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| **Radiocommunication Study Groups** |  |
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| Received: 19 April 2019  Subject: Recommendation ITU-R M.1371 | **Document 5B/675-E** |
| **23 April 2019** |
| **English only** |
| International Association of Marine Aids to Navigation and Lighthouse Authorities | |
| Liaison Note to ITU-R WORKING pARTY 5B | |
| Working document towards A PRELIMINARY DRAFT Revision of Recommendation ITU-R M.1371 | |

Introduction

IALA thanks Working Party (WP) 5B for its liaison statement on revision of Recommendation ITU-R M.1371-5 (Annex 6 to Working Party 5B Chairman's Report provided by ITU-R WP 5B Doc. [5B/646](https://www.itu.int/md/R15-WP5B-C-0646/en)).

During the 23rd meeting of IALA ENAV held 1–5 April 2019 in Singapore, IALA reviewed and considered the liaison statement from WP 5B.

The IALA ENAV Committee reviewed the proposed revisions of:

– Message 21: “Aids to Navigation report”;

– Message 28: Identification and position report for autonomous maritime radio devices;

– Message 29: Electronic Aid to Navigation (eAtoN) Report;

– Message 24 A to be useable in most cases for static object data.

Summary of Revisions

The IALA ENAV Committee reviewed a number of editorial and technical changes proposed of Message 21 and new Messages 28 and 29 in Recommendation ITU-R M.1371-5.

– To maintain support for legacy display systems, AIS message 21 should be used to indicate Mobile AtoNs. This could be achieved by updating Table 74 of Recommendation ITU-R M.1371-5 to reflect that Mobile AtoNs are captured by Aids-to-Navigation code 31.

– While updating Figure 42, care should be taken as to how legacy display systems will interpret the new rules for the dimension value. IALA recommends consulting with CIRM to investigate the behaviour of legacy display systems regarding the proposed change.

– To clarify the use of the AtoN status bits in message 21 IALA proposes to add a footnote to Table 73 parameter “AtoN status” stating “(1) For details on the use of the AtoN status pages refer to IALA documentation”.

– IALA proposes to delete proposed Message 28 for the time being as only Mobile AtoN and MOB are in Group A AMRD. For the purpose of AIS AtoN proposed Message 29 is sufficient.

– Message 29 should be amended to allow for a Single slot AIS Aid to Navigation (AtoN) Report. This message should be accompanied with Message 24A - Static Data Report, Part A - to provide an AtoN Name. It is primarily intended to identify and to provide the status of physical AtoN marking a special area, hazard other obstruction. This message can also be used to provide approximate direction and speed for a Mobile AtoN. This single slot AtoN Report would also allow the use of the CSTDMA access scheme which is more friendly to the AIS VDL than the existing two slot RATDMA Message 21.

– The parameter field in proposed Message 29: ”Nature of the AtoN”, “AtoN ID”, “Type of Physical Aid to Navigation (AtoN) augmented by the AtoN” and “Status” needs more work from IALA’s point of view. IALA will provide appropriate input to the following meeting of ITU WP5B.

– Proposed Message 29 should be renamed to Message 28 “Single slot Aid to Navigation (AtoN) Report”. A parameter field COG should be added to separate dimension and COG in the message.

The following changes are proposed for integration in the review of ITU-R M.1371-5. A track changes version with these proposed changes identified in the current version of Annex 6 to Working Party 5B Chairman's Report is provided as follows.

Details of Revisions

## 3.19 Message 21: Aids-to-navigation report

This message should be used by an AtoN AIS station. This station may be mounted on an aid‑to‑navigation or this message may be transmitted by a fixed station when the functionality of an AtoN station is integrated into the fixed station. This message should be transmitted autonomously at a Rr of once every three (3) min or it may be assigned by an assigned mode command (Message 16) via the VHF data link, or by an external command, or after any parameter value has changed. This message should not occupy more than two slots.

An AtoN station may also transmit a safety related broadcast message (Message 14) upon detecting that the floating AtoN has gone out of position or is malfunctioning, at the Competent Authority’s discretion.

