

# IALA RECOMMENDATION

R0130(O-130)

## CATEGORISATION AND AVAILABILITY OBJECTIVES FOR SHORT RANGE AIDS TO NAVIGATION

**Edition 3.0**

**June 2017**



# DOCUMENT HISTORY

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| Date            | Details   | Approval           |
|-----------------|---|--------------------|
| 1 December 2004 | 1 <sup>st</sup> issue   | Council session 35 |
| 24 June 2011    | Edition 2<br>Periodic review<br>References updated  | Council session 51 |
| 16 June 2017    | Edition 3.0<br>Reformatted and restructured according to new IALA document structure and template<br>Section 4 moved to guideline 1004 Service Levels | Council session 64 |

# THE COUNCIL

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## **RECALLING:**

- 1 The function of IALA with respect to Safety of Navigation, the efficiency of maritime transport and the protection of the environment.
- 2 Article 8 of the IALA Constitution regarding the authority, duties and functions of the Council.

## **NOTING:**

- 1 That one of the aims of the Association is to foster safe, economic and efficient movement of vessels by the improvement and harmonisation of aids to navigation world-wide.
- 2 That IMO SOLAS Chapter V, Regulation 13, includes the requirement that Contracting Governments undertake to arrange for the establishment and maintenance of such aids to navigation as, in their opinion, the volume of traffic justifies and the degree of risk requires.
- 3 That that IMO Resolution A.953(23) identifies the required signal availability for world-wide radionavigation systems and that other IALA Recommendations identify availability requirements for hyperbolic radionavigation and differential GNSS augmentation systems.

## **RECOGNISING:**

- 1 That IALA Recommendation E-105 on the Need to Follow National and International Standards advises in Recommendation (2), that purchasing authorities include reliability and quality requirements in their specifications when procuring Aids to Navigation equipment.
- 2 The importance of describing the management objectives for the operational performance levels of Short Range Aids to Navigation provided to mariners and the need to provide guidance to National Members on suitable and realistic levels of operational performance.

**CONSIDERING** the proposals of the IALA Aids to Navigation Requirements and Management Committee,

**ADOPTS** the Recommendation on Categorisation and Availability Objectives for Short Range Aids to Navigation, as described in the Annex,

**INVITES** Members and marine aids to navigation authorities worldwide to implement the provisions of the Recommendation,

**RECOMMENDS** that National Members and other appropriate Authorities providing marine aids to navigation services categorize their Aids to Navigation in accordance with the categories set out in Section 1 of the Annex to this Recommendation,

**REQUESTS** the IALA Aids to Navigation Requirements and Management Committee or such other committee as the Council may direct to keep the Recommendation under review and to propose amendments as necessary.



# **ANNEX**

**TO**

**IALA RECOMMENDATION R0130(O-130)**

**ON**

**CATEGORISATION AND AVAILABILITY OBJECTIVES  
FOR SHORT RANGE AIDS TO NAVIGATION**



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## 1 INTRODUCTION

Availability of Aids to Navigation (AtoN) has traditionally been linked to the size and complexity of the individual AtoN or system of AtoN concerned – for example, major lighthouses have been rated as Category 1 and light buoys as Category 3. While this correlation has been relevant in the past for AtoN system, changes occurring in navigational safety requirements, the technologies used in AtoN have indicated a need to review the basis on which availability is defined.

SOLAS chapter 5 defines that Competent Authorities should provide aids to navigation relevant to volume of traffic and degree of risk.

The adoption of contemporary risk management practices enables AtoN management authorities to define, preferably in consultation with mariners and other stakeholders, the availability requirements for the AtoN or system of AtoN concerned, and to assess its current and future categorization based upon its navigational significance. The resulting categorization of the AtoN or system of AtoN may result in some higher category AtoN being downgraded and, alternatively, the potential for lower category AtoN to be upgraded.

It is possible to identify the required level of availability during the design phase of Short Range Aids to Navigation by considering the known theoretical relationship between individual component reliability and system availability.

Whenever AtoN is mentioned in this document it shall also mean a system of AtoN.

### 1.1 SCOPE

This document provides a method to categorise and further provides availability objectives for each category of AtoN or System of AtoN. It does not consider other AtoN, such as radionavigation systems (GNSS or DGNSS) or Vessel Traffic Services (VTS).

