

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

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DEVELOPMENT OF POLICY AND NEW SYMBOLS FOR AIS AIDS TO NAVIGATION

Report of the Correspondence Group

Submitted by Japan

SUMMARY

<i>Executive summary:</i>	This document reports on the work of the NAV Correspondence Group on development of draft policy for AIS Aids to Navigation and proposes the draft policy at annex 1.
<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 20
<i>Related documents:</i>	MSC 86/23/7, MSC 86/23/18, MSC 88/23/10, MSC 88/23/12, 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, NAV 57/8, NAV 57/8/1, NAV 57/8/2 and SN/Circ. 243

Introduction

1 At its eighty-sixth session, the Maritime Safety Committee considered document MSC 86/23/7 (Japan), a proposal to develop new symbols for AIS aids to navigation (AIS-AtoN) taking into account document MSC 86/23/18 (CIRM), and agreed to include a high priority item of “New symbols for AIS-AtoN” in the work program of NAV.

2 At its fifty-sixth session, the NAV Sub-Committee considered documents NAV 56/11 (Japan), NAV 56/11/1 (IHO), NAV 56/11/2 (the United Kingdom) and NAV 56/11/3 (Denmark) and appreciated the initiative undertaken by Japan in developing examples of draft new symbols for AIS-AtoN. However there was concern that the broader issue of AIS-AtoN had not been discussed in detail at IMO and the Sub-Committee agreed that it was rather premature to establish a Correspondence Group on AIS-AtoN symbology. It was first imperative to have a policy in place before any major work was undertaken on this issue.

3 At its eighty-eighth session, the Maritime Safety Committee considered document MSC 88/23/10 (Japan and the United States), a proposal to expand scope of the planned output on “New symbols for AIS-AtoN” to also include the development of policy, guidance and performance standards for AIS-AtoN and rename the output accordingly, taking into account document MSC 88/23/12 (Chile), and agreed to expand the output to include performance standards, guidance and policy on their use and renamed the output “Development of policy and new symbols for AIS-AtoN”.

4 At its fifty-seventh session, the NAV Sub-Committee considered document NAV 57/8 (Japan) providing its view on how to progress the work and suggesting the establishment of a correspondence group taking into account documents NAV 57/8/1 (China), a proposal of new symbols for AIS-AtoN and NAV 57/8/2 (IALA), information with respect to the work of IALA, and agreed to establish the Correspondence Group under the coordination of Japan to make progress on this issue intersessionally.

5 Representatives of the following Member States participated in the Correspondence Group:

AUSTRALIA	JAPAN
BAHAMAS	MALASYA
CANADA	NORWAY
CHILE	REPUBLIC OF KOREA
DENMARK	SWEDEN
FINLAND	THAILAND
FRANCE	TURKEY
GERMANY	UNITED STATES

6 The following intergovernmental and non-governmental organizations were also represented:

INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)
INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ASSOCIATION OF MARINE AIDS TO NAVIGATION AND
LIGHTHOUSE AUTHORITIES (IALA)
COMITÉ INTERNATIONAL RADIO-MARITIME (CIRM)
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)
INTERNATIONAL SAILING FEDERATION (ISAF)
THE NAUTICAL INSTITUTE (NI)

Terms of Reference

7 The Correspondence Group was instructed to consider documents NAV 56/11, NAV 57/8 and NAV 57/8/2, including comments made in Plenary and any other relevant information, develop a first draft of a policy for AIS-AtoN and submit a report for consideration and review by NAV 58.

Discussion

8 The Group started its work by deciding on the topics to be covered on the draft IMO policy for AIS-AtoN based on the documents NAV 57/8 and NAV 57/8/2 and comments made in a plenary and agreed as follows:

- .1 definition
- .2 application or usage
- .3 performance standards
- .4 operation/ management
- .5 monitoring
- .6 risks and limitation
- .7 portrayal
- .8 training

9 There was a considerable discussion regarding the definition of AIS-AtoN. One opinion was to limit AIS-AtoN as transmitting Message 21 of the ITU Recommendation M.1371 (series) that is composed of the IALA Maritime Buoyage System and thus represents single point information. Another opinion was to expand the concept of AIS-AtoN from conventional aids to navigation, i.e. single point information, to future style of aids to navigation that includes representing line, area or

subject information such as caution area, restricted area, distress area using AIS Application Specific Message (ASM) defined by SN.1/Circ. 289. Many members supported the latter opinion of expanding the concept of AIS-AtoN. However, considering the following circumstances, the Group agreed to limit the definition of AIS-AtoN as transmitting Message 21 only and drafted the definition based on the IALA Recommendation A-126.