TABLE 73

| Parameter | Number of bits | Description |
| --- | --- | --- |
| Message ID | 6 | Identifier for Message 21 |
| Repeat indicator | 2 | Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more |
| 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) |
| Type of aids-to-navigation | 5 | 0 = not available = default; refer to appropriate definition set up by IALA; see Table 74 |
| Name of Aids-to-Navigation | 120 | Maximum 20 characters 6-bit ASCII, as defined in Table 47 “@@@@@@@@@@@@@@@@@@@@” = not available = default.  The name of the AtoN may be extended by the parameter “Name of Aid-to-Navigation Extension” below |
| Position accuracy | 1 | 1 = high (≤10 m)  0 = low (>10 m) 0 = default The PA flag should be determined in accordance with Table 50 |
| 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) |
| Dimension/ reference for position | 30 | Reference point for reported position; also indicates the dimension of an AtoN (m) (see Fig. 42*bis* and § 4.1), if relevant |
| Type of electronic position fixing device | 4 | 0 = Undefined (default) 1 = GPS 2 = GLONASS 3 = Combined GPS/GLONASS 4 = Loran-C 5 = Chayka 6 = Integrated Navigation System  7 = surveyed. For fixed AtoN and virtual AtoN, the charted position should be used. The accurate position enhances its function as a radar reference target 8 = Galileo 9-11 = not used  12 = multiple position, navigation and timing (PNT) system 13 = inertial navigation system 14 = terrestrial radio navigation system 15 = internal GNSS |
| 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) |
| Off-position indicator | 1 | For floating AtoN, only: 0 = on position; 1 = off position.  This flag should only be considered valid by receiving station, if the AtoN is a floating aid, and if time stamp is equal to or below 59. For floating AtoN the guard zone parameters should be set on installation |
| AtoN status | 8 | Reserved for the indication of the AtoN status1  00000000 = default |
| RAIM-flag | 1 | RAIM (Receiver autonomous integrity monitoring) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use see Table 50 |
| Virtual  AtoN flag | 1 | 0 = default = real AtoN at indicated position; 1 = virtual AtoN, does not physically exist. |
| Assigned mode flag | 1 | 0 = Station operating in autonomous and continuous mode = default 1 = Station operating in assigned mode |
| Spare | 1 | Spare. Not used. Should be set to zero. Reserved for future use |
| Name of Aid-to-Navigation Extension | 0, 6, 12, 18, 24, 30, 36, ... 84 | This parameter of up to 14 additional 6-bit-ASCII characters for a  2-slot message may be combined with the parameter “Name of Aid-to-Navigation” at the end of that parameter, when more than 20 characters are needed for the name of the AtoN. This parameter should be omitted when no more than 20 characters for the name of the A-to-N are needed in total. Only the required number of characters should be transmitted, i.e. no @-character should be used |
| Spare | 0, 2, 4, or 6 | Spare. Used only when parameter “Name of Aid-to-Navigation Extension” is used. Should be set to zero. The number of spare bits should be adjusted in order to observe byte boundaries |
| Number of bits | 272-360 | Occupies two slots |

*Notes relating to Table**73*:(1) For details on the use of the AtoN status pages refer to IALA documentation.



