



# South African Maritime Safety Authority

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Date: 2 February 2016

## Marine Notice No. 8 of 2016

### Standards for Aids to Navigation in South African waters and Inland Waterways

TO ALL REGIONAL MANAGERS, PRINCIPAL OFFICERS, STATE OWNED ENTERPRISES, GOVERNMENT DEPARTMENTS, SOUTH AFRICAN NAVY HYDROGRAPHER, MUNICIPALITIES, AIDS TO NAVIGATION SERVICE PROVIDERS AND OTHER INTERESTED AND AFFECTED PARTIES.

#### *Summary*

This Marine Notice advises on the Standards required by the South African Maritime Safety Authority (SAMSA) to ensure the standardisation, harmonisation and compliance with regard to all marine aids to navigation (AtoN) in the Republic of South Africa (RSA).

These Standards apply to the provision, operation and discontinuation of all AtoN, both fixed and floating (buoys), including radionavigation/electronic AtoN, on land and at sea (South African waters, within ports and harbours, private harbours and marinas, etc. and Inland Waterways) in the RSA.

2 February 2016

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# **Standards**

## **All marine aids to navigation (AtoN) in the Republic of South Africa (RSA)**

These Standards apply to the provision, operation and discontinuation of all AtoN, both fixed and floating (buoys), including radionavigation/electronic AtoN, on land and at sea (South African waters, within ports and harbours, private harbours and marinas, etc. and Inland Waterways) in the RSA.

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## SECTION I

### Introduction

#### 1. Legislative Framework

South Africa is a Member State to the United Nations (UN). The International Maritime Organization (IMO) is a specialised agency of the UN and its main task includes the maintenance of a comprehensive regulatory framework for shipping. IMO is responsible for a number of maritime related treaties, including the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended. SOLAS Chapter V addresses Safety of Navigation, and in particular, Regulation 13 addresses Aids to Navigation (AtoN) - refer to **Annex A** for the full text of Regulation 13.

South Africa is a Member of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and therefore has the duty to observe and implement IALA Recommendations, as reflected in SOLAS Chapter V - refer to **Annex C** for information on IALA.

South Africa is also a Member of the International Hydrographic Organisation (IHO), which is an intergovernmental consultative and technical organisation established to support safety of navigation and the protection of the marine environment. The IHO relies on acquiescence of its Member States and the inclusion of its standards and specifications in IMO conventions, such as reflected in SOLAS Chapter V.

The South African Maritime Safety Authority (SAMSA) is a statutory body established in terms of the SAMSA Act 5 of 1998. The Act enables SAMSA to administer and execute the relevant maritime legislation. The first of SAMSA's three mandates is "to ensure safety of life and property at sea".

Section 78 of the National Ports Act 12 of 2005 makes provision for SAMSA to determine the standards of AtoN within port limits and along the coast of the RSA - refer to **Annex B** for an extract of the Act. It further states that SAMSA has to give its consent before:

- Any AtoN is discontinued, irrespective whether such AtoN is replaced by another AtoN, or an AtoN on the same or adjacent location
- A service provided by an AtoN is reduced

#### 2. Standardised and harmonised marine Aids to Navigation

SAMSA, South Africa's Competent Maritime Authority, is a government entity responsible for ensuring safety of life and property at sea, safety on-board ships and small vessels at sea and on inland waterways.

#### 3. Scope

These Standards are set to ensure the standardisation, harmonisation and compliance of all marine AtoN in the Republic of South Africa (RSA).

The implementation of the appropriate international standards, recommendations and guidelines, in particular the IALA Standards<sup>1</sup>, Recommendations<sup>2</sup> and Guidelines, is an integral part of the standardisation, harmonisation and compliance of AtoN in South Africa.

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<sup>1</sup> IALA is in the process to develop its standards as part of its planned change of status from a non-governmental to an intergovernmental organisation

<sup>2</sup> The IALA Recommendations and Guidelines are available for download in PDF format on the IALA website ([www.iala-aism.org](http://www.iala-aism.org))

**4. Application**

These standards apply to all AtoN, including radionavigation/electronic AtoN, on land and at sea within the South African waters, within ports and harbours, including private harbours, marinas, etc. and navigable Inland Waterways in the RSA.

**5. Accountability**

Cognisance should be taken that any entity with the responsibility to establish AtoN, be it a national or local entity, cannot pass on the liability and the accountability attributed in having to establish and maintain such AtoN, to an external party, such as a service provider (contracting out, or outsourcing), etc.

**6. Review**

These Standards may be reviewed from time to time.

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## SECTION II

### Marine Aids to Navigation

A marine AtoN is defined by IALA as “A device or system external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels and/or vessel traffic”.

A marine aid to navigation should not be confused with a navigational aid. A navigational aid is an instrument, device, chart, etc., carried on board a vessel for the purpose of assisting navigation.

Refer to **Notes** for examples of AtoN.

#### 1. Visual Aids to Navigation

Visual marks for navigation can be either natural or man-made objects. They include structures specifically designed as short range AtoN, as well as conspicuous features such as headlands, mountaintops, rocks, trees, church-towers, minarets, monuments, chimneys, etc.

Short range AtoN can be fitted with a light if navigation at night is required, or left unlit if daytime navigation is sufficient.

Visual AtoN are purpose-built facilities that communicate information to a trained observer on a vessel for the purpose of assisting the task of navigation. The communication process is referred to as *marine signalling*.

The IALA Maritime Buoyage System (MBS) and other AtoN provide rules that apply to all fixed, floating and electronic marks serving to indicate:

- (a) Landfall, course to steer, and other areas or features of importance to the mariner;
- (b) The lateral limits of navigable channels;
- (c) Natural dangers and other obstructions such as wrecks;
- (d) New dangers.

#### 2. IALA Maritime Buoyage System (MBS)

The MBS and other traditional AtoN comprise fixed and floating devices. This is primarily a physical system, however all of the marks may be complemented by electronic means.

Within the MBS there are six types of marks, which may be used alone, or in combination. The mariner can distinguish between these marks by identifiable characteristics. Lateral marks differ between Buoyage Regions A and B, whereas the other five types of marks are common to both regions.

South Africa falls in Region A.

These marks are described below:

##### 2.1. Lateral Marks

Following the system of a “conventional direction of buoyage”, lateral marks in Region A utilise red and green colours by day and night to denote the port and starboard sides of channels respectively.

A modified lateral mark may be used at the point where a channel branches into two, to distinguish the preferred channel, that is to say the primary route, or channel that is so designated by SAMSA.

##### 2.2. Cardinal Marks

Cardinal marks indicate that the deepest water in the area lies to the named side of the mark. This convention is necessary even though for example, a North mark may have navigable water not only to the North, but also East and West of it. The mariner will know it is safe to the North, but shall consult the chart for further guidance.

Cardinal marks do not have a distinctive shape but are normally pillar or spar. They are always painted in yellow and black horizontal bands and their distinctive double cone top-marks are always black.

Cardinal marks have a special system of flashing white lights.

It will be observed that two other marks use white lights; Isolated Danger marks and Safe Water marks. Each has a distinctive light rhythm that cannot be confused with the very quick or quick flashing light of the Cardinal marks.

### 2.3. Isolated Danger Mark

The Isolated Danger mark is placed on, or near to a danger that has navigable water all around it. Because the extent of the danger and the safe passing distance cannot be specified for all circumstances in which this mark may be used, the mariner shall consult the chart and nautical publications for guidance. Distinctive double black spherical top-marks and Group flashing (2) white lights, serve to distinguish Isolated Danger marks from Cardinal marks.

### 2.4. Safe Water Marks

The Safe Water mark has navigable water all around it, but does not mark a danger. Safe Water marks can be used, for example, as fairway, mid-channel or landfall marks.

Safe Water marks have an appearance different from danger marking buoys. They are spherical, or alternatively pillar or spar with red and white vertical stripes and a single red spherical top-mark. Their lights, if any, are white using isophase, occulting, one long flash or Morse “A” (●■) rhythms.

### 2.5. Special Marks

Special marks are used to indicate a special area or feature whose nature may be apparent from reference to a chart or other nautical publication. They are not generally intended to mark channels or obstructions where the MBS provides suitable alternatives. Refer to **Notes** for examples of typical Special Marks.

Special Marks are yellow. They may carry a yellow “X” top-mark, and any light used is also yellow. To avoid the possibility of confusion between yellow and white in poor visibility, the yellow lights of Special marks do not have any of the rhythms used for white lights.

Their shape will not conflict with that of navigational marks. This means, for example, that a special buoy located on the port hand side of a channel may be cylindrical but will not be conical. Special marks may be lettered or numbered, and may also include the use of a pictogram to indicate their purpose using the IHO symbology where appropriate.

**Note:** Any buoy being deployed for ocean- and/or meteorological data acquisition, scientific measurements and/or as a single point mooring (SPM), shall be regarded as a Special Mark.

### 2.6. Marking New Dangers

“New Dangers” are newly discovered hazards, natural or man-made, that may not yet be shown in nautical documents and publications, and until the information is sufficiently promulgated, should be indicated by:

- marking a new danger using appropriate marks such as; Lateral, Cardinal, Isolated Danger marks, or equally
- using the Emergency Wreck Marking Buoy (EWMB). If SAMSA considers the risk to navigation to be especially high, at least one of the marks should be duplicated.

The Emergency Wreck Marking Buoy has blue and yellow vertical stripes in equal number, with a vertical/perpendicular yellow cross top-mark, and displays a blue and yellow alternating light.

Marking of a new danger may include use of a Racon coded Morse “D” (■●●), or other radio transmitting device, such as an AIS as an AtoN (AIS AtoN).

Marking of a new danger may be discontinued when SAMSA is satisfied that information concerning the “New Danger” has been sufficiently promulgated, or the danger has been resolved.

## 2.7. Note

2.7.1 The charted position of a floating AtoN (buoy) defines the nominal (or true) position for the anchor.

2.7.2 When the length of the mooring is determined, the following should be taken into consideration:

- (a) The variation in the depth of water between high and low tides
- (b) The natural swinging circle of buoys in a confined channel.

