



Maritime and Coastguard Agency

MARINE GUIDANCE NOTE

## MGN 324 (M+F)

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# Radio: Operational Guidance on the Use Of VHF Radio and Automatic Identification Systems (AIS) at Sea

**Notice to all Owners, Masters, Officers and Pilots of Merchant Ships, Owners and Skippers of Fishing Vessels and Owners of Yachts and Pleasure Craft.**

*This notice replaces Marine Guidance Notes MGN 22, 167 & 277*

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### Summary

Given the continuing number of casualties where the misuse of VHF radio has been established as a contributory factor it has been decided to re-issue the MCA Operational Guidance Notes on the use of VHF Radio. It has also been decided to include operational guidance notes for AIS equipment on board ship formerly contained in Marine Guidance Notice 277.

### Key Points

- The use of marine VHF equipment must be in accordance with the International Telecommunications Union (ITU) Radio Regulations.
- Although the use of VHF radio may be justified on occasion as a collision avoidance aid, the provisions of the Collision Regulations should remain uppermost
- There is no provision in the Collision Regulations for the use of AIS information therefore decisions should be taken based primarily on visual and/or radar information.
- IMO Guidelines on VHF Communication Techniques are given in Appendix I
- Typical VHF ranges and a Table of Transmitting frequencies in the Band 156 - 174 MHz for Stations in the Maritime Mobile Service is shown at Appendix II
- IMO Guidelines for the Onboard Operational Use of Shipborne Automatic Identification Systems (AIS) is shown in Appendix III
- MCA Guidance on the use of AIS in Navigation together with a list of MCA AIS base stations is shown in Appendix IV.

1. The International Maritime Organisation (IMO) has noted with concern the widespread misuse of VHF channels at sea especially the distress, safety and calling Channels 16 (156.8 MHz) and 70 (156.525 MHz), and channels used for port operations, ship movement services and reporting systems. Although VHF at sea makes an important contribution to navigation safety, its misuse causes serious interference and, in itself, becomes a danger to safety at sea. IMO has asked Member Governments to ensure that VHF channels are used correctly.

2. All users of marine VHF on United Kingdom vessels, and all other vessels in United Kingdom territorial waters and harbours, are therefore reminded, in conformance with international and national legislation, marine VHF apparatus may only be used in accordance with the International Telecommunications Union's (ITU) Radio Regulations. These Regulations specifically prescribe that:

(a) Channel 16 may only be used for distress, urgency and very brief safety communications and for calling to establish other communications which should then be concluded on a suitable working channel;

(b) Channel 70 may only be used for Digital Selective Calling not oral communication;

(c) On VHF channels allocated to port operations or ship movement services such as VTS, the only messages permitted are restricted to those relating to operational handling, the movement and the safety of ships and to the safety of persons;

(d) All signals must be preceded by an identification, for example the vessel's name or callsign;

(e) The service of every VHF radio telephone station must be controlled by an operator holding a certificate issued or recognised by the station's controlling administration. This is usually the country of registration, if the vessel is registered. Providing the Station is so controlled, other persons besides the holder of the certificate may use the equipment.

3. Appendix I to this notice contains the IMO Guidance on the use of VHF at sea. Masters, Skippers and Owners must ensure that VHF channels are used in accordance with this guidance.

4. Appendix II to this notice illustrates typical VHF ranges and a table of transmitting Frequencies in the Band 156 – 174 MHz for Stations in the Maritime Mobile Service, incorporating changes agreed by the 1997 World Radio Conference.

5. Channels 6, 8, 72 and 77 have been made available, in UK waters, for routine ship-to-ship communications, Masters, Skippers and Owners are urged to ensure that all ship-to-ship communications working in these waters is confined to these channels, selecting the channel most appropriate in the local conditions at the time.

6. Channel 13 is designated for use on a worldwide basis as a navigation safety communication channel, primarily for intership navigation safety communications. It may also be used for the ship movement and port services.

## **Use of VHF as Collision Avoidance Aid**

7. There have been a significant number of collisions where subsequent investigation has found that at some stage before impact, one or both parties were using VHF radio in an attempt to avoid collision. The use of VHF radio in these circumstances is not always helpful and may even prove to be dangerous.

8. At night, in restricted visibility or when there are more than two vessels in the vicinity, the need for positive identification is essential but this can rarely be guaranteed. Uncertainties can arise over the identification of vessels and the interpretation of messages received. Even where positive identification has been achieved there is still the possibility of a misunderstanding due to language difficulties however fluent the parties concerned might be in the language being used. An imprecise or ambiguously expressed message could have serious consequences.

