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| **US Radiocommunications Sector****Fact Sheet** |
| **Working Party:** WP 5B | **Document No:** USWP5B35-04 |
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| **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 the requirement to receive AMRD Group B devices.  |
| **Abstract:** The USCG had previously proposed a new AIS Message 28, a single slot Aids to Navigation (AtoN) message, 3 years ago. Since that time, we have refined the message content. This contribution provides an update to the message content. This contribution also clarifies the requirement to receive AMRD Group B devices. |

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| **Radiocommunication Study Groups** |  |
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1. **Introduction**

This document proposes updated technical content to Recommendation ITU-R M.1371-5. These changes are a result of ongoing refinement of the new AIS Message 28, a single slot Aids to Navigation (AtoN) message. This contribution also clarifies the requirement to receive AMRD Group B devices.

1. **Summary of changes**

Listed below are the proposed changes to Document 5B/315 Annex 4.4 , which contribute to the revision of Recommendation ITU-R M.1371-5:

To be added before the final draft.

1. **Attachment**

The following attachment contains the proposed changes to Annex 4.4 of the chairman’s report. All track changes from Annex 4.4 have been accepted; only the new proposed changes are shown in track changes. Note that only the relevant sections have been included in this proposal.

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| Source: Document 5B/TEMP/112Subject: Recommendation [ITU-R M.1371-5](https://www.itu.int/rec/R-REC-M.1371-5-201402-I/en) | Annex 4.4 toDocument 5B/315-E |
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| Annex 4.4 to Working Party 5B Chair’s Report |
| 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 |

*(No additional changes prior to this section)*

**A2-2.1.4 Multi-channel operation**

The AIS should be capable of receiving on three parallel channels and transmitting on four independent channels in accordance with § A2-4.1. Three separate AIS receiving processes should be used to simultaneously receive on AIS channels A, B, and 2006. One TDMA transmitter should be used to alternate AIS transmissions on four independent frequency channels.

*(No additional changes prior to this section)*

**A6-3.1 Composition**

The Class B “CS” AIS should comprise:

– A communication processor, capable of operating in a part of the VHF maritime mobile service (MMS) frequency band, in support of short-range, VHF, applications.

– At least one transmitter and three receiving processes for AIS. The three AIS receiving processes should work independently and simultaneously on AIS channels A, B, and 2006.

– An internal GNSS position sensor, which provides a resolution of one ten thousandth of a minute of arc and uses the WGS-84 datum (see § A6-3.3).

**A6-3.2 Operating frequency channels**

The Class B “CS” AIS station should operate at AIS 1 and AIS 2 and channel 2006 (160.9 MHz) for reception of transmissions by AMRD Group B using AIS technology in accordance with Recommendation ITU-R M.2135.

*(No additional changes prior to this section)*

**A6-4.2.1.1 Dual channel operation**

The AIS should be capable of operating on three parallel channels in accordance with § A6-3.2. Three separate AIS receive channels or processes should be used to simultaneously receive information on three independent frequency channels. One AIS transmitter should be used to alternate AIS transmissions on two independent frequency channels.

*(No additional changes prior to this section)*

[*Editor’s note: More work to be done on the following section*]

**A7-3.26** **Message 28: Aid-to-Navigation Report (Single-slot message)**

Message 28 provides similar information as AIS Message 21, but in one slot versus two slot, and can be used to report MAtoN direction and speed or provide extended information on the AtoN (i.e., its height) and what it’s marking (i.e., hazardous area). It may be accompanied by Message 24A - Static Data Report, Part A to provide the charted name of the AtoN.

This message may also be sent by a vessel to report an AtoN off-position or malfunction, or navigational hazard or obstruction, or to confirm an AtoN position and status.