## 2.8. Other Marks

Other Marks include lighthouses, beacons, sector lights, leading lines, major floating aids, and auxiliary marks. These visual marks are intended to aid navigation as information to mariners, not necessarily regarding channel limits or obstructions.

- Lighthouses, beacons and other aids of lesser ranges are fixed aids to navigation that may display different colours and/or rhythms over designated arcs. Beacons may also be unlit.
- Sector lights display different colours and/or rhythms over designated arcs.  
The colour of the light provides directional information to the mariner.
- Leading lines/ Ranges allow ships to be guided with precision along a portion of a straight route using the alignment of fixed lights (leading lights) or marks (leading marks), in some cases a single directional light may be used.
- Major floating aids include lightvessels, light floats and large navigational buoys intended to mark approaches from off shore.
- Auxiliary Marks are those other marks used to assist navigation or provide information. These include aids of non-lateral significance that are usually of defined channels and otherwise do not indicate the port and starboard sides of the route to be followed as well as those used to convey information for navigational safety.
- Port or Harbour Marks such as breakwater, quay/jetty lights, traffic signals, bridge marking and inland waterways AtoN.

## MBS Publication

Detailed information is contained in the publication called *IALA – AISM Maritime Buoyage System and other Aids to Navigation*. This publication is available from official South African Chart Agents. See the List of Chart Agents in the *Chart Catalogue (SANHO-3)* for details of official Agents selling paper charts and publications. This publication is also obtainable directly from IALA – refer to **Annex C** for the relevant contact detail.

## 2.9. Marking of bridges

Should bridges, that cross navigable waters, need special marking to ensure their safety and that of vessels navigating beneath them, the principles of the MBS would apply.

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## SECTION III

### Standardisation, harmonisation and compliance of Fixed and Floating Aids to Navigation in South Africa

1. SAMSA, as the Competent Maritime Authority, shall ensure safety of navigation by standardisation, harmonisation and compliance of all maritime AtoN in the RSA, on land and at sea<sup>3</sup>, as follows:
  - 1.1 Ensuring, as it deems practical and necessary, for appropriate AtoN to be provided as the volume of traffic and the degree of risks requires;
  - 1.2 Obtaining the greatest possible uniformity in AtoN by taking into account the appropriate international recommendations and guidelines, in particular the recommendations and guidelines of IALA;
  - 1.3 Ensuring all fixed, floating, radionavigation/electronic and virtual AtoN (AIS AtoN) meet acceptable international standards;
  - 1.4 IALA Recommendations and Guidelines would be the guiding factor, with the main emphasis on:
    - 1.4.1 Meeting the minimum IALA objectives on availability of the various types of AtoN and categories;
    - 1.4.2 Compliance to the IALA MBS;
    - 1.4.3 Colour: It should be noted that IALA has defined the colour regions<sup>4</sup>, for both marine AtoN lights and surface colours, for each of the following colours: White, Red, Green, Yellow and Blue;
    - 1.4.4 Light characteristics.
  - 1.5 Ensuring all AtoN, fixed and floating:
    - 1.5.1 Meet the requirements of present and changing needs of all mariners;
    - 1.5.2 Ensuring natural and or man-made hazards, which are dangers to navigation, are adequately marked.
  - 1.6 Identifying new and or additional AtoN to be established;
  - 1.7 Request an accountable AtoN Party to, within its area of jurisdiction, establish, maintain, improve, alter, remove or discontinue relevant AtoN within a reasonable time;
  - 1.8 Specifying the required range of AtoN;
  - 1.9 Giving directions concerning the provision and positioning of AtoN;
  - 1.10 Exercising general supervision over all AtoN to ensure that they are established in compliance with the prescribed conditions and specifications and are maintained in proper working order. In doing so SAMSA, or its appointed agent may at any reasonable time of the day or night make such inquiries about them and their management as they think fit, request relevant reports and information and conduct audits, which includes the inspection of AtoN
  - 1.11 Addressing any offences as indicated in **Section III, clause 10**.
  - 1.12 Establishing appropriate qualifications, training and certification requirements to ensure that the AtoN service providers' personnel are appropriately trained, qualified and capable of performing the tasks required, taking into consideration the type of AtoN and the level of services to be provided.

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<sup>3</sup> Includes offshore installations

<sup>4</sup> The IALA chromaticity areas appear on **Annex E**

2. All AtoN are to be provided and maintained according to the latest Recommendations and Guidelines as adopted and published by IALA, which include, but not limited to:
  - 2.1 Colour of day mark
  - 2.2 Shape
  - 2.3 Characteristic / coding
  - 2.4 Colour of light
  - 2.5 Range
  - 2.6 Categories 1, 2 or 3
  - 2.7 IALA MBS: The IALA MBS rules also apply to all fixed marks, other than lighthouses, leading lights, lightships and large navigational buoys.
  - 2.8 Availability of AtoN
3. No organ of the State, national accountable AtoN party (NAAP) and/or local accountable AtoN parties (LAAPs), such as public and private entities, applicable body corporates, boat clubs, private lodges/estates, any AtoN service provider, or any other entity shall, without the consent of SAMSA:
  - 3.1 Erect, place or reposition any fixed or floating AtoN, including automatic identification system (AIS) AtoN, as well as the placing of virtual AIS AtoN
  - 3.2 Vary the colour, character, height, range, change any other distinguishing feature of an AtoN, or the mode of exhibiting lights of any fixed or floating AtoN, mark or beacon in any lighthouse, buoy or beacon.
  - 3.3 Reduce an AtoN service in any manner
  - 3.4 Remove or discontinue any fixed or floating AtoN, mark or beacon

In all instances mentioned above, a written case must be submitted to SAMSA for consideration and approval or otherwise – refer to **Section V** and **Annex F**.
4. Each traditional AtoN shall be assigned to one of the three categories defined by IALA and adopt the relevant availability objectives for measuring the levels of service
5. The availability objectives for radionavigation services shall be in line with the IMO Resolution for a World Wide Radionavigation System (WWRNS) and IALA's relevant Recommendation on the performance and monitoring of a differential global navigation satellite system (DGNSS), for measuring the levels of service.
6. All AtoN infrastructure and equipment, etc. which are 60 years and older, are protected under the National Heritage Resources Act, 1999 (Act 25 of 1999) and shall be managed and maintained in terms of the prescribed norms and standards set in this Act.
7. All AtoN, both fixed and floating, should have their positions accurately recorded, based on WGS 84 Datum. Lit fixed marks should have their sectors and characteristics regularly checked where necessary. The mean positions of floating marks should be determined from observations taken at full ebb and at full floodtides.

## 8. Dissemination of Maritime Safety Information

- 8.1 SOLAS Regulation 13 states that “*Contracting Governments undertake to arrange for information relating to aids to navigation to be made available to all concerned. Changes in the transmissions of position-fixing systems which could adversely affect the performance of receivers fitted in ships shall be avoided as far as possible and only be effected after timely and adequate notice has been promulgated.*”

This information falls into three basic categories:

- (a) information about **planned changes**, such as, but not limited to:
  - changes to an existing AtoN or the establishment of new AtoN;
  - changes to traffic arrangements;
- (b) information about navigational **unplanned events**, such as, but not limited to:
  - the failure to AtoN
  - marine incidents (groundings, collisions, wrecks etc.)
- (c) **new information** arising from survey work or previously undiscovered hazards

- 8.2 The Hydrographic Office of the South African Navy (SANHO) is, amongst others, responsible for arranging for the dissemination all Maritime Safety Information (MSI) and the upkeep of Nautical Publications. It is important that the SANHO is notified promptly of all AtoN failures and changes to AtoN.

In the case of any changes or new AtoN, notification should preferably be given in advance of implementation, with the implementation date being given. Since new AtoN or changes to existing ones require sanction by SAMSA, the granting of this might conveniently provide the opportunity for preliminary advice to the SANHO.

It is therefore of utmost importance that SANHO is informed timeously of:

- 8.2.1 Any AtoN failure<sup>5</sup>. The message should include:
- (a) The name / number (as per the SANHO List of Lights, if applicable) of the AtoN
  - (b) Nature of the failure, e.g.
    - Out of operation
    - Unlit
    - Out of position
    - Off station
- 8.2.2 When the AtoN has been restored
- 8.2.3 Subject to having the sanction of SAMSA;
- (a) Any changes which may have taken place to an AtoN
  - (b) When new AtoN is to be established
  - (c) When an AtoN is to be discontinued

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<sup>5</sup> “Failure” means the unintentional termination of the ability of a system or part of a system to perform its required function. **Note:** This includes, but not limited to the failure (damage, missing) of a daymark, or topmark of a buoy and/or beacon.

8.2.4 **SANHO List of Lights.** This publication should be checked for any new light structures, altered characteristics, and the non-existence of charted or listed lights, buoys and light vessels/floats. In particular, information concerning the continuing relevance of any temporary amendments would be appreciated, as would reports on buoys of primary navigational significance. The following information should be included in any report:

- (a) Name, location, geographic position and datum upon which the position is based. The number should also be included if an existing light
- (b) Characteristics of light and phases if known
- (c) Sectors with bearings from seaward, and including arcs obscured
- (d) Elevation of the light
- (e) Nominal range
- (f) Description and colours of structure (including topmark), with height of the structure above ground level
- (g) For leading lights, the lead and distance between front and rear lights
- (h) For direction lights the centre line bearing from seaward and colours/bearing of all sectors
- (i) Detailed description of any fog signal

8.2.5 The contact detail of the Hydrographic Office is as follows:

- Urgent navigational information  
Fax : 021 787 2228 (24/7)  
Phone: 021 787 2445
- Other navigational information  
Phone : 021 787 2444 / 2445  
E-mail : [hydrosan@iafrica.com](mailto:hydrosan@iafrica.com)
- General information  
Phone :021 787 2408
- Postal information  
Hydrographer, Private Bag X1, Tokai 7966, South Africa
- Web site: <http://www.sanho.co.za>

## 9. **Training: South African Maritime Qualifications Codes for AtoN training**

### 9.1 Purpose of Codes

The successful delivery of AtoN services depends upon competent and experienced personnel to implement and maintain such aids therefore the recruitment, selection and training of suitable AtoN personnel are pre-requisites for the provision of professionally qualified personnel, capable of contributing to safe and efficient AtoN services and operations.

