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Agenda item [[2]](#footnote-2) 9

Technical Domain / Task Number 2 1.5.10

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Draft Guideline on Mobile Marine Aids to Navigation (MAtoN)

# INTRODUCTION

In 2018, IALA Recommendation R1016 Mobile Marine Aids to Navigation (MAtoN) was approved by the 68th session of the IALA Council. The recommendation defines a MAtoN, introduces the different types and typical uses for a MAtoN. The recommendation further requests the ARM Committee or such other committee as the Council may direct, to keep the Recommendation under review and to propose amendments as necessary.

ARM 8 (Oct 2018) progressed the development of a draft guideline for the use of MAtoN. ARM 8 acknowledged that the scope and wording of the draft guideline required tightening and refinement. Australia volunteered to lead this work intersessionally, agreeing to circulate the draft guideline amongst interested ARM members and to re-submit the draft guideline to ARM9.

## Purpose of the document

To complete an action item from ARM 8, this paper proposes a revised draft guideline for the ‘Use of Mobile Marine Aids to Navigation’, and offers feedback for consideration by the committee.

## Related documents

IALA Recommendation R1016 Mobile Marine Aids to Navigation (MAtoN)

# Discussion

In developing this guideline, Australia has consulted with national AtoN authorities and several ARM committee members. Stemming from this consultation, some concerns have emerged with the concept of a MAtoN. These can be summarized as follows:

* 1. the concept of a MAtoN does not meet the intent of an aid to navigation; rather a MAtoN is, as developed so far, a means of marking a potential drifting hazard.
  2. the deployment, recovery, tracking, monitoring, management and updating the position of a MAtoN may be complex and difficult activities, resulting in a reduction of its effectiveness
  3. potential confusion in identifying MAtoN as being different to other AtoN and other AIS contacts, and additional navigation display clutter through the display of MAtoN symbology
  4. there is limited support for the development of another AIS symbol for a MAtoN which may add further confusion to the seafarer’s understanding of AIS AtoN symbology.
  5. challenges with the manufacturing of physical MAtoN to meet environmental conditions and their securing to drifting or moving hazards, and
  6. a potential lack of standardisation, and therefore recognition of a physical MAtoN.

The above concerns suggest it is necessary for the ARM committee to critically evaluate the need to develop the guidance for MAtoN, and the need to review *R1016 Mobile Aids to Navigation (MAtoN)*

A clean version of the revised draft guideline is at *Annex 1,* and is submitted for consideration by the committee. There is a tracked changes version is at *Annex 2.*

# References

IALA Recommendation R1016 Mobile Marine Aids to Navigation (MAtoN)

# Annex

Annex 1: Revised guideline for the use of MAtoN (Clean version)

Annex 2: Revised guideline for the use of MAtoN (Track Changes version)

# Action requested of the Committee

The Committee is requested to:

1. Note the revised draft guideline at the *Annexes,* for the use of Mobile Marine Aids to Navigation (MAtoN), and
2. consider the feedback provided in this paper, and take appropriate action.

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| IALA Guideline |

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USE OF MOBILE Aids to Navigation (MATON)

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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|  |  |  |
|  |  |  |
|  |  |  |

1. INTRODUCTION 4

2. Scope 4

3. Definition 4

4. typical uses 4

5. Type of mobile aton 5

5.1. Physical MAtoN 5

5.2. Virtual MATON 5

6. AIS MAtoN programming 5

7. Deployment 6

7.1. Physical MAtoN 6

7.2. Virtual Maton 6

7.3. Promulgation 6

8. Monitoring and reporting 7

8.1. Maritime Safety Information 7

8.2. Monitoring 7

8.3. Reporting 7

9. Issues of responsibility 8

9.1. Designated Responsibility 8

9.2. Inability to Monitor 8

9.3. Costs of Wreck Marking 8

10. References 8

11. Acronyms 8

List of Tables

Table 1- Light colour and Rhythm 4

# INTRODUCTION

IALA recognises the necessity to mark moving hazards to navigation and approved IALA Recommendation R1016 in December 2017.

Taking into consideration the requirements of the Nairobi Wreck Convention Act, COLREGS, other IALA guidelines, IALA has developed these guidelines to aid its members and Competent Authority (AtoN) when considering the use of Mobile Aids to Navigation (MAtoN) as a means of marking a moving or drifting hazards to navigation.

