

## DEVELOPMENT OF POLICY AND NEW SYMBOLS FOR AIS AIDS TO NAVIGATION

Submitted by Japan

### SUMMARY

<i>Executive summary:</i>	This document proposes the views on how to progress the work and the establishment of the correspondence group for the accomplishment of the work.
<i>Strategic direction:</i>	5
<i>High-level action:</i>	5.2.4
<i>Planned output:</i>	5.2.4.2
<i>Action to be taken:</i>	Paragraph 11
<i>Related documents:</i>	MSC 86/23/7, MSC 86/23/18, NAV 55/INF.7, NAV 56/11, NAV 56/11/1, NAV 56/11/2, NAV 56/11/3, NAV 56/INF.2, NAV 56/INF.11, resolution MSC.191(79) and SN/Circ.243

### Background

1 The development of new symbols for AIS-Aids to Navigation (AIS-AtoN) began with the fifty-sixth session of the Sub-Committee on Safety of Navigation (NAV) with the target completion date in 2013. At NAV56, many delegates raised concerns that there had been no formal discussion on AIS-AtoN, especially virtual AIS-AtoN, at the IMO. As such, it was agreed that there was a need for IMO to develop a policy on AIS-AtoN before any development of symbols occurs.

2 Taking into account this discussion, Japan and the US proposed to the eighty-eighth session of the Maritime Safety Committee (MSC) the expansion of the scope of work of "Development of new symbols for AIS aids to navigation (AIS-AtoN)" to include the development of the policy. Chile also proposed to the Committee that monitoring of AIS-AtoN should be included in the policy. The Committee agreed to include the monitoring and consequently renamed the work item "Development of policy and new symbols for AIS aids to navigation".

### Development of Policy

3 Since the policy covers the broad range of issues regarding AIS-AtoN, it is helpful to provide topics and decide what issues should be discussed under each topic. The following are the proposed outline of the topics.

#### *i. Definition*

AIS-AtoN transmits the Message 21 "Aids-to-navigation report" of Recommendation ITU-R M.1371 and there are basically two kinds of AIS-AtoN, real or virtual. The real AIS-AtoN is easy to understand since a physical AtoN exists at its location. On the other hand, the virtual AIS-AtoN is not clearly defined. According to the IALA Recommendation O-143 "Virtual Aids to Navigation", the definition of virtual aid to navigation is:

“A virtual aid to navigation does not physically exist but is a digital information object promulgated by an authorised service provider that can be presented on navigational systems.”

This definition is amplified by a sentence that:

“They may be used to represent a line, area, position or other form that may be displayed graphically.”

Accordingly, the virtual AIS-AtoN can be transmitted not only by Message 21 but also by Message 6 “Addressed binary message”, Message 8 “Binary broadcast message” and possibly Message 25 “Single slot binary message” and Message26 “Multiple slot binary message with communications state”. Because these messages are able to transmit a line, area, position or other form as specified by the Area notice (FI 22 or 23) of the SN.1/Circ. 289 “GUIDANCE ON THE USE OF AIS APPLICATION-SPECIFIC MESSAGE”. Therefore, the definition of AIS-AtoN, especially the virtual AIS-AtoN, will be discussed under this topic.

ii. *Application or Usage*

The typical use of real AIS-AtoN that is attached to an aid to navigation such as buoy is to enhance the image of the aid on a navigational display like a radar beacon and to inform about the status of the aid to ships or a shore authority. The virtual AIS-AtoN may be useful to temporarily mark a sudden danger or obstacle to navigation such as wreck until a real aid to navigation deployed. Another possible use is to mark a point where a real aid to navigation is difficult to be deployed such as a deep water sea route. This topic will cover the possible application or usage of AIS-AtoN as noted above.

iii. *Performance standards*

Although the performance standards for AIS are described in Resolution MSC.74 (69) Annex 3 and technical standards are described in IEC 62320-2, the performance standards of AIS-AtoN such as range, transmission interval are discussed under this topic.

iv. *Operation/ Management*

This topic covers operational and managerial matters of AIS-AtoN which directly affect mariners, e.g., how to notice mariners an establishment of AIS-AtoN, what notification items written in list of radio signals, monitoring of slot utilization in order not to impair the main functions of AIS, etc.

v. *Monitoring*

Direct monitoring of AIS-AtoN will be carried out at a shore AIS station by receiving the radio signal of the AIS-AtoN. Remote monitoring will have several methods. One is satellite detection as proposed by Chile (MSC88/23/12) and using a repeater station is another possible method. Possible methods of monitoring and their advantage or disadvantage will be discussed under this topic.

vi. *Risks and Limitation*

Like other AIS tools, AIS-AtoN has its own risks and limitations, e.g., not all ships are equipped with AIS. Moreover, virtual AIS-AtoN has significant risks since there is no physical or visible object existing in spite of its advantages such as rapid and dynamic deployment. Possible risks or limitations will be raised and its countermeasures will be considered under this topic.

vii. *Display of Symbols*

When displaying a symbol of AIS-AtoN on a navigational display, it is essential that the display should not be cluttered with symbols. Therefore, as noted by Denmark in paragraph 8 of NAV55/INF.7, consideration should be paid to various display issues such

as relationship with IHO standards and zoom level under this topic.

*viii. Training*

Virtual AIS-AtoN can be seen on only a navigational display. Mariners should correctly identify the symbols and understand the characteristic of virtual AIS-AtoN. Therefore, training of mariners on virtual AIS-AtoN is important and how to do that is discussed under this topic.

4 The topics covered by the policy need not be limited to the above mentioned topics and, if the Sub-Committee agrees they are necessary, other topics can be added to the policy.

5 The IALA Recommendations and Guidelines on AIS-AtoN and Virtual AtoN could be useful support for the development of the policy.

**Development of new symbols**

6 The development of new symbols for AIS-AtoN will be carried out after the development of the policy. The developed symbols should be based on the policy and could take the principals and examples submitted by Japan at NAV56 (NAV56/11) into consideration.

7 Since any symbol for aids to navigation is strongly related to a navigational chart and display issues, IHO, IALA, IEC and ISO should be invited into the development work.

**Work plan**

8 The target completion date is in 2013 and three sessions of the Sub-Committee starting from NAV57 are allowed to allocate to the work. It is envisaged that the first year from NAV57 to 58 will be allocated to the development of policy and the second year from NAV58 to 59 will be the development of symbols.

9 However, since the scope of work on the development of the policy is deemed to be rather wider than the development of the symbols, this plan is subject to change.

10 In order to discuss the topics mentioned above and accomplish the work, Japan proposes the establishment of the correspondence group between NAV57 to NAV59. Since the term of the group spreads over two inter-sessional years, the group should submit an interim report to NAV58 and the Sub-Committee will make necessary change to the activity of the group based on the report.

**Action requested of the Sub-Committee**

11 The Sub-Committee is invited to consider the views expressed in this document, especially paragraph 10 of the establishment of the correspondence group and to decide as appropriate.

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