Economic and Social Council

Economic Commission for Europe

Inland Transport Committee

Working Party on Inland Water Transport

**Working Party on the Standardization of Technical
and Safety Requirements in Inland Navigation**

Fifty-sixth session
Geneva, 12–14 February 2020
Item 9 (a) of the provisional agenda
**Promotion of River Information Services and other Information
and Communication Technologies in inland navigation:
the International Standard for Tracking and Tracing
on Inland Waterways (resolution No. 63, revised)**

Additions to the International Standard for Tracking and Tracing on Inland Waterways (VTT) (annex to resolution No. 63, revised)

Note by the secretariat*

Mandate

1.   This document is submitted in line with the Proposed Programme Budget for 2020. part 5, Regional cooperation for development section 20, Economic Development in Europe. Programme 17, Economic Development in Europe (A/74/6 (Sect. 20) and Supplementary).

2.   At its fifty-fifth session, the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation asked the secretariat to prepare a draft revision of the annex to resolution No. 63, revised, in cooperation with the Chair of the International VTT Expert Group, based on the new version of the International Standard for Tracking and Tracing on Inland Waterways published by the Commission Implementing Regulation (EU) 2019/838 of 20 February 2019, for its next session (ECE/TRANS/SC.3/WP.3/110, para. 85).

3.   The Working Party may wish to consider the updated list of references and new chapters 4 and 5 to the revised standard prepared by the Chair of the International VTT Expert Group and harmonized with other documents of the Economic Commission for Europe, as contained in the annex to this document, and decide as appropriate.**

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*   This document was scheduled for publication after the standard publication date owing to circumstances beyond the submitter's control.
** The amendment proposal to the text of the revised standard transmitted by the Chair of the International VTT Expert Group can be found in ECE/TRANS/SC.3/WP.3/2020/7. New annexes for the revised standard will be issued for the fifty-seventh session of SC.3/WP.3.

Annex I*

List of the international agreements, recommendations, standards and guidelines which are referred to in the International Standard for Tracking and Tracing on Inland Waterways (amendment proposal to the annex to resolution No. 63, revised)

The list of references given below reproduces a revised section "References" of the annex to resolution No. 63, revised. The Working Party may wish to include this in section 1.2 of the revised standard.

"1.2   References

~~The content of this document is based on:~~ **The following international agreements, recommendations, standards and guidelines are referred to in this annex:**

Document title	Organization	Publication date
Directive 2005/44/EC of the European Parliament and of the Council of 7 September 2005 on harmonised river information services (RIS) on inland waterways in the community	European Union	07.09.2005
~~Commission Regulation (EC) No 415/2007 of 13 March 2007 concerning the technical specifications for vessel tracking and tracing systems referred to in Article 5 of Directive 2005/44/EC of the European Parliament and of the Council on harmonised river information services (RIS) on inland waterways in the Community~~ **Commission Implementing Regulation (EU) 2019/838 of 20 February 2019 on technical specifications for vessel tracking and tracing systems and repealing Regulation (EC) No. 415/2007**	European Union	~~13.03.2007~~ **24.05.2019**
~~Commission implementation regulation (EU) No 689/2012 of 27 July 2012 amending Regulation No 415/2007 of 13 March 2007 concerning the technical specifications for vessel tracking and tracing systems referred to in Article 5 of Directive 2005/44/EC of the European Parliament and of the Council on harmonised river information services (RIS) on inland waterways in the Community~~	~~EU~~	~~27.07.2012~~
The World Association for Waterborne Transport Infrastructure (PIANC) Guidelines and Recommendations for River Information Services	PIANC	**2019**
Recommendation on Electronic Chart Display and Information System for Inland Navigation (Inland ECDIS), edition 2.~~3~~ **4**, annex to ~~Rr~~esolution No. 48, revision~~ 2~~ **4**	UNECE	~~12.10.2012~~ **08.11.2019**
Guidelines and Recommendations for River Information Services, edition 3.0, **annex to** ~~Rr~~esolution No. 57, revised	UNECE	14.10.2011
Guidelines and Criteria for Vessel Traffic Services on Inland Waterways, **annex to** ~~Rr~~esolution No. 58	UNECE	21.10.2004
International Standard~~s~~ for ~~Notices to Skippers and for~~ Electronic Ship Reporting in Inland Navigation, **annex to** ~~Rr~~esolution No. ~~60 as amended by Resolution No. 70~~ **79**	UNECE	15.10.2010
International Standard for Notices to Skippers, annex to resolution No. 80, revised	**UNECE**	**08.11.2019**
~~Codes for the identification of ships, Recommendation No. 10, second edition~~ **Recommendation No 28 "Codes for Types of Means of Transport", revision 3**	UNECE	~~19.03.1997~~ **2010**
International Convention of Safety of Life at Sea (SOLAS), Chapter V — Safety of navigation, as amended	**IMO**	**1974**
MSC.74(69) Annex 3, "Recommendation on Performance Standards for a Shipborne Automatic Identification System (AIS)"	IMO	12.05.1998
Resolution A.915(22), "Revised Maritime Policy and Requirements for a future Global Navigation Satellite System (GNSS)"	IMO	29.11.2001