# Scope

This guideline is intended to provide information to Competent Authority (AtoN) on the use of MAtoN for the marking of hazards to navigation that may be drifting, moving or unmoored. The guideline provides information on the,

* features and characteristics of MAtoN
* typical uses of MAtoN
* responsibility of use
* programming, deployment, monitoring and reporting, and
* recovery of a MAtoN.

While this guideline is not intended to cover all aspects and uses of MAtoN, it does provide information on benefits, criteria for application and examples of where a MAtoN can be effectively used to enhance safe navigation.

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

# Definition

IALA Recommendation R1016 Mobile Marine Aids to Navigation (MAtoN) defines a MAtoN 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.*

For practical application, a MAtoN should be considered as a ‘concept’ that stems from the original purpose of a ‘Special Mark’, which indicates a special area or feature whose nature may be apparent from reference to a chart or other nautical publication.

MAtoN can be used for the marking hazards that represent a danger to safe navigation, that are not made fast to the shore (see section 3 below).

The objective, or goal, of a MAtoN is to mark a hazard to navigation, which cannot be marked by a fixed or moored AtoN.

# typical uses

MAtoN maybe used, but not limited to, the following applications:

* Mobile Ocean Data Acquisition System (ODAS) (e.g. currents, weather)
* Drifting wreckage (e.g. abandoned vessels, drifting shipping containers , debris that are not stationary)
* Water quality & pollution monitoring equipment or systems
* Mobile guard zones & convoys
* Underwater operations
* Enhance navigational safety during military operations (e.g. no sail zones during minesweeping, target exercises)
* Identifying end of drifting lines (e.g. seismic survey lines and long fishing lines)
* Towed and deployed applications (eg. cable laying) (The use of MAtoN for this purpose does not remove the necessity to comply with any provision directed by Part C of the ColRegs)
* Pollution containment and clean up
* Search & Rescue applications
* Small unmanned systems and equipment
* Special events (eg. channel swimming).

An AIS device fitted to a MAtoN is classified as a Group A Autonomous Marine Radio Device(AMRD).

# Type of mobile aton

MAtoN can be either physical or virtual. Competent Authority (AtoN) should consider the most appropriate type of MAtoN to use for a particular scenario based on a risk assessment.

## Physical MAtoN

Depending on the application, the size and shape of the floating physical MAtoN will vary. Physical MAtoN may also be used to mark a moving object, for example the extremity and spread of towed streamers from a seismic survey vessel.

Physical MAtoN should, where possible, be designed to meet the following specifications and light characteristics:

Table 1- Physical MAtoN characteristics

|  |  |
| --- | --- |
| Buoy / mark characteristics | |
| Colour | Yellow |
| Shape | Optional, but not in conflict with lateral or cardinal marks. Shape may also depend on method of deployment |
| Day mark | Special Mark, if practicable |
| Light Characteristics | |
| 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 nominal range 3NM |
| Racon | If fitted, Morse “T”(one long dash) = (Keep clear of me) should be used |
| Retroreflective Marking | Reflective markings in accordance with the requirements for special marks in R0106 on retroreflective material, should be used |
| AIS (when fitted) | |
| AIS Symbology | AIS symbology for MAtoN needs to be distinctly different (what can the symbology be ) ? we must offer guidance) from normal AIS AtoN due to its mobile nature  [new symbol to be designed for MAtoN, and ITU –R M.1371.5 amended accordingly] |
| AIS Naming Convention | [place holder/ to be developed] |

[The committee needs to consider the following:

1. Is a top mark necessary (or even possible), and can a top mark be used on something that is moving?
2. Should a coloured buoy be necessary or optional based on the expectation that the buoy will move
3. If a MAtoN is fitted to a physical object, such as the Ocean Cleanup device, will it have a top mark and colour scheme, or is a light and AIS AtoN basestation sufficient?
4. Can the design and make up of a physical MAtoN be prescribed based on the range of ways that one ‘may’ be deployed and or used?]

## Virtual MATON

A virtual MAtoN can be implemented through the use of a Virtual AIS AtoN using the AIS VHF datalink. It must have the capability of its position being updated based on the movement of the hazard it is marking.

Virtual MAtoN should be approved and strictly controlled by the Competent Authority (AtoN), and implemented based on the principles contained within IALA Recommendation O-143 on Virtual Aids to Navigation

Virtual MAtoN may be used for applications where deployment of a physical MAtoN may not be possible due to the hazard location, capability of assets, meteorological conditions, timeliness, or the nature of the hazard.

In deploying a virtual MAtoN, consideration should be given to the additional use of safety related messaging, geo-fencing, applying a course and speed, issuing and updating of relevant MSI.

