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| **US Radiocommunications Sector****Fact Sheet** |
| **Working Party:** WP 5B | **Document No:** USWP5B32-11 |
| **Ref:** Annex 1 to Document 5B/819 | **Date:** 11 March 2024 |
| **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 and to clarify using addressed AIS Messages 25 and 26. |
| **Abstract:** The USCG had previously proposed a new AIS Message 28, a single slot Aids to Navigation (AtoN) message, 2 years ago. Since that time, we have refined the message content. This contribution provides an update to the message content to be in line with the ongoing work to mature AIS Message 28. The addressed AIS Messages 25 and 26 need to be acknowledged, but the standard does not clearly define this.  |

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| **Radiocommunication Study Groups** |  |
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| Source:  Annex 1 to Document 5B/819Reference**:** ITU-R M.1371-5  | **Document: USWP5B32-12** |
| **06 Mar 2024** |
| **English only** |
| United States of America |
| 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.

This document also addresses the Addressed messaging for AIS Messages 25 and 26. These messages require an Acknowledgement message.

1. **Summary of changes**

Listed below are the proposed changes to Document 5B/819 Annex 1, which contribute to the revision of Recommendation ITU-R M.1371-5:

1. Updated the message description.
2. **Attachments**

The following attachment contains the proposed changes to Annex 1 of the chairman’s report with track changes highlighted in blue. 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.

## 5.3 Transmission packets

### **5.3.1 Addressed Messages 6, 12, 25 and 26**

Addressed messages should have a destination ID. The source station should anticipate an acknowledgement message (Message 7 or Message 13). If an acknowledgement is not received the station excluding Class B “SO” should retry the transmission. The station should wait 4 s before attempting retries. When a transmission is retried, the retransmit flag should be set to retransmitted. The number of retries should be 3, but it could be configurable between 0 and 3 retries by an external application via the presentation interface. When set to a different value by an external application, the number of retries should default to 3 retries after 8 min. The overall result of the data transfer should be forwarded to above layers. The acknowledgement should be between transport layers in two stations.

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

## 3.5 Message 7: Binary acknowledge

**Message 13: Safety related acknowledge**

Message 7 should be used as an acknowledgement of up to four Message 6, 25 or 26 messages received (see § 5.3.1, Annex 2) and should be transmitted on the channel, where the addressed message to be acknowledged was received.

Message 13 should be used as an acknowledgement of up to four Message 12 messages received (see § 5.3.1, Annex 2) and should be transmitted on the channel, where the addressed message to be acknowledged was received.

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

## Message 28: Aid-to-Navigation Report (single-slotted)

This single slot AIS Aid to Navigation (AtoN) Report (Table *BIS*) is primarily intended for the use by authorities in lieu of or to supplement AIS Message 21 AIS Aid to Navigation (AtoN) reports using either RATDMA or CSTDMA; to report Mobile AtoN types or provide extended information on the AtoN (i.e., its height) and what its marking (i.e., hazardous area). This message can coded to be repeated by the recipient station’s, so as to extend its range of coverage and create a mesh network. It may be accompanied by Message 24A - Static Data Report, Part A to provide the charted name of the AtoN if not already being provided by Message 21