9. Valuable time can be wasted whilst mariners on vessels approaching each other try to make contact on VHF radio instead of complying with the Collision Regulations. There is the further danger that even if contact and identification is achieved and no difficulties over the language of communication or message content arise, a course of action might still be chosen that does not comply with the Collision Regulations. This may lead to the collision it was intended to prevent.

10. In 1995, the judge in a collision case said "It is very probable that the use of VHF radio for conversation between these ships was a contributory cause of this collision, if only because it distracted the officers on watch from paying careful attention to their radar. I must repeat, in the hope that it will achieve some publicity, what I have said on previous occasions that any attempt to use VHF to agree the manner of passing is fraught with the danger of misunderstanding. Marine Superintendents would be well advised to prohibit such use of VHF radio and to instruct their officers to comply with the Collision Regulations."

11. In a case published in 2002 one of two vessels, approaching each other in fog, used the VHF radio to call for a red to red (port to port) passing. The call was acknowledged by the other vessel but unfortunately, due to the command of English on the calling vessel, what the caller intended was a green to green (starboard to starboard) passing. The actions were not effectively monitored by either of the vessels and collision followed.

12. Again in a case published in 2006 one of two vessels, approaching one another to involve a close quarter's situation, agreed to a starboard to starboard passing arrangement with a person on board another, unidentified ship, but not the approaching vessel. Furthermore, the passing agreement required one of the vessels to make an alteration of course, contrary to the requirements of the applicable Rule in the COLREGS. Had the vessel agreed to a passing arrangement requiring her to manoeuvre in compliance with the COLREGS, the ships would have passed clear, despite the misidentification of ships on the VHF radio. Unfortunately by the time both vessels realised that the ships had turned towards each other the distance between them had further reduced to the extent that the last minute avoiding action taken by both ships was unable to prevent a collision.

13. Although the practice of using VHF radio as a collision avoidance aid may be resorted to on occasion, for example in pilotage waters, the risks described in this note should be clearly understood and the Collision Regulations complied with.

## Use of VHF Automatic Identification Systems (AIS)

14. AIS operates primarily on two dedicated VHF channels (AIS1 – 161.975 MHz and AIS2 – 162.025 MHz). Where these channels are not available regionally, the AIS is capable of automatically switching to alternate designated channels. AIS has now been installed on the majority of commercial vessels, and has the potential to make a significant contribution to safety. However the mariner should treat the AIS information with caution, noting the following important points:

15. Mariners on craft fitted with AIS should be aware that the AIS will be transmitting own-ship data to other vessels and shore stations.

To this end they are advised to:

15.1 initiate action to correct improper installation;

15.2 ensure the correct information on the vessel's identity, position, and movements (including voyage-specific, see Annex IV) is transmitted; and

15.3 ensure that the AIS is turned on, at least within 100 nautical miles of the coastline of the United Kingdom.

16. The simplest means of checking whether own-ship is transmitting correct information on identity, position and movements is by contacting other vessels or shore stations. Increasingly, UK Coastguard and port authorities are being equipped as AIS shore base stations. As more shore base stations are established, AIS may be used to provide a monitoring system in conjunction with Vessel Traffic Services and Ship Reporting (SOLAS Chapter V, Regulations 11 and 12 refer).

17. Many ship owners have opted for the least-cost AIS installation to meet the mandatory carriage requirement. By doing so, many of the benefits offered by graphic display (especially AIS on radar) are not realised with the 3-line 'Minimum Keyboard Display' (MKD).

18. The Pilot Connector Socket and suitable power outlet should be located somewhere of practical use to a marine pilot who may carry compatible AIS equipment. This should be somewhere close to the wheelhouse main conning position. Less accessible locations in chart rooms, at the after end of the wheelhouse are not recommended.

19. The routine updating of data into the AIS, at the start of the voyage and whenever changes occur, should be included in the navigating officer's checklist and include:

- ship's draught;
- hazardous cargo;
- destination and ETA;
- route plan (way points);
- correct navigational status;
- short safety-related messages.

20. The quality and reliability of position data obtained from targets will vary depending on the accuracy of the transmitting vessel's GNSS equipment. It should be noted that older GNSS equipment may not produce Course Over Ground and Speed Over Ground (COG/SOG) data to the same accuracy as newer equipment.

21. Operational guidance for Automatic Identification Systems (AIS) on board ships can be found in the MCA Guidance on the Safety of Navigation - Implementing SOLAS Chapter V (accessible from the MCA website at [www.mcga.gov.uk](http://www.mcga.gov.uk)) and reproduced in Appendix IV of this notice.

