中国重庆干、支流电子航道图制作与应用

Design and Application for Inland Electronic Navigational Chart of Artery and Tributary of Chongqing in China

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Introduction

Located on the upper reaches of the Yangtze River, Chongqing is the biggest port city of southwest China and an important comprehensive transportation hub, having the artery of Yangtze river 671 kilometers and tributaries including Jialing River, Wujiang Rive 3780 kilometers, freight volume 96m tonnes each year, freight turnover 1219 million ton-kilometre, average travelling distance 1262 kilometers. Design and application for inland electronic navigational chart of artery and tributary of China's Yangtze River, playing a very important role in ensuring the ship safety transportationof the Yangtze river and Chongqing shipping economic prosperity.

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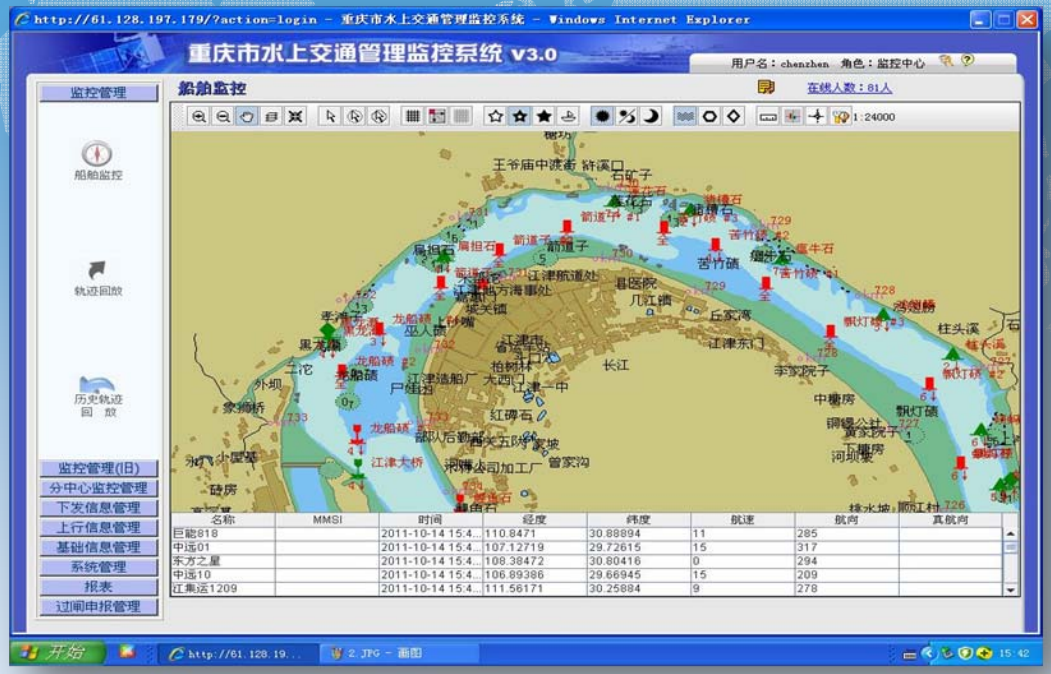
Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

Before 2002, artery and tributary of China's Yangtze River didn't have the unified, standard, available Inland Electronic Navigational Chart. It is unfavorable for effective development of the Yangtze River and supplementary naVigation and safety supervision by using GPS,AIS etc. therefore Chongqing Port & Shipping Administration began to study related standards about International Navigational Chart in 2002. Prepared to design Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River, aimed to promote the construction and application of GPS and AIS inartery and Tributary of China's Yangtze River.

Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

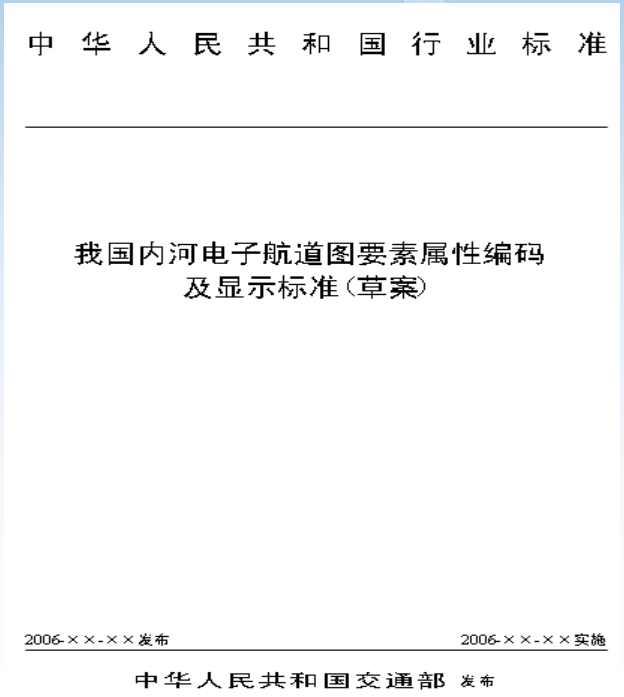


Given that Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River is very importmant for safe navigation of ships and The Yangtze shipping economy development, Chongqing Port & Shipping Administration worked on Inland Electronic Navigational Chart Standard, depending on Chongqing waterway traffic safety supervising system, formulated inland electronic navigational chart data and display draft standards of China, constructed artery of the Yangtze River and Chongqing tributary standard inland electronic navigational chart library, developed the display and processing engine of standard Inland Electronic Navigational Chart, developed Chongqing water traffic management monitoring system and AIS system.

Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

1.Formulated inland electronic navigational chart data and display draft standards of China(industry standard)

In reference to the international charts based on standard, according to the actual conditions of our country, study and formulate inland electronic navigational chart data and display draft standards for China's inland channel characteristic.

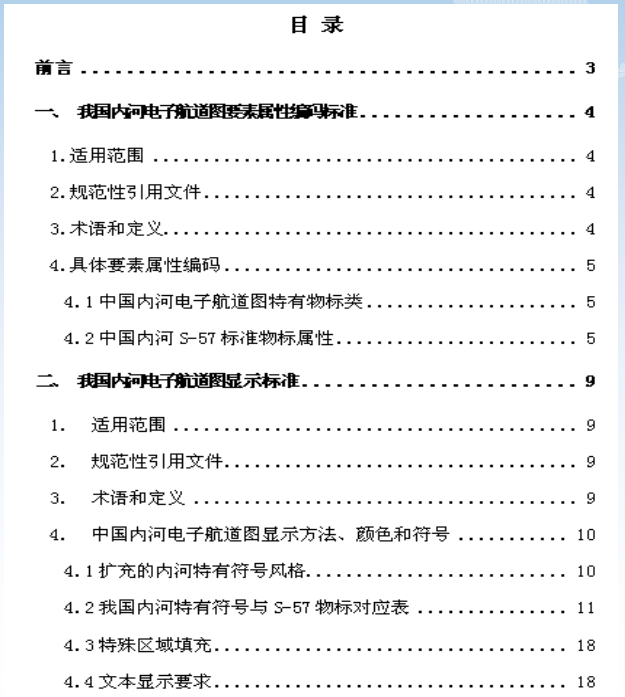


中 华 人 民 共 和 国 行 业 标 准

我国内河电子航道图要素属性编码
及显示标准(草案)

2006-××-××发布　　2006-××-××实施

中华人民共和国交通部 发布



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Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

1.Formulated inland electronic navigational chart data and display draft standards of China(industry standard)

The display standard is that of IHO S-52 standard supplementary provisions, expansion of inland special symbols style (as shown in figure 1), symbol size, special area filling regulations (such as table 1) and text display requirements.