TABLE (*bis)*

| 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) |
| Time stamp | 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) |
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| Restricted Use Indicator | 2 | Denotes where the AtoN may be operated.0 = Unrestricted use (default)1 = Use restricted to territorial waters of the flag state (of MMSI MID)2 = Use restricted the Exclusive Economic Zone (EEZ) of the flag state (of MMSI MID)3 = Use restricted as defined by its flag state (of MMSI MID)NOTE 1- Use outside of a restricted area requires permission of the flag state competent authority. |
| AIS AtoN Station Type | 3 | Denotes the type of AIS AtoN station. See IALA Recommendation R0126, The Use of the AIS in Marine AtoN Services, R1016, Mobile Marine Aids to Navigation (Mato,N) and IMO MSC Circular 1463, Policy on Use of AIS Aids to Navigation.0 = A physical AIS AtoN; 1 = A synthetic) predicted AIS AtoN; 2 = A synthetic monitored AIS AtoN; 3 = A virtual AIS AtoN; 4 = A mobile AIS AtoN; 5 = A mobile self-propelled AIS AtoN; 6-7 = Reserved for future use. |
|  Types of aids-to-navigation | 7 | 0 = not available = default; refer to appropriate definition set up by IALA; (see Table *BIS 2*). |
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| [–]IALA AtoN MRN  | 17 | AtoN unique IALA Marine Resource Name (MRN). national identification number. The MMSI MID represents the nationality.000001-131 071, 0 = unassigned or unknown = default. See IALA Guideline G1143*, IALA MRN for AtoN*, e.g., urn:mrn:iala:aton:<ISO 3166-1 alpha-2 code for its nationality>:<national identification number>. |
| AtoN Dimensions type | 2 | Defines what Dimensions A and B represent.0 = AtoN Height and Width. Dimension A = represents a height above mean water (i.e., platform, structure, wind turbine, etc.), in 1 meter steps, 0-510, 511 = height greater than 510 meters; Dimension B = represents a circle radius from the broadcasted position encompassing the structure/object, in 10 meter steps, 0-126, 127 = a circle greater than 1260 meters. Used to convey the physical dimensions of a large AtoN or structure and assist its sightings. Dimension A = Dimension B = 0 = unknown = default.1 = Mobile AtoN Vector. Dimension A = COG, in true degrees: 0-359 in 1 degree steps, 360 = COG unreported; 361 = dynamically positioned on station, COG unreported, 362 = purposedly adrift, COG unreported, 362 = self-propelled, COG unreported; 363 = tethered, COG unreported, 364 = COG unknown = default, 365-511 reserved for future use; Dimension B = SOG, in 1 knot steps, 0-59; 60 = SOG unreported; 61 = dynamically positioned on station, SOG unreported, 62 = purposedly adrift, SOG unreported, 62 = self-propelled, SOG unreported; 63 = tethered, SOG unreported, 64 = SOG unknown = default, 65-127 reserved for future use. 2 = AtoN Area/Line. Dimension A = length of a rectangle area or line, in 10 meter steps, 0 – 510, 511 = length greater than 5100 meters; Dimension B = width of the area, in 10 meter steps, 0 – 126, 127 = width greater than 1260 meters, 0 = Dimension A represents a line, the broadcasted position represents the mid-point of the height and width of a rectangular area denoting the area of the AtoN description. Dimension A = Dimension B = 0 = unknown = default.3 = Swing Circle. Dimension A = Dimension B = 0 represents a point = default; Dimension A (in 1 meter steps, 0-127 meters) + Dimension B (in 10 meter steps, 0-1270 meters) = represents a radius from the broadcasted position to convey a large swing circle of this AtoN. NOTE: AtoN Dimension Types may alternate to provide more information about the AtoN, i.e., using Type 0 to provide the height and width of a Mobile AtoN, using Type 2 to provide the area a Mobile AtoN is marking, e.g., oil spill. |
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| AtoN Dimensions A | 9 | 0-511 as defined by its AtoN Dimension Type (0 = default) |
| AtoN Dimension B | 7 | 0-127 as defined by its AtoN Dimension Type (0 = default) |
| AtoN Charted Status | 1 | Denotes whether the AtoN is charted or not.0 = AtoN is charted1 = AtoN uncharted = default |
| AtoN On-station Status | 3 | Denotes whether the AtoN is on-station or not.0 = On-station or on course (Mobile AtoN) = default1 = On-station, but damaged, occulted, submerged or otherwise not properly visible 2 = Off-station location unknown3 = Off-station, but reporting its current position4 = Off-station adrift5 = Off-station, removed or relocated6 = On-station, as a new or temporary AtoN7 = Reserved for future use |
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| AtoN Status bits | 8 | Reserved for the indication of the AtoN status. SeeIALA Recommendation R0126.00000000 = default |
| Rebroadcast Flag | 1 | Use to indicate whether this AtoN Report should be rebroadcasted upon receipt;-to extend the range of the original report.0 = do not rebroadcast = default; 1 = rebroadcast this report. |
| Spare | 9 | Should be set to zero. Reserved for future use |
| Number of bits | 168 | Occupies one slot |

Table (*bis 2*)

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|   | 0 | Unknown or unspecified = default |
| 1 | Reference point |
| 2 | RACON or MAtoN (when not otherwise type 32-56) |
| 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 | Mobile AtoN fitted to Ocean Data Acquisition System (ODAS) |
| 33 | Mobile AtoN fitted to a Water Sampling and/or Monitoring Vehicle |
| 34 | Mobile AtoN fitted to a Research Vehicle |
| 35 | Mobile AtoN: Towed Cable, Pipe or Semi-submerged Object Marker |
| 36 | Mobile AtoN: Towed Vessel or Object |
| 37 | Mobile AtoN: Flotsam Marker, Large (greater than XX meters) |
| 38 | Mobile AtoN: Flotsam Marker, Small (less than XX meters) |
| 39 | Mobile AtoN: Fishing Apparatus |
| 40 | Mobile AtoN: Synthetic Target Marker  |
| 41 | Mobile AtoN: Protected Species Marker |
| 42 | Mobile AtoN: Military Operation Target Marker |
| 43 | Mobile AtoN: Dangerous Object |
| 44 | Mobile AtoN: Pollution Spill Marker |
| 45 | Mobile AtoN: Search & Rescue Datum Mark |
| 46 | Mobile AtoN: Datum Mark |
| 47 | Mobile AtoN: Operating Underwater (at times)  |
| 48 | Mobile AtoN: Underwater Operations Marker |
| 49 | Mobile AtoN: Military Operation or Restricted Area Marker N |
| 50 | Mobile AtoN: Military Operation or Restricted Area Marker E |
| 51 | Mobile AtoN: Military Operation or Restricted Area Marker W |
| 52 | Mobile AtoN: Military Operation or Restricted Area Marker S |
| 53 | Mobile AtoN: Dynamic Area Cardinal Marker N |
| 54 | Mobile AtoN: Dynamic Area Cardinal Marker E |
| 55 | Mobile AtoN: Dynamic Area Cardinal Marker W |
| 56 | Mobile AtoN: Dynamic Area Caedinal Marker S |
| 57 - 63 | Reserved for future use |
| 64 – 127  | Reserved for regional use |

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