9.2 Principle of Codes

SAMSA has drawn up a Qualification Code for both *AtoN Manager*<sup>6</sup> *Level 1* and *AtoN Technician Level 2* – refer to the SAMSA web site ([www.samsa.org.za](http://www.samsa.org.za)) in this regard.

10. **Offences**

- 10.1 It is an offense to attach any type of vessel onto any AtoN.
  - 10.2 It is unlawful to intentionally alter, move, disturb, wilfully damage or destroy, remove or any part thereof, cast adrift or sink any AtoN
  - 10.3 It is unlawful to conceal or obscure any AtoN
  - 10.4 It is unlawful to operate a light, or device which may confuse a vessel. Should the owner of any such light, or device fail to extinguish, or effectively screen, or remove the device within seven days of notice to do so having been served on him or her, the expenses for the removal of such a light or device may be recovered from that owner or person.
  - 10.5 Perpetrators shall be prosecuted.
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<sup>6</sup> The term “Manager” covers both operations (managerial) and technical (engineering) disciplines

## SECTION IV

### Marine Aids to Navigation Requirements

#### 1. General

1.1. All AtoN shall have good visual presence and provide a distinctive daymark

#### 1.2. Colour/Shape

The colours of the structures, buoys, daymarks and top marks, (colour and shape) shall comply with the following IALA Recommendations:

- (a) IALA MBS for Region A where structures are to indicate areas as defined in the MBS – refer to **Annex D** in this regard, and
- (b) Surface colours used as visual signals on AtoN, must be according to the IALA chromaticity areas as plotted on the 1983 CIE chromaticity diagram – refer to **Annex E** in this regard.

#### 2. Floating Aids to Navigation

2.1. All floating AtoN need to:

2.1.1 Have good visual presence

2.1.2 Have good station keeping and stability (keep upright)

2.1.3 Be able to track well in windy conditions and currents (do not lean over excessively)

2.2. Focal plane heights should be chosen, taking the size of vessels that it serves, and the navigational requirements into consideration

2.3. Buoyancy

2.3.1 Sufficient reserve buoyancy should be provided for all weather conditions in order for the AtoN to remain effective in varying weather conditions of the area. There must be sufficient buoyancy to support the entire weight of the buoy and the moorings. If it is anticipated that maintenance personnel will work on the buoy afloat, then the buoy must have sufficient reserve buoyancy and stability for this to be safely carried out.

2.3.2 The size and hence the weight of the buoy will depend on the navigational requirements and the local environmental conditions.

2.4. Placing of buoys

The buoy separation distance should be chosen in such way that the next two buoys are recognised before the nearest one has been passed, or in other cases approximately 100 m before the last buoy can no longer be detected and identified.

2.5. Mooring System

2.5.1 The mooring system has to maintain the floating aid in a sufficiently accurate position for it to perform its function as an AtoN.

#### 2.6. Colour of Safe Water Marks

There shall be four (4) white and four (4) red vertical colour stripes on a buoy body and super structure.

## 2.7. Top Marks

### 2.7.1 Conical topmarks (for lateral and cardinal marks)

- (a) The vertical height of a cone from base to apex should be about 90% of the base diameter.
- (b) For cardinal marks, the separation distance between cones should be about 50% of the base diameter of the cone.
- (c) The vertical clear space between the lowest point of the topmark and all other parts of the mark should be at least 35% of the base diameter of the cone.
- (d) The base diameter should be 25%-30% of the diameter of the buoy at the waterline.

### 2.7.2 Cylindrical (can) topmarks (for lateral marks)

- (a) The vertical height of a cylinder should be one (1) to 1.5 times the base diameter.
- (b) The vertical clear space between the lowest part of the cylinder and all other parts of the mark should be at least 35% of the diameter of the cylinder.
- (c) In the case of a buoy, the base diameter of the cylinder should be 25%-30% of the diameter of the buoy at the waterline.

### 2.7.3 Spherical topmarks (for isolated danger and safe water marks)

- (a) In the case of a buoy, the diameter of the sphere(s) should be at least 20% of the diameter of the buoy at the waterline.
- (b) For isolated danger marks the separation distance between spheres should be about 50% of their diameter.
- (c) The vertical space between the lowest part of the sphere(s) and all other parts of the mark should be at least 35% of the diameter of the sphere(s).

### 2.7.4 'X' (Single 3-D Yellow Diagonal Cross) topmarks (for special marks)

The arms of the 'X' should be diagonally contained within a square with length of side of about 33% of the buoy diameter at the waterline. The width of the arms of the 'X' should be about 15% of the length of side of the square.

## 2.8. Numbering or lettering

If marks at the sides of a channel are numbered or lettered, the numbering or lettering shall follow the "conventional direction of buoyage". The protocol for numbering lateral marks, should be "even numbers on red - odd numbers on green".

## 3. Lit Aids to Navigation, both fixed and floating

3.1. The following must be taken into consideration when a light is selected for the AtoN:

- 3.1.1 Type and characteristics of the aid provided
- 3.1.2 Distance (range) of the aid from the observer
- 3.1.3 Atmospheric conditions
- 3.1.4 Contrast relative to background conditions (conspicuity); and
- 3.1.5 The reliability and availability of the aid
- 3.1.6 For lights on floating AtoN, care must be taken to provide adequate vertical divergence as the floating aid rolls and pitches, therefore the vertical divergence of the lantern should not be less than 10°.

3.2. It is essential that the light complies with the following requirements:

3.2.1 Be designed to operate effectively on a marine AtoN

3.2.2 The colour of the light shall meet the IALA chromaticity recommendation.

### 3.3. Daylight control

3.3.1 The light shall be switched on automatically during night-time and off during daytime or as the ambient light levels dictate. At a minimum, the light shall switch on whenever the ambient illumination, measured on a horizontal plane, falls below 50 – 100 lux. The light shall not switch off until the ambient illumination rises above 150 – 200 lux.

3.3.2 The hysteresis for the daylight control shall be 50-100 lux.

### 3.4. Maintenance

3.4.1 Regular maintenance is required to ensure that AtoN equipment and systems continue to perform at the levels required. A maintenance regime should therefore be adopted, taking best practices into account.

3.4.2 It is possible to increase the intervals between maintenance visits by:

- (a) Using more reliable equipment
- (b) Better system designs
- (c) Standardise equipment to simplify spare part management
- (d) Using renewable energy sources such as solar photovoltaic (PV)
- (e) Using self-contained (solar PV) Light Emitting Diode (LED) lanterns
- (f) Early replacement & modernisation

### 3.4.3 Fixed vs. Floating AtoN

Depending on the location where AtoN are required, it is advisable, where possible, to use fixed AtoN rather than floating AtoN as the latter are more expensive and challenging to maintain.

### 3.4.4 Materials

By introducing low maintenance materials, such as high density polyethylene, glass reinforced plastic (GRP), hot-dipped galvanized steel, marine grade stainless steel/aluminium, it may be possible to reduce maintenance requirements and time on site.

3.4.5 Special care should be taken of historic AtoN buildings, structures and equipment – also refer to **Section III, clause 6** in this regard.

## SECTION V

### Procedures to establish, alter, remove or discontinue any Aid to Navigation

1. No organ of the State, NAAP, LAAP, AtoN service provider, or any other entity shall, without the sanction of SAMSA:
  - 1.1. Erect or place any fixed, or floating AtoN, mark or beacon

**Note:** This includes:
    - (a) AIS AtoN
    - (b) Placing of virtual AtoN
  - 1.2. Remove or discontinue any fixed, or floating AtoN, mark or beacon
  - 1.3. Alter the colour, character, height, shape or other pertinent characteristics, or the mode of exhibiting lights of any fixed or floating AtoN, mark or beacon in any lighthouse, buoy or beacon.
  - 1.4. Reduce an AtoN service in any manner
  - 1.5. With regards to **clauses 1.2** and **1.3** above, cognisance should be taken that the National Ports Act (Act 12 2005) makes provision that the National Ports Authority has to consult with the Port Consultative Committee closest to the respective AtoN first, before SAMSA will consider sanctioning a request to:
    - 1.5.1. Cease operating any AtoN under its control, irrespective of whether such AtoN is replaced by a new AtoN on the same or adjacent location, or
    - 1.5.2. Reduce the service provided by any AtoN
  - 1.6. Proof of such consultation will have to be submitted as part of the motivation for SAMSA's consideration
2. In all instances mentioned above, a written case must be submitted to SAMSA for approval in order for the necessary sanction to be granted.
3. Application forms are obtainable from the office of below mentioned manager - refer to **Annex F** for an examples of the relevant application forms.

