

SUB-COMMITTEE ON SAFETY OF  
NAVIGATION  
58th session  
Agenda item 7

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**DISCLAIMER**

As at its date of issue, this document, in whole or in part, is subject to consideration by the IMO organ to which it has been submitted. Accordingly, its contents are subject to approval and amendment of a substantive and drafting nature, which may be agreed after that date.

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

**Report of the Drafting Group**

**1 GENERAL**

1.1 As instructed by the Sub-Committee, the Drafting Group on Development of Policy and New Symbols for AIS Aids to Navigation (the Group) met on 3 July 2012 under the chairmanship of Mr. Jorge Arroyo (United States).

1.2 The Group was attended by delegates from the following Member States:

AUSTRALIA  
CHINA  
CYPRUS  
DENMARK  
GERMANY

JAPAN  
POLAND  
REPUBLIC OF KOREA  
RUSSIAN FEDERATION

1.3 The Group was also attended by observers from the following intergovernmental and non-governmental organizations in consultative status:

INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)  
INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND  
LIGHTHOUSE AUTHORITIES (IALA)  
THE NAUTICAL INSTITUTE (NI)

**2 TERMS OF REFERENCE**

2.1 The group, taking into account documents NAV 58/7 and NAV 58/7/1, and decisions, comments and proposals made in Plenary, was instructed to undertake the following tasks:

- .1 consider document NAV 58/7, annex 1 and review the draft Policy on use of AIS Aids to navigation and prepare a draft revised text;
- .2 prepare draft revised terms of reference for the Correspondence Group on Development of Policy and new symbols for AIS Aids to navigation to work intersessionally between NAV 58 and NAV 59; and
- .3 submit its report on Wednesday, 4 July 2012.

### **3 POLICY ON USE OF AIS AIDS TO NAVIGATION**

3.1 The Group reviewed annex 1 to document NAV 58/7 (Japan) on the draft policy on use of AIS Aids to navigation and provided comments and recommended actions as outlined in the following paragraphs.

#### **Purpose and scope**

3.2 The Group considered purpose and scope of the proposed draft policy and agreed with the text proposed by the Correspondence Group on Development of Policy and New Symbols for AIS Aids to Navigation.

#### **Definition**

3.3 Regarding the definition of AIS AtoN, the Group recalled that plenary had agreed with the option 2 in the proposed draft policy and agreed to delete options 1 and 3 accordingly.

#### **Application**

3.4 The Group considered the application contained in section 4 of the proposed draft policy and agreed to replace the word "AIS" in paragraph 4.1.2 with "equipment capable of transmitting or receiving AIS messages".

3.5 The Group, taking into account decisions and comments made in plenary, agreed to delete paragraph 4.1.7 which reads "as AIS AtoN operates in VHF range to be displayed, the benefit of AIS AtoN for voyage planning is limited".

3.6 With regard to permanent use of virtual AIS AtoN, the group also agreed to delete the first "permanent" and add the words "on an ongoing basis" after the word "AIS AtoN" in paragraph 4.3.6 of the proposed draft policy.

#### **Performance**

3.7 The Group considered section 5 on performance and agreed to add a footnote with the following text after the word "guidelines" in paragraph 5.2.

"Refer to and ITU-R M.1371-4 and IALA Recommendation A-126."

#### **Risks and limitations, Portrayal and Training**

3.8 The Group considered sections on Risks and limitations, Portrayal and Training and agreed with defining GNSS, deleting the words "and synthetic", and replacing the word "part" with "an extension" in paragraphs 8.2, 9.1 and 10.1 respectively.

#### **4 RE-ESTABLISHMENT OF THE CORRESPONDENCE GROUP ON DEVELOPMENT OF DRAFT POLICY FOR AIS Aids TO NAVIGATION**

4.1 In light of the discussions set out in section 3 of the Group's report, the Group recommends that a correspondence group under the coordination of Japan\* be established to progress work intersessionally, with the following terms of reference:

- .1 consider documents NAV 58/7 and NAV 58/WP.7, including comments made in plenary and any other relevant information to further review [from an editorial point of view] and finalize a revised draft of a policy for AIS Aids to Navigation;
- .2 develop symbols for AIS AtoN, taking into account the symbols contained in SN/Circ.243 and other relevant guidelines, standards and publications; and
- .3 submit a report for consideration and review to NAV 59.

#### **5 VIEWS OF THE DRAFTING GROUP**

5.1 The Group considered paragraph 5 of document NAV 58/7/1 (Australia) and was of the opinion that further liaison is necessary to ensure standards developed by other international organizations i.e. IHO, IEC and IALA align with this developing policy for AIS AtoN.

5.2 The Group considered paragraph 9 of document NAV 58/7 and was of the opinion that AIS Application Specific Message (ASM) should be further considered in conjunction with developments of AIS AtoN policy in the future.

