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| **US Radiocommunications Sector****Fact Sheet** |
| **Working Party:** WP 5B | **Document No:** USWP5B31-18-FD\_r1 |
| **Ref:** Annex 4 to Document 5B/731 | **Date:** 06 March 2023 |
| **Document Title:** PRELIMINARY DRAFT REVISION OF RECOMMENDATION ITU-R M.1371-5 Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile frequency band |
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| **Purpose/Objective:** The purpose of this document is to provide updated content for the proposed AIS Message 28. |
| **Abstract:** The USCG had previously proposed a new AIS Message 28, a single slot Aids to Navigation (AtoN), 2 years ago. Since that time, we have refined the message content, and this contribution provides an update to the message content to be in line with the ongoing work to mature this message content.  |

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| **Radiocommunication Study Groups** |  |
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| Working document towards a draft revision of Recommendation ITU-R M.1371-5 |

1. **Introduction**

This document proposes updated technical content to Recommendation ITU-R M.1371-5 for AIS Message 28. These changes are a result of ongoing discussions about how to use the single slot Aids to Navigation report and what content is required.

1. **Summary of changes**

Listed below are the proposed changes to Document 5B/731 Annex 4 which contribute to the revision of Recommendation ITU-R M.1371-5:

1. Updated the message description.
2. Enhanced the time stamp to support up to 60 minutes.
3. Removed the position accuracy.
4. Replaced the AtoN ID with AtoN Designator.
5. Enhanced the dimensions fields to provide better support for Mobile AtoN and other special applications.
6. Added an AtoN Status Source field.
7. Removed the Type of Physical Aid to Navigation (AtoN) augmented by the AtoN.
8. Added an On-Station indicator.
9. Added an AtoN Signal Status field.
10. Provided an updated table for the nature of the AtoN.
11. Provided a new table for the nature of AtoN for regional use.
12. Provided a new table for AtoN operating status.
13. **Attachments**

The following attachment contains the proposed changes to Annex 4 of the chairman’s report with track changes. Note that only the relevant sections have been included in this proposal.

attachment

PRELIMINARY DRAFT REVISION OF RECOMMENDATION ITU-R M.1371-5

Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile frequency band

(Question ITU-R 232/5)

(1998-2001-2006-2007-2010-2014-202X)

Scope

This Recommendation provides the technical characteristics of an automatic identification system (AIS) using time division multiple access in the very high frequency (VHF) maritime mobile band.

\*Note: no additional changes prior to this section.

## 3.26 Message 28: Single-slot Aid to Navigation Report

Single slot AIS Aid to Navigation (AtoN) report, primarily intended for the use by authorities to provide AtoN reports, but may also be used by ships to report a hazard or navigational AtoN discrepancy. It may be accompanied by Message 24A - Static Data Report, Part A to provide the charted name of the AtoN.

This message is not intended to be processed or portrayed by the AIS MKD on mobile AIS devices. The parameters or grouping of parameters in this message should be portrayed on pertinent navigational systems (i.e., INS) as are defined in IEC 62288.

This message may be used to identify autonomous marine radio devices (i.e. Mobile AtoN and MOB Class M) and to provide approximate direction and speed for those that are mobile.