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* *Note by the secretariat:* the text proposed for deletion is ~~strikethrough~~, the new text is **bold**.

Document title	Organization	Publication date
Resolution A.1106(29) Revised Guidelines for the Onboard Operational Use of Shipborne Automatic Identification System (AIS)	**IMO**	**02.12.2015**
Recommendation ITU-R M.585 "Assignment and use of identities in the maritime mobile service"	**ITU**	**2015**
~~Research project Consortium Operational Management Platform River Information Services (COMPRIS) final report and underlying final work package documents~~	~~European Commission~~	~~12.02.2006~~
Recommendation ITU-R M.1371–4, "Technical characteristics for an ~~an~~ **a universal shipborne** automatic identification system using time-division multiple access in the VHF maritime mobile band"	ITU	~~04.2010~~ **2014**
International Standard IEC 61993-2, edition 2.0**:2018** "Maritime navigation and radiocommunication equipment and systems — Automatic Identification System**s** (AIS) — Part 2: Class A shipborne equipment of the universal automatic identification system (AIS) — Operational and performance requirements, methods of test and required test results"	IEC	~~19.10.2012~~ **19.07.2018**
International Standard IEC 61162-Serie, "Maritime navigation and radiocommunication equipment and systems — Digital interfaces": Part 1: Single talker and multiple listeners Part 2: Single talker and multiple listeners, high speed transmission	IEC	 ~~25.11.2010~~ **01.08.2016** 09.1998
International Standard IEC 62287-Series, "Maritime navigation and radiocommunication equipment and systems — Class B shipborne equipment of the automatic identification system (AIS)" **Part 1: Carrier-sense time division multiple access (CSTDMA) techniques** **Part 2: Self-organising time division multiple access (SOTDMA) techniques**	**IEC**	 **04.05.2017** **02.2017**
Radio Technical Commission's for Maritime Services (RTCM) Recommended Standards for Differential GNSS (Global Navigation Satellite Systems) Service	**RTCM**	**2010**
~~United Nations Code for Trade and Transport Locations, UN/LOCODE, 2012-2~~	~~UNECE~~	~~07.03.2013~~
Technical Clarifications on Vessel Tracking and Tracing Standard for Inland Navigation, and Test Standard for Inland AIS, Central Commission for the Navigation of the Rhine (CCNR)	CCNR	
Standard for Electronic Ship Reporting in Inland Navigation edition 1.2	CCNR	19.10.2006"

Annex II[**]

New chapters 4 and 5 to the International Standard for Tracking and Tracing on Inland Waterways (amendment proposal to the annex to resolution No. 63, revised)

A. Chapter 4 "Other mobile stations on inland waterways"

4.1 Introduction

Vessels not obliged to operate Inland AIS mobile stations may use other AIS mobile stations. The following mobile stations can be used:

(a) AIS Class A mobile station in accordance with [Articles 35(2) and 35(3) of Commission Directive 2014/90/EU];

(b) AIS Class B mobile station in accordance with paragraph 4.2.