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**GUIDANCE ON THE USE OF VHF AT SEA**

*(Extract from: IMO Resolution A.954 (23). Proper use of VHF Channels at Sea (Adopted on 5<sup>th</sup> December 2003))*

**1. VHF COMMUNICATION TECHNIQUE**

**1.1 Preparation**

Before transmitting, think about the subjects which have to be communicated and, if necessary, prepare written notes to avoid unnecessary interruptions and ensure that no valuable time is wasted on a busy channel.

**1.2 Listening**

Listen before commencing to transmit to make certain that the channel is not already in use. This will avoid unnecessary and irritating interference.

**1.3 Discipline**

- (a) VHF equipment should be used correctly and in accordance with the Radio Regulations. The following in particular should be avoided:
- (b) calling on channel 16 for purposes other than distress, and very brief safety communications, when another calling channel is available;
- (c) non - essential transmissions, e.g. needless and superfluous signals and correspondence;
- (d) communications not related to safety and navigation on port operation channels; communication on channel 70 other than for Digital Selective Calling;
- (e) occupation of one particular channel under poor conditions;
- (f) transmitting without correct identification;
- (g) use of offensive language.

**1.4 Repetition**

Repetition of words and phrases should be avoided unless specifically requested by the receiving station.

**1.5 Power reduction**

When possible, the lowest transmitter power necessary for satisfactory communication should be used.

**1.6 Automatic identification system (AIS)**

AIS is used for the exchange of data in ship-to-ship communications and also in communication with shore facilities. The purpose of AIS is to help identify vessels, assist in target tracking, simplify information exchange and provide additional information to assist situational awareness. AIS may be used together with VHF voice communications.

AIS should be operated in accordance with Resolution A.917 (22) as amended by Resolution A.956 (23) on Guidelines for the onboard operation use of shipborne automatic identification systems.

**1.7 Communications with coast stations**

On VHF channels allocated to port operations service, the only messages permitted are restricted to those relating to the operational handling, the movement and safety of ships and, in emergency, to the safety of persons, as the use of these channels for ship-to-ship communications may cause serious interference to communications related to the movement and safety of shipping in port areas.

Instructions given on communication matters by shore stations should be obeyed.

Communications should be carried out on the channel indicated by the shore station. When a change of channel is requested, this should be acknowledged by the ship.

On receiving instructions from a shore station to stop transmitting, no further communications should be made until otherwise notified (the shore station may be receiving distress or safety messages and any other transmissions could cause interference).

### **1.8 Communications with other ships**

VHF Channel 13 is designated by the Radio Regulations for bridge to bridge communications. The ship called may indicate another working channel on which further transmissions should take place. The calling ship should acknowledge acceptance before changing channels.

The listening procedure outlined above should be followed before communications are commenced on the chosen channel.

### **1.9 Distress communications**

Distress calls/messages have absolute priority over all other communications. When heard, all other transmissions should cease and a listening watch should be kept.

Any distress call/message should be recorded in the ship's log and passed to the master.

On receipt of a distress message, if in the vicinity, immediately acknowledge receipt. If not in the vicinity, allow a short interval of time to elapse before acknowledging receipt of the message in order to permit ships nearer to the distress to do so.

### **1.10 Calling**

In accordance with the radio regulations Channel 16 may only be used for distress, urgency and very brief safety communications and for calling to establish other communications which should then be conducted on a suitable working channel.

Whenever possible, a working frequency should be used for calling. If a working frequency is not available, Channel 16 may be used, provided it is not occupied by a distress call/message.

In case of difficulty to establish contact with a ship or shore station, allow adequate time before repeating the call. Do not occupy the channel unnecessarily and try another channel.

### **1.11 Changing channels**

If communications on a channel are unsatisfactory, indicate change of channel and await confirmation.

### **1.12 Spelling**

If spelling becomes necessary use the spelling table contained in the International Code of Signals and the radio regulations and the IMO Standard Marine Communication Phrases (SMCP)

### **1.13 Addressing**

The words "I" and "You" should be used prudently. Indicate to whom they refer.

Example of good practice:

"Seaship, this is Port Radar, Port Radar, do you have a pilot?"

"Port Radar, this is Seaship, I do have a pilot."