*[Editor’s note: review the input below and provide feedback as required.]*

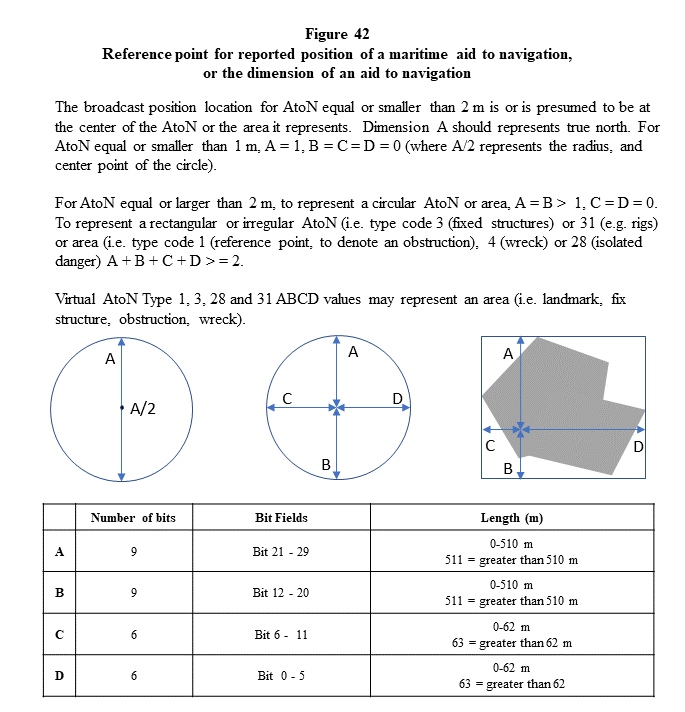


TABLE 74

The nature and type of aids to navigation can be indicated with 32 different codes

|  |  |  |
| --- | --- | --- |
|  | Code | Definition |
|  | 0 | Default, Type of AtoN not specified |
|  | 1 | Reference point |
|  | 2 | RACON |
|  | 3 | Fixed structures off-shore, such as oil platforms, wind farms.  (NOTE 1 – This code should identify an obstruction that is fitted with an AtoN AIS station) |
|  | 4 | 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 | Mobile AtoN/Light Vessel/LANBY/Mobile Offshore Drilling Units/Rigs |
| NOTE 1 – The types of aids to navigation listed above are based on the IALA Maritime Buoyage System, where applicable.  NOTE 2 – There is potential for confusion when deciding whether an aid is lighted or unlighted. Competent authorities may wish to use the regional/local section of the message to indicate this. | | |







## 3.27 Message 28: Single slot Aid to Navigation (AtoN) Report

The Single slot AIS Aid to Navigation (AtoN) Report is a 1-slot message. It should be accompanied with Message 24A - Static Data Report, Part A - to provide an AtoN Name. It is primarily intended to identify and provide the status of physical AtoN marking a special area, hazard other obstruction. This message can also be used to provide the approximate direction and speed for a Mobile AtoN.

TABLE (*bis)*

| Parameter | Bits | Description |
| --- | --- | --- |
| Message ID | 6 | Identifier for Message 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) |
| Position accuracy | 1 | 1 = high (< 10 m),  0 = low (>10 m) = default |
| Nature of the AtoN | 7 | Identifies the category and type of AtoN mark. See Table (bis) |
| Dimensions Scaler | 1 | 0 -Radius from the reported position in 1 meter steps  1-Radius from the reported position in 100 meter steps |
| AtoN Dimensions | 9 | 0 – 511 (if dimension Scaler is 0: 0 – 511m or dimension Scaler is 1: 0 to 51 100 m) |
| COG | 5 | 0-359 degrees true steps 360 = not available 361 = SOG < 2 knots, direction is not reported |
| SOG | 5 | Speed over ground in 1 knot steps (0-30 knots), 0 - 28 knots; 29 = 29 knots or higher; 30 = fixed; 31 = not available = default |
| AtoN ID | 30 | Identifies a Physical AtoN associated with this AtoN, using five (5) character 6-bit ASCII unique identifier as assigned by the Administration per IALA Guideline GXXX; “@@@@@” = not available = default. |
| Type of Physical Aid to Navigation (AtoN) augmented by the AtoN | 4 | *Editor’s note: Needs further review by IALA*  [0 - Undefined = default  1 - Buoy (nun)  2 - Buoy (can)  3 - Buoy (lighted)  4 - Buoy (sound)  5 - Beacon (lighted)  6 - Beacon (sound)  7 - Beacon  8 - [Reserved for future use]  9 - RACON  10 - Reserved for regional use  11 - Reserved for regional use  12 - 15 - Reserved for future use] |
| Status | 4 | *Editor’s note: Needs further review by IALA*  [0 - Default = Watching Properly  1 - Inoperative  2 - Operating improperly (erratic)  3 - Operating improperly (reduced)  4 - Off-station  5 - Missing (location unknown)  6 - Missing (adrift)  7 - Damaged / occulted / submerged  8 - Removed / Discontinued  9 - Open  10 - Closed  11 - Partially Open  12 - Active  13 - Inactive  14 - TBD  15 – TBD] |
| Spare | 2 | Spare. Not used. Should be set to zero. Reserved for future use |
| Number of bits | 168 | Occupies one slot |