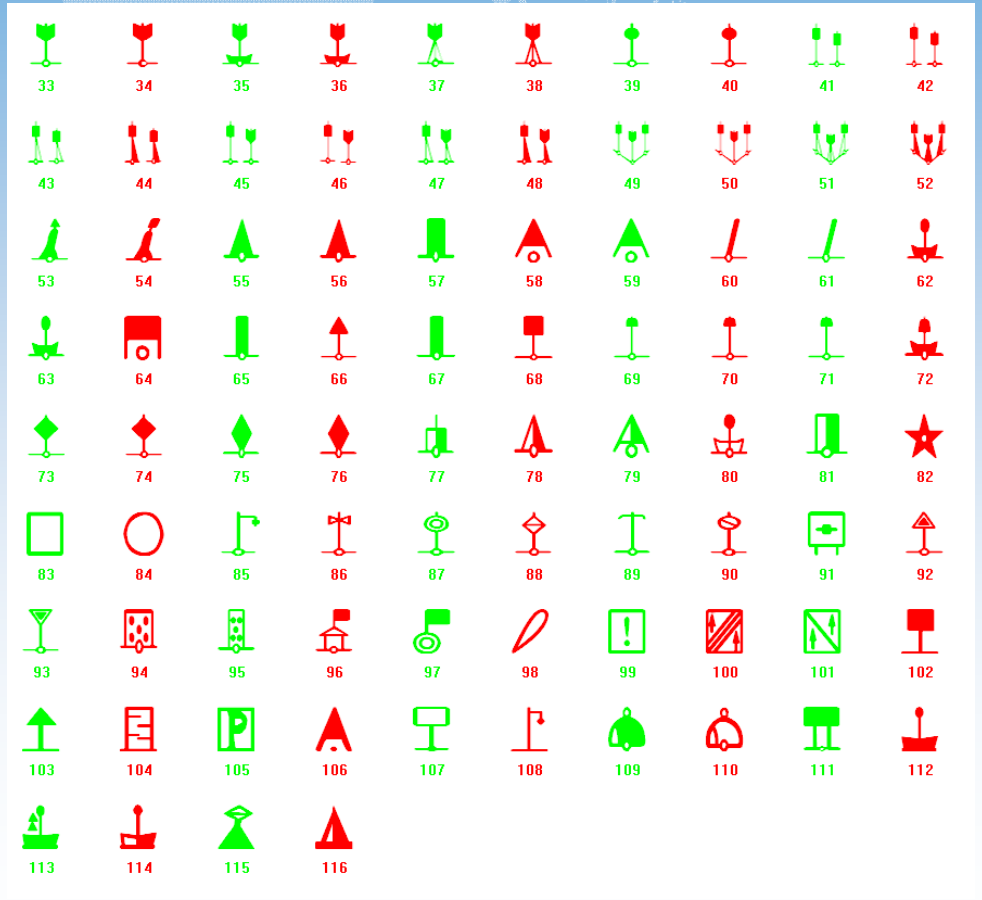


Figure 1

Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

2. Construction of artery of the Yangtze River and tributary of Chongqing standard inland electronic navigational chart library

Finished Inland Electronic Navigational Chart 3256KM, 208 cells, which includes the Yangtze River(Yibin-Yangshan port)2997KM, 176 cells. Chongqing tributary such as Jialing River, Wujiang River etc. 259KM, 32 cells, scale from 1:5000 to 1:20 000.

Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

The Yangtze River navigational charts are divided into 5 sections of 175 pictures in the operations, plus 1 index chart, totally 176 pictures. Specific division as follows:

- Section A : Yibin-Yichang 76 pictures (chart named cn2cA0XX)
- Section B: Yichang-Wuhan for 30 pictures (chart named cn2cB0XX)
- Section C: Wuhan-Wusongkou 37 pictures (chart named cn2cC0XX)
- Section D: Wusongkou- Yangshan port-24 pictures (chart named cn2cD0XX)
- Section E: Huangpu River 8 pictures (chart named cn2cE0XX)

Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

The artery of the Yangtze River Standard Electronic Navigational Chart Legend

Figure 3

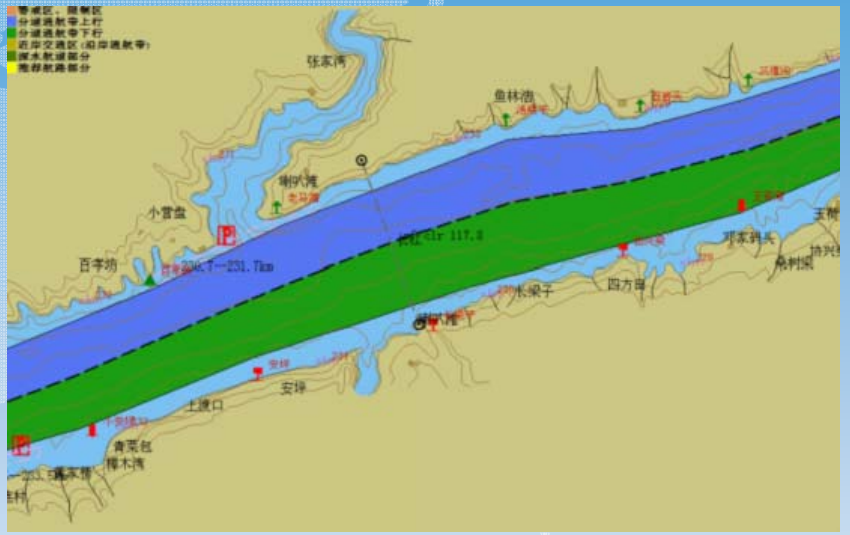


Figure 4

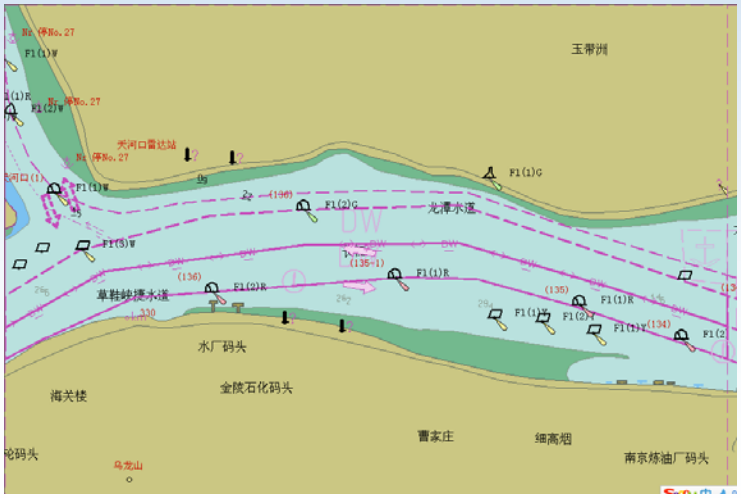
Figure 5

Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

3. Developed the display and processing engine of standard inland electronic navigational chart

On the basis of inland electronic navigational chart data and displaydraft standards and artery and tributary of the Yangtze River standard inland electronic navigational chart library, developed the display and processing engine of standard inland electronic navigational chart, the engine can read, processing, display, query, modify the standard inland electronic navigational chart, which supports our country inland chart standard, and support the International Hydrographic Organization and the European inland electronic navigational chart display standard.

The dongle is authorized to access the engine and electronic navigational chart.



Design background of Inland Electronic Navigational Chart of Artery and Tributary of China's Yangtze River

4. Developed Chongqing water traffic management monitoring system

On the basis of the display and processing engine and artery and tributary of the Yangtze River standard inland electronic navigational chart library, constructed an intelligent traffic platform for data collection, query, control, management, decision and service ,achieve the Yangtze River shipping management and service.

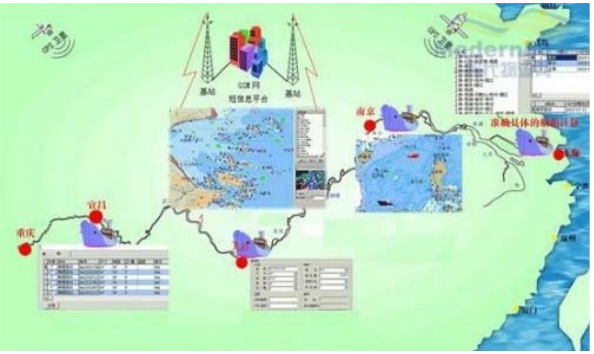
Applications

1. **The application of Chongqing water traffic management monitoring system**

- 2002 Start research and construction;
- 2004 test running;
- 2005 promotion and comprehensive application,finished Inland Electronic Navigational Chart of 3256KM, 208 cells, artery and tributary of China's Yangtze River, applied 3500 Inland Electronic Navigational Chart GPS terminals, it is the earliest and largest promotion application of Inland Electronic Navigational Chart in China;
- After 2005, Chongqing water security situation gets great change, Water traffic accident declines year by year, Waterway transportation as the Yangtze river three gorges project impounded water, gets a great development.