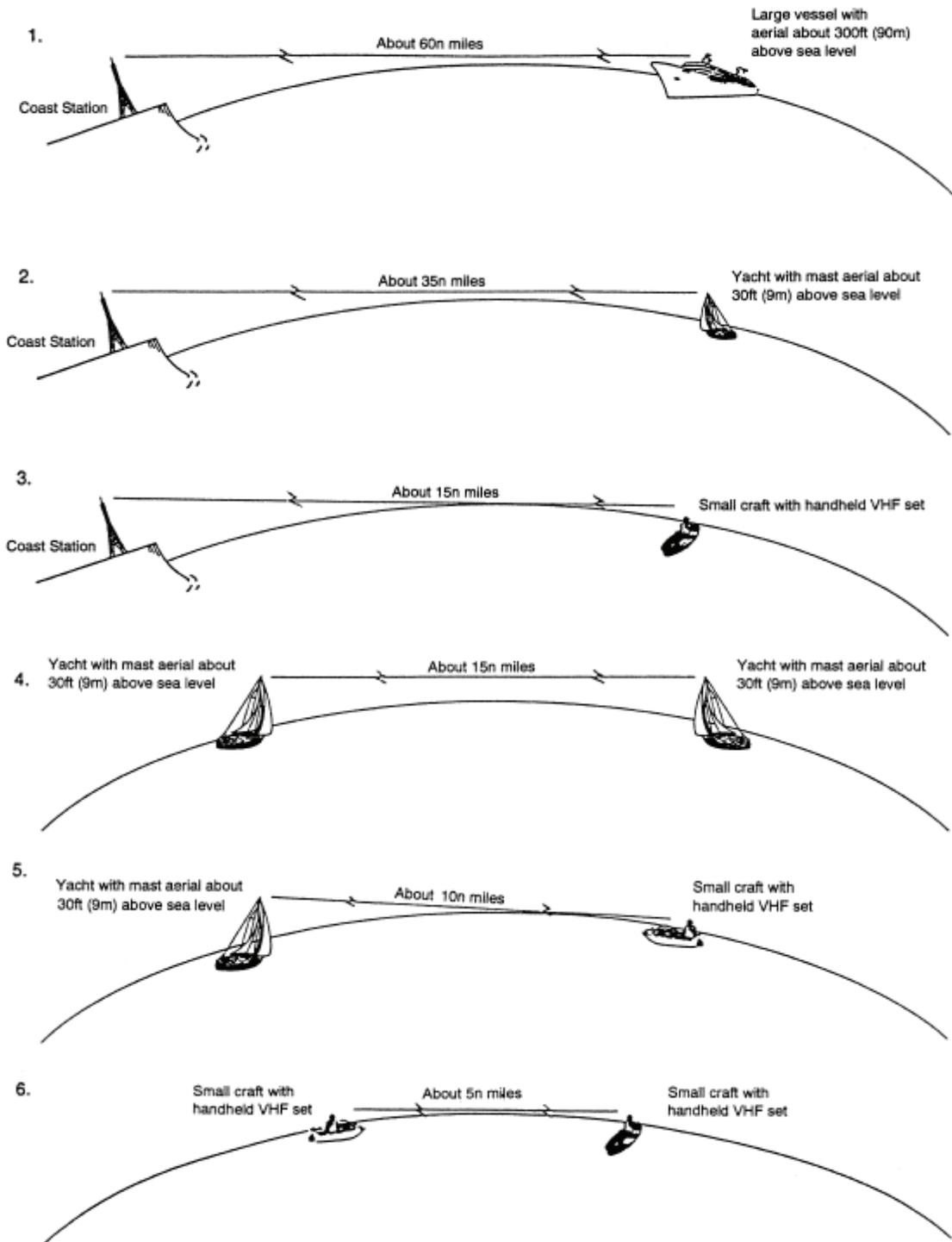
### **1.14 Watchkeeping**

Every ship, while at sea, is required to maintain watches. Continuous watch keeping is required on VHF DSC Channel 70 and also when practicable, a continuous listening watch on VHF Channel 16.

In certain cases Governments may require ships to keep a watch on other channels.

**TYPICAL VHF RANGES**

*(Extract from Admiralty List of Radio Signals Volume 5 published by the United Kingdom Hydrographic Office)*



It should be noted that the fact that a transmitter and receiver are within radio sight does not automatically guarantee that an acceptable signal will be received at that point. This will depend, amongst other things on the power of transmission, the sensitivity of the receiver and the quality and position of the transmitting and receiving aerials. The range may also be affected to some degree by the pressure, temperature and humidity of the air between the transmitter and receiver.