- Inclusion of AIS Application Specific Message opens the scope of the Correspondence Group work to a wide area and, therefore, it seems difficult to finish the work within the allocated time frame.
- Defining methods for properly communicating, integrating and portraying data from different sources and sensors is very closely related to the discussion of the Correspondence Group on e-navigation and, thus, duplicating efforts with e-navigation process.

10 The IALA Recommendation A-126 uses the term “real”, “synthetic” and “virtual” for the implementation ways of AIS-AtoN. However, since the all ways of AIS-AtoN informationally real and the difference is whether physically exist or not, the Group agreed to use the term “physical”.

11 Concerning the implementation ways, the Group was divided in its opinion with the following three options.

- The first option is to define the three implementation ways “physical”, “synthetic” and “virtual”, as the IALA Recommendation A-126 defines, since it has a significant bearing on operational matters and can have implications on the navigation.
- The second option is to define the implementation ways as only “physical” and “virtual” and to exclude “synthetic”, since “synthetic” has a physically existing AtoN and there is no difference between “physical” and “synthetic” from mariner’s viewpoint.
- The third option is to omit all implementation ways from the definition, since this is clearly described by the IALA documents and omitting it would leave the way open for future development of AIS AtoN.

These three options of the implementation ways also affect application of AIS-AtoN. Therefore, the draft policy shows the options of definition and application within square brackets.

12 Regarding the application of AIS-AtoN, especially virtual AIS-AtoN where no aids to navigation physically exists, the Group agreed that unless the object is impossible to be maintained as charted due to changes with time, the permanent usage of virtual AIS-AtoN is not recommended since permanent objects and other permanent dangers to safe navigation should be marked in ENCs, paper nautical charts and nautical publications, and should in general not be duplicated as a multiple layer by AIS-AtoN.

13 During the discussion, the Group has noted that the present AIS-AtoN technology is in use and may bring some benefits for mariners through its ability of near real time information transfer, but the introduction of Application Specific Messages (ASM) may enable more advanced applications and may, in the future, better address needs for rapid promulgation of dynamic, new or temporary information related to maritime safety. ASM will, however for considerable time only, be presentable on dedicated systems such as Portable Pilot Units. Considering the work underway on an e-navigation implementation plan and proposed review of the GMDSS, recommendations are provided for future development on rapid electronic promulgation of MSI and AtoN information in the following section.

14 The proposed draft IMO policy on use of AIS-AtoN is attached as annex 1 of this report.

Future development

15 Digital data objects used for communication of information related to the same object or event found in other data collections should contain unique object identifiers, enabling unambiguous information integration, to avoid information related to the same object or event being represented as several layers of apparently unrelated information.

16 Development of data object definitions to be used by different means of promulgation of static or real time dynamic Information related to the same object or event, such as ENC updates, AIS-AtoN, AIS ASM or GMDSS broadcasts, should take into account the S-100 geospatial standard for maritime data, to ensure compatibility.

17 Presentation of integrated information on future navigation related to displays or systems should take into account the human element, seeking intuitive and unambiguous recognition. Developing, improving or enhancing graphical elements, text phrases or sounds should be based on usability evaluation.

18 Definitions of information objects and promulgation procedures related to MSI or virtual Aids to Navigation should either specify period of validity as part of the content definition or specify broadcast interval (timeout of validity), as well as take into account the human element in terms of information relevance at different zoom level of a geographically oriented display system, to ensure unambiguous interpretation and prevent display clutter.

New symbols

19 During the discussions, Denmark proposed the consideration of new symbols in this Group and submitted its idea of new symbols based on NAV 56/11 and NAV 56/11/3 since it would be beneficial, if any amendment to symbology could be resolved quickly, in order to enable inclusion into the ongoing revision of IEC 62288, without introducing untimely needs for changes to test standards or type approvals for existing equipment, acknowledging that lessons learned should otherwise be addressed in due course of the e-navigation strategy implementation. Although there was a support from some members, other members were of the opinion that, considering the terms of reference instructed by the Sub-Committee and the time remaining, it would be premature to consider symbols. Therefore the Group regarded the proposal as information only, and included it in the report as annex 2 for future consideration by the Sub-Committee subject to the approval of the proposed draft policy.

Action requested of the Sub-Committee

20 The Sub-Committee is invited to consider the proposed draft policy in annex 1, note the discussion regarding new symbols in paragraph 19 and decide as appropriate.

* * *

ANNEX 1

Proposed 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 1

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 three ways.

.1 Physical AIS-AtoN:

A Physical AIS-AtoN is an AIS station located on an AtoN that physically exists.