All such applications, using the appropriate forms, should be addressed to:

Executive Head: Centre for Sea Watch and Response  
SAMSA  
PO Box 532, Parow, 7499

Tel: (021) 938 3310  
Fax: (021) 938 3334  
E-mail: [aton@samsa.org.za](mailto:aton@samsa.org.za)

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## SECTION VI

### Reporting, audit and inspection procedures

1. Any NAAP, LAAP, AtoN service provider and others concerned in the care or management of any such AtoN under their jurisdiction, shall furnish all such reports, explanations or information concerning these, as SAMSA requires.
    - 1.1. SAMSA, or its appointed agent, may, for the purpose of verifying compliance with the standards required, conduct audits and inspections and make such inquiries about them and their management as it may think fit. Such audits and inspections may comprise:
      - 1.1.1 Physical inspection of the AtoN provided, both by night and day.
      - 1.1.2 Availability of AtoN according to IALA Recommendations. Requirement for all the accountable AtoN Parties to submit regular reports of the performance of their AtoN, which will include availability statistics.
      - 1.1.3 Confirmation that the deployed AtoN comply with IALA recommendations and are fit for the purpose.
      - 1.1.4 Failure/casualty response
      - 1.1.5 Maintenance procedures
      - 1.1.6 Sample inspection regarding colour, range and daymark integrity to ensure that the deployed AtoN is fit for purpose.
  2. SAMSA representatives shall be afforded access to AtoN facilities and such assistance as they may reasonably require.
  3. If in SAMSA's opinion, or on having received a complaint that any AtoN, or any work connected with it, is:
    - 3.1. Inefficient
    - 3.2. Improperly managed
    - 3.3. Confusing a vessel SAMSA will arrange for an inspection of the AtoN, or any work connected thereto.
  4. If it is desirable for the safety of navigation to do so, SAMSA may, by notice in writing:
    - 4.1. Request the accountable AtoN Party to maintain, or repair an AtoN within a reasonable time period;
    - 4.2. To remove an AtoN, a lamp or light in its entirety, to move it to another position, to modify it, or to alter its characteristics to such an extent and in such a manner as SAMSA specifies in the notice; or
    - 4.3. In the case of a lamp or light, with effect from a day specified in the notice:
      - 4.3.1 To refrain from lighting the lamp, or light either entirely, or for the period SAMSA specifies in the notice; or
      - 4.3.2 To cease showing the lamp, or light either entirely or for the period SAMSA specifies in the notice.
  5. SAMSA, or its appointed agent will communicate to the relevant Parties the results of the inspection of their AtoN.
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## Reference documents

IALA Dictionary

IALA Maritime Buoyage System, March 2014

IALA NAVGuide 2014

### Notes

1. **Examples of AtoN** include, but not limited to lighthouses, beacons, breakwater/quay/jetty lights, leading/transit (range) lines, buoys (lit or unlit), lightvessels, daymarks (dayboards), traffic signals, audible (fog/sound) signals<sup>7</sup>, , Racon (radar transponder beacon), Automatic Identification System (AIS) AtoN, Global Navigation Satellite System<sup>8</sup> (GNSS), Differential GNSS<sup>9</sup> (DGNS) and Loran.
2. **Examples of uses of Special Marks:**
  - Ocean Data Acquisition Systems (ODAS) marks
  - Traffic separation marks where use of conventional channel marking may cause confusion
  - Spoil Ground marks
  - Military exercise zone marks
  - Single Point Mooring (SPM)
  - Cable or pipeline marks
  - Recreation zone marks
  - Boundaries of anchorage areas
  - Structures, such as offshore renewable energy installations
  - Aquaculture

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<sup>7</sup> It has been IALA policy since 1985 that audible (fog/sound) signals are not classed as an AtoN, but merely a warning device. A fog signal is able to assist ALL marines in its vicinity, acting as a back-up in case of an emergency. SAMSA shall determine whether a hazard requires an audible signal, or not

<sup>8</sup> This includes Global Positioning System (GPS)

<sup>9</sup> This includes Differential Global Positioning System (DGPS)

## Acronyms and Abbreviations

In this document, unless the context shows that another meaning is intended, the following mean:

<b>AIS</b>	Automatic Identification System
<b>AtoN</b>	Aids to Navigation
<b>DGNSS</b>	Differential Global Navigation Satellite Systems
<b>EMWB</b>	Emergency wreck marking buoy
<b>GPS</b>	Global Positioning System
<b>GRP</b>	glass reinforced plastic (fibreglass)
<b>GNSS</b>	Global Navigation Satellite System
<b>IALA</b>	International Association of Marine Aids to Navigation and Lighthouse Authorities
<b>LED</b>	Light Emitting Diode
<b>IHO</b>	International Hydrographic Organisation
<b>IMO</b>	International Maritime Organisation
<b>NAAP</b>	National Accountable aids to navigation party
<b>LAAP</b>	Local Accountable aids to navigation party
<b>MBS</b>	IALA Maritime Buoyage System
<b>MSI</b>	Maritime Safety Information
<b>NM</b>	Nautical miles
<b>ODAS</b>	Ocean Data Acquisition Systems
<b>RSA</b>	Republic of South Africa
<b>SAMSA</b>	South African Maritime Safety Authority
<b>SANHO</b>	Hydrographic Office of the South African Navy
<b>SPM</b>	Single Point Mooring
<b>SOLAS</b>	International Convention for the Safety of Life at Sea, 1974, as amended
<b>UN</b>	United Nations
<b>WGS</b>	World Geodetic System

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## Definitions and Interpretations

In this concept document, unless the context shows that another meaning is intended, the following mean:

“**Aid to Navigation (AtoN)**” is defined by IALA as “*A device or system external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels and/or vessel traffic*”

“**AIS AtoN**” means a special type of Automatic Identification System (AIS) station which is fitted to an AtoN which provides positive identification of the aid without the need for a special ship-borne display.

“**AtoN restored**” means an AtoN that was non-available due to scheduled and/or unscheduled interruptions, is now performing its full function again.

“**Authority**” means an official body that is set up by government to administer an area of activity that has the right or power to enforce rules or give orders, is a source of reliable information on a subject and has the required knowledge, skill, or experience worthy of respect. SAMSA is the Competent Authority for all maritime related matters, including AtoN.

“**Availability**” means it is the percentage of time that an aid, or system of aids, is performing a required function under stated conditions. Non-availability can be caused by scheduled and/or unscheduled interruptions.

“**Bearing**” in marine navigation terms means it is the direction of one object in relation to another. It is expressed in degrees from a point of reference and is measured clockwise from 000 degrees to 360 degrees.

“**Beacon**” means it is a fixed navigation mark that can be recognised by its shape, colour, pattern, topmark, or light character, or a combination of these.

“**Best point of passage**” means the most appropriate point to pass under a bridge. The “best point of passage” will be determined by the competent Authority taking into account all relevant factors, such as:

- maximum available headroom
- water depth under the bridge, particularly where it is not uniform
- protection of the bridge piers and other obstructions
- the need to have one way or two way traffic

“**Buoy**” means it is a floating, and moored, artificial navigation mark. It can be recognized by means of its shape, colour, pattern, topmark or light character, or a combination of these. It may carry various additional aids to navigation.

“**Cardinal Mark**” is named after the quadrant in which it is placed. The name of a Cardinal Mark indicates that it should be passed to the named side of the mark, where the mariner may find navigable water.

“**Casualty**” – refer to “Failure”

“**Categories**” in terms of aids to navigation means:

- Category 1: An Aid to Navigation (AtoN) or a system of AtoN that is considered by the Competent Authority to be of vital navigational significance. For example, lighted aids to navigation and racons that are considered essential for marking landfalls, primary routes, channels, waterways, dangers or the protection of the marine environment.
- Category 2: An AtoN or a system of AtoN that is considered by the Competent Authority to be of important navigational significance. For example, it may include any lighted aids to navigation and racons that mark secondary routes and those used to supplement the marking of primary routes.
- Category 3: An AtoN or a system of AtoN that is considered by the Competent Authority to be of necessary navigational significance.

“**Characteristic**” means it is a distinctive feature permitting the identification of an aid to navigation.

“**Chromaticity**” means the colour quality of a colour stimulus definable by its chromaticity co-ordinates, or by its dominant (or complementary) wavelength and its purity taken together.

“**Colour**” means the aspect of visual perception by which an observer may distinguish differences between two fields of view of the same size, shape and structure, such as may be caused by differences in the spectral composition of the radiation concerned in the observation.

“**Colour regions**” means the chromaticity boundaries of colours recommended by IALA for lighted AtoN and for surface colours on AtoN – refer to Annex D in this regard. Marine AtoN signal lights use a five-colour system comprising white, red, green, yellow and blue. The recommended surface colours for visual signals on AtoN are as follows:

- Ordinary colours should be limited to white, black, red, green, yellow or blue.
- Orange and fluorescent red, yellow, green or orange may be used for special purposes requiring high conspicuity.

“**Competent Authority**” means any person or organisation that has the legally delegated or invested authority, capacity, or power to perform a designated function. SAMSAs are the Competent Maritime Authority.

“**Conventional direction of buoyage**” means the general direction taken by the mariner when approaching a harbour, river, estuary or other waterway from seaward. In the case of Inland Waters, the conventional direction of buoyage is going upstream. Going upstream, the left hand side is regarded as the Port Hand side and the right hand side the Starboard Hand side.

“**Course to steer**” in terms of the MBS means the direction the vessel should be steered.

“**Daymark**” means it is an unlighted navigation mark.

“**Eclipse**” means an interval of darkness between appearances of a light.

“**Electronic (digital) symbology**” means it is a symbol that is electronically displayed on specific a software programme to complement to physical marks.

“**Emergency Wreck Marking Buoy**” means it is a buoy marking a new, dangerous wreck.

“**Failure**” means the unintentional termination of the ability of a system or part of a system to perform its required function. **Note:** This includes the failure (damage, missing) of a daymark or topmark of a buoy and/or beacon.

“**Fixed AtoN**” means a fixed artificial navigation mark that can be recognised by its shape, colour, pattern, topmark or light character, or a combination of these. While this functional definition includes lighthouses and other fixed aids to navigation, the terms *lighthouse* and *beacon* are used more specifically to indicate importance and size.

“**Flash**” means an exhibition of light for a given time between two darknesses.

“**Floating mark**” means it is a navigation mark carried on a floating body such as a buoy.

“**General navigation**” means all navigation that does not involve entry or departure into a marina, harbour, or the marking of jetties and quays.

“**Group flashing**” means it is a flashing light in which a group of flashes, specified in number, is regularly repeated.

“**IALA Maritime Buoyage System**” means the rules that were introduced by IALA in 1977 in order to standardise maritime buoyage and other aids to navigation. The rules apply to all fixed, floating and electronic marks serving to indicate:

- The lateral limits of navigable channels
- Natural dangers and other obstructions such as wrecks
- Landfall, course to steer, and other areas or features of importance to the mariner

“**LAAP**” means an organ of the State, a public and/or private entity, applicable body corporate, boat club, private lodge/estate and any other entity/body that need to establish AtoN for the purpose to improve safety of navigation in their local area of jurisdiction.