# AIS MAtoN programming

Where AIS is used in conjunction with a MAtoN, the device is considered to be a Group A, AMRD. Group A, AMRD’s should be programmed with the following numbering scheme:

[numbering scheme to be inserted once determined by ITU. IALA needs to request appropriate numbering scheme for AMRD’s]

Consideration should be given to incorporating Safety Related Messaging with the use of an AIS MAtoN.

# Deployment

## Physical MAtoN

Physical MAtoN may be deployed through a number of different means including from a ship, aircraft, or potentially self propelled. The Competent Authority (AtoN) should define the appropriate method for the installation, deployment and monitoring of a physical MAtoN. Special considerations should be given regarding the intended use of the MAtoN to ensure it is accurately marked.

## Virtual Maton

Deployment of Virtual MAtoN should conform to IALA Guideline 1081 on virtual AtoN. The use of virtual MAtoN must be authorised by a Competent Authority (AtoN). Virtual MAtoN should only be used where urgency requires, or where it is impractical to use a physical MAtoN.

# Designed and constructed for Deployment

The concept of a MAtoN has been implemented to be versatile in its use, and is intended to present a method of marking hazards to navigation that may be drifting, moving, mobile, and otherwise difficult to secure and mark permanently. In many cases, the decision to deploy a MAtoN may be at short notice, and done so to prevent further incidents at sea. MAtoN must never be used for extended periods or as a permanent solution.

MAtoN should therefore be designed to be versatile and easily deployed by a range of different means including ships, boats, aircraft, or potentially an unmanned surface or aerial system. It is expected that MAtoN may be designed in a range of different shapes and sizes to make such deployment achievable.

Competent Authorities (AtoN) should seek involvement in the design, construction and approval of MAtoN to suit their particular operational requirements.

# Promulgation

Competent Authorities (AtoN) should ensure that the deployment of a MAtoN is appropriately promulgated by all possible means.

This should be done through the appropriate recognised marine publications and through the promulgation of Maritime Safety Information (MSI).

Drifting hazards should remain appropriately marked until the competent authority has assessed that information concerning the new danger has been sufficiently promulgated, or there is no longer a risk to safety of navigation.

Promulgation of the MAtoN should, as a minimum, include:

* Type of MAtoN provided (Physical or Virtual);
* Light
  + Colour
  + Flash Character
  + Nominal Range
* Predicted movement – the predicted movement of the MAtoN and associated hazard should be promulgated. The following information should be considered:
  + Heading
  + Speed
  + Predicted rate and direction of drift
  + Other characteristic which would help determine the predicted path of the hazard being marked by the MAtoN
* Day Mark.
* Rules, regulations, requirements, and procedures.
* Size, Shape, and identification of the hazard that is being marked with a MAtoN.
* Duration the MAtoN is in effect (eg. Start and End timings).
* Appropriate Nautical Chart/s number in which MAtoN is to be deployed, as a reference point only.

One of the main tasks for a VTS is to provide information to the mariners within the VTS area. Therefore, when a MAtoN is planned to be deployed in a VTS area, it is important to liaise and cooperate with the VTS Authority at an early stage in order for the VTS to have correct information to give to the traffic in the VTS area. Such information may include, but not be limited to:

* Availability of aids to navigation (including MAtoNs);
* Limited manoeuvrability in the fairway, due to deficiencies of aids to navigation;
* Any other potential hindrances that may impose restrictions on the safe navigation of the vessels.

# Monitoring and reporting

## Maritime Safety Information

The use of a MAtoN does not negate the requirement to promulgate MSI to ensure mariners are aware of the hazard to navigation. The promulgation of MSI is considered fundamental to the effectiveness of a MAtoN.

Competent Authorities (AtoN) should ensure MSI is promulgated when MAtoN are used to mark hazards to navigation.

## Monitoring

Competent Authorities (AtoN) must ensure MAtoN are monitored in order to update their positional information. Some considerations for monitoring include:

* Physical inspection;
* Remote and/ or automatic tracking (i.e., radar, satellite, cellular networks, AIS, etc.)
* Surface and air assets in the vicinity of the MAtoN, that can provide visual verification to the MAtoNs position relative to the hazard;
* If applicable Competent Authorities (AtoN) may request vessels to report visual sightings of the MAtoN to verify its true position;
* Radar reflectors may be used to enhance the MAtoN’s position;
* Monitoring and updating the position of a Virtual MAtoN position is important, as it pertains to drifting hazards and obstructions.