.2 Synthetic AIS-AtoN:

A Synthetic AIS-AtoN is where Message 21 is transmitted from an AIS station located remotely from the AtoN.

.3 Virtual AIS-AtoN:

A Virtual AIS-AtoN is transmitted as a Message 21 for an AtoN that does not physically exist]

[Option 2

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]

[Option 3

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.]

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 AIS, 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)*. 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 co-ordination 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 AtoN's before any decision of establishment or deployment is made.**
- .6 AIS-AtoN could enhance the mariner's awareness on Maritime Safety Information (MSI) since AIS-AtoN have the possibility to bring information almost immediately to the attention of the Officer of the Watch (OOW) in it's relevant geographical context.
- .7 As AIS-AtoN operates in VHF range to be displayed, the benefit of AIS-AtoN for voyage planning is limited.

[If the option 3 of definition is chosen, the paragraph 4.2 to 4.4 will be deleted.]

4.2 Application of Physical AIS-AtoN

- .1 A Physical AIS-AtoN which is associated to a physically existing AtoN, can be implemented to provide mariners with the following service information:
 - The type and the name of the AtoN;

* Where the AIS is part of an Integrated Bridge System, presentation of the AIS data would in general not be limited to the MKD.

- 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);
- Other types of information through AIS Application Specific Message *

[If the option 2 of definition is chosen, the paragraph 4.3 will be deleted with a change of paragraph number 4.4.]

4.3 Application of Synthetic AIS-AtoN

- .1 A Synthetic AIS-AtoN which is associated to a physically existing AtoN is not equipped with the AIS station or transmitter. The AIS signal is transmitted from an AIS station or transmitter which is remotely located from the AtoN itself. Therefore, its usage is almost similar to a physical AIS-AtoN and the services provided to mariners can be summarized as follows:

- To inform type, name and designated position (if not monitored) of AtoN;
- To inform real-time position of floating AtoN (if the AtoN is monitored.);
- To indicate off-position of floating AtoN (if the AtoN is monitored.);
- To indicate AtoN status, e.g. light error, RACON error (if the AtoN is monitored).

4.4 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 the 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 (NtM) for some temporary and preliminary warnings and information from various origins, particularly where the warnings and information has yet to be included in the relevant ENC's, 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 (HO's). This work has now been completed. Most HO's are now including temporary and preliminary NtM information in ENC's. Where temporary and preliminary information are included in ENC's, 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

* Refer to SN.1/Circ.289 – GUIDANCE ON THE USE OF AIS APPLICATION-SPECIFIC MESSAGES.

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 economical 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 permanent usage of virtual AIS-AtoN is not recommended** since permanent objects and other permanent dangers to safe navigation should be marked in ENC's, paper nautical charts and nautical publications, and should in general not be duplicated as a multiple layer by AIS-AtoN.

5 Performance

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 onboard 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 co-ordinator, National Co-ordinator, the Sub-Area Co-ordinator (if there is one) and the NAVAREA Co-ordinator.

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.
- .4 Because of the technological newness of the AIS-AtoN, there will be a lack of user awareness or understanding.

- 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 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 and synthetic AIS-AtoN.
- graphically indicate the type of the AIS-AtoN in accordance with the IALA Maritime Buoyage System.
- 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 part 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.

ANNEX 2

This annex contains two alternatives (A and B) for improved AIS-AtoN symbols.
Draft new symbols for AIS-AtoN – Alternative A

Table 1A – Previous and current recommended symbols for AIS-AtoN









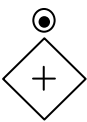

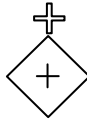
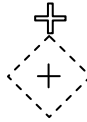
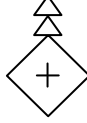

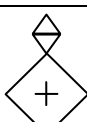

	AIS-AtoN Symbol (Physical)	AIS-AtoN Symbol (Virtual)
Previous AIS-AtoN Symbol, SN/Circ. 243		
Previous AIS-AtoN Symbol, IEC 62288 Ed. 1.0		
Recommended basic AIS-AtoN Symbol Alternative A		

Table 2A – improved symbols for portrayal of AIS-AtoN on navigation related displays
Replacing the symbol in SN/Circ-243, Table 4, on AIS related AtoN

Type of AIS-AtoN (Type of code in AIS msg. 21)	Symbol (Physical)	Symbol (Virtual)
Default, type not specified (0) Reference point (1) Fixed structure off shore / obstruction (3) Light, without sectors (5) Light, with sectors (6) Leading Light Front (7) Leading Light Rear (8) Light Vessel / LANBY/Rigs (31)		
Racon (2)		
Emergency Wreck Mark (4) [requires update of ITU-R M.1371-1 and IALA Recommendation A-126]		
Beacon, Cardinal N (9) Floating, Cardinal Mark N (20)		
Beacon, Cardinal E (10) Floating, Cardinal Mark E (21)		