“**Isolated Danger Mark**” means it is a mark erected on, or moored on, or as close to an isolated danger that has navigable water all around it.

“**Lateral limits**” means the sideway navigable limits of a channel.

“**Lateral Marks**” are marks indicating the port and starboard sides of a route to be followed.

“**Leading lights**” means two or more lights associated to form one or more leading lines (or ranges).

“**Light**” means an apparatus emitting light of distinctive character, for use as an aid to navigation by night or, exceptionally, by day.

“**Light characteristics**” means the distinctive feature permitting the identification of an aid to navigation.

“**Maritime Buoyage System**” – see IALA Maritime Buoyage System.

“**Mode**” means a manner, or method of exhibiting lights on a buoy or beacon (daytime/night-time).

“**NAAP**” means an organ of the State, statutory and/or other AtoN service provider and any other entity/body that needs to establish AtoN for the purpose to improve safety of navigation on a national basis.

“**Navigable waters**” means that for a waterway to be navigable, it must meet several criteria, such as it must be deep enough to allow the draft depth of the vessels using it, it must be wide enough to allow passage for the beam width of the vessels using it, it must be free of barriers to navigation such as waterfalls and rapids, or have a way around them, and the current of the waterway must be mild enough to allow vessels to make headway.

“**Nominal range**” is the distance in nautical miles at which a light produces an illuminance at the eye of the observer of  $2 \times 10^{-7}$  lux for night-time range, and  $1 \times 10^{-3}$  lux for day time range in a homogeneous atmosphere in which the meteorological visibility is 10 nautical miles.

“**Numbering or lettering**” means the numbers, or text appearing on an AtoN to be able to identify it in terms of its position, e.g. a buoy on a channel.

“**Offshore installations**” means oil & gas installations, renewable energy devices (wind turbines, tidal & wave devise) and aquaculture (fish farming)

“**Out of position**” means it is a buoy which is not in its charted position.

“**Physical mark**” means it is a mark that is tangible and/or visual.

“**Pictogram**” means an ideogram (a graphic symbol that represents an idea or concept) that conveys its meaning through its pictorial resemblance to a physical object.

“**Pillar**” means a vertical load-bearing member designed to resist compression and buckling and which is usually of circular cross section.

“**Port Hand side**” is a nautical term which refers to the left side of a vessel or ship as perceived by a person on board facing the bow (front).

“**Preferred channel**” means at the point where a channel divides, when proceeding in the “conventional direction of buoyage”, a preferred channel would be the “recommended route” to follow.

“**Regions A and B**” The IALA Maritime Buoyage System makes provision for a single set of rules, which allows Lighthouse Authorities the choice of using red to port or red to starboard, on a regional basis. The two regions being known as Region A and Region B.

“**Rhythm**” (of a navigation light), alternative term: “Characteristic” means the distinctive colour or periodic rhythm (or both) of a navigation light, enabling it to be identified.

“**Safe Water Marks**” serve to indicate that there is navigable water all around the mark; these include centre line marks and mid-channel marks.

“**Sanction**” means the official approval given by SAMSA, as a statutory body in terms of its mandate.

“**Sector**” of a sector light means the space bounded by two vertical planes passing through the luminous source of the sector light and within which a light of a given character is visible.

“**Sector light**” is a light presenting different characters (usually different colours) over various parts of the horizon of interest to marine navigation.

“**Short range AtoN**” means all AtoN intended for use within visual, audible or radar range of the mariner.

“**Spar**” means a vertical pole.

“**Special Mark**” means it is a mark not primarily intended to assist navigation, but which indicate a special area or feature referred to in appropriate nautical documents.

“**Starboard Hand**” side is a nautical term which refers to the right side of a vessel or ship as perceived by a person on board facing the bow (front).

“**Topmark**” means one or more relatively small objects of characteristic shape or colour (or both), placed on top of a navigation mark (or buoy) to identify it.

“**Traffic signal**” means it is a signal used to control traffic movements in a port or port approaches.

“**Unlit**” means that the AtoN does not carry a signal light.

“**Visual Aids to Navigation**” are purpose-built facilities that communicate information to a trained observer on a vessel for the purpose of assisting the task of navigation. The communication process is referred to as *marine signalling*.

“**WGS 84**” means the latest revision of WGS (World Geodetic System) (dating from 1984 and last revised in 2004).

“**World Geodetic System**” (WGS) is a standard for use in cartography, geodesy, and navigation. It comprises a standard coordinate frame for the Earth, a standard spheroidal reference surface (the *datum* or *reference ellipsoid*) for raw altitude data, and a gravitational equipotential surface (the *geoid*) that defines the *nominal sea level*.

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# **ANNEXURES**

**Extract from SOLAS Chapter V**

**Regulation 13 - Establishment and operation of aids to navigation**

1. Each Contracting Government undertakes to provide, as it deems practical and necessary either individually or in co-operation with other Contracting Governments, such aids to navigation as the volume of traffic justifies and the degree of risk requires.
  2. In order to obtain the greatest possible uniformity in aids to navigation, Contracting Governments undertake to take into account the international recommendations and guidelines (reference is made to IALA) when establishing such aids.
  3. Contracting Governments undertake to arrange for information relating to aids to navigation to be made available to all concerned. Changes in the transmissions of position-fixing systems which could adversely affect the performance of receivers fitted in ships shall be avoided as far as possible and only be effected after timely and adequate notice has been promulgated.
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**Extract from the National Ports Act 12 of 2005**

**Lighthouses and other navigational aids**

**78.** (1) The Authority<sup>10</sup> must operate and maintain lighthouses and other navigational aids under its control in terms of standards determined by the South African Maritime Safety Authority in order to assist the navigation of vessels within port limits and along the coast of the Republic.

(2) The Authority may not cease operating any lighthouse or navigational aid under its control, irrespective of whether such lighthouse or aid is replaced by a new lighthouse or aid on the same or adjacent location, or reduce the service provided by any lighthouse or aid in any manner, without the consent of the South African Maritime Safety Authority and having consulted the Port Consultative Committee of the port closest to the lighthouse or aid.

(3) Subject to subsection (2), the Authority may erect new lighthouses or install other navigational aids on locations and in the manner which the Authority may think fit, or improve or extend the service provided by existing lighthouses and other navigational aids.

(4) The Port Consultative Committee of the port closest to a lighthouse or navigational aid may make recommendations to the Authority with regard to the improvement or extension of the service provided by such lighthouse or aid.

(5) The Authority may remove any light or device which may confuse a vessel if the owner of the property on which the light or device is used or the person having charge of such light or device fails to extinguish or effectively screen the light or remove the device within seven days of notice to do so having been served on him or her, and may recover the expenses for the removal from that owner or person.

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<sup>10</sup> i.e. the National Ports Authority

## **Overview of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)**

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) was established on 1 July 1957, with South Africa being one of the founder members. South Africa is still an IALA National Member.

IALA is a non-profit, non-governmental organisation with the aim to foster the safe, economic and efficient movement of vessels for the benefit of the marine community and the protection of the marine environment by:

- continuous improvement and harmonisation of Aids to Navigation (AtoN) worldwide
- bringing together services and organisations concerned with the provision or maintenance of marine AtoN and allied services, at sea and on inland waters.

IALA is the only international organisation that deals with marine AtoN and related matters. IALA brings together services and organisations concerned with the provision or maintenance of AtoN systems and allied activities.

IALA Recommendations represent the highest level of IALA documentation equivalent to a “standard” in an intergovernmental organisation and there is an implicit expectation that national members will observe and implement IALA Recommendations.

Recommendations provide direction to IALA members on uniform procedures and processes that will facilitate IALA objectives. IALA recommendations contain information on how members should plan, operate and manage AtoN and may reference relevant International Standards and IALA Guidelines.

The responsibility for safe navigation resides with the mariner, through the appropriate use of AtoN, in conjunction with official nautical documents and prudent seamanship, including voyage planning as defined in IMO Resolutions.

The IALA AtoN system has two components: Fixed and floating (Maritime Buoyage System) AtoN.

Within the Maritime Buoyage System there are six types of marks, which may be used alone or in combination. The mariner can distinguish between these marks by identifiable characteristics.

Lateral marks differ between Buoyage Regions A and B<sup>11</sup>, whereas the other five types of marks are common to both regions. South Africa falls within Region A. Refer to Annex D in this regard.

