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| IALA Guideline |

1016

USE OF MOBILE [Hazard marking] ATONs

Edition 1.0

Document date

Revisions to this IALA Document are to be noted in the table prior to the issue of a revised document.

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# INTRODUCTION

IALA recognises the necessity to mark moving hazards to navigation and has developed these guidelines to aid its national members and other competent authorities when considering the use of Mobile Aids to Navigation (MAtoN) to mark moving hazards.

Consideration has been given to requirements of the Nairobi International Convention on the Removal of Wrecks of 2007, COLREGS, other IALA guidelines and future technological advancements.

This guidance aims to assist Competent Authorities to consider the most appropriate means of marking a moving, or drifting hazard to navigation, using a MAtoN.

# SCOPE

This guideline defines a MAtoN, and guides national members and Competent Authorities in the instances where it can be used, responsibilities for use, how drifting and guided hazards can be marked and other pertinent guidance.

While this guideline cannot address every use of MAtoN, it is intended to provide useful information, benefits, and criteria for application.

Add in links / scope of other IALA Recommendations and Guidelines.

Appropriate IALA sources and references should be consulted for additional relevant information.

# DEFINITION

A MAtoN is defined as a non-fixed or un-moored AtoN; it does not include a fixed or moored buoy that is adrift from station, temporary or otherwise.

Autonomous Marine Radio Device (AMRD) group A are recognised as a type of MAtoN.

Note: MAtoN should not be used for unmanned vessel applications. The lights exhibited by these vessels should comply with COLREGS, or other competent authority regulations.

# TYPICAL USES

Mobile aids to navigation maybe used, but not limited to, the following applications:

* Mobile Ocean Data Acquisition System (ODAS) (e.g. to gather data on currents and weather)
* Drifting wreckage (e.g. containers, debris)
* Water quality and pollution monitoring equipment
* Dynamic guard zones and convoys
* Underwater operations
* Enhancing navigational safety during military operations (e.g. no sail zones during minesweeping, target exercises areas)
* Towed and deployed applications (e.g. cable laying)
* Search & Rescue applications
* Special events (e.g. swimming competitions)

# TYPES OF MOBILE ATON

MAtoN can be either physical or virtual.

Competent authorities should determine the most appropriate type of MAtoN for the situation, based on available equipment and technology and the risk assessment.

## Physical MAtoN

A physical MAtoN is usually a special mark with MAtoN specific light characteristics (see Table 1).

Physical MAtoN may also be used to mark a moving object, for example the extremity of a towed array from a seismic survey vessel. Physical MAtoN should be designed to meet the following characteristics.

Table 1- MAtoN characteristics

|  |  |
| --- | --- |
| Type of AtoN, colour, and shape | Special Mark.  Colour yellow.  Shape optional, but not in conflict with lateral marks. |
| Top mark | Single yellow “X” shape.  *To increase conspicuity, and if practical, a top mark of a special mark should be used.* |
| Additional marks | For hazards with low profile/partly submerged and where visual observations are primarily undertaken from the air, an additional mark, like a circular symbol, can be added, if practicable. |
| Position sensor | A physical AIS AtoN |
| Light (when fitted) |  |
| Colour | Yellow |
| Rhythm | Flicker 1s Eclipse 0.7s Repeat Flicker 1s Eclipse 0.5s Normal Fl 1s Eclipse 0.5s Normal Fl 1s Eclipse 3s. (Flicker 5hz).  Minimum range 3NM – **NOTE from ARM10 Plenary – consider increasing range/intensity and detailing flicker.** |

Additional considerations:

* Radar reflectors - to increase radar conspicuity, and if practical, a radar reflector should be installed.
* Reflective markings, if any, should be in accordance with R0106 on Retro-reflecting material.
* Position reliability of the MAtoN can be better achieved if it is attached to the hazard it is intended to mark.

## Virtual MATON

A virtual MAtoN electronically marks the hazard using an AIS Virtual AtoN message.

A virtual MAtoN should only be used when it has the capability of updating the position of the hazard in, or near, real time. The broadcast rate should be equal or better than the physical AIS AtoN (typically no more than 3 minutes). By no means should a virtual MAtoN update its position by dead-reckoning.

The use of Virtual MAtoN should be approved and strictly controlled by the competent authority, and implemented on the principles contained within IALA Recommendation O-143 on Virtual Aids to Navigation.

Consider safety related messaging, geofencing, Course and Speed, Automatic updating of relevant MSI.

### PROGRAMMING AIS MATON

An AIS MAtoN is considered to be an AtoN. Therefore, it broadcasts AIS Message 21 and is programmed using the coding information prescribed in ITU-R M.1371-5 (yet to be updated to include Mobile AtoN).

eNAV committee to confirm

that MAtoN will use the same numbering scheme as AtoN (9192M3I4D516X7X8X9 or 9192M3I4D566X7X8X9).

Competent Authorities may wish to complement the broadcast of Message 21 above, with a broadcast free text message (AIS Message 14) to warn of the hazard.

# DEPLOYMENT

## Physical MAtoN

The Competent Authority should choose an appropriate method for the installation and deployment of physical MAtoN, depending on the type and nature of the hazard (e.g., datum markers for search and rescue, icebergs, oil slick, pollution barriers, etc.).

Special consideration must be given to:

* Safety of personnel
* National work safety requirements
* Equipment and resources available
* Sea state and weather conditions
* Priority accorded to the severity of the hazard
* Other issues as necessary

## Virtual Maton

Deployment of virtual MAtoN should:

* only be done if the position of the hazard can be known in, or near, real time.
* conform to IALA Guideline 1081 on Virtual AtoN.

