IEHG 15th Annual Meeting

IENC Development Status

Liu Li

China Waterborne Transportation Institute

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China IENC Producing Status

- Heilongjiang River system navigation mileage: 8211km
- Sino Russian boundary river: 660km IENCs
- Heilongjiang River : 1090km IENCs
- Yangtze river :

  2746.6km IENCs, basically covering the whole trunk line
- Pearl River system navigation mileage : 16450 km, 1221km IENCs

National IENC Standard Content

National standard has been completed：

- **National Standards — IENC Engineering Technical Standard**
  - ✓ **Team Leader: Fei Weijun**
  - ✓ **Principle： Combined with China’s Reality, Compatible with the IEHG IENC standard**
  - ✓ **Structure: 8 Parts and 3 Appendixes**

Standard Structure

National Standards:

1. General Issues
2. Terms
3. Basic Rules
4. Feature and Attribute
5. Feature encoding
6. Data File
7. Data Structure
8. Data Checks


UDC

中华人民共和国国家标准 GB

P GB/T –

内河电子航道图工程技术标准

Engineering technical standard for inland waterway electronic chart

Appendix A - Feature and Attribute

Appendix B - Feature Encoding Guide

Appendix C - Data Validation Checks

IENC Standard Difference between China and IEHG

- **Apparent difference: AtoNs**
  - **5 classifications, 25 kinds**
    - ✓ **Navigation Marks: indicat limits and obstructions**
    - ✓ **Signal Marks : provide wat vessels**
    - ✓ **Special Marks : indicate st sections, etc., not for navig**
    - ✓ **Indication Marks : notice s**
    - ✓ **Warning Marks : warning**

JTS

中华人民共和国行业标准 JTS 196—10—2015

长江干线桥区和航道整治建筑物

中华人民共和国国家标准

GB 5863—93

内 河 助 航 标 志

代替 GB 5863—86

Aids to navigation on inland waterways

1 主题内容与适用范围

本标准规定了内河助航标志(以下简称内河航标)的种类、功能、形状、颜色、灯质、图例及配布原则等。

本标准适用于中华人民共和国各江、河、湖泊、水库通航水域所配布的内河航标。个别特殊通航水域经批准后,可根据具体情况另行规定。

2 引用标准

GB 5864 内河助航标志的主要外形尺寸

3 总则

3.1 内河航标是船舶在内河安全航行的重要助航设施。内河航标的主要功能是标示内河航道的方向、界限与碍航物,揭示有关航道信息,为船舶航行指出安全、经济的航道。

3.2 决定河流左、右岸的原则:按水流方向确定河流的上、下游,面向河流下游,左手一侧为左岸,右手一侧为右岸。

对水流流向不明显或各河段流向不同的河流,按下列顺序确定上、下游:

a. 通往海口的一端为下游;

b. 通往主要干流的一端为下游;

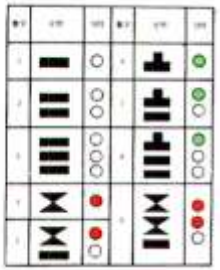
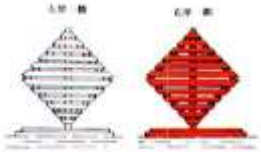
IENC Standard Difference between China and IEHG

Chinese Feature Classifications	No.	AtoNs	IEHG/ S-57 Object & Attribute
1. Navigation Marks (11)	1	Crossing Mark 	bcnlat/boylat，catlam=13/14
	2	Bankwise Mark 	bcnlat/boylat，catlam=27
	3	Range Marks	BCNSPP/BOYSPP-CATSPM 16, leading mark
	4	Transition Range Marks 	
	5	Indirect Range Marks	
	6	Fore and Aft Range Marks	

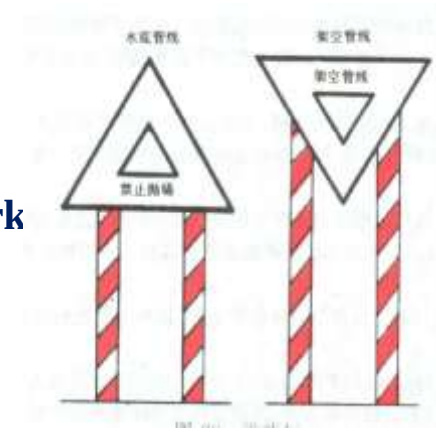
IENC Standard Difference between China and IEHG

Chinese Feature Classifications	No.	AtoNs	IEHG/ S-57 Object & Attribute
1. Navigation Marks (11)	7	Lateral Mark 	BOYLAT/BCNLAT-CATLAM=1/2
	8	Middle Ground Mark/ Bifurcation Mark 	bcnlat/boylat catlam=9/10
	9	Position Indicating Mark 	
	10	Flood Mark 	
	11	Bridge Opening Mark 	notmrk，catnmk= 44/45 或 bcnlat，catlam=23

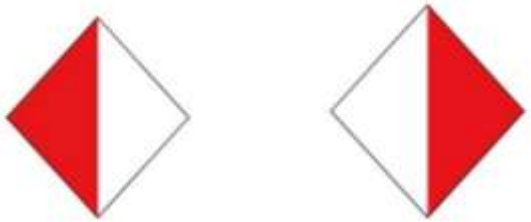
IENC Standard Difference between China and IEHG