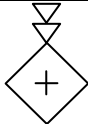

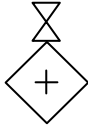

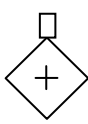
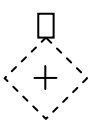
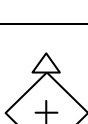

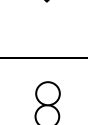
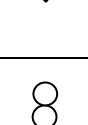
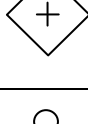

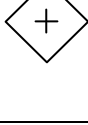





Beacon, Cardinal S (11) Floating, Cardinal Mark S (22)		
Beacon, Cardinal W (12) Floating, Cardinal Mark W (23)		
Beacon, Port hand (13) Beacon, Preferred Channel port hand (15) Port hand Mark (24) Preferred Channel Port hand (26)		
Beacon, Starboard hand (14) Beacon, Preferred Channel starboard hand (16) Starboard hand Mark (25) Preferred Channel Starboard hand (27)		
Beacon, Isolated danger (17) Isolated danger (28)		
Beacon, Safe water (18) Safe Water (29)		
Beacon, Special mark (19) Special Mark (30)		

Table 3A – Portrayal of AIS-AtoN indicating off position or health failure.

Type of failure condition	Symbol (Physical)	Symbol (Virtual)
AIS-AtoN indicating to be Off Position Note: Physical AIS-AtoN indicate realtime EPFS position of drifting AtoN (obstacle), Virtual AtoN indicate original designated position of AtoN	Off Position ! 	Off Position ! 
AIS-AtoN indicating Lights failure Note: Only applicable to Physical AIS-AtoN	Unlit ! 	
AIS-AtoN indicating Racon failure Note: Only applicable to Physical AIS-AtoN	Racon err ! 	

Top mark should alternate between *type of AtoN* and description of *error state*, until acknowledged. After acknowledge, relevant *type of AtoN* topmark should be displayed.

EXAMPLE 1A – Fixed lighthouse missing



Off Position !



Alternates with



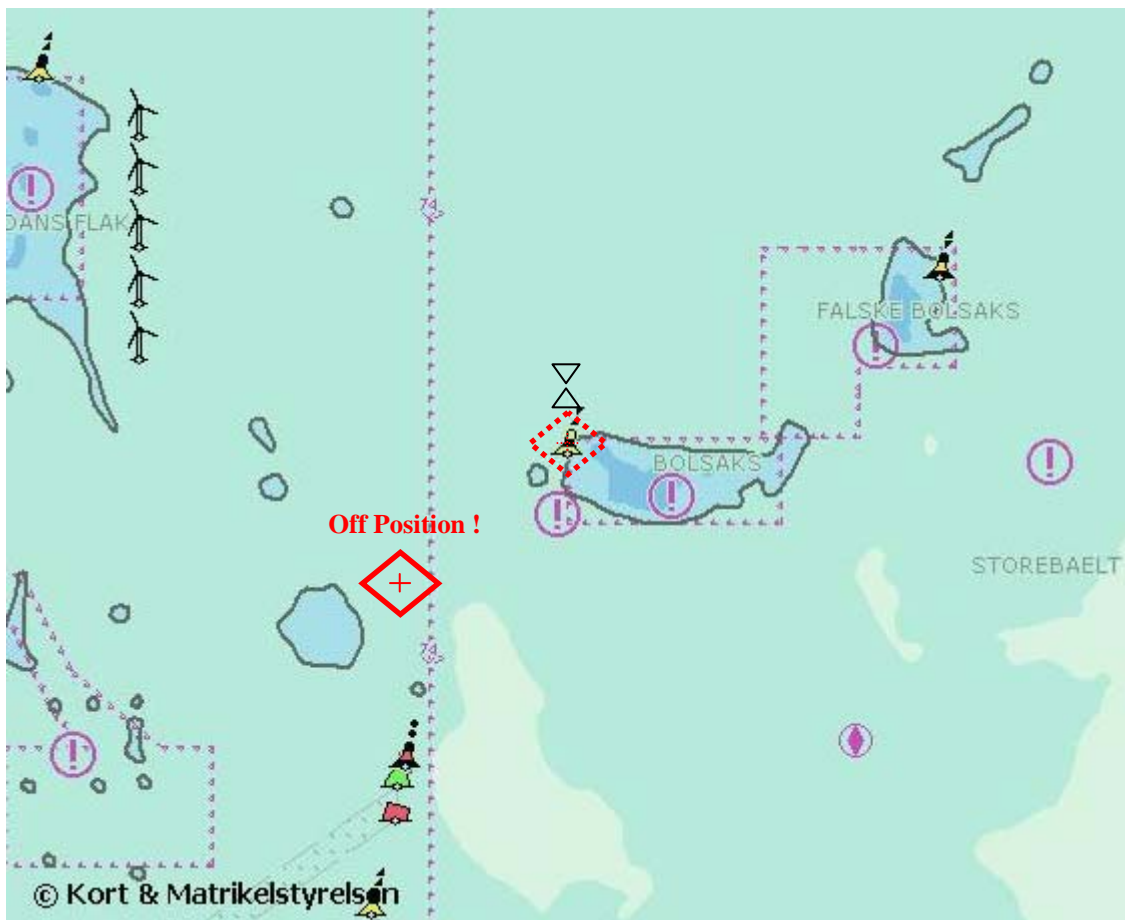
Until acknowledged.