## Reporting

The MAtoN should be reported when it:

* Is deployed;
* Is amended;
* Leaves its promulgated coverage or drifts into the waters of an adjacent responsible Competent Authority (AtoN) (Political consideration MOU);
* Is considered by the Competent Authority (AtoN) that positional information requires updating;
* Where at all possible it should be self-reporting and updating to all vessels in the vicinity (light/racon/AIS, etc.);
* Is removed / discontinued/damaged.

# Issues of responsibility

## Designated Responsibility

Mobile hazards pose a risk to safe navigation. Therefore, the person, organisation, or governmental body of a moving hazard should take steps to ensure it is appropriately marked as a moving hazard. If the moving hazard is caused by a natural phenomenon then it is the responsibility of the Competent Authority (AtoN) with jurisdiction of the waterway to identify the hazard.

The Competent Authority (AtoN) should advise the person, organisation, or governmental body who is responsible for marking their moveable hazard the correct standards and methods to identify the hazard with a MAtoN.

## Inability to Monitor

A Competent Authority (AtoN) or owner losing the ability to monitor a MAtoN that it has deployed retains responsibility until either:

* The MAtoN is retrieved, sinks, or is placed at no danger to mariners;
* The responsibility is assumed by another Competent Authority (AtoN).

## Recovery

It remains the responsibility of the Competent Authority (AtoN) approving the use of a MAtoN to ensure that the user recovers the MAtoN once the hazard no longer presents a risk to safe navigation.

## Costs of Wreck Marking

In accordance with article 10 of the Wreck Removal Convention (IMO document LEG/CONF.16/19 dated 23 May 2007), the registered owner of the ship responsible for the wreck shall be liable for the costs of marking it.

# 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
  + IALA Recommendation R 1016 Mobile Aids to Navigation
  + IMO document LEG/CONF.16/19 dated 23 May 2007
  + IALA Guideline on Marking of Drifting Wrecks
  + *ITU document 5B/411-E November 2017*

# Acronyms

AIS Automatic Identification System

COLREGS The International Regulations for Preventing Collisions at Sea (1972) as amended.

MAtoN Mobile Aid(s) to Navigation

MSI Maritime Safety Information

VHF Very High Frequency

MBS Maritime Buoyage System

MoU Memorandum of Understanding

ODAS Ocean Data Acquisition System

Competent Authority (AtoN) - is an authority made responsible, in whole or in part, by the Government for the safety (including environmental safety) and efficiency of aids to navigation service provision and the protection of the environment.

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| IALA Guideline |

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USE OF MOBILE Aids to Navigation (MATON)

Edition 1.0

Document date

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|  |  |  |
|  |  |  |

1. INTRODUCTION 4

2. Scope 4

3. Definition 4

4. typical uses 4

5. Type of mobile aton 5

5.1. Physical MAtoN 5

5.2. Virtual MATON 5

6. AIS MAtoN programming 5

7. Deployment 6

7.1. Physical MAtoN 6

7.2. Virtual Maton 6

7.3. Promulgation 6

8. Monitoring and reporting 7

8.1. Maritime Safety Information 7

8.2. Monitoring 7

8.3. Reporting 7

9. Issues of responsibility 8

9.1. Designated Responsibility 8

9.2. Inability to Monitor 8

9.3. Costs of Wreck Marking 8

10. References 8

11. Acronyms 8

List of Tables

Table 1- Light colour and Rhythm 4

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* Enhance navigational safety during military operations (e.g. no sail zones during minesweeping, target exercises)
* Identifying end of drifting lines (e.g. seismic survey lines and long fishing lines)
* Towed and deployed applications (eg. cable laying) (The use of MAtoN for this purpose does not remove the necessity to comply with any provision directed by Part C of the ColRegs)
* Pollution containment and clean up
* Search & Rescue applications
* Small unmanned systems and equipment
* Special events (eg. channel swimming).

An AIS device fitted to a MAtoN is classified as a Group A Autonomous Marine Radio Device(AMRD).

# Type of mobile aton

MAtoN can be either physical or virtual. Competent Authority (AtoN) should consider the most appropriate type of MAtoN to use for a particular scenario based on a risk assessment.

## Physical MAtoN

Depending on the application, the size and shape of the floating physical MAtoN will vary. Physical MAtoN may also be used to mark a moving object, for example the extremity and spread of towed streamers from a seismic survey vessel.