### **Contact detail:**

IALA - AISM  
10, rue des Gaudines  
78100 Saint Germain en Laye, France

Telephone: +33 1 34 51 70 01

Fax: +33 1 34 51 82 05

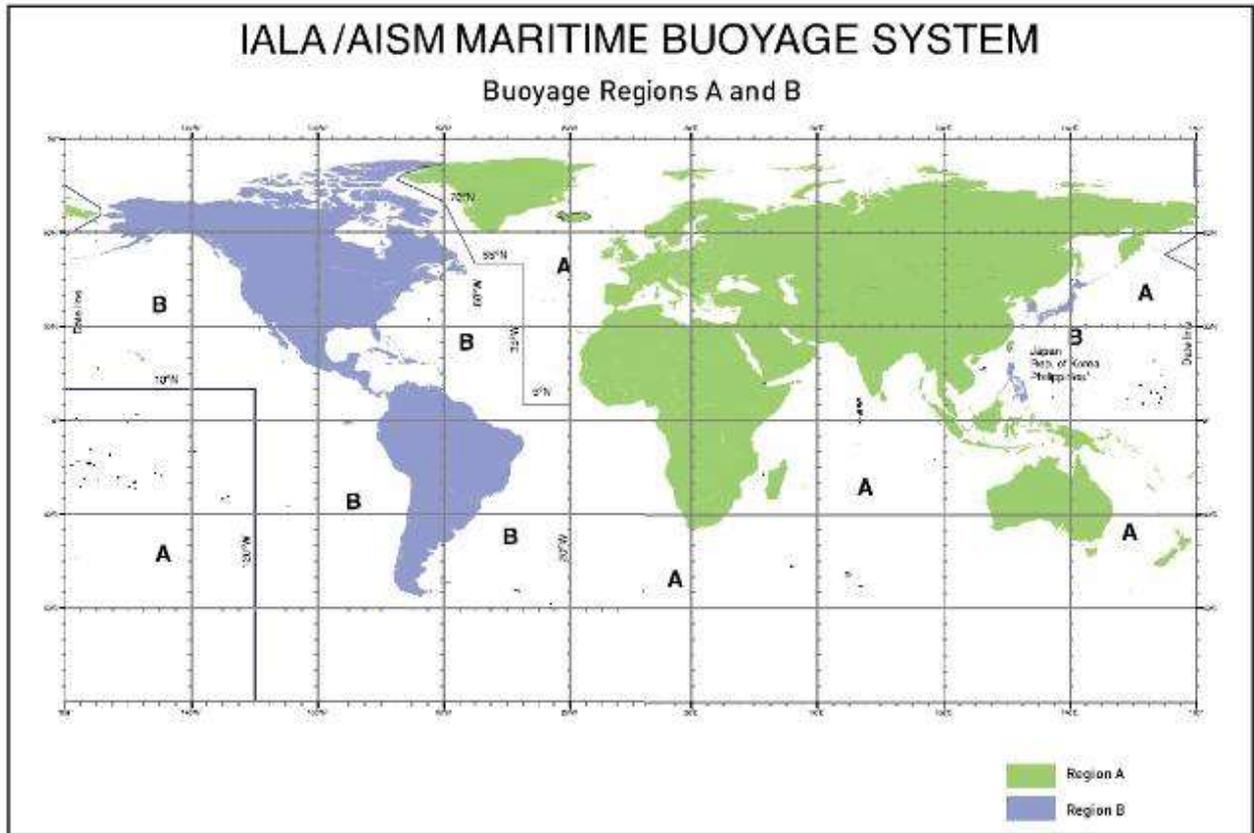
e-mail: [contact@iala-aism.org](mailto:contact@iala-aism.org)

Internet: [www.iala-aism.org](http://www.iala-aism.org)

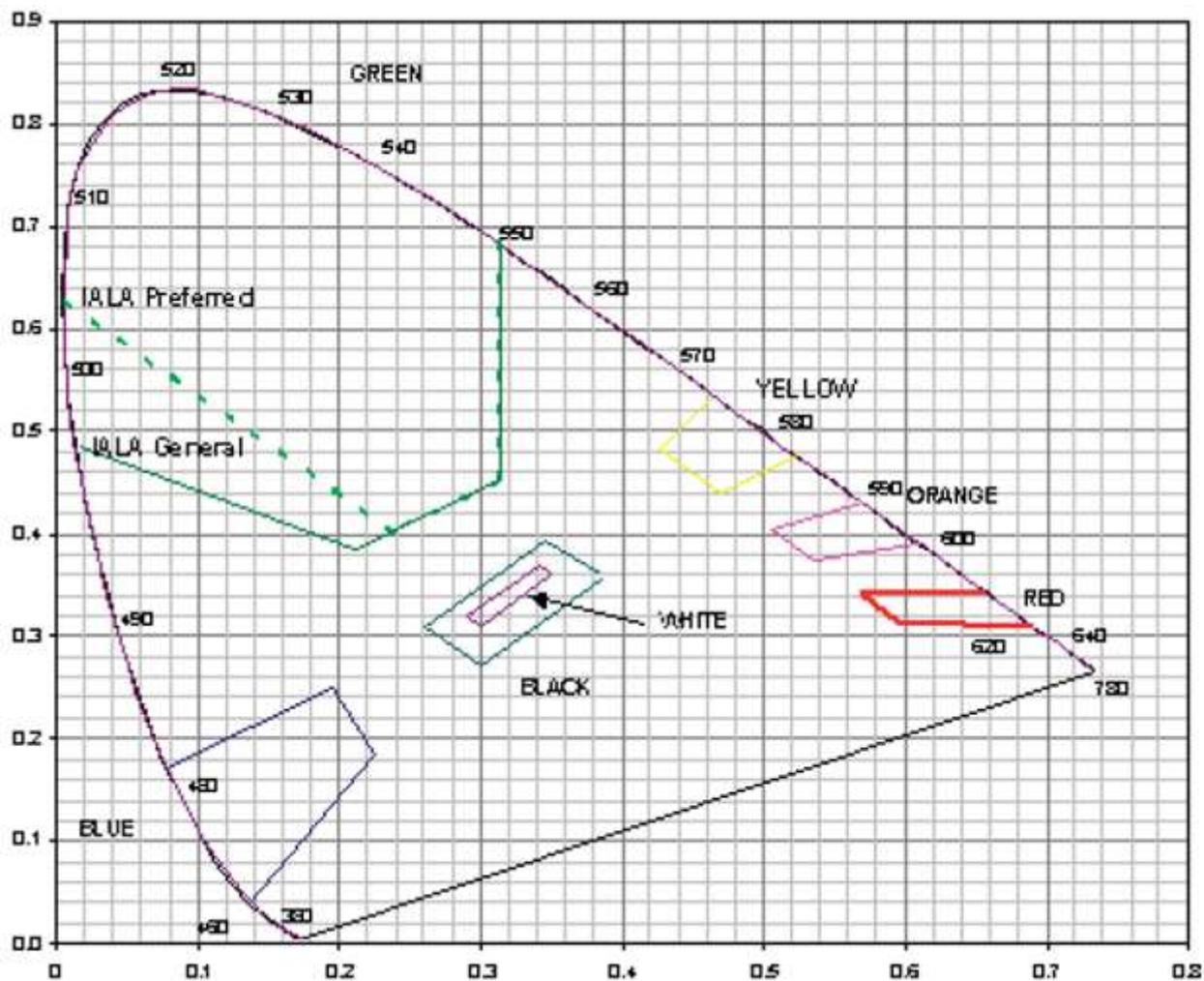
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<sup>11</sup> In Region B the colour red is used to mark the starboard hand side of channels

**IALA Maritime Buoyage System: Buoyage Regions A & B**

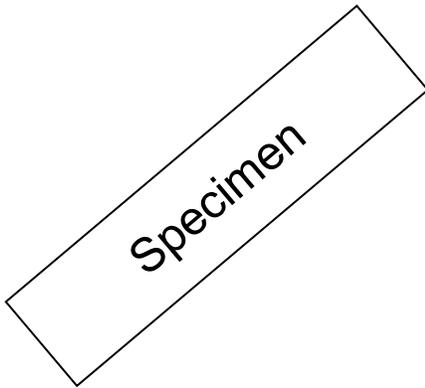


IALA chromaticity areas as plotted on the 1983 CIE chromaticity diagram



# Specimen of Application Forms

**Note:** The latest forms can be obtained from [aton@samsa.org.za](mailto:aton@samsa.org.za)



**NEW MARINE AID TO NAVIGATION<sup>12</sup>**

**Application for Approval of a New Aid(s) to Navigation**

An application is herewith made for the approval by the South African Maritime Safety Authority (SAMSA) to establish an aid to navigation (AtoN) as described hereunder.

**Note:** No National Accountable Aids to Navigation Party (NAAP), Local Accountable Aids to Navigation Party (LAAP), service provider, or any other entity, on land or at sea shall, without the consent of SAMSA:

- (a) erect or place any fixed, floating, radio, radar and/or electronic AtoN, etc.
- (b) alter (colour; character; height; mode of exhibiting lights; range, etc.) of any fixed, floating, radio, radar and/or electronic AtoN, etc.

**Note:** In this instance, a different application form is to be filled in, which can be obtained from the e-mail address given below

- (c) remove or discontinue any fixed, floating, radio, radar and/or electronic AtoN, etc.

**Note:** In this instance, a different application form is to be filled in, which can be obtained from the e-mail address given below

**Please complete all applicable sections**

**Note:** Application to be sent to: [aton@samsa.org.za](mailto:aton@samsa.org.za)

SECTION 1 Detail of entity seeking approval		
1.1	Name, address and contact detail of Entity seeking approval	
1.2	Name, address and contact detail of Entity for whom the AtoN is to be provided for, if different than in clause 1.1 above	

<sup>12</sup> An Aid to Navigation (AtoN) is defined by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) as “a device or system external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels and/or vessel traffic”.

1.3	Name, address and contact detail of Entity whose asset the AtoN is/to be				
1.4	Name, address and contact detail of Entity who would be responsible and maintain the AtoN				
<b>SECTION 2 Information of envisaged AtoN</b>					
2.1	Intended purpose of the AtoN				
2.2	Intended date for the AtoN to become operational				
2.3	How long is it intended for the AtoN to be operational/deployed				
2.4.	<b>Type of AtoN</b> (i.e. Lighthouse, Beacon, Leading/Transit/Sector Light; Breakwater/Quay/Jetty light; Buoy, Sound (fog) Signal, Racon, AIS AtoN and DGPS, etc.				
2.5.	<b>Name of AtoN</b> (Name / Number / Identification)				
2.6.	Is it in the place of an existing/previous AtoN	Yes		No	
2.6.1.	If the answer to clause 2.6 is YES:				
(a)	Which AtoN is it in place of?				
(b)	When was the AtoN being replaced, originally established?				
2.7.	<b>Location</b>				
2.8.	<b>Geographical Co-ordinates</b> (WGS84 Datum)				
2.8.1.	Latitude				
2.8.2.	Longitude				
2.9.	<b>Type of Power Source:</b> (Solar/Mains, etc.)				