### Table of Transmitting Frequencies in the VHF maritime mobile band

(Extract from Admiralty List of Radio Signals Volume 5 published by the United Kingdom Hydrographic Office)

Channel designators	Notes	Transmitting frequencies (MHz)		Inter Ship	Port operations and ship movement		Public correspondence
		Ship stations	Coast stations		Single frequency	Two frequency	
60		156□025	160□625			X	x
01		156□050	160□650			X	x
61	<i>m), o)</i>	156□075	160□675		x	X	x
02	<i>m), o)</i>	156□100	160□700		x	X	x
62	<i>m), o)</i>	156□125	160□725		x	X	x
03	<i>m), o)</i>	156□150	160□750		x	X	x
63	<i>m), o)</i>	156□175	160□775		x	X	x
04	<i>m), o)</i>	156□200	160□800		x	X	x
64	<i>m), o)</i>	156□225	160□825		x	X	x
05	<i>m), o)</i>	156□250	160□850		x	X	x
65	<i>m), o)</i>	156□275	160□875		x	X	x
06	<i>f)</i>	156□300		x			
66		156□325	160□925			X	x
07		156□350	160□950			X	x
67	<i>h)</i>	156□375	156□375	x	x		
08		156□400		x			
68		156□425	156□425		x		
09	<i>i)</i>	156□450	156□450	x	x		
69		156□475	156□475	x	x		
10	<i>h)</i>	156□500	156□500	x	x		
70	<i>j)</i>	156□525	156□525	<b>Digital selective calling for Distress, Safety and Calling</b>			
11		156□550	156□550		x		
71		156□575	156□575		x		
12		156□600	156□600		x		
72	<i>i)</i>	156□625		x			
13	<i>k)</i>	156□650	156□650	x	x		
73	<i>h), i)</i>	156□675	156□675	x	x		
14		156□700	156□700		x		
74		156□725	156□725		x		
15	<i>g)</i>	156□750	156□750	x	x		
75	<i>n)</i>	156□775			x		
16		156□800	156□800	<b>Distress, Safety and Calling</b>			
76	<i>n)</i>	156□825			x		
17	<i>g)</i>	156□850	156□850	x	x		
77		156□875		x			
18	<i>m)</i>	156□900	161□500		x	X	x
78		156□925	161□525			X	x

Continued on next page

Channel designators	Notes	Transmitting frequencies (MHz)		Inter Ship	Port operations and ship movement		Public correspondence
		Ship stations	Coast stations		Single frequency	Two frequency	
19		156□950	161□550			x	x
79		156□975	161□575			x	x
20		157□000	161□600			x	x
80		157□025	161□625			x	x
21		157□050	161□650			x	x
81		157□075	161□675			x	x
22	m)	157□100	161□700		x	x	x
82	m), o)	157□125	161□725		x	x	x
23	m), o)	157□150	161□750		x	x	x
83	m), o)	157□175	161□775		x	x	x
24	m), o)	157□200	161□800		x	x	x
84	m), o)	157□225	161□825		x	x	x
25	m), o)	157□250	161□850		x	x	x
85	m), o)	157□275	161□875		x	x	x
26	m), o)	157□300	161□900		x	x	x
86	m), o)	157□325	161□925		x	x	x
27		157□350	161□950			x	x
87		157□375	161□975		x		
28		157□400	162□000			x	x
88	h)	157□425			x		
AIS 1	l)	161□975	161□975				
AIS 2	l)	162□025	162□025				

Note—For assistance in understanding the Table, see notes a) to o)

### General notes

a) Administrations may designate frequencies for the following purposes, intership, port operations and ship movement services for use by light aircraft and helicopters to communicate with ships or participating coast stations in predominantly maritime support operations. However, the use of the channels which are shared with public correspondence shall be subject to prior agreement between interested and affected administrations.

b) The channels in this table, with the exception of Channels 06, 13, 15, 16, 17, 70, 75 and 76, **may** also be used for high-speed data and facsimile transmissions, subject to special arrangement between interested and affected administrations.

c) The channels in this table, but **preferably** Channel 28 and with the exception of Channels 06, 13, 15, 16, 17, 70, 75 and 76, may be used for direct-printing telegraphy and data transmission, subject to special arrangement between interested and affected administrations.

d) The frequencies in this table may also be used for radiocommunications on inland waterways.

- e) Administrations having an urgent need to reduce local congestion may apply 12.5 kHz Channel interleaving on a non-interference basis to 25 kHz channels, provided:
- Recommendation ITU-R M.1084-2 shall be taken into account when changing to 12.5 kHz Channels;
  - it shall not affect the 25 kHz Channels of the Appendix 18 maritime mobile distress and safety frequencies, especially the Channels 06, 13, 15, 16, 17, and 70, nor the technical characteristics mentioned in Recommendation ITU-R M.489-2 for those channels;
  - implementation of 12.5 kHz channel interleaving and consequential national requirements shall be subject to prior agreement between the implementing administrations and administrations whose ship stations or services may be affected.

