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**Differentiation between an Aid to Navigation, Mobile Aid to Navigation and
Autonomous Maritime Radio Device**

Submitted by IALA

SUMMARY

Executive summary: This document provides comments to assist in the effective differentiation between an Aid to Navigation, Mobile Aid to Navigation and an Autonomous Maritime Radio Device.

Strategic Direction, if applicable: 2

Output: Not applicable

Action to be taken: Paragraph 20

Related documents: IMO/ITU EG14/3/8, ITU WP 5B (20 June 2018/5B/538-E)

Background

1. The Joint IMO/ITU Experts Group on Maritime Radiocommunication Matters, at its 14th meeting, considered paper IMO/ITU EG14/3/8 (WRC-19 Agenda item 1.9.1 – information on Mobile Aids to Navigation (MAtoN)) submitted by IALA. This paper drew to the attention of the Experts Group IALA Recommendation R1016 on Mobile Marine Aids to Navigation (MAtoN).
2. During the most recent meetings of the IALA e-Navigation Information Services and Communications (ENAV) and the Aids to Navigation Requirements and Management (ARM) Committees, liaison information provided by the International Telecommunication Union ITU WP 5B (20 June 2018/5B/538-E) was reviewed.
3. IALA notes the continuing work on Autonomous Maritime Radio Devices (AMRD) and considers that clarity is required with respect to the differences between an Aid to Navigation (AtoN), MAtoN and an AMRD.

Definitions

4. Following the review of the information provided by the International Telecommunication Union (ITU WP 5B (20 June 2018/5B/538-E) and IALA Recommendation R1016, the following relevant definitions are of note:

- .1 Marine Aid to Navigation (AtoN) – An AtoN is a device, system or service, external to vessels, designed and operated to enhance the safe and efficient navigation of individual vessels and/or vessel traffic (IALA Dictionary);
- .2 Mobile Aid to Navigation (MAtoN) – A MAtoN shall be defined as a non-fixed or un-moored AtoN, but does not include a fixed or moored buoy that is adrift from station, temporary or otherwise (IALA Recommendation R1016);
- .3 Safety of navigation – The term “enhance safety of navigation” is derived from the International Convention for the Safety of Life at Sea (SOLAS), as amended. Within SOLAS, Chapter V is titled “safety of navigation” and contains all relevant regulations. Any signal or information originated by a device, which reaches the navigator, may influence the safety of navigation. This includes AIS (signals should be shown on radar and eventually also on the electronic display and information system) and VHF (working channels and Ch. 70). In any case the navigator has to decide how to proceed. In a positive case the safety of navigation will be enhanced. The term “safety of navigation” is used in SOLAS and other IMO documents, however there is no definition existing. The regulations listed in SOLAS Chapter V are relevant to achieve safety of navigation”; and
- .4 Autonomous Maritime Radio Device (AMRD) – An AMRD is an autonomous station, operating at sea and transmitting independently of a ship station or a coast station. Two groups of AMRDs are identified (ITU document 5B/411-E November 2017):
 - .1 Group A: AMRDs that enhance the safety of navigation; and
 - .2 Group B: AMRDs that do not enhance the safety of navigation (AMRDs which deliver signals or information which do not concern the vessel can distract or mislead the navigator and degrade the safety of navigation).

5. IALA is of the opinion that the definition for the safety of navigation should be revised to the term “enhance safety of navigation” is derived from the International Convention for the Safety of Life at Sea (SOLAS), as amended. Regulations related to safety of navigation are contained within Chapter V of SOLAS. It is further considered that transmissions and information received from an external device should have a positive effect on enhancing the safety of navigation. This includes AIS information, which should ideally be integrated into radar and electronic chart display and information systems; and VHF transmissions (working channels and Ch. 70 DSC messages). In a positive case the safety of navigation will be enhanced. The term “safety of navigation” is used in SOLAS and other IMO documents, however there is no definition existing. The regulations listed in SOLAS Chapter V are relevant to achieve “safety of navigation”.

6. IALA notes that the use of the terminology AMRD Group A and Group B may result in the possibility of confusion with Automatic Identification System (AIS) Class A and Class B transponders and is of the opinion that AMRD should alternately be divided into Group X and Group Y.