The use of such stations in inland waterways is up to the decision of the Competent Authority responsible for the navigation in that area.

If such stations are used on a voluntary basis, the shipmaster shall keep the manually entered AIS data constantly up to date. No incorrect data shall be transmitted over AIS.

4.2 General requirements for AIS Class B mobile stations on inland waterways

AIS Class B has restricted functionalities compared to Inland AIS mobile stations. The messages sent out by an AIS Class B mobile station are transmitted with a lower priority in comparison to Inland AIS mobile stations.'

In addition to the requirements [resulting from other Union legal acts, in particular, Directive 1999/5/EC of the European Parliament and of the Council (7) and Commission Decision 2005/53/EC], AIS Class B mobile stations installed on vessels navigating on [Union inland waterways] shall meet the requirements set out in:

(a) Recommendation ITU-R M. 1371;

(b) IEC International Standard 62287 (including DSC channel management).

Note: It is the responsibility of the Competent Authority responsible for the navigation in that area to ascertain the conformity of AIS Class B mobile stations to the standards and requirements listed in the second subparagraph prior to issuing a ship station license, assigning a Maritime Mobile Service Identifier (MMSI) number, for example by type approval of the relevant AIS Class B mobile stations.

B. Chapter 5 "AIS Aids to Navigation in inland navigation"

5.1 Introduction

A navigational aid (also known as Aids to Navigation, or AtoN) is a marker which provides support during navigation. Such aids include markings for lighthouses, buoys, fog signals, and day beacons. A list of types of AtoNs is included in Table 5.2.

The AIS technology provides the possibility to dynamically transfer information about AtoNs.

For the use in inland navigation the maritime AIS AtoN report (Message 21) needs to be extended to reflect the specifics of the inland buoyage system.

The maritime AIS AtoN report is based on the IALA buoyage system. For inland navigation the AIS AtoN report needs to reflect the European Inland AtoN system described in chapter 5.

[**] *Note by the secretariat:* the definitions of the terms used in chapters 4 and 5 can be found in ECE/TRANS/SC.3/WP.3/2020/7.

The AIS AtoN report transfers the position and the meaning of the AtoN as well as information if a buoy is on the required position (on position) or not (off position).

5.2 Use of Message 21: Aids to Navigation report

For the use on inland waterways, the AIS AtoN report (Message 21) as defined in Recommendation ITU-R M.1371 is being used. The additional European Inland types of AtoN are coded using the 'AtoN status' bits.

Table 5.1

AIS AtoN Report

Parameter	Number of bits	Description
Message ID	6	Identifier for this message 21
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated 0-3; Default = 0; 3 = do not repeat any more
ID	30	MMSI number (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 figure 5.1[1]
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 Aids to Navigation Extension' below
Position accuracy (PA)	1	1 = high (≤ 10 m) 0 = low (> 10 m) 0 = default The PA flag should be determined in accordance with Recommendation ITU-R M.1371, table "Determination of position accuracy information"
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 figure 5.1), if relevant[2]

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[1] In case an inland AtoN type code is being transmitted, this field (type of AtoN) shall be set to 0 = undefined.

[2] When using figure 5.1 for AtoN the following shall be observed:

- For fixed AtoN, virtual AtoN, and for offshore structures, the orientation established by the dimension A shall point to true north

- For floating aids larger than 2 × 2 m, the dimensions of the AtoN shall always be given approximated to a circle, i.e. the dimensions shall always be as follows $A = B = C = D \neq 0$. (This is due to the fact that the orientation of the floating AtoN is not transmitted. The reference point for reported position is in the centre of the circle.)

- $A = B = C = D = 1$ shall indicate objects (fixed or floating) smaller than or equal to 2 × 2 m. (The reference point for reported position is in the centre of the circle.)

