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Working Party on Inland Water Transport

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

Fiftieth session

Geneva, 15-17 February 2017

Item 5 (b) of the provisional agenda

**Standardization of technical and safety requirements in inland navigation:
Signs and Signals on Inland Waterways (SIGNI) (Resolution No. 22, revised)**

Amendment proposal to Signs and Signals on Inland Waterways (SIGNI) (Resolution No. 22, revised)

Note by the secretariat

I. Mandate

1. This document is submitted in line with Cluster 5: Inland Waterway Transport, para. 5.1 of the programme of work 2016-2017 (ECE/TRANS/2016/28/Add.1) adopted by the Inland Transport Committee at its seventy-eighth session on 26 February 2016.
2. The Working Party on Inland Water Transport (SC.3) at its sixtieth session decided to combine Resolution No. 59 and Signs and Signals on Inland Waterways (SIGNI) (Resolution No. 22, Revision 2) into a single document under the name of "SIGNI" to avoid overlaps between them and asked the secretariat to begin revising SIGNI and to include this item in the agenda of the fiftieth session of the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation (SC.3/WP.3) (ECE/TRANS/SC.3/203, para. 63).
3. SC.3/WP.3 may wish to consider the amendment proposal for SIGNI prepared by the secretariat as set out below. It is proposed to:
 - introduce new marks in section 2.4 of SIGNI;
 - avoid the overlaps between SIGNI and the Guidelines for Waterway Signs and Marking (Resolution No. 59, Revision 2);
 - introduce new Chapters 12 and 13 to SIGNI;

- align SIGNI with other UNECE Resolutions, in particular, the European Code for Inland Waterways (CEVNI) and Resolution No. 48.
4. To this end, SC.3/WP.3 may wish to consider a new structure of SIGNI and give necessary instructions to the secretariat.

II. Proposal for a new structure of SIGNI

5. Given the overlaps between SIGNI and the Guidelines for Waterways Signs and Marking, it is proposed to combine their contents following the structure below alongside with updating SIGNI provisions where necessary:

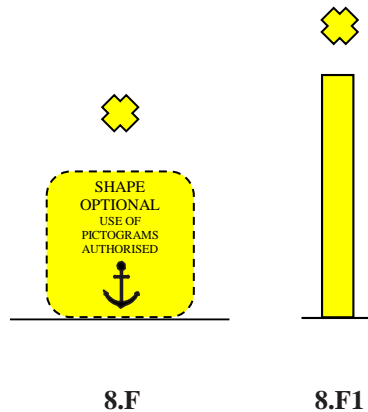
1. GENERAL
 - SIGNI, 1.1, General (1.1.1-1.1.6, 1.1.14)
 - SIGNI, 1.5, Buoyage and marking system
 - Guidelines for Waterways Signs and Marking, Chapter 1, General
 - SIGNI, 6.2, Distance marks
2. VISIBILITY OF SIGNS AND LIGHTS
 - Guidelines for Waterways Signs and Marking, Chapter 3, Visibility of signs and lights
 - SIGNI, 1.1.9-1.1.11
3. BUOYAGE AND MARKING OF THE WATERWAY
 - Guidelines for Waterways Signs and Marking, Chapter 2, Requirements to be met by signs and marks and their marking plan
 - SIGNI, Chapter 2, Buoyage and marking of the waterway (figure 18 should be deleted)
 - SIGNI, Chapter 5, Waterway signs and markings
 - SIGNI, 1.1.12, Warning posts
 - SIGNI, Chapter 8, Buoys for miscellaneous purposes
4. LIGHTS
 - SIGNI, 1.2, Rhythmic lights
 - SIGNI, 1.3, Fixed lights
 - SIGNI, 1.4, Additional luminous signal
 - SIGNI, 1.1.12, Semaphores
5. INSTALLATION OF SIGNS AND MARKING IN CHARACTERISTIC SECTIONS OF THE RIVER
 - Guidelines for Waterways Signs and Marking, Chapter 4, Installation of signs and marking in characteristic sections of the river
 - SIGNI, figures 10, 11, 14 and 17 could be added to Section 4.1 of this Chapter