Use of MAtoN and AMRD

7. IALA recommends that the use of MAtoN should be strictly controlled, authorised by a Competent Authority and only used when a risk assessment has determined the requirement and benefit as described in IALA Recommendation R1016.
8. IALA notes that AtoN and MAtoN are not AMRDs, and that both AtoN and MAtoN are subject to IALA guidelines and recommendations.
9. IALA recommends that Competent Authorities critically consider the benefit that an AMRD has to safety of navigation and retain the discretion to determine if the application enhances safety of navigation.
10. When considering the licensing of AIS AMRDs, IALA recommends that Competent Authorities should consider:
 - .1 The potential overloading of the AIS VHF data link;
 - .2 That AIS AMRD should not appear as a Class B AIS transponder or vessel symbology; and
 - .3 That AIS AMRD should meet an appropriate technical and test specification,
 - .4 Overcrowding of shipborne and shore based (such as vessel traffic services) navigational displays.
11. IALA recommends that electronic navigation equipment manufacturers should consider the inclusion of functions that 'filter' AMRDs from navigation displays.
12. The diagram below represents the different device classification:

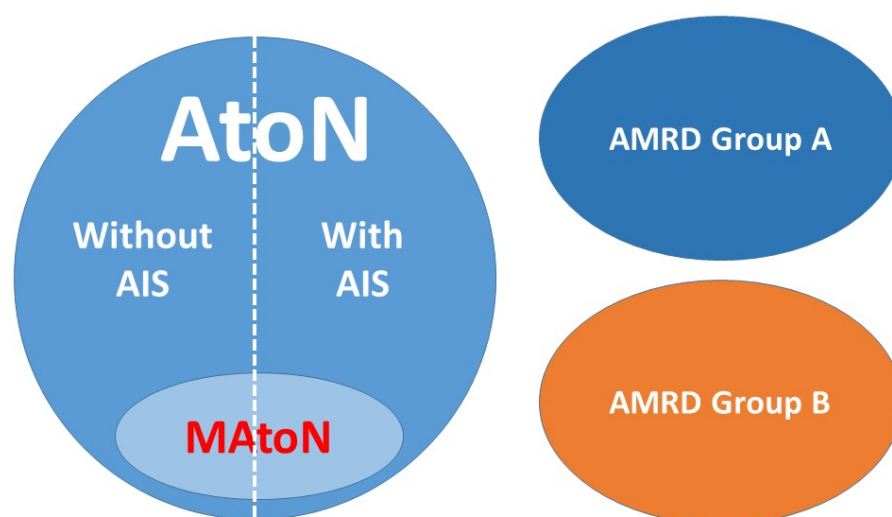


Figure 1: Representation of differing device classifications

13. To help Competent Authorities determine the correct device classification between AtoN/AMRD the following decision tree is provided:

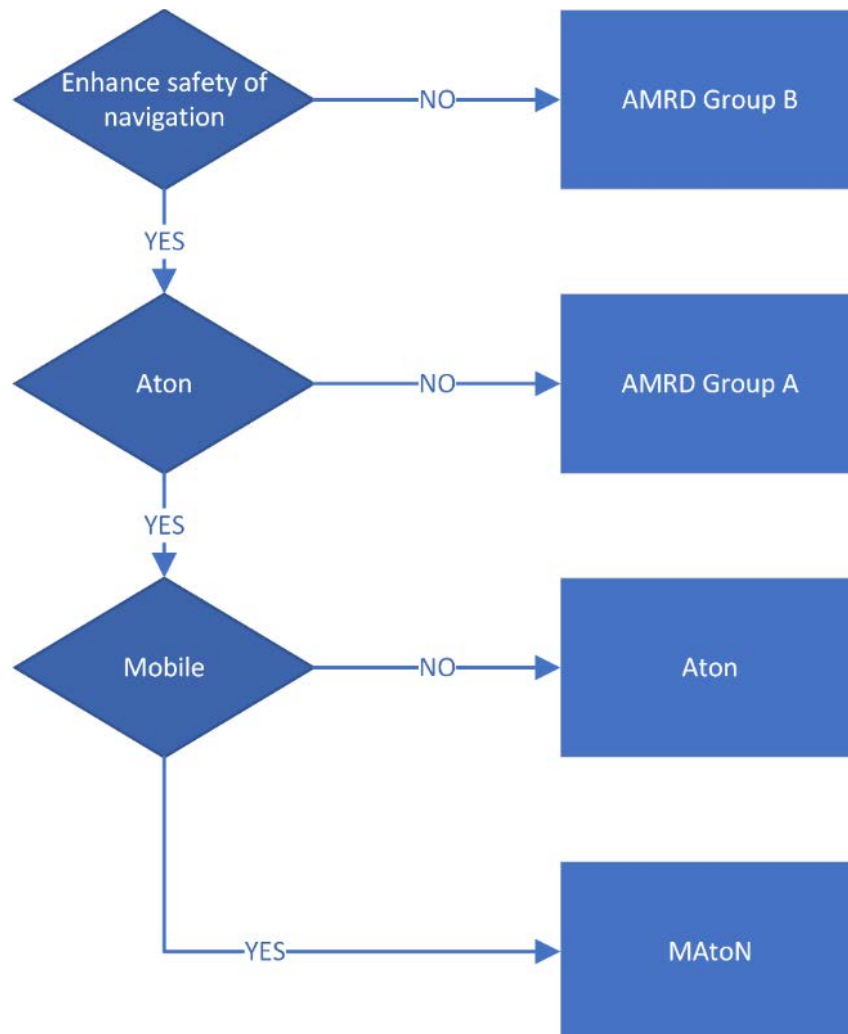


Figure 2: Device classification decision tree

Numbering of MAtON and AMRD

14. Considering the information provided above, IALA presumes that MAtON will use the same numbering scheme as AtoN (9₁9₂M₃I₄D₅1₆X₇X₈X₉ or 9₁9₂M₃I₄D₅6₆X₇X₈X₉).

15. Since AMRD are not AtoN or MAtON, IALA believes the proposed numbering scheme (9₁9₂8₃X₄X₅Y₆Y₇Y₈Y₉) will cause confusion with AtoN and MAtON on currently installed and operational systems. IALA suggests that a different numbering scheme be used to distinguish AMRD from other AIS devices.

16. IALA noted that the type of AIS message sent and received will probably determine the symbol shown on display equipment. Issues that may be result include:

- .1 Having no symbol defined for an AMRD might result in not displaying the AMRD;
- .2 Devices and/or applications like Radar and ECDIS that might display AMRD as an AtoN or a vessel; and

- .3 Devices and/or applications might expect an AtoN message from these stations and interpret them accordingly.

17. IALA suggests that the impact of the chosen numbering scheme for AMRD is confirmed with relevant sections of the industry.

18. IALA considers that the symbol used on ECDIS and Radar for AMRD must be substantially different from those used for other AIS devices, especially Class A and B shipborne AIS.

ITU-R M.1371-5 Table “84ter”

19. IALA has reviewed the proposed ITU-R M.1371-5 “Table 84ter” which relates to AMRD classification. It has been identified that the development of MAtoN will affect the requirement for certain code allocations. Experts attending IALA committee meetings have also considered that certain group A allocated codes can be considered group B and that in some cases the code may be group A or B dependant on location, traffic density, the outcome of risk assessment etc.

Code	General group	Definition
0		Default, not specified
1	A	Fishing net indicator
2		Oceanic observation data transmitter
3		Towed unpowered object
4		Derelict object
5		Free floating object (such as floating ice)
6		Object (such as spilled oil) marker
7		Dynamic navigation marker
8-16		Reserved
17	B	Aquaculture net indicator
18-31		Reserved

Table 1: Original “table 84ter”

20. IALA notes the accurate naming of the AMRD by the user as defined in table “84bis” will be essential given the large number of potential uses for AMRD that may emerge. IALA considers that table “84ter” needs extensive review prior to inclusion in ITU-R M.1371-5 and offers the following suggestions shown as insertions/deletion.

Code	General group	Definition
0		Default, not specified
1	A/B	Fishing net/line/pot indicator
2	B	Oceanic observation data transmitter
3	A	Towed unpowered object such as survey equipment
4		Derelict object MAtoN used
5	A	Free floating object (such as floating ice)
6	B	Object (such as spilled oil) marker
7		Dynamic navigation marker MAtoN used
8-16		Reserved for Group A AMRD
17	B	Aquaculture not indicator AtoN used
18-31		Reserved for Group B AMRD

Table 2: “Table 84ter” with comments

Action Requested

21. The Sub-Committee is invited to consider the comments provided and take action as appropriate.