### 1.2 CONSIDERATIONS

The categorisation of AtoN should be based on a risk assessment methodology that assesses the navigational significance of an AtoN or system of AtoN, taking into consideration factors such as:

- Waterway significance;
- Areas of environmental sensitivity;
- Nature and type of cargo;
- Nature and type of navigation;
- Traffic density;
- Mix of AtoN and their coverage;
- Climate (ice, fog etc.);
- National concerns and priorities.

### 1.3 ASSESSMENT ASPECTS

The categorisation of an AtoN or system of AtoN also depends on aspects such as:

- Existing technology;
- Logistics;
- Redundancy;
- Accessibility;

- Other navigational services available to the mariner including, pilotage, VTS, GNSS.

Categorisation should be determined or confirmed, wherever practicable, in consultation with mariners and other stakeholders who use the particular short range AtoN or system of AtoN.

Formal procedures for collecting, processing and recording availability data should be established.

## 1.4 CATEGORIES

There are three categories of AtoN, reflecting their navigational significance.

### 1.4.1 CATEGORY 1

An AtoN or system of AtoN that is considered by the Competent Authority to be of vital navigational significance.

For example, lighted AtoN, AIS AtoN and racons that are considered essential for marking landfalls, primary routes, channels, waterways, dangers or the protection of the marine environment.

### 1.4.2 CATEGORY 2

An AtoN or system of AtoN that is considered by the Competent Authority to be of important navigational significance.

For example, it may include any lighted AtoN, AIS AtoN and racons that mark secondary routes and those used to supplement the marking of primary routes.

### 1.4.3 CATEGORY 3

An AtoN or system of AtoN that is considered by the Competent Authority to be of necessary navigational significance.

### 1.4.4 OVERALL

The categorisation of a system of AtoN is independent of the rating of the individual aids within the system. Such a system can be composed of various Categories of AtoN.

For example, a system rated as Category 2 could include individual AtoN that are rated Category 1, 2 or 3. A buoyed channel rated Category 2 may have an entrance/fairway buoy rated Category 1.

## 1.5 AVAILABILITY OBJECTIVES

The table below provides overall availability objectives for each category of AtoN or System of AtoN as provided by the Competent Authority.

**Table 1** *Categories of percentage availability*

| CATEGORY | AVAILABILITY OBJECTIVE | CALCULATION PERIOD   |
|----------|------------------------|--|
| 1        | 99.8%                  | Availability Objectives are calculated over a continuous three-year period, unless otherwise specified |
| 2        | 99.0%                  |  |
| 3        | 97.0%                  |  |

Calculations principles according to IALA Guideline on Availability and Reliability of Aids to Navigation.

The minimum availability of any individual AtoN should be 95.0%.

Where the availability of an individual AtoN consistently falls below 95.0%, consideration should be given to the discontinuance or replacement/modification of that AtoN.

## 2 DEFINITIONS

### 2.1 SHORT RANGE AIDS TO NAVIGATION

All AtoN intended for use within visual, audible or radar range of the mariner.

### 2.2 SYSTEM OF ATON

A group of complementary short range AtoN intended to collectively provide sufficient and timely information with which to safely navigate vessels within and through a waterway.

### 2.3 AVAILABILITY

The probability that an AtoN or system of AtoN, as defined by the Competent Authority, is performing its specified function at any randomly chosen time. This is expressed as a percentage of total time that an AtoN or system of AtoN should be performing their specified function.<sup>1</sup>

## 3 ACRONYMS

To assist in the use of this Recommendation, the following acronyms have been used:

|       |  |
|-------|--|
| AtoN  | Aid(s) to Navigation   |
| DGNSS | Differential Global Navigation Satellite System  |
| IALA  | International Association of Marine Aids to Navigation and Lighthouse Authorities - AISM |
| IMO   | International Maritime Organization  |
| GNSS  | Global Navigation Satellite System   |
| SOLAS | International Convention for the Safety of Life at Sea (IMO 1974 as amended)             |
| VTS   | Vessel Traffic Services  |

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<sup>1</sup> Reference: as adapted from the IALA Guideline No. 1035 on the Availability and Reliability of Aids to Navigation - Theory and Examples.