When the AIS-AtoN is selected,
the following information becomes available:

MMSI: 992196112 Name: W26 MISSING - DK NAVWARN 345 Type: Beacon, Starboard hand (14) Virtual: Yes Off Position: YES!
--

Reference: DANISH NAV WARN 345 GREAT BELT. LIGHT OESTERRENDEN N (W26)
IN POS 55-21.8N 11-03.1 IS MISSING AND MAKES A SUBMERGED OBSTRUCTION.
DEPTH ...

AIS-AtoN signal only transmitted, when there is an error state.

EXAMPLE 2A – Floating AtoN off position**Off Position !**

Alternates with



Until acknowledged.

Off Position !

Alternates with



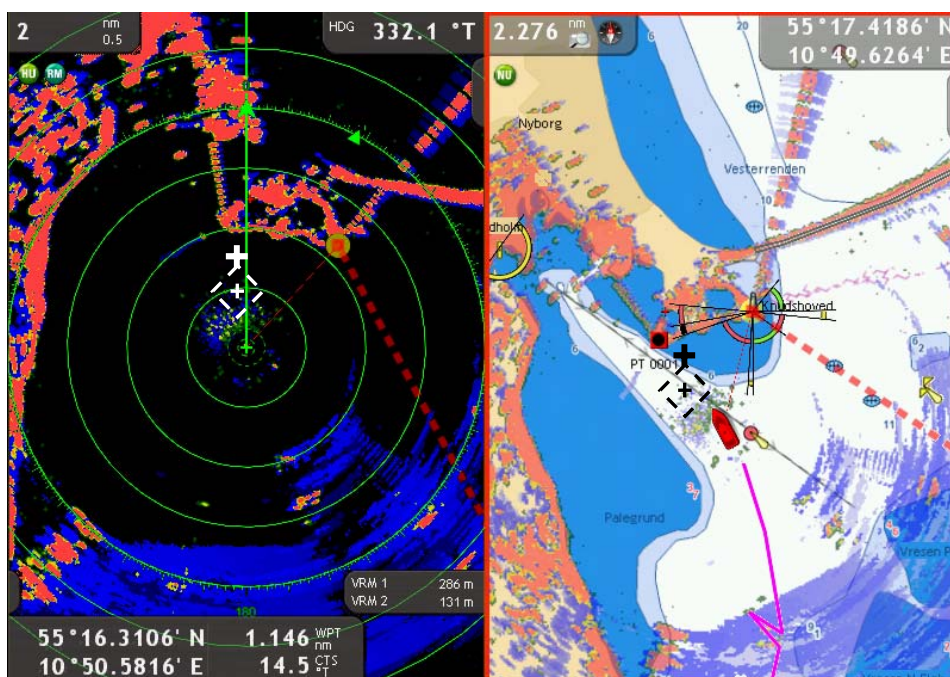
Until acknowledged.


When the Virtual AIS-AtoN is selected, the following information becomes available:

MMSI: 992196xxx
 Name: OFF POSITION (DK NAVWARN YYY)
 Type: Floating, Cardinal Mark W (23)
 Off Position: YES!

AIS-AtoN signal only transmitted, when there is an error state.