Physical MAtoN should, where possible, be designed to meet the following specifications and light characteristics:

Table 1- Physical MAtoN characteristics

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| Shape | Optional, but not in conflict with lateral or cardinal marks. Shape may also depend on method of deployment |
| Day mark | Special Mark, if practicable |
| Light Characteristics | |
| 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 nominal range 3NM |
| Racon | If fitted, Morse “T”(one long dash) = (Keep clear of me) should be used |
| Retroreflective Marking | Reflective markings in accordance with the requirements for special marks in R0106 on retroreflective material, should be used |
| AIS (when fitted) | |
| AIS Symbology | AIS symbology for MAtoN needs to be distinctly different (what can the symbology be ) ? we must offer guidance) from normal AIS AtoN due to its mobile nature  [new symbol to be designed for MAtoN, and ITU –R M.1371.5 amended accordingly] |
| AIS Naming Convention | [place holder/ to be developed] |

[The committee needs to consider the following:

1. Is a top mark necessary (or even possible), and can a top mark be used on something that is moving?
2. Should a coloured buoy be necessary or optional based on the expectation that the buoy will move
3. If a MAtoN is fitted to a physical object, such as the Ocean Cleanup device, will it have a top mark and colour scheme, or is a light and AIS AtoN basestation sufficient?
4. Can the design and make up of a physical MAtoN be prescribed based on the range of ways that one ‘may’ be deployed and or used?]

## Virtual MATON

A virtual MAtoN can be implemented through the use of a Virtual AIS AtoN using the AIS VHF datalink. It must have the capability of its position being updated based on the movement of the hazard it is marking.

Virtual MAtoN should be approved and strictly controlled by the Competent Authority (AtoN), and implemented based on the principles contained within IALA Recommendation O-143 on Virtual Aids to Navigation

Virtual MAtoN may be used for applications where deployment of a physical MAtoN may not be possible due to the hazard location, capability of assets, meteorological conditions, timeliness, or the nature of the hazard.

In deploying a virtual MAtoN, consideration should be given to the additional use of safety related messaging, geo-fencing, applying a course and speed, issuing and updating of relevant MSI.

# AIS MAtoN programming

Where AIS is used in conjunction with a MAtoN, the device is considered to be a Group A, AMRD. Group A, AMRD’s should be programmed with the following numbering scheme:

[numbering scheme to be inserted once determined by ITU. IALA needs to request appropriate numbering scheme for AMRD’s]

Consideration should be given to incorporating Safety Related Messaging with the use of an AIS MAtoN.

# Deployment

## Physical MAtoN

Physical MAtoN may be deployed through a number of different means including from a ship, aircraft, or potentially self propelled. The Competent Authority (AtoN) should define the appropriate method for the installation, deployment and monitoring of a physical MAtoN. Special considerations should be given regarding the intended use of the MAtoN to ensure it is accurately marked.

## Virtual Maton

Deployment of Virtual MAtoN should conform to IALA Guideline 1081 on virtual AtoN. The use of virtual MAtoN must be authorised by a Competent Authority (AtoN). Virtual MAtoN should only be used where urgency requires, or where it is impractical to use a physical MAtoN.

# Designed and constructed for Deployment

The concept of a MAtoN has been implemented to be versatile in its use, and is intended to present a method of marking hazards to navigation that may be drifting, moving, mobile, and otherwise difficult to secure and mark permanently. In many cases, the decision to deploy a MAtoN may be at short notice, and done so to prevent further incidents at sea. MAtoN must never be used for extended periods or as a permanent solution.

MAtoN should therefore be designed to be versatile and easily deployed by a range of different means including ships, boats, aircraft, or potentially an unmanned surface or aerial system. It is expected that MAtoN may be designed in a range of different shapes and sizes to make such deployment achievable.

Competent Authorities (AtoN) should seek involvement in the design, construction and approval of MAtoN to suit their particular operational requirements.

# Promulgation

Competent Authorities (AtoN) should ensure that the deployment of a MAtoN is appropriately promulgated by all possible means.

This should be done through the appropriate recognised marine publications and through the promulgation of Maritime Safety Information (MSI).

Drifting hazards should remain appropriately marked until the competent authority has assessed that information concerning the new danger has been sufficiently promulgated, or there is no longer a risk to safety of navigation.