6. MARKING OF HARBOUR ENTRANCES
 - SIGNI, 6.1, Entrances to harbours
7. MARKING OF PERMANENT STRUCTURES
 - SIGNI, Chapter 3, Marking of permanent structures
8. BLOCKAGE OF THE WATERWAY
 - SIGNI, Chapter 4, Blockage of the waterway
9. MARKING OF PROHIBITED OR RESTRICTED ZONES
 - SIGNI, Chapter 7, Marking of prohibited or restricted zones
10. VARIABLE MESSAGE SIGNS TO REGULATE TRAFFIC
 - Guidelines for Waterways Signs and Marking, Chapter 5, Variable message signs to regulate traffic
11. INSTALLATION OF RADAR REFLECTORS ON MARKING SIGNS AND SIGNALS AND NAVIGABLE PASSES THROUGH BRIDGES
 - Guidelines for Waterways Signs and Marking, Chapter 6, Installation of radar reflectors on marking signs and signals and navigable passes through bridges
12. MONITORING OF SIGNS AND MARKING BY AIS¹ AIDS TO NAVIGATION
 - A new chapter
13. REGIONAL AND NATIONAL SPECIAL REQUIREMENTS
 - A new chapter
 - Appendix 1, Minimal dimensions of the waterway signs
 - Guidelines for Waterways Signs and Marking, Appendix 1
 - Appendix 2, Properties of lights
 - Guidelines for Waterways Signs and Marking, Appendix 2
 - Appendix 3, Colours of reflected light for navigation signs
 - Guidelines for Waterways Signs and Marking, Appendix 3
 - Appendix 4, Rhythmic lights
 - SIGNI, Annex 1
 - Appendix 5, Buoyage and marking of lakes and broad waterways
 - SIGNI, Annex 2
 - Appendix 6, Recommendations for the lighting of traffic signs
 - Guidelines for Waterways Signs and Marking, Appendix 4
 - Appendix 7, Examples for variable-message traffic signs
 - Guidelines for Waterways Signs and Marking, Appendix 5

¹ Automatic Identification System.

III. Draft amendment to Chapter 2, Buoyage and Marking of the Fairway

6. Add figure 22 to paragraph 2.4.5



(fig. 22)

7. Add a new paragraph 2.4.6

“2.4.6 Marking of new dangers

2.4.6.1 Definition of New Dangers

The term “New Danger” is used to describe newly discovered hazards not yet shown in nautical documents. New Dangers include naturally occurring obstructions such as sandbanks or rocks or man-made dangers such as wrecks.

2.4.6.2 Description of New Dangers

New Dangers marks

Colour: Blue and yellow vertical stripes in equal number dimensions (minimum 4 stripes and maximum 8)

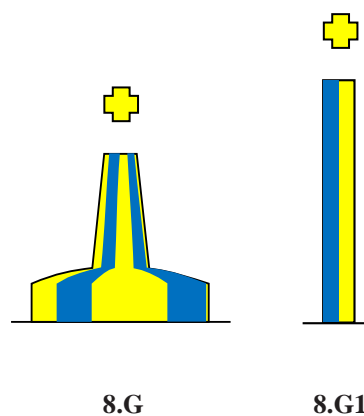
Form: pillar or spar

Topmark (if any): vertical or perpendicular yellow cross

Light (when fitted):

Colour: yellow/blue alternating

Rhythm: one second of blue light and one second of yellow light with 0.5 seconds of darkness between.



(fig. 23)

2.4.6.3 In addition it may be marked by other electronic means, such as automatic identification system (AIS).

2.4.6.4 If the Administration considers the risk to navigation to be especially high, at least one of the marks should be duplicated. Any duplicate mark shall be identical to its partner in all respects.”

8. *Renumber* the existing paragraph 2.4.6 as 2.4.7.

IV. New Chapter 12, Monitoring of Signs and Marking by AIS Aids to Navigation

9. The use of AIS Aids to Navigation (AIS AtoN) messages in inland navigation is still under discussion. However, the equipment of vessels with Inland ECDIS devices is becoming a demand with a view to ensuring greater navigation safety; the obligation of equipment with an Inland AIS and an Inland ECDIS device or a comparable electronic chart display device is in force on the Rhine since 1 December 2014.² Given the development of Inland ECDIS standard and the experience in using the AIS AtoN technology in inland navigation, SC.3/WP.3 may wish to include the basic definitions in SIGNI as a separate chapter or an appendix. For this purpose the secretariat reproduces here an abstract from the Information Paper on AIS AtoN report messages in Inland Waterways transmitted by Inland Electronic Chart Display and Information Systems (Inland ECDIS) and Vessel Tracking and Tracing (VTT) Expert Groups (Informal document SC.3/WP.3 No. 3 (2015)) that could be relevant to SIGNI.