*Editor’s note: Needs further review by IALA* [Table (bis)

|  |  |  |  |
| --- | --- | --- | --- |
| AtoN Type | | | |
| **00** | Undefined = default | **50** | Drilling platform |
| **01** | Cardinal Mark N | **51** | Mobile offshore drilling unit |
| **02** | Cardinal Mark E | **53** |  |
| **03** | Cardinal Mark S | **54** | Wind turbine |
| **04** | Cardinal Mark W | **55** | Light vessel |
| **05** | Port / left hand Mark | **56** |  |
| **06** | Starboard / right hand Mark | **57** |  |
| **07** | Preferred Channel Port hand | **58** |  |
| **08** | Preferred Channel Starboard hand | **59** |  |
| **09** | Reference point | **60** |  |
| **10** | Special mark | **61** | Call-in Point |
| **11** | Sector light | **62** | Do not proceed beyond this point |
| **12** | Range Front | **63** | Proceed reduced speed |
| **13** | Range Rear | **64** | Proceed (outside channel only) |
| **14** |  | **65** | Proceed (one-way traffic only) |
| **15** |  | **66** | Information |
| **16** | Anchorage | **67** | Restricted OPS |
| **17** | Mooring | **68** | No entry / Exclusion |
| **18** |  | **69** | Entry permitted |
| **19** | Channel near the right bank (red) | **70** | Entry permitted at reduced speed |
| **20** | Channel near the left bank (green) | **71** | Aquaculture farm |
| **21** | Cross-over right bank | **72** | Underwater OPS |
| **22** | Cross-over left bank | **73** | Military OPS |
| **23** | Port side / Right descending bank | **74** | Search and Rescue |
| **24** | Starboard side / Left descending bank | **75** | Pollution Response / Recovery |
| **25** | Bifurcation / Junction, pass left-hand side | **76** | Guard zone |
| **26** | Bifurcation / Junction, pass right-hand side | **77** | Maritime event / regatta |
| **27** | Bifurcation / Junction | **78** | Fishing |
| **28** |  | **79** | Marine mammal sighting |
| **29** | Danger point or obstacle | **80** |  |
| **30** | Danger point or obstacle right-hand side | **81** | Observation / sampling station |
| **31** | Danger point or obstacle left-hand side | **82** | End of towed line / cable / net / object / system |
| **32** | Danger point or obstacle bifurcation | **83** | Fishing net indicator |
| **33** | Isolated danger | **84** | Derelict vessel / object |
| **34** | Wreck | **85** | Vessel in distress |
| **35** | Safe water / No danger | **86** |  |
| **36** |  | **87** | Iceberg / ice floe |
| **37** |  | **88** | Persons /divers / swimmers on the water |
| **38** |  | **89** |  |
| **39** | Berth / pier | **90** |  |
| **40** | Terminal | **91** | Datum / free-floating marker |
| **41** | Overhead cable / obstruction | **92** | Locating marker |
| **42** | Submerged cable / obstruction | **93** | Autonomous craft / station / system |
| **43** | Bridge span | **94** | Remotely operated craft / station / system |
| **44** | Bridge lighting | **95** |  |
| **45** | Abutment / pillar | **96** |  |
| **46** | Lock | **97** |  |
| **47** | Gate | **98** |  |
| **48** |  | **99** |  |
| **49** |  | **100-127** | Reserved for future use |

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Actions requested

IALA kindly asks ITU-R WP 5B to take into consideration these proposals in their further work on the revision of Recommendation ITU-R M.1371.

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