*Specific notes*

- f) The frequency 156.300 MHz (Channel 06) **may** also be used for communication between ship stations and aircraft stations engaged in co-ordinated search and rescue operations. Ship stations shall avoid harmful interference to such communications on Channel 06 as well as to communications between aircraft stations, ice-breakers and assisted ships during ice seasons.
- g) Channels 15 and 17 may also be used for on-board communications provided the effective radiated power does not exceed 1 W, and subject to the national regulations of the administration concerned when these channels are used in its territorial waters.
- h) Within the European Maritime Area and in Canada, these frequencies (Channels 10, 67 & 73) may also be used, if so required, by the individual administrations concerned, for communication between ship stations, aircraft stations and participating land stations engaged in co-ordinated search and rescue and anti-pollution operations in local areas.
- i) The preferred first three frequencies for the purpose indicated in note a) are 156.450 MHz (Channel 09), 156.625 MHz (Channel 72) and 156.675 MHz (channel 73).
- j) Channel 70 is to be used exclusively for digital selective calling for distress, safety and calling.
- k) Channel 13 is designated for use on a worldwide basis as a navigation safety communication channel, primarily for intership navigation safety communications. It may also be used for the ship movement and port operations service subject to the national regulations of the administrations concerned.
- l) These Channels (AIS 1 and AIS 2) will be used for an automatic ship identification and surveillance system capable of providing worldwide operation on high seas, unless other frequencies are designated on a regional basis for this purpose.
- m) These Channels (18 and 82 to 86) may be operated as single frequency channels, subject to special arrangement between interested or affected administrations.
- n) The use of these Channels (75 and 76) should be restricted to navigation-related communications only and all precautions should be taken to avoid harmful interference to Channel 16, e.g. by limiting the output power to 1 W or by means of geographical separation.
- o) These channels may be used to provide bands for initial testing and the possible future introduction of new technologies, subject to special arrangement between interested or affected administrations. Stations using these channels or bands for the testing and the possible future introduction of new technologies shall not cause harmful interference to, and shall not claim protection from, other stations operating in accordance with ITU Radio Regulations / Volume 1 / Chapter SII - Frequencies / Article S5 / Frequency allocations.

**OPERATION OF AIS ON BOARD**

*(Extract from IMO Resolution A.917. (22). Guidelines for the onboard operational use of shipborne Automatic Identification Systems (AIS) (Adopted on 29<sup>th</sup> November 2001). As amended by Resolution A.956. (23). (Adopted 5<sup>th</sup> December 2003).*

**INHERENT LIMITATIONS OF AIS**

31. The officer of the watch (OOW) should always be aware that other ships, in particular leisure craft, fishing boats and warships, and some coastal shore stations including Vessel Traffic Service (VTS) centres, might not be fitted with AIS.
32. The OOW should always be aware that other ships fitted with AIS as a mandatory carriage requirement might switch off AIS under certain circumstances by professional judgement of the master.
33. In other words, the information given by the AIS may not be a complete picture of the situation around the ship.
34. The users must be aware that transmission of erroneous information implies a risk to other ships as well as their own. The users remain responsible for all information entered into the system and the information added by the sensors.
35. The accuracy of the information received is only as good as the accuracy of the AIS information transmitted.
36. The OOW should be aware that poorly configured or calibrated ship sensors (position, speed and heading sensors) might lead to incorrect information being transmitted. Incorrect information about one ship displayed on the bridge of another could be dangerously confusing.
37. If no sensor is installed or if the sensor (e.g. the gyro) fails to provide data, the AIS automatically transmits the 'not available' data value. However the built in integrity check cannot validate the contents of the data processed by the AIS.
38. It would not be prudent for the OOW to assume that the information received from the other ship is of a comparable quality and accuracy to that which might be available on own ship.

**USE OF AIS IN COLLISION AVOIDANCE SITUATIONS**

39. The potential of AIS as an anti collision device is recognised and AIS may be recommended as such a device in due time.
40. Nevertheless, AIS information may be used to assist collision avoidance decision making. When using the AIS in the ship to ship mode for anti collision purposes, the following precautionary points should be borne in mind:
  - a. AIS is an additional source of navigational information. It does not replace, but supports, navigational systems such as radar target tracking and VTS; and
  - b. The use of AIS does not negate the responsibility of the OOW to comply at all times with the Collision Regulations
41. The user should not rely on AIS as the sole information system, but should make use of all safety relevant information available
42. 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.
43. Once a ship has been detected, AIS can assist tracking it as a target. By monitoring the information broadcast by that target, its actions can also be monitored. Changes in heading and course are, for example, immediately apparent, and many of the problems common to tracking targets by radar, namely clutter, target swap as ships pass close by and target loss following a fast manoeuvre, do not affect AIS. AIS can also assist in the identification of targets, by name or call sign and by ship type and navigational status.