10. The International Association of Maritime Aids to Navigation and Lighthouse Authorities (IALA) maintains a harmonised and internationally recognized buoying system which is also the basis of the information content of the AIS AtoN report message. IALA defines the use of AIS AtoN as follows (Recommendation A-126 on the use of AIS in maritime aids to navigation services):

- the primary purpose of an AIS AtoN Station is to promote and enhance safety and efficiency of navigation by one or more of the following;
- providing a positive and all-weather means of identification;
- transmitting accurate positions of floating AtoN;
- indicating if a floating AtoN is off position;
- provide additional AtoN capability through the use of Virtual AIS AtoN, where installation of physical AtoN is technically or operationally difficult;
- enable timely/temporary marking of new hazards (fixed or dynamic) using Virtual AIS AtoN.

11. The AIS AtoN Report message provides information about the AtoN. This information is typically broadcasted with a reporting interval of 3 minutes and can be received within the VHF coverage range of the transmitting AIS AtoN station or AIS shore station. In case any data sets are left blank by the user, the application shall automatically use the default values as given by the VTT standard. After configuration of all values it shall be possible to save the values and write them back into the Inland AIS station using the input sentences of IEC 61993-2 and the VTT standard.

12. AIS message 21 is based on the IALA Maritime buoyage system which is different from the buoyage system used in inland navigation (CEVNI buoyage system). An Inland specific AtoN message for inland waterways needs to be defined and incorporated in the related standards (VTT and Inland ECDIS). Both standards have to be amended to enable a correct information and display of the AtoN.

² www.ccr-zkr.org/files/documents/ris/brochureAIS_en.pdf.

13. An AIS Aids to navigation can be implemented in three ways, which are described in the following paragraphs.
14. Real AIS AtoN Station is an AIS station located on an AtoN that physically exists.
15. Synthetic AIS AtoN is where the AtoN message is transmitted from a remote AIS station. There are two possibilities for implementing a synthetic AtoN.
16. Monitored Synthetic AIS AtoN has a position sensor and a communication link between the AIS Station and the AtoN. The communication between the AtoN and AIS confirms the location and status of the AtoN.
17. Predicted Synthetic AIS AtoN is not monitored to confirm its location or status. The use of Predicted Synthetic AIS AtoN broadcasts for fixed AtoN is acceptable as the location will not change, but the status of the AtoN cannot be verified.
18. Virtual AIS AtoN is transmitted as AIS AtoN message for an AtoN that does not physically exist. When a Virtual AIS AtoN is used, the AtoN symbol or information would be available for presentation to a mariner on an electronic chart, even though there is no real AtoN such as a buoy or beacon. Such a message would typically be broadcasted by an AIS shore station or an AIS AtoN station.
19. The AIS message 21 is offering the nature and type of AtoN, which can be indicated with 32 codes, but IALA areas are using different buoys than inland waterways. An Inland ECDIS is, therefore, not able to determine the correct display of the AtoN message and has to use a generic symbol. The type of the buoy can only be provided as textual description in the pick report.
20. The use of AIS AtoN messages in combination with real buoys may have benefits both for the skippers and administrations. However, it has to be considered that not all vessels might be equipped to display AIS AtoNs. Further, the availability and reliability of the AIS information cannot be guaranteed in all cases. The usefulness of such a combined solution has to be investigated and decided case by case, as it depends on the local situation and conditions. The use of virtual AIS AtoNs as the replacement for real buoys is not generally recommended. In addition, experiences must be gained about the safety risk and reliability of the entire system.
21. The library of Inland ECDIS symbols is given in the Appendix to UNECE Resolution No. 48, Recommendation on electronic chart display and information system for inland navigation (Inland ECDIS).

V. New Chapter 13, Regional and National Special Requirements

22. In Revision 2 of SIGNI there is a footnote indicating that in some member States waterway signs correspond to national rules. Similar to Chapter 9 of CEVNI, SC.3/WP.3 may wish to give additional information about the omitted, complemented or modified provisions for waterway signs and marking at a regional or a national level in a separate Chapter 13.
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