Chinese Feature Classifications	No.	AtoNs	IEHG/ S-57 Object & Attribute
2 Signal Marks (6)	1	Traffic Control Mark 	
	2	Whistling Mark 	BCNSPP/BOYSPP-CATSPM =28, ‘sound ship’s siren mark
	3	Limit Mark   	notmrk，catnmk= 31
	4	Depth Signal Mark	
	5	Cross Current Mark 	
	6	Regulating Lock Mark 	

IENC Standard Difference between China and IEHG

Chinese Feature Classifications	No.	AtoNs	IEHG/ S-57 Object & Attribute
3 Special Marks (2)	1	Pipeline Mark 	BCNSPP/BOYSPP-CATSPM 6, cable mark; 34, overhead power cable mark; 39, pipeline mark
	2	Special Mark 	BCNSPP/BOYSPP-CATSPM

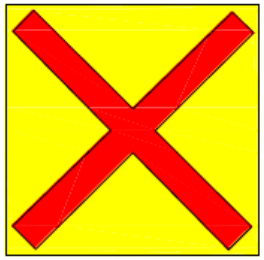
IENC Standard Difference between China and IEHG

Chinese Feature Classifications	No.	AtoNs	IEHG/ S-57 Object & Attribute
4 Indication Marks (3)	1	Left/Right Bridge Opening Mark 	notmrk，catnmk= 12/13
	2	Pier Caps Mark 	

IENC Standard Difference between China and IEHG

Classifications	No.	AtoNs	IEHG/ S-57 Object & Attribute
4 Indication Marks (3)	3	Channel Direction Mark 	notmrk-catnmk
		Channel Mileage Mark	dismar- CATDIS
		Channel Regulating Structure Notice Mark 	
		Channel Information Notice Mark 	notmrk-catnmk=41

IENC Standard Difference between China and IEHG

Classifications	No.	AtoNs	IEHG/ S-57 Object & Attribute
5 Warning Marks (3)	1	Non-Navigable Bridge Opening Mark 	
	2	Non-Navigable Waterway Topmark 	
	3	Anchor Prohibited Mark 	notmrk-catnmk=8
		Waterway Restricted Mark 	

IENC Standard Difference between China and IEHG

- **Summary:**
  - ✓ A small part of Chinese AtoNs can be encoded by the features of IEHG IENC standard such as boylat/bcnlat、BCNSPP/BOYSPP，notmrk.
  - ✓ Most of Chinese AtoNs can’t be encoded by AtoNs features of IEHG IENC
  - ✓ New added 8 feature classes together with Special Marks express Chinese Navigational System of Marks

BCNNVG	BOYNVG
BCNSGN	BOYSGN
BCNSPP	BOYSPP
BCNIND	BOYIND
BCNWAR	BOYWAR

Discussion- arranged outside the agenda at this meeting or next meeting

- **How to write the Chinese Navigational System of Marks into the IEHG IENC standard?**
- **The depth of Yangtze river waterway from Nanjing to the mouth of Yangtze river is 12.5 meters. the international ocean vessels have sailed into Yangtze river. And the navigation terminals of these ships such as ECDIS would been produced according to the S-401 standard. If IEHG IENC standards do not contain Chinese AtoNs features, the navigation terminals of international ocean ships sailing into Yangtze river would not been able to use inland ENCs. In addition, with the development of unmanned autonomous navigation vessels, the more comprehensive and compatible IENC standards would been more neccessary.**

Solution

- **Add new features in the IENC Feature Catalogue.**

Feature	Beacon,navigation

Acronym: BCNNVG Code: 17XXX
Type: G
Primitive: L
Data Dictionary (DD)Reference:
DD Name: IENC Date accepted: 2019-10-31
Definition (In China) : XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Attribute Bindings:
acronym usage constraints

In the dedfinition , It is marked that the feature is only used in China.

Solution

- **Add new contents in the Encoding Guide for Inland ENCs.**

O - Buoys, Beacons and Daymarks, Notice Marks

O.2 Beacons & Daymarks

O.2.7 Continue Along Bank (O)

Used only in the Chinese river. Indicates that the recommended track continues along the same side of the waterway.

Now Definition : Used only in the Po river (Italy). Indicates that the recommended track continues along the same side of the waterway.

Graphics	Encoding Instructions	Object Encoding
Real world  Chart Symbol 	A)	**Object Encoding** **Object Class =** BCNNVG(P) (M) BCNSHP = [1 (stake, pole, perch, post)] (M) catlam = [27 (continue along the bank)] (M) COLOUR = [1 (white), 3 (red), 4 (green)] (M) SCAMIN = [EU: 20000; US: 60000] (C) SORDAT = [YYYYMMDD] (C) SORIND = (Refer to Section B, General Guidance) **Object Encoding**

In the definition or in the Object Encoding , Making it clear that the feature encoding is used only in China so that the IENC producer can understand.

Question?

China Waterborne Transportation Institute