**USE OF AIS IN NAVIGATION**

*(Extract from MCA Guidance on the Safety of Navigation – Implementing SOLAS Chapter V)*

1. AIS is designed to be able to provide additional information to existing Radar or ECDIS displays. Until the optimum display modes have been fully evaluated and decided upon internationally, AIS will comprise “stand alone” units without integration to other displays.

2. AIS will provide identification of targets together with the static and dynamic information listed in the IMO Guidelines paragraph.12. Mariners should, however, use this information with caution noting the following important points:

a.) Collision avoidance must be carried out in strict compliance with the COLREGs. There is no provision in the COLREGs for use of AIS information therefore decisions should be taken based primarily on visual and / or radar information.

b.) The use of VHF to discuss actions to take between approaching ships is fraught with danger and still discouraged. (See above). The MCA’s view is that identification of a target by AIS does not remove the danger. Decisions on collision avoidance should be made strictly according to the COLREGs.

c.) Not all ships will be fitted with AIS, particularly small craft and fishing boats. Other floating objects which may give a radar echo will not be detected by AIS.

d.) AIS positions are derived from the target’s GNSS position. (GNSS = Global Navigation Satellite System, usually GPS). This may not coincide exactly with the target.

e.) Faulty data input to AIS could lead to incorrect or misleading information being displayed on other vessels. Mariners should remember that information derived from radar plots relies solely upon data measured by the own-ship’s radar and provides an accurate measurement of the target’s relative course and speed, which is the most important factor in deciding upon action to avoid collision. Existing ships of less than 500 gt. which are not required to fit a gyro compass are unlikely to transmit heading information.

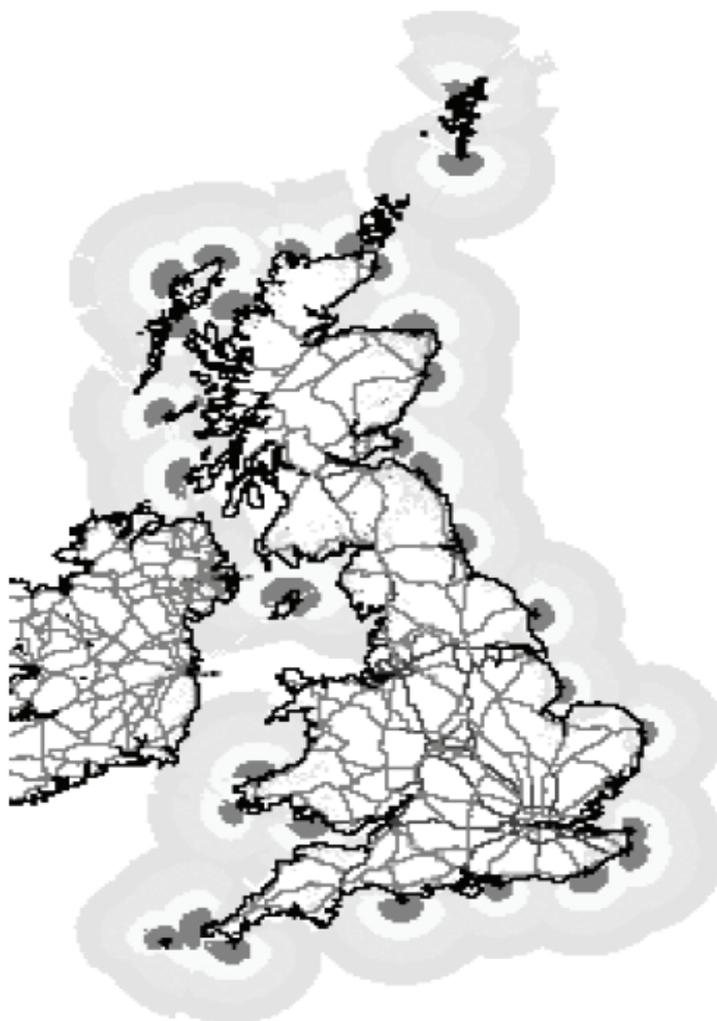
f.) A future development of AIS is the ability to provide synthetic AIS targets and virtual navigation marks enabling coastal authorities to provide an AIS symbol on the display in any position. Mariners should bear in mind that this ability could lead to the appearance of “virtual” AIS targets and therefore take particular care when an AIS target is not complemented by a radar target. AIS will sometimes be able to detect targets which are in a radar shadow area.