Applications

1. The application of Chongqing water traffic management monitoring system



Collision avoidance alarm

Alarm function

Rescue function

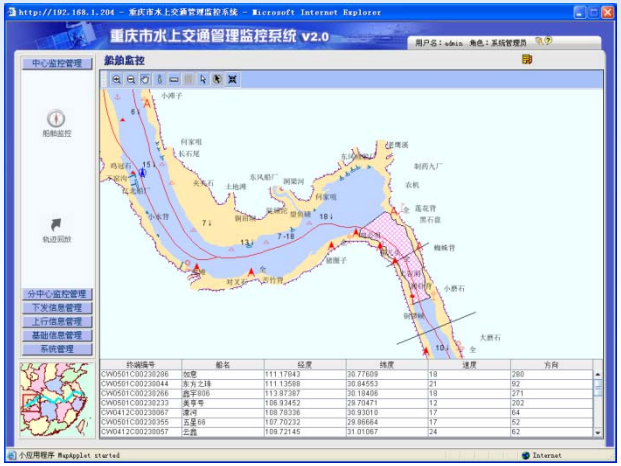
Navigation aid function

Schedule function

Investigate and collect evidence

Lockage declaration

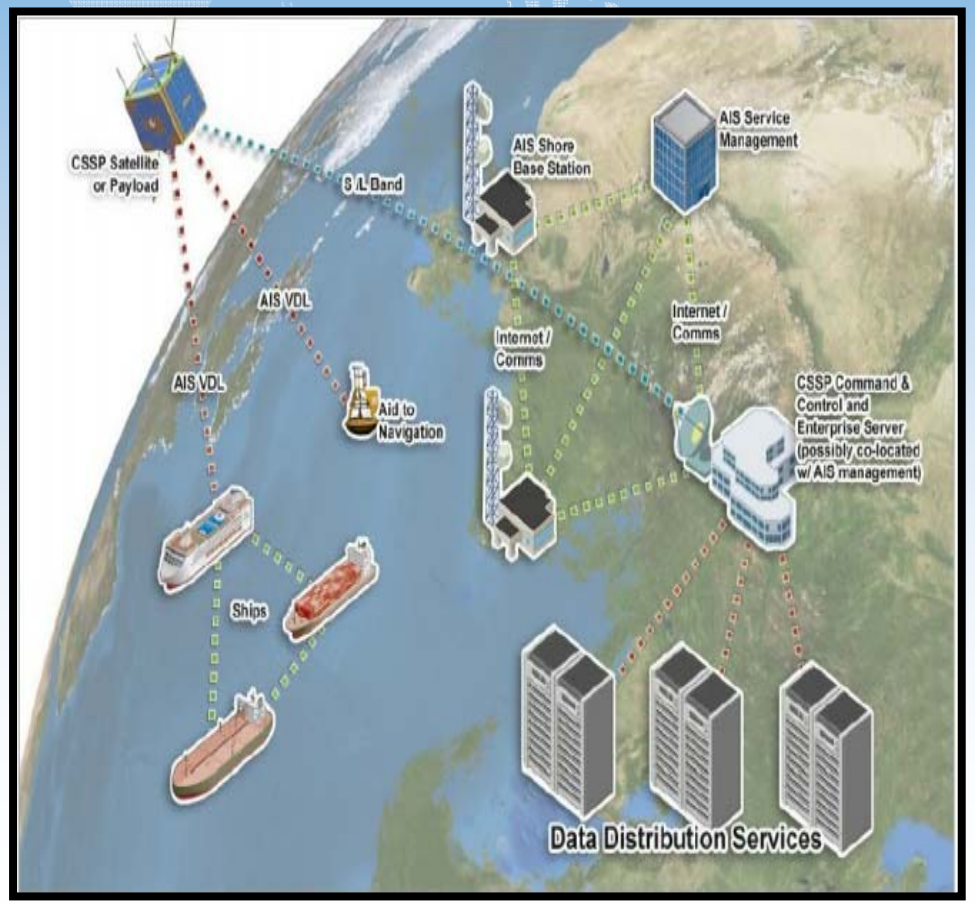
Information service



Applications

1. The application of Chongqing water traffic management monitoring system

There are 3585 ships in the system net, provided 8156 pieces of atmosphere, hydrology, the channel navigation safety information to ship, processed effective alarm 163 times, corrected illegal sailing ship 21 times, provided rescue ship for distress help 25 times.



Applications

2. The application of domestic other inland river

Chongqing Port & Shipping Administration and Hunan local maritime bureaub signed up on the water traffic safety monitoring system of cooperation agreement, Chongqing water traffic management monitoring system and the display and processing engine of standard Inland Electronic Navigational Chart had been used in Hunan local maritime bureau.


Thank you!