Paper for Consideration by the Digital Information Portrayal Working Group (DIPWG)

Non-NEWOBJ Symbols for Virtual Aids

Submitted by:	DIPWG Chair
Executive Summary:	Paper describes the current paper chart and ECDIS symbols used to portray virtual aids to navigation, including the interim NEWOBJ implementation. The question is asked whether the symbology defined for the virtual AIS aids using NEWOBJ is sufficient.
Related Documents:	S-4, Section B-489.2 INT1 Symbol S-18.1 and S-18.2 S-52 Chart Presentation Bulletin No. 10 (S-52-CPB-No 10), "Portrayal of virtual AIS aids to navigation" S-57 Edition 3.1 Encoding Bulletin (EB54), "UOC Clause 12.14.1 AIS equipped aids to navigation" IEC 62288/Ed2/CDV, "Presentation of navigation related information on shipborne navigational displays"
Related Projects:	S-101

Introduction / Background

Action 16 from HSSC4 directed, "TSMAD to develop an Encoding Bulletin that describes how to encode virtual AIS Aids to Navigation using the New Object (NEWOBJ) feature."

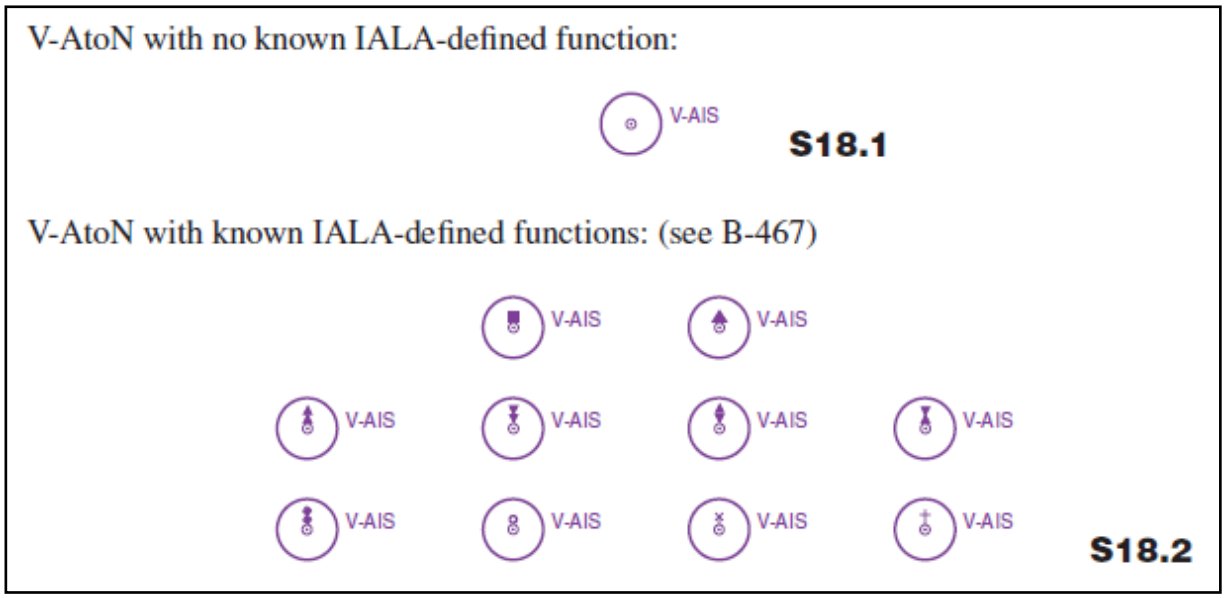
Symbology for virtual AIS AtoNs using existing S-52 symbols was defined to support the portrayal of the NEWOBJ implementation and the combined encoding bulletin (EB54) and chart presentation bulletin (S-52 CPB No. 10) were release to describe the proper encoding and portrayal of the new feature.

Analysis/Discussion/Conclusions

Use of NEWOBJ was intended to provide a means to quickly add new objects to ENCs until such time as S-57 could be modified to accommodate the change. By necessity, the symbology used for any implementation of NEWOBJ must be created from symbols that already exist in the current S-52 Presentation Library.