- Floating offshore structures that are not fixed, such as rigs, shall be considered as Code 31 type from Table 5.2. These structures shall have their 'Dimension/reference for position' parameter as determined above in Note 1. For fixed offshore structures, Code 3 type from Table 5.2, shall have their 'Dimension/reference for position' parameter as determined above in Note 1. Hence, all offshore AtoN and structures have the dimension determined in the same manner and the actual dimensions are contained in Message 21.
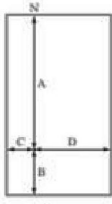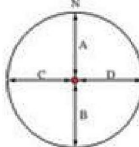
Parameter	Number of bits	Description
Type of electronic position fixing device	4	0 = Undefined (default) 1 = GPS 2 = GLONASS 3 = Combined GPS/GLONASS 4 = Loran-C 5 = Chayka 6 = Integrated Navigation System 7 = surveyed. For fixed AtoN and virtual AtoN, the charted position should be used. The accurate position enhances its function as a radar reference target 8 = Galileo 9–14 = not used 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. *Note 1*: 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 status 00000000 = default[3]
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 Recommendation ITU-R M.1371 table "Determination of position accuracy information"
Virtual AtoN flag	1	0 = default = real AtoN at indicated position; 1 = virtual AtoN, does not physically exist[4]
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 Aids 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 Aids-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 AtoN 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 Aids to Navigation Extension" is used. Should be set to zero. The number of spare bits should be adjusted in order to observe byte boundaries
Total	**272-360**	**Occupies two slots**

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[3] For Inland AIS AtoN report, this field shall be used to indicate the Inland AtoN type using page 001.

[4] When transmitting virtual AtoN information, i.e. the virtual/pseudo AtoN Target Flag is set to one (1), the dimensions shall be set to A = B=C = D = 0 (default). This shall also be the case, when transmitting the 'reference point' information.

Figure 5.1

Reference point for reported position of a maritime AtoN, or the dimension of an AtoN

		Number of bits	Bit Fields	Distance (m)
	A	9	Bit 21 — Bit 29	0-511511 — 511 m or greater
	B	9	Bit 12 — Bit 20	0-511511 — 511 m or greater
	C	6	Bit 6 — Bit 11	0-6363 — 63 m or greater
	D	6	Bit 0 — Bit 5	0-6363 — 63 m or greater

If the type of AtoN to be transmitted is covered within the existing IALA types of AtoN (according to Table 5.2), no changes need to be applied.

Table 5.2

Types of Aids to Navigation

Code	Definition Maritime
0	Default, Type of AtoN not specified
1	Reference point
2	RACON
3	Fixed structures offshore, 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
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

(Rows 4–19 grouped under: Fixed AtoN)

Code	Definition Maritime
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

(Codes 24–31 are grouped under the label *Floating AtoN*.)

Note 1: The types of AtoN 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.

5.3 Extension of Message 21 with inland-specific type of AtoN

The parameter field 'AtoN status' is used for the extension of Message 21 with inland-specific type of AtoN.
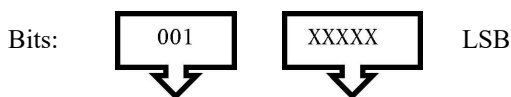
The parameter field 'AtoN status' is organized in eight pages, of which page ID 0 is 0 = default, page ID 1 to 3 is for regional use and page ID 4 to 7 is for international use. The first three bits of the AtoN status filed defines the page ID, the remaining 5 bits contains the information of the page.

The region, in which page ID 1 to 3 is applicable is defined by the Maritime Identification Digits within the MMSI of the transmitting AIS AtoN station. Thus, the bit coding of the 5 information bits in the AtoN status field is only applicable in this specific region.

[As regards Union inland waterways page ID 1 of the AtoN status field contains the list of inland-specific type of AtoN used.]

To set an inland-specific type of AtoN in Message 21, two steps have to be made. First, the parameter 'Type of aids to navigation' in Message 21 needs to be set to '0 = Default, type of AtoN not specified'. Second, the parameter 'AIS status' needs to be set to page ID 1 and the appropriate code of the Inland-specific type of AtoN, as follows:

Msg 21 — AtoN status:

Bits: | 001 | | XXXXX | LSB

coding: Page ID type of AtoN (0-31)