Promulgation of the MAtoN should, as a minimum, include:

* Type of MAtoN provided (Physical or Virtual);
* Light
  + Colour
  + Flash Character
  + Nominal Range
* Predicted movement – the predicted movement of the MAtoN and associated hazard should be promulgated. The following information should be considered:
  + Heading
  + Speed
  + Predicted rate and direction of drift
  + Other characteristic which would help determine the predicted path of the hazard being marked by the MAtoN
* Day Mark.
* Rules, regulations, requirements, and procedures.
* Size, Shape, and identification of the hazard that is being marked with a MAtoN.
* Duration the MAtoN is in effect (eg. Start and End timings).
* Appropriate Nautical Chart/s number in which MAtoN is to be deployed, as a reference point only.

One of the main tasks for a VTS is to provide information to the mariners within the VTS area. Therefore, when a MAtoN is planned to be deployed in a VTS area, it is important to liaise and cooperate with the VTS Authority at an early stage in order for the VTS to have correct information to give to the traffic in the VTS area. Such information may include, but not be limited to:

* Availability of aids to navigation (including MAtoNs);
* Limited manoeuvrability in the fairway, due to deficiencies of aids to navigation;
* Any other potential hindrances that may impose restrictions on the safe navigation of the vessels.

# Monitoring and reporting

## Maritime Safety Information

The use of a MAtoN does not negate the requirement to promulgate MSI to ensure mariners are aware of the hazard to navigation. The promulgation of MSI is considered fundamental to the effectiveness of a MAtoN.

Competent Authorities (AtoN) should ensure MSI is promulgated when MAtoN are used to mark hazards to navigation.

## Monitoring

Competent Authorities (AtoN) must ensure MAtoN are monitored in order to update their positional information. Some considerations for monitoring include:

* Physical inspection;
* Remote and/ or automatic tracking (i.e., radar, satellite, cellular networks, AIS, etc.)
* Surface and air assets in the vicinity of the MAtoN, that can provide visual verification to the MAtoNs position relative to the hazard;
* If applicable Competent Authorities (AtoN) may request vessels to report visual sightings of the MAtoN to verify its true position;
* Radar reflectors may be used to enhance the MAtoN’s position;
* Monitoring and updating the position of a Virtual MAtoN position is important, as it pertains to drifting hazards and obstructions.

## Reporting

The MAtoN should be reported when it:

* Is deployed;
* Is amended;
* Leaves its promulgated coverage or drifts into the waters of an adjacent responsible Competent Authority (AtoN) (Political consideration MOU);
* Is considered by the Competent Authority (AtoN) that positional information requires updating;
* Where at all possible it should be self-reporting and updating to all vessels in the vicinity (light/racon/AIS, etc.);
* Is removed / discontinued/damaged.

# Issues of responsibility

## Designated Responsibility

Mobile hazards pose a risk to safe navigation. Therefore, the person, organisation, or governmental body of a moving hazard should take steps to ensure it is appropriately marked as a moving hazard. If the moving hazard is caused by a natural phenomenon then it is the responsibility of the Competent Authority (AtoN) with jurisdiction of the waterway to identify the hazard.

The Competent Authority (AtoN) should advise the person, organisation, or governmental body who is responsible for marking their moveable hazard the correct standards and methods to identify the hazard with a MAtoN.

## Inability to Monitor

A Competent Authority (AtoN) or owner losing the ability to monitor a MAtoN that it has deployed retains responsibility until either:

* The MAtoN is retrieved, sinks, or is placed at no danger to mariners;
* The responsibility is assumed by another Competent Authority (AtoN).

## Recovery

It remains the responsibility of the Competent Authority (AtoN) approving the use of a MAtoN to ensure that the user recovers the MAtoN once the hazard no longer presents a risk to safe navigation.

## Costs of Wreck Marking

In accordance with article 10 of the Wreck Removal Convention (IMO document LEG/CONF.16/19 dated 23 May 2007), the registered owner of the ship responsible for the wreck shall be liable for the costs of marking it.

# 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
  + IALA Recommendation R 1016 Mobile Aids to Navigation
  + IMO document LEG/CONF.16/19 dated 23 May 2007
  + IALA Guideline on Marking of Drifting Wrecks
  + *ITU document 5B/411-E November 2017*

# Acronyms

AIS Automatic Identification System

COLREGS The International Regulations for Preventing Collisions at Sea (1972) as amended.

MAtoN Mobile Aid(s) to Navigation

MSI Maritime Safety Information

VHF Very High Frequency

MBS Maritime Buoyage System

MoU Memorandum of Understanding

ODAS Ocean Data Acquisition System

Competent Authority (AtoN) - is an authority made responsible, in whole or in part, by the Government for the safety (including environmental safety) and efficiency of aids to navigation service provision and the protection of the environment.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)