The symbology created for the virtual AIS AtoNs NEWOBJ consists of the magenta circle for berth number (BRTHNO01) and one of eleven simplified buoy or beacon symbols, such as BNCCAR01, BOYLAT14,

This solution provides a rough approximation of the symbology specified in S-4 for virtual AtoNs, as shown below.



Virtual AtoN Symbols Specified in S-4, Section B-489.2

These symbols are list as symbols S18.1 & S18.2 in INT1, as shown below.

18.1		Virtual AIS (with unknown IALA-defined function)
18.2		Virtual AIS (with known IALA-defined function)

Virtual AIS Symbols Shown in INT1

The NEWOBJ symbols implemented in the combined encoding/chart presentation bulletin are shown below.

Purpose of Virtual Aid	CLSDEF	CLSNAM	SYMINS	PORTRAYAL
North Cardinal	A Virtual object which indicates navigable water lies northwards	Virtual AtoN, North Cardinal	SY(BRTHNO01);SY(BCNCAR01);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
East Cardinal	A Virtual object which indicates navigable water lies eastwards	Virtual AtoN, East Cardinal	SY(BRTHNO01);SY(BCNCAR02);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
South Cardinal	A Virtual object which indicates navigable water lies southwards	Virtual AtoN, South Cardinal	SY(BRTHNO01);SY(BCNCAR03);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
West Cardinal	A Virtual object which indicates navigable water lies westwards	Virtual AtoN, West Cardinal	SY(BRTHNO01);SY(BCNCAR04);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Port lateral (IALA A)	A Virtual object marking the port side of a channel	Virtual AtoN, Port Lateral	SY(BRTHNO01);SY(BOYLAT24);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Starboard Lateral (IALA A)	A Virtual object marking the starboard side of a channel	Virtual AtoN, Starboard Lateral	SY(BRTHNO01);SY(BOYLAT13);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Port lateral (IALA B)	A Virtual object marking the port side of a channel	Virtual AtoN, Port Lateral	SY(BRTHNO01);SY(BOYLAT23);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Starboard Lateral (IALA B)	A Virtual object marking the starboard side of a channel	Virtual AtoN, Starboard Lateral	SY(BRTHNO01);SY(BOYLAT14);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Isolated Danger	A Virtual object marking an isolated danger	Virtual AtoN, Isolated Danger	SY(BRTHNO01);SY(BCNISD21);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Safe Water	A Virtual object marking safe water	Virtual AtoN, Safe Water	SY(BRTHNO01);SY(BOYSAW12);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Special Purpose	A Virtual object used to mark an area or feature referred to in nautical documents	Virtual AtoN, Special Purpose	SY(BRTHNO01);SY(BOYSPP11);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	
Emergency Wreck Marking	A Virtual object marking a wreck	Virtual AtoN, Wreck Marking	SY(BRTHNO01);SY(BOYSPP11);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11)	

NEWOBJ Virtual AIS Symbols Shown in
S-52 Chart Presentation Bulletin No. 10 (S-52-CPB-No 10), "Portrayal of virtual AIS aids to navigation," and
S-57 Edition 3.1 Encoding Bulletin (EB54), "UOC Clause 12.14.1 AIS equipped aids to navigation"

These symbols will probably suffice for use in the short term, but a more permanent set of symbols, specifically designed for Virtual Aids (which may be implemented by means other than AIS in the future) might be desirable in the long term. This would be especially true if simplified symbology for aids is eliminated for the portrayal of S-101.

The symbols being proposed by IEC for physical and virtual AIS aids are shown in Annex A for reference. These symbols would be displayed in addition to the ECDIS symbols on integrated ECDIS / AIS navigation diosplays.

Recommendations

Solicit recommendations from DIPWG members for “permanent” symbology to be used to portray virtual AtoNs.

Justification and Impacts

The current set of symbols being used for NEWOBJ Virtual AIS AtoNs may be confusing once simplified symbology is eliminated for the portrayal of buoys and beacons in ECDIS.