#### **6 ACTION REQUESTED OF THE SUB-COMMITTEE**

6.1 The Sub-Committee is invited to:

- .1 agree on the revised draft text of the policy on use of Aids to navigation as set out in the annex;
- .2 re-establish the correspondence group on development of draft policy on use of AIS Aids to Navigation according to the proposed terms of reference (paragraph 4.1); and
- .3 approve the report, in general.

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## ANNEX

### REVISED DRAFT POLICY ON USE OF AIS AIDS TO NAVIGATION

#### 1 Purpose

1.1 The purpose of this document is to provide both mariners and shore authorities, especially Aids to Navigation service providers, a clear policy direction on the use of AIS Aids to Navigation (AtoN) for ensuring the safety of navigation.

#### 2 Scope

2.1 This document specifies the policy on the application or usage of AIS AtoN, including definition, performance, operational matters and other related topics.

#### 3 Definition

**Option 2** The highlight was editorial mistake and deleted.

##### 3.1 AIS Aids to Navigation:

An AIS AtoN is a digital aid to navigation (AtoN) promulgated by an authorized service provider using AIS Message 21 "Aids to navigation report" that is portrayed on devices or systems (e.g. ECDIS, radar or INS). An AIS AtoN can be implemented in two ways.

##### .1 Physical AIS AtoN:

A Physical AIS AtoN is an AIS Message 21 representing an AtoN that physically exists.

##### .2 Virtual AIS AtoN:

A Virtual AIS AtoN is transmitted as a Message 21 representing an AtoN that does not physically exist.

#### 4 Application

##### 4.1 General principles

.1 establishment or operation of an AIS AtoN should be in accordance with the SOLAS regulation V/13 on establishment and operation of aids to navigation. Based on the Convention, each competent AtoN service authority or provider has the possibility to establish or operate AIS AtoN as the volume of traffic justifies and the degree of risk requires;

.2 when considering the establishment or deployment of AIS AtoN, the competent AtoN service authority or provider should take special precaution that not all ships may carry equipment capable of transmitting or receiving AIS messages, such as leisure craft, fishing boats and warships, and some coastal stations, including Vessel Traffic Service (VTS) centres, might not be fitted with AIS capability;

- .3 further, even if a ship carries an AIS unit, the capability to portray or to display AIS AtoN information may be limited. Some types of class A AIS equipment, which is required by the SOLAS Convention, can for example only display alphanumeric information, such as the name of the AtoN, on a Minimum Keyboard Display (MKD)<sup>1</sup>. Likewise, the portrayal of information for class B AIS equipment is optional and various types of display such as radar and ECDIS may display an AIS symbol but not necessarily an AIS AtoN symbol;
- .4 there is also potential conflict between static AtoN display and AIS AtoN display, especially if the data is in conflict. Therefore, close coordination between the AtoN authority and the relevant charting authorities is essential;
- .5 consequently, not all users will benefit from the provision of AIS AtoN. Therefore, the competent AtoN authority should take careful consideration to promulgate the information as necessary to mariners and other relevant parties before the establishment or deployment of AIS AtoN is completed. **It is highly important that mariners know how to interpret, understand and use AIS AtoNs before any decision of establishment or deployment is made; and**
- .6 AIS AtoN could enhance the mariner's awareness on Maritime Safety Information (MSI) since AIS AtoN has the possibility to bring information almost immediately to the attention of the Officer of the Watch (OOW) in its relevant geographical context.

#### 4.2 Application of Physical AIS AtoN

- .1 a Physical AIS AtoN which is associated with a physically existing AtoN, can be implemented to provide mariners with the following service information:
  - the type and the name of the AtoN;
  - the position of the AtoN (must always be actual position of physical AtoN, i.e. real-time EPFS position for floating AtoN, especially if off position);
  - AtoN's status, e.g. light error, RACON error, off-positioning indication in the case of a drifting buoy, etc. with Message 14 "Safety-related broadcast message (optional)" (if monitored); and
  - other types of information through AIS Application Specific Message<sup>2</sup> (optional).

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<sup>1</sup> Where the AIS is part of an Integrated Bridge System, presentation of the AIS data would in general not be limited to the MKD.

<sup>2</sup> Refer to SN.1/Circ.289 – Guidance on the use of AIS Application-Specific Messages.

#### 4.3 Application of Virtual AIS AtoN

- .1 a Virtual AIS AtoN transmits information about an AtoN that does not physically exist. In this context, the competent AtoN authority should take every precaution to avoid confusion to the mariners. The AIS message should clearly identify this as virtual AIS AtoN.
- .2 the application or usage of a virtual AIS AtoN may be divided into two categories, temporary and permanent.