EXAMPLE 3A – New Wreck Mark w. virtual AIS-AtoN



When the AIS-AtoN  symbol is selected, the following information becomes available:

MMSI: 99219xxxx
Name: NEW WRECK - NAVWARN ZZZ
Type: Emergency Wreck Mark (4)
Virtual: Yes
Off Position: No

EXAMPLE 4A – Unlit lighthouse



Alternates with



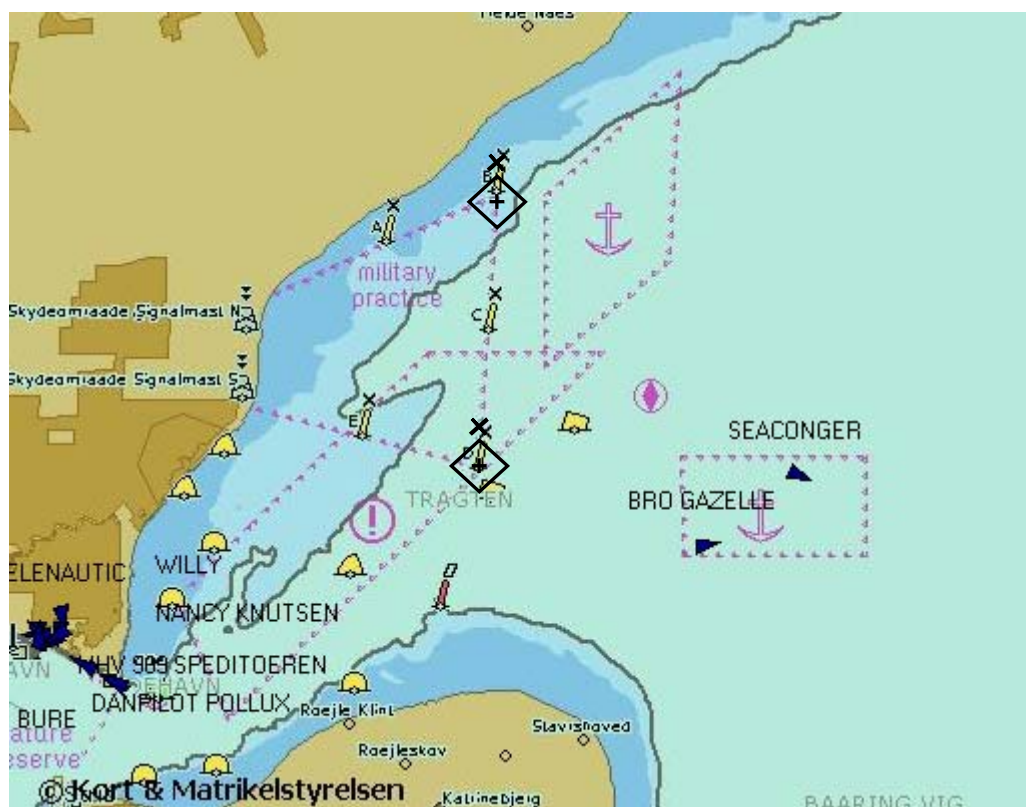
Until acknowledged.

When the AIS-AtoN is selected,
the following information becomes available:


MMSI: 992196112
Name: W26 IS UNLIT - NAVWARN 123
Type: Beacon, Starboard hand (14)
Virtual: No
Off Position: No
Status: Light Error

AIS-AtoN signal only transmitted, when there is an error state.

EXAMPLE 5A – Special Mark AIS-AtoN highlighting active Military Firing Range



AIS-AtoN only transmitted, when Firing Range is in use

When the AIS-AtoN  is selected, the following information becomes available:

MMSI: 992196xxx
Name: FIRING PRACTICE - KEEP CLEAR
Type: Special Mark (30)
Virtual: No
Off Position: No

Draft new symbols for AIS-AtoN – Alternative B

Table 1B – Previous and current recommended symbols for AIS-AtoN







	AIS-AtoN Symbol (Physical)	AIS-AtoN Symbol (Virtual)
Previous AIS-AtoN Symbol, SN/Circ. 243		
Previous AIS-AtoN Symbol, IEC 62288 Ed. 1.0		
Recommended basic AIS-AtoN Symbol Alternative B		

Table 2B – improved symbols for portrayal of AIS-AtoN on ENC displays

Replacing the symbol in SN/Circ-243, Table 4, on AIS related AtoN









Type of AIS-AtoN (Type of code in AIS msg. 21)	Symbol (Physical)	Symbol (Virtual)
Physical AtoN on position: Diamond only. (Original Charted AtoN symbol visible behind the AIS-AtoN Diamond.)		
Virtual AtoN on position: Symbol resembling AtoN top mark inside diamond, see Table 3B		

Table 3B – improved symbols for portrayal of AIS-AtoN on non-ENC displays

Replacing the symbol in SN/Circ-243, Table 4, on AIS related AtoN

Type of AIS-AtoN (Type of code in AIS msg. 21)	Symbol (Physical) Non-ENC display	Symbol (Virtual)
Default, type not specified (0) Reference point (1) Fixed structure off shore / obstruction (3) Light, without sectors (5) Light, with sectors (6) Leading Light Front (7) Leading Light Rear (8) Light Vessel / LANBY/Rigs (31)		
Racon (2)		
Emergency Wreck Mark (4) [requires update of ITU-R M.1371-1 and IALA Recommendation A-126]		