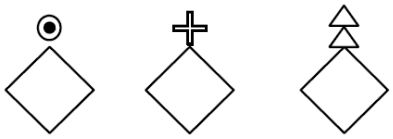
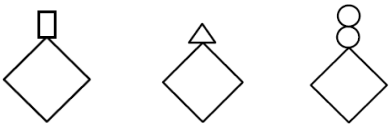
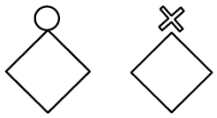
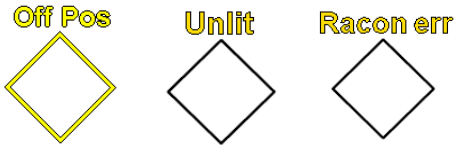
Action Required of DIPWG

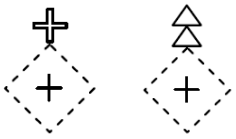
DIPWG is invited to:

a. Propose alternate “permanent” symbology to be used to portray virtual AtoNs, which could be prototyped in the S-100/S-101 testbed environment.

Annex A Draft symbols for Physical and Virtual AIS aids from IEC 62288/Ed2/CDV

Shown on the following two pages

	Symbol name and description	Symbol graphic(s)
2.10 a	**AIS aids to navigation –Physical** Physical AIS aids to navigation (AtoN) shall be presented as an open diamond. The sides of the diamond shall be not more than 6 mm in length. The diamond shall be drawn using a thin solid line style. The basic colour for an “on position” AIS AtoN is defined as the normal colour for AIS AtoN symbols. The basic colour for the diamond of an “off position” AIS AtoN is yellow, it shall be drawn using thick solid line style and when used against light background it shall include a black one pixel outline to improve readability. If available, on radar display AIS AtoN shall be drawn indicating the purpose of the AIS AtoN. On display containing an underlying chart AIS AtoN shall be drawn without indication of purpose unless the object is selected in which case, if available, the symbol is drawn indicating the purpose of the AIS AtoN. Purpose symbol shall be drawn using a thin solid line style and shall be the same basic colour as the AIS AtoN symbol. The height of the purpose symbol shall be not more than 5 mm in length AIS AtoN shall indicate failure of light with yellow text “Unlit”. AIS AtoN shall indicate failure of Racon with yellow text “Racon err”. When used against light background the yellow text shall include a black one pixel outline to improve readability AIS AtoN may be labelled. Alphanumeric text used to label an AIS AtoN shall be the same basic colour as the AIS AtoN symbol. Other information from AIS AtoN, if available (for example from Message 14 for the same MMSI), shall be available on demand. All physical AtoNs shall be in their own layer which shall have own display on/off selection.	Physical AIS AtoN: Basic shape Examples of Physical AIS AtoN  Racon Emergency wreck mark North cardinal mark East cardinal mark South cardinal mark West cardinal mark  Port hand mark Starboard hand mark Isolated danger  Safe water Special mark (IALA dictionary, topmarks) Examples of failures  Off position Lights failure Racon failure

	Symbol name and description	Symbol graphic(s)
2.10 b	**AIS aids to navigation - Virtual** Virtual AIS aids to navigation (AtoN) shall be presented as an open diamond. The sides of the diamond shall be not more than 6 mm in length. The diamond shall be drawn using a thin dashed line style. The basic colour for a Virtual AIS AtoN is as used for the physical AIS AtoN symbols. If available, AIS AtoN shall be drawn indicating the purpose of the AtoN. Purpose symbol shall be drawn using a thin solid line style and shall be the same basic colour as the AIS AtoN symbol. The height of the purpose symbol shall be not more than 5 mm in length AIS AtoN shall indicate intended location of a physical AtoN with yellow text “Missing”. When used against light background the yellow text shall include a black one pixel outline to improve readability AIS AtoN may be labelled. Alphanumeric text used to label an AIS ATON shall be the same basic colour as the AIS AtoN symbol. Other information from AIS AtoN, if available (for example from Message 14 for the same MMSI), shall be available on demand. All virtual AtoNs shall be in their own layer which shall have own display on/off selection. When selected off a permanent indication shall be provided.	Virtual AIS AtoN: Basic shape Examples of Virtual AIS AtoN  Emergency wreck mark North cardinal mark East cardinal mark South cardinal mark West cardinal mark Port hand mark Starboard hand mark Isolated danger Safe water Special mark (IALA dictionary, topmarks) Examples of failure Intended location of missing AtoN