**Input paper:** DTEC4-6.2.3.4

**Input paper for the following Committee(s):** **Purpose of paper:**

(Select as appropriate)

**□** ARM **□** ENG **□** PAP **☑** Input

**X** DTEC **□** VTS **□** Information

**Agenda item** …………………………………

**Technical domain/ Task number** …………………………………

**Author(s)/Submitter(s)** China MSA

PROPOSED REVISION TO PRELIMINARY DRAFT OF recommendation ITU-R M.1371-5

# Summary

This document proposes amendments to the preliminary draft revision of ITU-R M.1371-5. It includes corrections to the retransmission control of Messages 6 and 12, as well as improvements to the parameters in Message 28.

## Purpose of the document

The purpose of this document is to propose revisions to ITU-R M.1371-5, aiming to address technical gaps, improve the document's applicability, and contribute to the further refinement of the preliminary draft.

## Related documents

[1] IALA Committee Work Program (2023-2027)

[2]ITU-R M.1371-5 Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile frequency band

# Background

ITU-R M.1371-5, published in 2014, is currently under revision, with a new version expected in 2026. The IALA DTEC working group 3 is actively seeking further contributions to ensure the technical completeness and feasibility of the revised standard.

This document is based on the latest revision of ITU-R M.1371-5 and proposes modifications to improve the retransmission control mechanisms for Messages 6 and 12, and adjustments to the parameters of Message 28. These proposals are presented for discussion at DTEC4.

# Discussion

In Annex 2, Section 5.3.1 , the situation of “it could be configurable between 0 and 3 retries by an external application via the presentation interface” applies only to the base station. Therefore, it is recommended to add "for the base station" at the end of the sentence for clarity. The statement “When the external application is set to another value, the retransmission count should default to 3 after 8 minutes” does not align with the actual situation. In practice, the retransmission count remains unchanged after the base station is configured via the BCG sentence. Therefore, it is recommended to remove this statement to avoid confusion.

In Annex 7, Section 3.26, Table A7-41, the AtoN Dimensions Type for Message 28 are insufficient for meeting the practical application requirements. Therefore, it is recommended to revise the size limits upward to accommodate a wider range of operational needs. Furthermore, in practical applications, the effective area of the message is not necessarily a standard rectangle, nor is its orientation always aligned with longitude or latitude. Therefore, it is suggested to introduce Interior Angle and Rotation parameters, allowing the effective area of the message to be defined as a rhombus or triangle. This enhancement would improve the flexibility and operability of the message coverage area.

# References

1. ITU-R M.1371-5 Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile frequency band

# Action requested of the Committee

The Committee is requested to:

1. Consider the suggestions in section 3.
2. Take appropriate actions.

Annex

The proposed revisions are shown in track changes and highlighted blue in the following texts.

#### A2-5.3.1 Addressed Messages 6 and 12

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 for base station. ~~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.

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

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 = 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.  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 AtoN 3 = a synthetic monitored AIS AtoN 4 = a virtual AIS AtoN 5 = a mobile AIS AtoN [6 = a mobile self-propelled AIS AtoN] 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~~3 | 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~~0.25-meter steps, 0-~~510~~2046, ~~511~~ 2047= height greater than ~~510~~ 511.5meters; Dimension B = represents a circle radius from the broadcasted position encompassing the structure/object, in ~~10~~2.5-meter steps, 0-~~126~~ 510, ~~127~~ 511= a circle greater than ~~1260~~1275 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~~2047 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~~511 reserved for future use.   2 = AtoN Area. 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~~50-meter steps, 0 – ~~510~~ 2046, ~~511~~ 2047= length greater than ~~5100~~102300 meters; Dimension B = width of the area, in ~~10~~50-meter steps, 0 – ~~126~~510, ~~127~~ 511= width greater than ~~1260~~ 25500 meters.  3 = Swing Circle. Dimension A = Dimension B = 0 represents a point = default; Dimension A (in ~~1~~0.1-meter steps, 0-~~127~~200 meters) + Dimension B (in ~~10~~200-meter steps, 0-~~1270~~102200 meters) = represents a radius from the broadcasted position to convey a large swing circle of this AtoN.  4 = Line. The latitude and longitude values represent the midpoint of the line; The 20 bit of AtoN Dimensions A and AtoN Dimension B represent the length of the line, in 0.1-meter steps，0-104857.6 meters.  5 = Interior Angle and Rotation. AtoN Dimensions A = degree of the interior angle on the southwest side before rotation, 0-179 =diamond shape, 180-359 = triangular shape, in 1-degree steps, with the degree being AtoN Dimensions A-180, 360-2047 reserved for future use.. AtoN; Dimensions B = clockwise rotation angle, in 1-degree steps, 0-359 degrees, 360-511 reserved for future use. 6-7 = reserved for future use.  NOTE: AtoN Dimension Types may alternate to provide more information about the AtoN.   1. 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. 2. using Type 2 to provide the area a Mobile AtoN is marking (orientation indicated by the long side of a rectangular, diamond, or triangular shape; using Type 5 to indicate the direction of rotation. 3. using Type 1 to provide the orientation, and using Type 4 to specify the length of the line segment. |
| AtoN Dimensions A | ~~9~~11 | 0-~~511~~2047 as defined by its AtoN Dimension Type (0 = default) |
| AtoN Dimension B | ~~7~~9 | 0-~~127~~511 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 = default 1 = AtoN charted |
| AtoN On-station Status | 4 | Denotes whether the AtoN is on-station or not.  0 = on-station = default  1 = on-station or on course (Mobile AtoN) 2 = on-station, but damaged, occulted, submerged or otherwise not properly visible 3 = 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 position 5 = off-station adrift 6 = off-station, removed or relocated 7 = on-station, as a new or temporary AtoN 8 = 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 = default 1 = rebroadcast this report |
| AtoN Report Originator | 1 | Denotes the originator of the report.  0 = competent authority originated report = default  1 = 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 = default  1 = reported latitude, longitude, AtoN On-station Status, and AtoN Status bits confirmed, unchanged  2 = reported latitude, longitude, AtoN On-station Status, or AtoN Status bits confirmed and updated  3 = reserved for future use |
| ~~Spare~~ | ~~5~~ | ~~Should be set to zero. Reserved for future use~~ |
| Number of bits | 168 | Occupies one slot |