  A few references to this covered approaching a crowded anchorage where vessel movements can be quickly identified against the reliance on 'historical data' such as from ARPA.

- Fears regarding Pirates and possible AIS assisted collisions.
  Although there were only a couple of comments regarding this, we have found that in general discussion these subjects are still high on the list of concerns expressed by seafarers on the implementation of AIS. In fact many comments received regarding the use of AIS replicate those made when previous new technology was introduced such as radar and VHF.

- Does the Master consider adequate information/consultation was given prior to fitting?
  The basis of this question was to establish whether the Master had been part of the consultation process regarding the installation of AIS onboard his vessel. We predicted a low number to reply in the affirmative and the result of 32% proved higher than we actually expected. However, it highlights the fact that there is still a long way to go towards including the ships staff in the installation process. In many cases equipment was delivered with virtually no warning and the installation carried out with little or no input from the ships staff. In some circumstances the equipment had to be fitted by ships staff and the equipment subsequently commissioned by an independent technician. I refer you to the previous comments regarding one Captains problem convincing a technician on the correct installation position. The value of having the 'end user' involved is shown in the previous slides on the positioning of the Pilot Plug and MKD.

- Does the Master consider adequate training has been given in the use of AIS?

  - If not, is training being planned by the company?
    This third question regarding training adds to the already well-worn path of discussion on training in the use of bridge equipment. There appeared to be little evidence of any formalised training, despite this some 42% said they considered adequate training had been given. On further investigation of the various comments, it would appear that 'adequate training' was deemed to be that derived from a few words by the installation technician or information given in the manufacturers handbook. Only three Masters stated that their respective companies are planning some form of training. Our survey didn't seek to elaborate on this question, however, we are aware that in two of these cases the Master was not able to give details on any proposals.

5. CONCLUSION. We do not presume to offer our survey as a definitive outlook on AIS and its implementation but the comments we have received show that there is still a lot to do at the 'front end' of the market. Confidence in the system is still low but improving and needs addressing with better cooperation between manufacturer, shipowner, technician and ships' staff. We have heard on many occasions the comment 'If they had only spoken to us (the end user) these problems could have been resolved'. I think, in many ways, this problem is being addressed, but what we see and hear is that it is not fast enough. The lessons learned from

the installation of previous technology have not been fully taken onboard and confidence in a potentially useful system is being undermined at an early stage. The survey showed that even when positive feedback was received, the knowledge of and full potential of the system was not known or fully understood.

We, as Pilots, have a problem with the lack of Pilot Plug installation, another weakness inhibiting the full use of the system. We know from one manufacturer that each unit is delivered with a Pilot Plug yet we have seen that unit in operation on ships without that Pilot Plug being fitted. So, it would appear that even when the manufacturer does his best the system still manages to break down. It is easy to lay blame at the door of the installation technician; we have certainly seen situations where this is undoubtedly the case. However, the argument can be taken further in the fact that if the 'end user' was better trained and prepared then he could offer a more informed input to the proceedings.

With the implementation of new technology we are really taken back to the manufacturer who, we believe, could possibly do more to aid the decision process on use and installation of his equipment; after all, a good basic knowledge of equipment that is installed in a suitable position will surely improve the confidence in and desirability of the product. We are aware that manufacturers are required to provide instruction manuals but what about developing basic training manuals or a CD that can easily be accessed by the seafarer onboard or indeed even at home. This is the sort of thing that could then be built on by the training establishments to further enhance equipment understanding.

It is the very nature of pilotage that gives us the opportunity to work with so many different seafarers and deal with different types of equipment that allows us to gather the information and data that has gone towards this paper. In so doing we hope that our survey has given an insight to the views and concerns of the seafarer and, of course, those of Pilots as well.

It is true to say that some Pilot services around the world are at a further stage in developing AIS then we are in the United Kingdom so it is to them that we look for user experience. However, progress is being made and with the combination of lessons learned from our colleagues in Europe and the United States together with the knowledge acquired from these seminars; we are confident that the current projects will utilise AIS in a manner that best serves the needs of vessels under Pilotage and in a way that is most appropriate to each individual Pilotage district.