TABLE (*bis1)*

| Parameter | Bits | Description |
| --- | --- | --- |
| Message ID | 6 | Identifier for this message; always 28 |
| Repeat indicator | 2 | Used by the repeater to indicate how many times a message has been repeated. |
| Source ID | 30 | Identity (in the MMS) of the source of the message (see Article **19** of the RR and Recommendation ITU R M.585) |
| Spare | 2 | Should be set to zero. Do not use. |
|  |  |  |
| UTC Minute | 6 | UTC minute when the report, 00-59; 60 = UTC minute not available = default; 61-63 not used. |
| UTC Second | 6 | UTC second when the report was generated by the EPFS (0-59 or 60) if time stamp is not available, which should also be the default value or 61 if positioning system is in manual input mode or 62 if electronic position fixing system operates in estimated (dead reckoning) mode or 63 if the positioning system is inoperative). |
| Longitude | 28 | Longitude in 1/10 000 min of position of an AtoN (±180°, East = positive, West = negative, 181 = (6791AC0h) = not available = default) |
| Latitude | 27 | Latitude in 1/10 000 min of an AtoN (±90°, North = positive, South = negative, 91 = (3412140h) = not available = default) |
|  |  |  |
| AtoN Type | 2 | 0 = physical AtoN, at broadcasted position;1 = synthetic AtoN, physically present at the broadcasted--from elsewhere--predicted position; 2 = virtual AtoN, not physically present at the broadcasted fixed position; or3 = mobile AtoN, AtoN at broadcasted position, but mobile. |
| Nature of the AtoN | 7 | Identifies the category and type of AtoN mark. See Table (*bis2*) |
|  |  |  |
| AtoN Designator | 18 | "Maximum 3 character 6-bit ASCII designator that distinguishes this AtoN from other similar AtoNs. “@@@” = not available = default." |
| Dimensions type | 2 | 0 = *Circular Area* = Dimension A = Dimension B = 0 = point = default; Dimension A, (in 100 metre steps, 0-511) + Dimension B (in 1 metre steps, 0-127) = represents a radius from the broadcasted position to denote that a object or area is at a point or within the circle.1 = *Height & Dimension* = Dimension A = represent a height above mean water (i.e., platform, structure, wind turbine, etc.), in 1 metre steps, 0-511, 511 = height greater than 510 metres; Dimension B = represents a radius from the from the broadcasted position to denote that the structure is within the circle, in 10 metre steps, 0-127 metres, to convey the physical dimensions of a large AtoN or structure.2 = *Vector* = Dimension A = COG, in true degrees: 000-359 in 1 degree steps, 360 = COG varying, 361 = adrift, COG unknown, 362 = propelled, COG unknown; 363 = tethered, COG unknown; Dimension B = SOG, in 1 knot steps, 0-59; 60 = dynamically positioned on station, 61-127 not used.3 = *Swing Circle* = Dimension A = Dimension B = 0 represents a point = default; Dimension A (in 1 metre steps, 0-511 metres) + Dimension B (in 10 metre steps, 0-127 metres) = represents a radius from the broadcasted position to convey the a large swing circle of a this AtoN. |
|  |  |  |
| Dimensions A | 9 | 0-511 as defined by its AtoN Dimension Type |
| Dimension B | 7 | 0-127 as defined by its AtoN Dimension Type |
| AtoN Status Source | 1 | 0 = AtoN Operating Status Provide by an Authority or Autonomouly by the AtoN Station; 1 = AtoN Operating Status reported to an Authority, i.e., mariner AtoN discrepancy report. |
|  |  |  |
| On-station Indicator | 3 | 0 = On-station 1 = On-station, but uncharted 2 = On-station, but damaged, occulted, or submerged 3 = Off-station, and damaged, occulted, or submerged 4 = Off-station, adrift in the vicinity5 = Off-station, location unknown 6 = Removed or relocated, no longer at its charted position 7 = Unknown = default |
| AtoN Signal Status | 4 | Per Table (bis4) |
| Spare | 8 | Should be set to zero. Reserved for future use |
| Number of bits | 168 | Occupies one slot |