The MCA has established an Automatic Identification System (AIS) network in accordance with SOLAS Chapter V Regulation 19 and the European Traffic Monitoring Directive 2002/59/EC for base station transponders. The AIS network consists of base stations located as shown in the table on page 15.

The AIS Network is defined to operate within IMO guidelines and will be capable of receiving all message types and in particular AIS message type 5: Ship Static and Voyage related data, provided as 6 minute intervals in accordance with ITU R M. 1371-1. This automated procedure will enable identification and tracking of suitably equipped vessels without further intervention from either the vessel's crew or Coastguard personnel.

#### **Areas Covered**

The diagram below provides an indication of the areas covered by the AIS Network (Although the prediction indicates no coverage in the Southern Irish Sea, the trial to date has shown the area is covered).



MCA District	Base Station	Latitude			Longitude			AIS
		Degrees	Minutes	N / S	Degrees	Minutes	W / E	MMSI
Aberdeen	Dunnett Head	58	40.313	N	3	22.491	W	002320722
	Durness	58	34.000	N	4	44.500	W	002320720
	Gregness	57	7.643	N	2	3.136	W	002320721
	Noss Head	58	28.750	N	3	2.972	W	002320723
	Rosemarkie	57	37.900	N	4	4.800	W	002320719
	Windy Head	57	38.924	N	2	14.590	W	002320718
Belfast	Limavady	55	6.712	N	6	53.390	W	002320709
	Orlock Head	54	40.416	N	5	34.966	W	002320708
Brixham	East Prawle	50	13.200	N	3	42.500	W	002320710
Clyde	Glengorm	56	37.917	N	6	7.885	W	002320714
	Kilchairan	55	45.900	N	6	27.200	W	002320711
	Law Hill	55	41.800	N	4	50.500	W	002320712
	Pulpitt Hill	56	24.300	N	5	29.000	W	002320713
	South Knapdale	55	55.100	N	5	27.600	W	002320717
	Tiree	56	30.238	N	6	57.776	W	002320716
Dover	Fairlight	50	52.300	N	0	38.100	E	002320715
	MRCC Dover	51	7.800	N	1	20.200	E	002320705
	North Foreland	51	22.300	N	1	26.900	E	002320706
Falmouth	Lands End	50	8.068	N	5	38.096	W	002320704
	Lizard Point	49	57.821	N	5	12.396	W	002320733
	Scillies	49	55.710	N	6	18.180	W	002320734
Forth	Inverbervie	56	51.200	N	2	15.700	W	002320735
	MRSC Forth	56	16.731	N	2	35.380	W	002320732
	St. Abbs Crosslaw	55	54.455	N	2	12.295	W	002320741
Holyhead	South Stack	53	18.600	N	4	41.000	W	002320776
Humber	Cullercoats	55	4.374	N	1	27.799	W	002320775
	Flamborough Head	54	7.848	N	0	5.205	W	002320766
	Whitby	54	29.000	N	0	36.000	W	002320778
Liverpool	MRSC Liverpool	53	29.800	N	3	3.200	W	002320777
	Snaefell	54	15.829	N	4	27.596	W	002320770
Milford	Dinas	52	0.300	N	4	53.700	W	002320774
	St. Anns Head	51	40.950	N	5	10.500	W	002320781
Portland	The Grove	50	32.885	N	2	25.098	W	002320763
Shetland	Collafirth Hill	60	32.040	N	1	23.352	W	002320771
	Compass Head	59	52.066	N	1	16.318	W	002320772
	Saxa Vord	60	49.600	N	0	50.600	W	002320764
	Wideford Hill	58	59.300	N	3	1.400	W	002320765
Solent	Needles	50	39.700	N	1	34.600	W	002320779
	Newhaven	50	46.800	N	0	3.000	E	002320773
	Selsey	50	43.788	N	0	48.141	W	002320780
Stornoway	Butt of Lewis	58	27.683	N	6	13.851	W	002320769
	Forsnaval	58	12.801	N	7	0.499	W	002320768
	Melvaig	57	50.542	N	5	46.883	W	002320767
	Rodel	57	44.900	N	6	57.500	W	002320764
Swansea	Hartland Point	51	1.795	N	4	31.300	W	002320765
	Mumbles Hill	51	34.200	N	3	59.100	W	002320779
	Severn Bridge (2)	51	36.400	N	2	37.800	W	002320773
Thames	MRSC Thames	51	51.271	N	1	16.908	E	002320780
Yarmouth	Langham	52	56.600	N	0	57.200	E	002320769
	MRCC Yarmouth	52	36.300	N	0	42.500	E	002320768
	Skegness	53	8.916	N	0	20.784	E	002320767