## Promulgation

Competent Authorities, or the appropriate jurisdiction, should promulgate the particulars of the MAtoN by all appropriate means. This can be done through the promulgation of Maritime Safety Information (MSI), followed by notices to mariners and nautical charts and publications.

Hazards should remain marked until the Competent Authority has assessed that information has been sufficiently promulgated, or there is no longer a risk to safety of navigation.

Promulgation should include details of the MAtoN, including:

* Description of the hazard that is being marked
* Whether physical (i.e. spar or pillar) or virtual
* If lighted,
  + Colour
  + Flash character
  + Nominal range
* If it is possible to model the movement of the hazard,
  + set
  + drift
* Any rules and regulations applicable
* Duration for which the promulgation of MSI is valid (e.g. duration after which the location is uncertain)
* Request for sighting reports

### PROMULGATION BY VTS

When a MAtoN is planned to be deployed in a VTS area, it is important to liaise with the VTS authority, so that it can promulgate information on the MAtoN as part of its information service.

Such information can include:

* Characteristics of the MAtoN, including its location and duration of deployment
* Any limitation on ship manoeuvrability in the VTS area

It should be noted that a VTS may also be the provider of MSI in some instances.

# MONITORING AND REPORTING

## Monitoring

The purpose of monitoring the location and state of the MAtoN is to know where the hazard to navigation is at all times. This is so that the information can be promulgated to mariners and others interested, by the best available means. It is also necessary when recovering physical MAtoNs.

The MAtoN can be monitored by:

* physical inspection, including use of assets in the vicinity of the MAtoN
* remotely (e.g. radar, satellite, AIS and telecommunications and other technologies)
* requesting vessels in the vicinity to report visual/radar sightings and/or AIS detections of the MAtoN

Competent Authorities need to ensure that they have access to near real time (typically no more than 3 minutes) position of the MAtoN, particularly when marking them with a virtual MAtoN.

## Reporting

The location and state of the MAtoN will be of interest to local and national authorities, transiting vessels and those operating in the vicinity of the hazard.

Therefore, information on the MAtoN should be reported when it:

* Is deployed
* Is altered or changed
* Is removed, discontinued or damaged
* Is missing
* Leaves or drifts beyond its pre-determined coverage area
* Drifts into the waters of an adjacent Competent Authority

If possible, the location of a MAtoN should be ‘self-reporting’ to vessels in the vicinity (light/AIS etc.)

## Maritime Safety Information (MSI)

The promulgation of MSI is considered fundamental to the deployment of MAtoN and is complementary to the marking of the hazard to navigation. MSI is the established means for Competent Authorities to advise mariners of the location and other characteristics of the MAtoN.

See section 6.3 for information on promulgation.

# DISCONTINUATION OF MATON

MAtoNs may be discontinued when the Competent Authority considers that the hazard to navigation no longer exists. This decision can be made by the Competent Authority either unilaterally, or after consultation with other stakeholders.

When discontinuing a MAtoN, Competent Authorities should ensure that any MAtoNs, whether physical or virtual, are removed entirely, so as to avoid confusing mariners. This is to be followed promptly by the promulgation of appropriate MSI, to advise of the discontinuation.

If the hazard location involves two or more national jurisdictions, it is essential that Competent Authorities liaise with each other regarding the marking of the hazard and promulgation of information on it.

[Note from ARM10 plenary: If the Mobile hazard is beyond EEZ (i.e. on the high seas) then who is responsible]

# RESPONSIBILITIES

## Designated Responsibility

[Note from ARM10 plenary: Consider inclusion of recovery and disposal]

Mobile hazards pose a risk to safe navigation. Therefore, the person, organisation, or government body responsible for the mobile hazard, should ensure that the hazard is marked adequately.

The Competent Authority should advise the person, organisation, or government body responsible for marking the mobile hazard of the correct guidance for use of MAtoN.

~~If the mobile hazard is caused by a natural phenomenon, then it is the responsibility of the Competent Authority to identify and mark the hazard.~~

## Inability to Monitor

A Competent Authority or owner that loses the ability to monitor their MAtoN, still retains responsibility for it until either:

* The MAtoN is retrieved, has sunk, or is no longer a hazard to navigation; or
* Responsibility for the MAtoN is assumed by another operator or Competent Authority.

## Cost of MARKING wrecks

In accordance with article 10 of the Nairobi International Convention on the Removal of Wrecks 2007, the registered owner of the ship responsible for the wreck shall be liable for the costs of locating, marking and removing the hazard.

# IMAGE/S

It will be good to include an image of a deployed MAtoN (or a image of a typically use case).

# REFERENCES

* + IALA Recommendation O-139 on The Marking of Man-Made Offshore Structures
  + IALA Recommendation E‐110  Rhythmic Characters of Lights On Aids To Navigation
  + IALA Recommendation O-143 Virtual Aids to Navigation
  + The Nairobi International Convention on the Removal of Wrecks adopted Nairobi, 18 May 2007
  + IALA Recommendation R 1015 Marking Of Hazardous Wrecks (reopen)
  + IALA Guideline 1046 Response Plan for the Marking of New Wrecks (reopen)
  + *ITU document 5B/411-E November 2017*

# ACRONYMS

AIS Automatic Identification System

MAtoN Mobile Aid(s) to Navigation

MSI Maritime Safety Information

VHF Very High Frequency

MBS (IALA) Maritime Buoyage System

ODAS Ocean Data Acquisition System

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