##### Temporary application

- .3 virtual AIS AtoN may be used as a means to rapidly communicate and deploy certain Maritime Safety Information (MSI) in addition to its broadcast via the GMDSS. It may also further supplement Notices to Mariners (NtMs) for some temporary and preliminary warnings and information from various origins, particularly where the warnings and information have yet to be included in the relevant ENC, due to the time it takes for the distribution of ENC updates.
- .4 attention should also be drawn to the fact that the IHO recently established an ENC Updating Working Group to further improve the recommended ENC updating regimes to be used by Hydrographic Offices (HOs). This work has now been completed. Most HOs are now including temporary and preliminary NtM information in ENCs. Where temporary and preliminary information are included in ENCs, there must be coordination between AIS AtoN and ENC updates in order to avoid multiplied/duplicated layers of information on a display concerning the same issue.

##### Permanent application

- .5 virtual AIS AtoN can be used for permanently marking an object for which it is difficult to establish a physical AtoN due to environmental or economic difficulty, e.g. deep-water, harsh sea conditions. Another case of the permanent application of virtual AIS AtoN is for example marking a shoal which changes with time due to current or weather effect.
- .6 however, unless the object is impossible to maintain as charted because of changes which occur over time, **the usage of virtual AIS AtoN on an ongoing basis is not recommended** since permanent objects and other permanent dangers to safe navigation should be included in ENCs, paper nautical charts and nautical publications, and should in general not be duplicated as a multiple layer by AIS AtoN.

#### 5 Performance

The highlight was amended at the plenary as follows:  
"the permanent usage of virtual AIS AtoN".

##### 5.1 Range and reporting interval

An AIS AtoN should have the transmission range and reporting interval providing timely detection, depending on traffic and topology of the area and degree of risk, in accordance with international recommendations. The reporting interval for Message 21 of AIS AtoN is nominally three minutes but can be changed to improve timely detection or datalink efficiency in accordance with international recommendations. An AIS AtoN should be considered lost after 15 minutes, unless updated.

## 5.2 Other characteristics

Other characteristics of AIS AtoN should take into consideration the risks and limitations described herein, as well as appropriate international standards, recommendations and guidelines\*.

## 6 Operation/management

6.1 In order to avoid an unauthorized transmission of AIS AtoN, every AIS AtoN should be authorized by the competent authority.

6.2 An AtoN authority should make all necessary information relating to AIS AtoN available to all concerned.

6.3 The number of AIS AtoNs deployed in one area should be limited in order to avoid clutter on a display both on board and ashore.

6.4 When deploying a virtual AIS AtoN as a supplementary means of promulgating MSI, the AtoN authority must co-ordinate closely with the information provider, the NAVTEX Coordinator, National Coordinator, the Sub-Area Coordinator (if one exists) and the NAVAREA Coordinator.

## 7 Monitoring

7.1 In order to ensure reliability and integrity, each AIS AtoN should be monitored by appropriate means and once a discrepancy is detected, the AtoN service provider or other relevant authority should notify all concerned immediately. Although VHF Data Link (VDL) loading by an AIS AtoN is very low, the AIS VDL should be monitored by slot utilization or other appropriate means in order to ensure that the transmission of AIS AtoN does not impair ship to ship transmissions of AIS, and to detect any unauthorized transmission of AIS AtoN.

7.2 Contracting Governments should appoint a competent authority with the responsibility for protecting the integrity of the AIS VDL, and ensure the legal means to prevent unauthorized AIS AtoN transmissions.

## 8 Risks and limitations

8.1 Both AIS AtoN service providers and users should be aware of the following risks of AIS AtoN:

- .1 not all ships carry AIS and not all AIS displays can display AIS AtoN; not all mariners or shore based operators can be aware of the AIS AtoN;
- .2 information overload may cause confusion;
- .3 since Physical AIS AtoN may show the real-time position of the AtoN, there can be a position difference between the AIS AtoN position and the charted AtoN position; and
- .4 because of the technological newness of the AIS AtoN, there will be a lack of user awareness or understanding.

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\* Refer to and ITU-R M.1371-4 and IALA Recommendation A-126.



8.2 Both AIS AtoN service providers and users should also be aware of the following limitation of AIS AtoN:

- .1 as well as AIS shipborne station, position of floating AIS AtoN depends on Global Navigation Satellite System (GNSS) and may thus be subject to GNSS vulnerability.

## **9 Portrayal**

9.1 The purpose of portrayal of AIS AtoN information is to convey the meaning of the AIS AtoN information intuitively and unambiguously to all concerned through navigational or other display. Graphic portrayal of AIS AtoN information should:

- clearly distinguish virtual AIS AtoN from physical AIS AtoN;
- graphically indicate the type of the AIS AtoN in accordance with the IALA Maritime Buoyage System; and
- be sufficiently different from IHO chart symbols and other navigation related symbols to differentiate ENC AtoN objects from AIS AtoN.

## **10 Training**

10.1 It is recommended that navigators and VTS operators, as an extension of the training on the IALA Maritime Buoyage System, are introduced to AIS AtoN as defined by this policy, and portrayal on navigation related displays as defined by relevant documents, including the concept of a Virtual AIS AtoN, visible only on electronic displays.

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