**Table (bis2)  -- Nature of the AtoN**

|  |  |  |
| --- | --- | --- |
|   | 0 | Unknown or unspecified = default |
|   | 1 | Reference point |
| 2 | RACON  |
| 3 | Fixed structures, such as platforms or towers |
| 4 | IALA Emergency Wreck Marking Buoy |
| Fixed AtoN | 5 | Light, without sectors |
| 6 | Light, with sectors |
| 7 | Leading Light Front |
| 8 | Leading Light Rear |
| 9 | Beacon, Cardinal N |
| 10 | Beacon, Cardinal E |
| 11 | Beacon, Cardinal S |
| 12 | Beacon, Cardinal W |
| 13 | Beacon, Port Hand |
| 14 | Beacon, Starboard Hand |
| 15 | Beacon, Preferred Channel Port Hand |
| 16 | Beacon, Preferred Channel Starboard Hand |
| 17 | Beacon, Isolated Danger |
| 18 | Beacon, Safe Water |
| 19 | Beacon, Special Mark |
| Floating AtoN | 20 | Cardinal Mark N |
| 21 | Cardinal Mark E |
| 22 | Cardinal Mark S |
| 23 | Cardinal Mark W |
| 24 | Port Hand Mark |
| 25 | Starboard Hand Mark |
| 26 | Preferred Channel Port Hand |
| 27 | Preferred Channel Starboard Hand |
| 28 | Isolated Danger |
| 29 | Safe Water |
| 30 | Special Mark |
|   | 31 | Light vessel, LANBY, Rigs     |
| Mobile AtoN | 32 | Reserved for future use |
| 33 | Mobile AtoN: Flotsam Marker, Large (greater than XX metres) |
| 34 | Mobile AtoN: Flotsam Marker, Small (less than XX metres) |
| 35 | Mobile AtoN: Pollution Spill Marker  |
| 36 | Mobile AtoN fitted to Flotsam (e.g., containers, debris) |
| 37 | Reserved for future use |
| 38 | Reserved for future use |
| 39 | Reserved for future use |
| 40 | Mobile AtoN fitted to Ocean Data Acquisition System (ODAS) |
| 41 | Mobile AtoN fitted to a Water Sampling and/or Monitoring Platform |
| 42 | Reserved for future use |
| 43 | Mobile AtoN: Underwater Operations |
| 44 | Mobile AtoN: Divers Down Marker |
| 45 | Mobile AtoN: Military Operation Area Marker |
| 46 | Mobile AtoN: Military Operation Target Marker |
| 47 | Mobile AtoN: Search & Rescue Datum Mark |
| 48 | Mobile AtoN: Towed Cable, Pipe or Semi-submerged Object Marker |
| 49 | Mobile AtoN: Towed Vessel or Object |
| 50 | Reserved for future use |
| 51 | Mobile AtoN: Underwater Operations |
| 52 | Mobile AtoN: Divers Down Marker |
| 53 | Mobile AtoN: Military Operation Area Marker |
| 54 | Mobile AtoN: Military Operation Target Marker |
| 55 | Mobile AtoN: Search & Rescue Datum Mark |
| 56 | Mobile AtoN: Towed Cable, Pipe or Semi-submerged Object Marker |
| 57 | Mobile AtoN: Towed Vessel or Object |
| Reserved | 58 | Reserved for future use |
| 59 | Reserved for future use |
| 60 | Reserved for future use |
| 61 | Reserved for future use |
| 62 | Reserved for future use |
| 63-127 | Reserved for regional use |

**Table (bis3) -- Nature of AtoN (Reserved for regional use)**

|  |  |  |
| --- | --- | --- |
| Mobile AtoN | 63 | Mobile AtoN fitted to an Umanned Remotely-Operated Vehicle  |
| 64 | Mobile AtoN fitted to an Umanned Autonomous Vehicle  |
| 65 | Mobile AtoN: Fishnet Marker  |
| 66 | Mobile AtoN: Fishing Long Line Marker |
| 67 | Mobile AtoN: Dynamic Zone Marker Cardinal E |
| 68 | Mobile AtoN: Dynamic Zone Marker Cardinal N |
| 69 | Mobile AtoN: Dynamic Zone Marker Cardinal S |
| 70 | Mobile AtoN: Dynamic Zone Marker Cardinal W |
| Special Mark | 71 | Special Mark: Vessel reported in distress via GMDSS Alert (may be accomapny by a message 12 that provides furter details) |
| 72 | Special Mark: Call-in Point (may be accomapny by a message 12 that provides furter details) |
| 73 |  Reserved for future use |
| 74 |  Reserved for future use |
| 75 |  Reserved for future use |
| 76 |  Reserved for future use |
|  Reserved | 77 - 127 |  Reserved for future use |

**Table (bis4) - AtoN Operating Status**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **1st bit** | **2nd bit** | **3rd bit** | **4th bit** |
| **Type of Signal** | **Light** | **Sound**  | **RACON** | **Markings** |
| **Watching properly** | **0** | **0** | **0** | **0** |
| **Discrepant** | **1** | **1** | **1** | **1** |

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\*Note: no additional changes following this section.