2.10.	<b>Proposed IALA<sup>13</sup> Category<sup>14</sup></b> (e.g. 1, 2, or 3)	
<b>SECTION 3 AtoN detail</b>		
3.1.	<b>Unlit AtoN</b>	
3.1.	Complete the sub sections of <b>clause 3.5</b>	
3.2.	<b>Lit AtoN</b>	
3.2.	<b>Light:</b>	
(a)	Colour	
(b)	Divergence	
(c)	Character	
(d)	Detail of character: Flash, Eclipse (dark period) and Total Period: (e.g. fl 0.2, ec 1.8 = 2.0 sec)	
(e)	Horizontal visibility, e.g. 360° (omnidirectional)	
(f)	Light Sector(s): (e.g. R212° - 230° (18°), W230°–235° (5°), G235° - 255° (20°))	
(g)	Leading/Transit/Sector Light Line bearing (e.g. 316°)	
3.3.	Range [Nautical miles (NM)]	
3.4.	Focal height (m) above mean sea level	

<sup>13</sup> **IALA** means the International Association of Marine Aids to Navigation and Lighthouse Authorities

<sup>14</sup> “**Categories**” in terms of AtoN means:

- **Category 1:** An Aid to Navigation (AtoN) or a system of AtoN that is considered by the Competent Authority (SAMSA) to be of **vital navigational significance**. For example, lighted aids to navigation and racons that are considered essential for marking landfalls, primary routes, channels, waterways, dangers or the protection of the marine environment.
- **Category 2:** An AtoN or a system of AtoN that is considered by the Competent Authority (SAMSA) to be of **important navigational significance**. For example, it may include any lighted aids to navigation and racons that mark secondary routes and those used to supplement the marking of primary routes.
- **Category 3:** An AtoN or a system of AtoN that is considered by the Competent Authority (SAMSA) to be of **necessary navigational significance**.

3.5.	<b>Support structure:</b>			
3.5.	Type of structure (other than floating AtoN), e.g. metal pole, metal lattice, concrete structure, etc.			
3.5.	Colour of structure			
3.5.	Height of structure (m)			
3.5.	Detail of day mark(s), e.g. shape and colour			
3.5.	Detail of top mark(s), e.g. shape and colour			
3.5.	Fitted with radar reflector	Yes		No
3.6.	<b>Floating AtoN (buoy)</b>			
3.6.1.	If lit, complete the relevant sub sections of <b>clause 3.2</b>			
3.6.2.	Shape (e.g. Spar, Pillar, etc.)			
3.6.3.	IALA Maritime Buoyage System type (e.g. Lateral, Cardinal, etc.)			
3.6.4.	<b>Colour of:</b>			
(a)	Buoy body			
(b)	Super structure			
3.6.5.	Focal Plane/height (mm), i.e. focal height of the light above water level			
3.6.6.	<b>Daymarks:</b>			
(a)	Colour			
(b)	Shape			
3.6.7.	<b>Topmark/s:</b>			
(a)	Colour			
(b)	Shape			
3.6.8.	Buoy body material [e.g. metal, plastic (GRP, polyethylene, etc.)], etc.			

3.6.9.	Super structure material				
3.6.10.	Diameter of buoy body (mm)				
3.6.11.	Approximate weight of buoy (Kg)				
3.6.12.	Mooring Arrangement (e.g. 36mm chain & 1 tonne sinker)				
3.6.13.	Fitted with radar reflector	Yes		No	
<b>3.7.</b>	<b>Sound (fog) Signal</b>				
3.7.1.	Signal type (electric, bell, etc.)				
3.7.2.	Signal character				
3.7.3.	Sound sector (e.g. directional, omnidirectional)				
3.7.4.	Range [Nautical miles (NM)]				
3.7.5.	Method of switching ON/OFF				
<b>3.8.</b>	<b>Racon</b>				
3.8.1.	Morse Identity Code (form of racon “flash” on ship’s radar display)				
3.8.2.	Sector of signal (e.g. 360°)				
3.8.3.	Frequency:				
(a)	<u>X-band</u> (9320 MHz to 9500 MHz)	Yes		No	
(b)	<u>S-band</u> (2920 MHz to 3100 MHz)	Yes		No	
(c)	Frequency-agile	Yes		No	
3.8.4.	Range [Nautical miles (NM)]				
<b>3.9.</b>	<b>Automatic Identification System (AIS) AtoN</b>				
3.9.1.	Marine Mobile Service Identity (MMSI) number				
3.9.2.	Message 21 content:				
(a)	The type of AtoN				
(b)	The name of the AtoN				

3.9.3.	List any other message types to be transmitted	
3.9.4.	<b>Range</b> [Nautical miles (NM)]	
3.10.	<b>Differential Global Positioning System (DGPS)</b>	
3.10.1.	Station Reference number	Issued by the Hydrographic Office when listed in the List of Lights and Radio Signals (SAN HO-1)
3.10.2.	Identification number of: (Issued by IALA)	
(a)	Reference Station	
(b)	Transmitting Station	
3.10.3.	DGPS corrections	
(a)	Transmitting frequency (kHz)	
(b)	Transmitting frequency (bps)	
3.10.4.	<b>Range</b> [Nautical miles (NM) @ which $\mu\text{V/m}$ ]	
3.10.5.	Message types to be transmitted	
3.10.6.	Integrity monitoring	
3.11.	<b>Any other type AtoN</b>	
3.11.	Detail	
<b>SECTION 4 Motivation why a new AtoN is required</b>		

SECTION 5 Signatures	
5.1	<b>Entity seeking sanction</b>

Name of entity: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

5.2	<b>Entity for whom the AtoN is to be provided for, if different than 5.1 above</b>
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Name of entity: \_\_\_\_\_

Name: \_\_\_\_\_

Signature \_\_\_\_\_ Date: \_\_\_\_\_

5.3	<b>Approval by SAMSA</b>
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**Approved / Not approved**

Name: \_\_\_\_\_

**Executive Head, Centre for Sea Watch and Response**

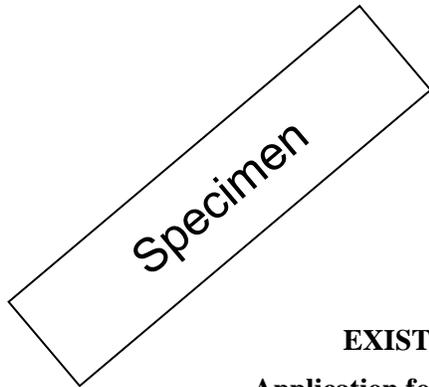
Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Remarks:**

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**EXISTING MARINE AID TO NAVIGATION<sup>15</sup>**

**Application for Approval to alter an existing Aid to Navigation**

An application is herewith made for the approval by the South African Maritime Safety Authority (SAMSA) to alter an aid to navigation (AtoN) as described hereunder.

**Note:** No National Accountable Aids to Navigation Party (NAAP), Local Accountable Aids to Navigation Party (LAAP), service provider, or any other entity, on land or at sea shall, without the consent of SAMSA:

- (d) alter (colour; character; height; mode of exhibiting lights; range, etc.) of any fixed, floating, radio, radar and/or electronic AtoN, etc.
- (e) erect or place any fixed, floating, radio, radar and/or electronic AtoN, etc.

**Note:** a different application form is to be filled in, which can be obtained from the e-mail address given below)

- (f) remove or discontinue any fixed, floating, radio, radar and/or electronic AtoN, etc.

**Note:** a different application form is to be filled in, which can be obtained from the e-mail address given below)

**Please complete all applicable sections**

**Note:** Application to be sent to: [aton@samsa.org.za](mailto:aton@samsa.org.za)

<b>SECTION 1. Detail of entity seeking approval</b>		
1.1.	Name, address and contact detail of Entity seeking approval	
1.2.	Name, address and contact detail of Entity for whom the AtoN is to be altered for, if different than in clause 1.1 above	
1.3.	Name, address and contact detail of Entity whose asset the AtoN is	

<sup>15</sup> An Aid to Navigation (AtoN) is defined by IALA as “a device or system external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels and/or vessel traffic”.

1.4.	Name, address and contact detail of Entity who would be responsible to alter the AtoN		
<b>SECTION 2. Information of AtoN to be altered</b>			
2.1.	Name of AtoN		
2.2.	List of Lights Number		
2.3.	When was the AtoN originally established		
2.4.	Purpose of the AtoN		
2.5.	<b>Type of AtoN</b> (i.e. Lighthouse, Beacon, Leading/Transit/ Sector Light; Breakwater/Quay/Jetty light; Buoy, Sound (fog) Signal, Racon, AIS AtoN and DGPS, etc.		
2.6.	Intended date for the change to take effect		
<b>SECTION 3. Detail of envisaged alterations</b>			
	<b>Description</b>	<b>Present</b>	<b>To be altered to</b>
3.1.	<b>Location</b>		

3.2.	<b>Geographical Co-ordinates (WGS84 Datum):</b>		
3.2.1	Latitude		
3.2.2	Longitude		
3.3.	<b>IALA<sup>16</sup> Category<sup>17</sup></b> (e.g. 1, 2, or 3)		
3.4.	<b>Lit/Unlit AtoN</b>		
3.4.1	Light (if applicable)		
(a)	Colour		
(b)	Divergence		
(c)	Character		
(d)	Horizontal visibility		
(e)	Light Sector(s)		
(f)	Leading/Transit Line/Sector light bearing		
3.5.	Range [Nautical miles (NM)]		
3.6.	Focal height (mm) above mean sea level		
3.7.	<b>Support structure</b>		
3.7.1	Type of structure (other than floating AtoN), e.g. metal pole, metal lattice, concrete structure, etc.		
3.7.2	Colour of structure		

<sup>16</sup> **IALA** means the International Association of Marine Aids to Navigation and Lighthouse Authorities

<sup>17</sup> “**Categories**” in terms of AtoN means:

- **Category 1:** An Aid to Navigation (AtoN) or a system of AtoN that is considered by the Competent Authority to be of **vital navigational significance**. For example, lighted aids to navigation and racons that are considered essential for marking landfalls, primary routes, channels, waterways, dangers or the protection of the marine environment.
- **Category 2:** An AtoN or a system of AtoN that is considered by the Competent Authority to be of **important navigational significance**. For example, it may include any lighted aids to navigation and racons that mark secondary routes and those used to supplement the marking of primary routes.
- **Category 3:** An AtoN or a system of AtoN that is considered by the Competent Authority to be of **necessary navigational significance**.