Beacon, Cardinal N (9) Floating, Cardinal Mark N (20)		
Beacon, Cardinal E (10) Floating, Cardinal Mark E (21)		
Beacon, Cardinal S (11) Floating, Cardinal Mark S (22)		
Beacon, Cardinal W (12) Floating, Cardinal Mark W (23)		
Beacon, Port hand (13) Beacon, Preferred Channel port hand (15) Port hand Mark (24) Preferred Channel Port hand (26)		
Beacon, Starboard hand (14) Beacon, Preferred Channel starboard hand (16) Starboard hand Mark (25) Preferred Channel Starboard hand (27)		
Beacon, Isolated danger (17) Isolated danger (28)		
Beacon, Safe water (18) Safe Water (29)		
Beacon, Special mark (19) Special Mark (30)		

Table 4B – Portrayal of AIS-AtoN indicating off position or health failure.

Type of failure condition	(Physical)	(Virtual)
AIS-AtoN indicating to be off Position <i>Note: Physical AIS-AtoN indicate realtime EPFS position of drifting AtoN (obstacle) using the symbol from Table3B with Red or flashing diamond. Virtual AtoN indicate original designated position of AtoN.</i>		
AIS-AtoN indicating Lights failure Red or flashing beacon symbol. <i>Note: Only applicable to Physical AIS-AtoN</i>		

AIS-AtoN indicating Racon failure Red or flashing Racon symbol Note: Only applicable to Physical AIS-AtoN		
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EXAMPLE 1B - Fixed lighthouse missing

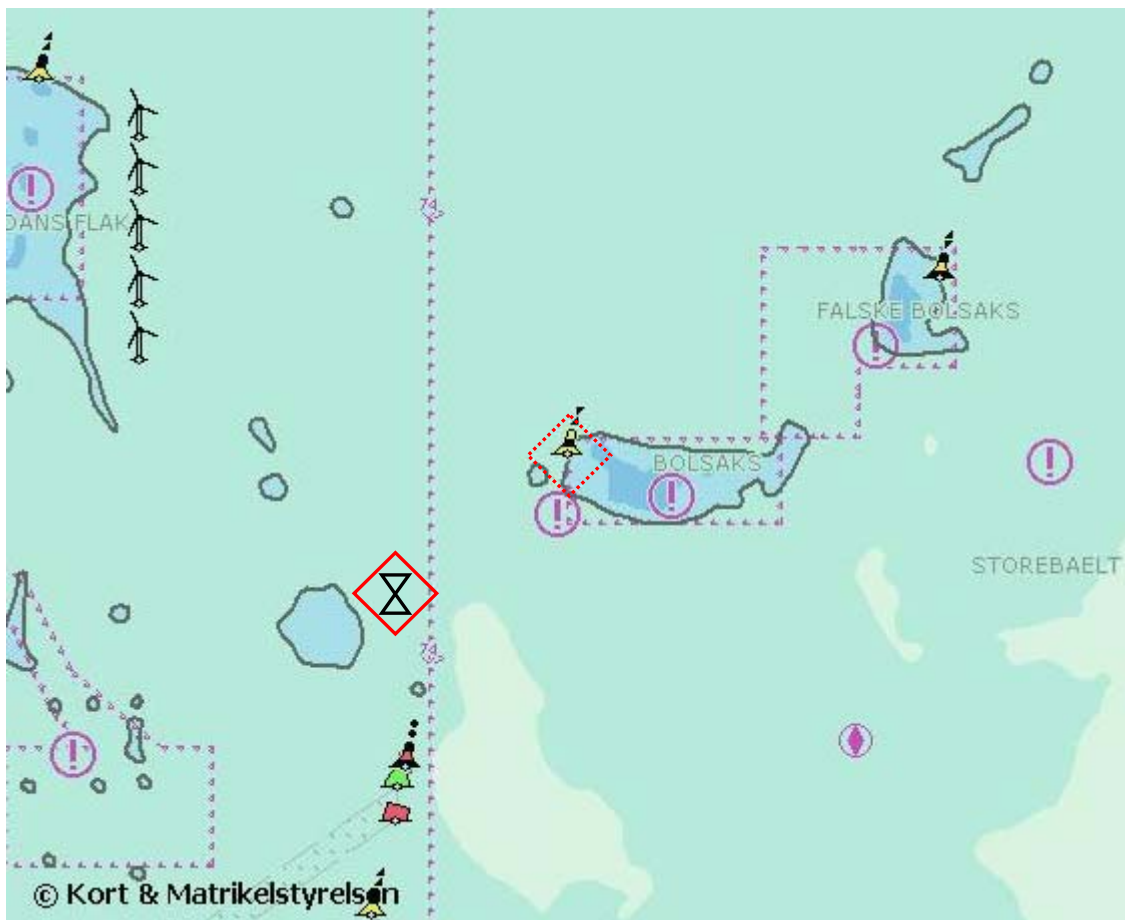


When the AIS-AtoN is selected, the following information becomes available:

MMSI: 992196112
Name: W26 MISSING – DK NAV/WARN 345
Type: Beacon, Starboard hand (14)
Virtual: Yes
Off Position: YES!

Reference: DANISH NAV WARN 345 GREAT BELT. LIGHT OESTERRENDEN N (W26)
IN POS 55-21.8N 11-03.1 IS MISSING AND MAKES A SUBMERGED OBSTRUCTION.
DEPTH ...

AIS-AtoN signal only transmitted, when there is an error state.

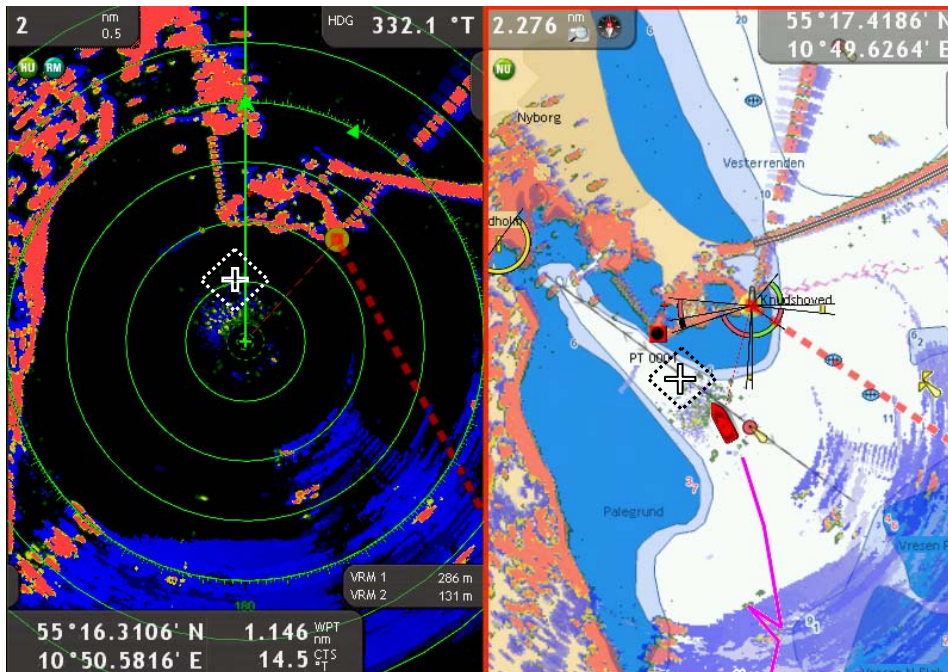
EXAMPLE 2B – Floating AtoN off position


When the AIS-AtoN is selected, the following information becomes available:

MMSI: 992196xxx
Name: OFF POSITION (NAVWARN YYY)
Type: Floating, Cardinal Mark W (23)
Off Position: YES!

AIS-AtoN signal only transmitted, when there is an error state.


EXAMPLE 3B – New Wreck Mark w. virtual AIS-AtoN



When the AIS-AtoN  symbol is selected, the following information becomes available:

MMSI: 99219xxxx
Name: NEW WRECK - NAVWARN ZZZ
Type: Emergency Wreck Mark (4)
Virtual: Yes
Off Position: No

EXAMPLE 4B – Unlit lighthouse

When the AIS-AtoN  is selected, the following information becomes available:

AIS-AtoN signal only transmitted, when there is an error state.

MMSI: 992196112
 Name: W26 IS UNLIT - DK NAVWARN 123
 Type: Beacon, Starboard hand (14)
 Virtual: No
 Off Position: No
 Status: Light Error

EXAMPLE 5B – Special Mark AIS-AtoN highlighting active Military Firing Range



AIS-AtoN only transmitted, when Firing Range is in use

When the AIS-AtoN  is selected, the following information becomes available:

MMSI: 992196xxx
Name: FIRING PRACTICE - KEEP CLEAR
Type: Special Mark (30)
Virtual: No
Off Position: No