TABLE A7-41

| **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 RR Art. **19** and Rec. 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) |
| Restricted Use Indicator | 2 | Denotes where the AtoN may be operated.0 = unrestricted use = default1 = 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.NOTE 2 – This parameter should not be available and reported as 0 if AtoN Report Originator = 1. |
| 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 (MAtoN) and IMO MSC Circular 1473, Policy on Use of AIS Aids to Navigation.0 = a physical AIS AtoN (floating)1 = a physical AIS AtoN (fixed)2 = a synthetic predicted AIS AtoN3 = a synthetic monitored AIS AtoN4 = a virtual AIS AtoN5 = a mobile AIS AtoN6-7 = reserved for future use |
| Types of AtoN | 7 | 0 = not available = default 1-127 = refer to message 21 Table 29 or Table BIS 2 below). |
| IALA AtoN MRN  | 17 | AtoN unique IALA Marine Resource Name (MRN). national identification number. The MMSI MID represents the nationality. 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>.000001-131 071, 0 = unassigned or unknown = default. |
| 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, 63 = self-propelled, SOG unreported; 64 = tethered, SOG unreported, 65 = SOG unknown = default, 66-127 reserved for future use. 2 = AtoN Area/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 = 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. If Dimension B = 0, then it represents a line. 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. |
| 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 uncharted = default1 = AtoN charted |
| AtoN On-station Status | 4 | Denotes whether the AtoN is on-station or not.0 = on-station = default1 = on-station or on course (Mobile AtoN)2 = on-station, but damaged, occulted, submerged or otherwise not properly visible3 = off-station location unknown (also used to report when synthetic or virtual AIS reports are not being broadcasted)4 = off-station, but reporting its current position5 = off-station adrift6 = off-station, removed or relocated7 = on-station, as a new or temporary AtoN8 = unmarked navigation hazard, used by a vessel to inform of an unmarked navigation hazard. Type of AtoN should be denoted as 1 = reference point. Should be accompanied by a message 14 that provides a description of the hazard, e.g., floating container.9 = unmarked obstruction (anything that restricts, endangers, or interferes with navigation). Type of AtoN should be denoted as 1 = reference point. Should be accompanied by a message 14 that provides a description of the hazard, e.g., vessel aground.10-15 = reserved for future use. |
| AtoN Status bits | 8 | Reserved for the indication of the AtoN status. See IALA Recommendation R0126, The Use of the AIS in Marine AtoN Services.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 = default1 = rebroadcast this report |
| AtoN Report Originator | 1 | Denotes the originator of the report.0 = competent authority originated report = default1 = vessel originated report |
| AtoN Confirmation Flag | 2 | This parameter may be used by competent authorities to seek confirmation(s) on the position and/or status of this reported AtoN. If Source ID = 00MIDxxxx or 99MIDxxxx, 0 = no confirmation requested = default; 1 = confirmation requested.If a confirmation is requested, the latest request received by the vessel should be automatically retained for at least 24 hours or until overridden by a no confirmation requested message. If the vessel should come within 2000 m of the reported AtoN it should rebroadcast its latest confirmation request message unchanged or updated with the observed latitude, longitude, AtoN On-station Status, and AtoN Status bits.0 = unknown or unable to confirm = default1 = reported latitude, longitude, AtoN On-station Status, and AtoN Status bits confirmed, unchanged2 = reported latitude, longitude, AtoN On-station Status, or AtoN Status bits confirmed and updated3 = reserved for future use |
| Spare | 5 | Should be set to zero. Reserved for future use |
| Number of bits | 168 | Occupies one slot |

Table A7-42

**Type of aids-to-navigation**

|  |  |  |
| --- | --- | --- |
|  | **Code** | **Definition (Type of aid to navigation)** |
|  | 0-31 | Refer to Table A7-29 |
| Mobile AtoN | 32 | Mobile AtoN Ocean Data Acquisition System (ODAS) |
| 33 | Mobile AtoN Water Sampling and/or Monitoring Vehicle |
| 34 | Mobile AtoN 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: Navigation hazard |
| 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  |
|  |  |
|  |  |
|  |  |
| 50 | Mobile AtoN: Dynamic Area |
|  |  |
|  |  |
|  |  |
| 51-63 | Reserved for future use |
|  | 64-127 | Reserved for regional use |