3.7.3	Height of structure (m)								
3.7.4	Detail of day mark(s), e.g. shape and colour								
3.7.5	Detail of top mark(s), e.g. shape and colour								
3.8.	Fitted with radar reflector	Yes		No		No		Yes	
3.9.	<b>Floating AtoN (buoy)</b>								
3.9.1	If lit, complete the relevant sub sections of <b>clause 3.4</b>								
3.9.2	Shape (e.g. Spar, Pillar, etc.)								
3.9.3	IALA Maritime Buoyage System type (e.g. Lateral, Cardinal, etc.)								
3.10.	<b>Colour of:</b>								
(c)	Buoy body								
(d)	Super structure								
3.10.1	Focal Plane/height (mm)								
3.10.2	<b>Daymarks:</b>								
(c)	Colour								
(d)	Shape								
3.10.3	<b>Topmark/s:</b>								
(c)	Colour								
(d)	Shape								
3.10.4	Fitted with radar reflector	Yes		No		No		Yes	
3.11.	<b>Sound (fog) Signal:</b>								
3.11.1	Signal Type (electric, bell, etc.)								
3.11.2	Signal Character								

3.11.3	Sector (e.g. directional, omnidirectional)								
3.11.4	<b>Range</b> [Nautical miles (NM)]								
3.11.5	Method of switching ON/OFF								
3.12.	<b>Racon:</b>								
3.12.1	Morse Identity Code								
3.12.2	Sector of signal (e.g. 360°)								
3.12.3	Frequency:								
(d)	<u>X-band</u> (9320 MHz to 9500 MHz)	Yes		No		No		Yes	
(e)	<u>S-band</u> (2920 MHz to 3100 MHz)	Yes		No		No		Yes	
(f)	Frequency-agile	Yes		No		No		Yes	
3.12.4	Range [Nautical miles (NM)]								
3.13.	<b>Automatic Identification System (AIS) AtoN</b>								
3.13.1	Marine Mobile Service Identity (MMSI) number								
3.13.2	Message 21 content:								
(c)	The type of AtoN								
(d)	The name of the AtoN								
(e)	Any other message types (to be) transmitted								
(f)	<b>Range</b> [Nautical miles (NM)]								
3.14.	<b>Differential Global Positioning System (DGPS)</b>								
3.14.1	Station Reference number – as per the List of Lights and Radio Signals(SAN HO-1)								

3.14.2	Identification number of: (Issued by IALA):							
3.14.3	Reference Station							
3.14.4	Transmitting Station							
3.14.5	DGPS corrections(issued by IALA)							
(c)	Transmitting frequency (kHz)							
(d)	Transmitting frequency (bps)							
3.14.6	<b>Range</b> [Nautical miles (NM) @ which $\mu\text{V/m}$ ]							
3.14.7	Message types to be transmitted							
3.14.8	Integrity monitoring	Yes		No		No		Yes
3.15.	<b>Any other type AtoN</b>							
3.15.1	Detail							
<b>SECTION 4. Motivations</b>								
4.1.	Reasons why the current AtoN is to be altered  <b>Note:</b> In order for SAMSA to reach a decision, the reasons given should include, but not limited to: <ul style="list-style-type: none"> <li>• Users' request/opinion</li> <li>• Technical justifications</li> <li>• Feasibility study</li> <li>• Financial analysis, etc.</li> </ul> If need be, a separate submission can be made.							
4.2.	<b>Consultation:</b> Detail, with documented proof of:							
4.2.1	User consultation							
4.2.2	Local Port Consultative Committee (PCC) consultation – only relevant in the case of the National Ports Authority							

**SECTION 5. Signatures**

**5.1. Entity seeking sanction**

Name of entity: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**5.2. Entity for whom the AtoN is to be provided for, if different than 5.1 above**

Name of entity: \_\_\_\_\_

Name: \_\_\_\_\_

Signature \_\_\_\_\_ Date: \_\_\_\_\_

**5.3. Approval by SAMSA**

**Approved / Not approved**

Name: \_\_\_\_\_

**Executive Head, Centre for Sea Watch and Response**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Remarks:**

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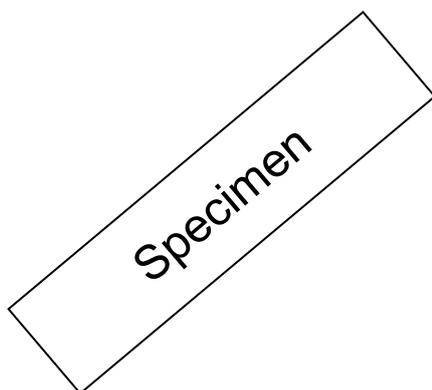
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## EXISTING MARINE AID TO NAVIGATION<sup>18</sup>

### Application for Approval to discontinue an existing Aid to Navigation

An application is herewith made for the approval by the South African Maritime Safety Authority (SAMSA) to discontinue an aid to navigation (AtoN) as described hereunder.

**Note:** No National Accountable Aids to Navigation Party (NAAP), Local Accountable Aids to Navigation Party (LAAP), service provider, or any other entity, on land or at sea shall, without the consent of SAMSA:

- (g) remove or discontinue any fixed, floating, radio, radar and/or electronic AtoN, etc.
- (h) erect or place any fixed, floating, radio, radar and/or electronic AtoN, etc.

**Note:** a different application form is to be filled in, which can be obtained from the e-mail address given below)

- (i) alter (colour; character; height; mode of exhibiting lights; range, etc.) of any fixed, floating, radio, radar and/or electronic AtoN, etc.

**Note:** a different application form is to be filled in, which can be obtained from the e-mail address given below)

### Please complete all applicable sections

**Note:** Application to be sent to: [aton@samsa.org.za](mailto:aton@samsa.org.za)

SECTION 1. Detail of entity seeking approval		
1.1.	Name, address and contact detail of Entity seeking approval	
1.2.	Name, address and contact detail of Entity for whom the AtoN is to be altered for, if different than in clause 1.1 above	
1.3.	Name, address and contact detail of Entity whose asset the AtoN is	
SECTION 2. Information of AtoN to be discontinued		
2.1.	Name of AtoN	

<sup>18</sup> An Aid to Navigation (AtoN) is defined by IALA as “a device or system external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels and/or vessel traffic”.

2.2.	List of Lights Number				
2.3.	Location				
2.4.	<b>Type of AtoN</b> (i.e. Lighthouse, Beacon, Leading/Transit/ Sector Light; Breakwater/Quay/Jetty light; Buoy, Sound (fog) Signal, Racon, AIS AtoN and DGPS, etc.				
2.5.	When was the AtoN originally established				
2.6.	Purpose of the AtoN				
2.7.	Intended date to discontinue the AtoN				
2.8.	Would another AtoN be established in its place?	Yes		No	
2.8.1	If the answer to clause 2.8 is YES, a separate Application for Approval of a New Aid to Navigation form is to be submitted prior to SAMSA considering the application to discontinue the AtoN in question.				
2.8.2	Has an Application for Approval of a New Aid to Navigation form been submitted to SAMSA replace the AtoN in question?	Yes		No	
<b>SECTION 3. Detail of the AtoN to be discontinued</b>					
3.1.	<b>Geographical Co-ordinates (WGS84 Datum):</b>				
3.1.1	Latitude				
3.1.2	Longitude				
3.2.	<b>IALA<sup>19</sup> Category<sup>20</sup></b> (e.g. 1, 2, or 3)				
3.3.	<b>Lit/Unlit AtoN</b>				

<sup>19</sup> IALA means the International Association of Marine Aids to Navigation and Lighthouse Authorities

<sup>20</sup> “Categories” in terms of AtoN means:

- **Category 1:** An Aid to Navigation (AtoN) or a system of AtoN that is considered by the Competent Authority to be of **vital navigational significance**. For example, lighted aids to navigation and racons that are considered essential for marking landfalls, primary routes, channels, waterways, dangers or the protection of the marine environment.
- **Category 2:** An AtoN or a system of AtoN that is considered by the Competent Authority to be of **important navigational significance**. For example, it may include any lighted aids to navigation and racons that mark secondary routes and those used to supplement the marking of primary routes.
- **Category 3:** An AtoN or a system of AtoN that is considered by the Competent Authority to be of **necessary navigational significance**.

3.4.	<b>Support structure</b> (other than floating AtoN)	
3.5.	<b>Floating AtoN (buoy)</b>	
3.6.	<b>Sound (fog) Signal</b>	
3.7.	<b>Racon</b>	
3.8.	<b>Automatic Identification System (AIS) AtoN</b>	
3.9.	<b>Differential Global Positioning System (DGPS)</b>	
3.9.1	Station Reference number	
3.10.	<b>Any other type AtoN</b>	
3.10.1	Detail	
<b>SECTION 4. Motivations</b>		
4.1.	<p>Reasons why a current AtoN is to be discontinued.</p> <p><b>Note:</b> In order for SAMSA to reach a decision, the reasons given should include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Users' request/opinion</li> <li>• Technical justifications</li> <li>• Feasibility study</li> <li>• Financial analysis, etc.</li> </ul> <p>If need be, a separate submission can be made.</p>	
4.2.	<b>Consultation:</b> Detail, with documented proof of:	
4.2.1	User consultation	
4.2.2	Local Port Consultative Committee (PCC) consultation – only relevant in the case of the National Ports Authority	

<b>SECTION 5. Signatures</b>	
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<b>5.1.</b>	<b>Entity seeking sanction</b>
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Name of entity: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

<b>5.2.</b>	<b>Entity for whom the AtoN is to be provided for, if different than 5.1 above</b>
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Name of entity: \_\_\_\_\_

Name: \_\_\_\_\_

Signature \_\_\_\_\_ Date: \_\_\_\_\_

<b>5.3.</b>	<b>Approval by SAMSA</b>
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**Approved / Not approved**

Name: \_\_\_\_\_

**Executive Head, Centre for Sea Watch and Response**

Signature \_\_\_\_\_ Date: \_\_\_\_\_

**Remarks:**

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