Paper for Consideration by ENCWG

Suggestion on Encoding for bridge and culvert marks in ENC

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Executive summary: The paper analyzes how to represent bridge and culvert marks in electronic charts and puts forward some suggestions.

Related documents:

Introduction / Background

1.Bridges need special marks to ensure the safety of the bridge and the ships sailing under the bridge, such as: clearance height under the bridge, clearance width, water depth, or the possibility of collision with the bridge. As early as May 1998, the International Association of Lighthouse Authorities (IALA) issued the "Recommendations on the Marks of Fixed Bridges on Navigation Waterways" (hereinafter referred to as the "Recommendations"). The recommendation divides bridge marks into day and night marks. The day mark is marked with circular signs (vertical stripes in red and white) indicating the "Best Crossing Point". In the System A, a solid green equilateral triangle sign with an upward tip is used to mark the right side of the navigable bridge hole, and a solid red positive direction sign is used to mark the left side (contrary to System B). The night mark "Best Crossing Point" is indicated by white lights showing the characteristics of safe waters, the left and right sides of the navigable fairway can be marked with red or green rhythm lights according to the " IALA Maritime Buoy System ".

2.The " Best Crossing Point " of IALA does not distinguish whether navigable bridge holes are one-way or two-way navigation, and the standard of prohibited navigation

marks for bridge holes is also provided in the "Navigation Marks for Bridges in Navigable Waters in the Chinese Sea Area" (GB24418-2020). The prohibited navigation mark of the bridge hole is a square sign with a black cross on a yellow background and is set on the non-navigable side of the one-way navigation bridge hole.

Analysis / Discussion

1.The IALA's suggestion on bridge and culvert mark is to set the style of the mark on the spot, and IHO does not stipulate how it should be displayed on paper and electronic charts. Different countries and regions have different regulations. Bridge and culvert mark have day mark as signs and night mark as light marks, they exist depending on the actual geographic landmark of the bridges. According to the data classification and coding rules of S-101, bridge and culvert marks should be used as auxiliary landmarks. Analyzing the electronic charts of Japan, Europe, China's Hong Kong and Macau regions, etc., it is found that the day mark is used as DAYMAR, and which are used as the auxiliary mark of the bridge together with LIGHTS. In some cases, the day mark is omitted and only LIGHTS are used as the auxiliary mark of the bridge. There are also PILPNT as the main mark and the LIGHTS on it as the auxiliary mark.

2.There is no difference between LIGHTS as the auxiliary mark and the electronic chart production institutions, and the day mark signs also conform to the IHO's definition of DAYMAR (The identifying characteristics of an aid to navigation which serve to facilitate its recognition against a daylight viewing background. On those structures that do not by themselves present an adequate viewing area to be seen at the required distance, the aid is made more visible by affixing a daymark to the structure. A daymark so affixed has a distinctive colour and shape depending on the purpose of the aid.). Therefore, if the bridge is marked with a daytime sign, it is a reasonable choice to use the DAYMAR. So now it is necessary to discuss whether the following main mark is to choose to choose a bridge (BRIDGE) or a bridge pier

(PILPNT). First of all, the bridge pier (PILPNT) is also a part of the bridge. Secondly, there are not many piers (PILPNT) shown on the general electronic chart. Some electronic charts are added for the purpose of using the pier (PILPNT) as the main mark. Therefore, it is more practical and cartographic rules to suggest using BRIDGE as the main marker.

Conclusions

In order to better communicate the electronic charts of different countries, it is necessary to unify the representation methods of bridge and culvert marks in electronic charts.

Recommendations

To sum up, the following suggestions are made for the representation of bridge and culvert marks in the electronic chart:

1.The main mark should be the Bridge identified by the bridge and culvert mark;

2.The day mark is represented as day mark (DAYMAR), and the night mark is the LIGHTS and serves as the auxiliary mrak of the bridge.

3.An option can be added to the Attribute Specific Mark class (CATSPM) : Bridge Mark.

4.Different bridge and culvert mark attributes are assigned according to the actual content.

" Best Crossing Point " sign：

DAYMAR: CATSPM: bridge mark (if available)
COLOUR: red,white
TOPSHP: circle
COLPAT: vertical stripes
LIGHTS: COLOUR: white
LITCHR: The actual light characteristics is different.

Signage on the left/right side of navigable bridge hole (System A)：

DAYMAR: CATSPM: bridge mark (if available)

COLOUR: red/green

TOPSHP: rectangle, horizontal/triangle, point up

LIGHTS: COLOUR: red/green

LITCHR: The actual light characteristics different.

No navigation signs in bridge orifice：

DAYMAR: CATSPM: entry prohibited mark, bridge mark (if available)

COLOUR: yellow

TOPSHP: rectangle, horizontal

LIGHTS: COLOUR: yellow

LITCHR: morse,

SIGGRP: (P)

SIGPER:12/15s

Action Required of ENCWG

The ENCWG may discuss and make recommendations on the representation of bridge and culvert marks in electronic charts.