

---

## Paper for Consideration by ENCWG

### Progress Report of the HDENC Depth Contours Auto-generation

<b>Submitted by:</b>	China MSA
<b>Executive summary:</b>	A small group led by China MSA and participated by UKHO, CHS, I4insight, SevenCS and Caris, carried out an auto-generation test of HDENC depth contours by different softwares. This report will introduce the test progress.

#### Background

1. In January 2020, IHO released S-65 Annex A, *High Density (HD) ENC Production and Maintenance Guidance (Edition 1.0.0)*. At the ENCWG-6 meeting held in June 2021, China MSA submitted the document ENCWG6-11.1d, which introduced the manual processing experience about the auto-generation of HDENC depth contours and suggested that other HDENC producing authorities share their experience as reference information for potential HDENC producing authorities.
2. ENCWG-6[Action6/17] suggested “*ENCWG members interested in providing information on their process for generating contours for HDENCs and/or participating in a small group to compile this information into a single document for reference to notify the Chair at their earliest convenience.*” According to this suggestion, China MSA took the lead in setting up a small group on HDENC depth contours auto-generation, with the participation of UKHO, CHS, I4insight, SevenCS and Caris.

#### Introduction

3. At the end of October 2021, China MSA provided a testdata file named "HDENC-TESTDATA-NEW.000". The test data is multi beam scanning soundings, and some soundings are manually modified.
4. All participants fed back their test results before the end of November 2021. The depth contours in these test results were auto-generated by the HDENC production software without manual processing.

- **Overview of test data**

<b>File name</b>	HDENC-TESTDATA-NEW.000
<b>Number of soundings</b>	582,541
<b>Average sounding density</b>	1 meter
<b>File size</b>	93.869 MB
<b>Coordinate reference system</b>	WGS-84
<b>Longitude and latitude resolution</b>	0.00000001
<b>Depth resolution</b>	0.1

- **Test requirements**

<b>Contours interval</b>	0~30m: 1m; Above30m:5m.
<b>Other requirements</b>	Depth contours are auto-generated by software without manual processing.
	Provide the software and its version.
	Provide appropriate introduction documents.
	Manual processing experience are welcomed to provide.

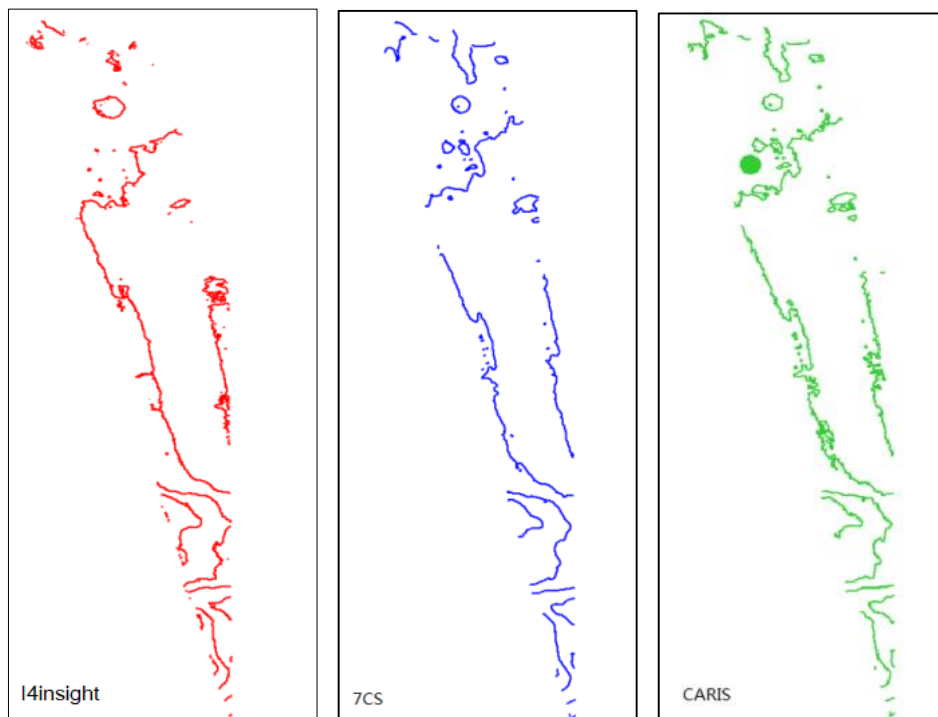
- **List of test results**

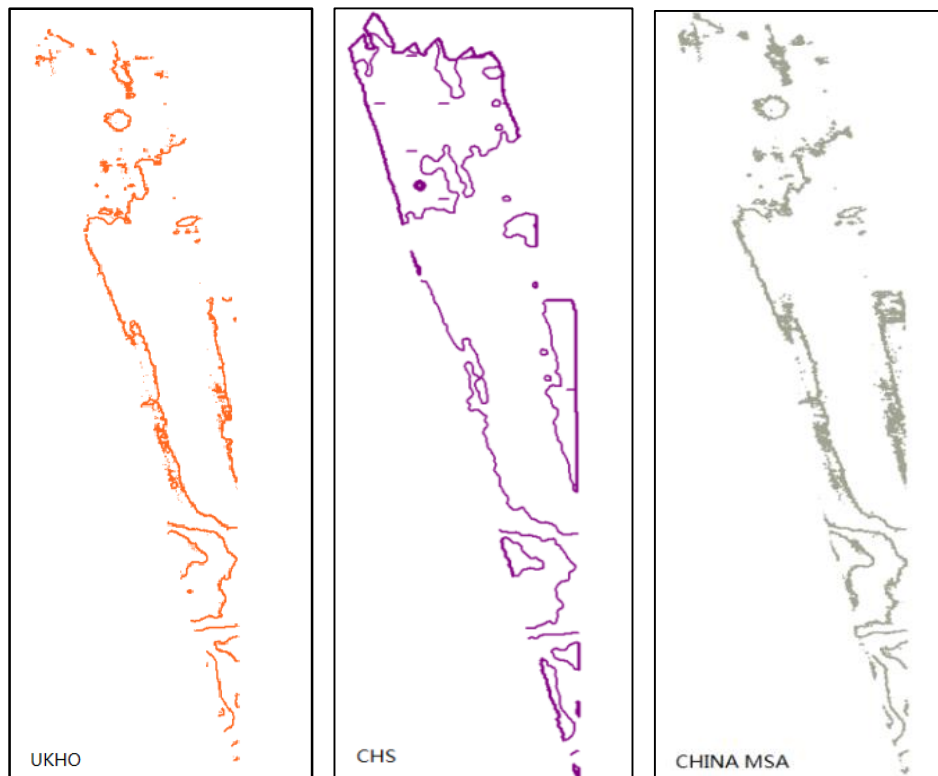
<b>I4insight</b>	CN5DEPCN.000
<b>SevenCS</b>	7CSMSA12.000
<b>Caris</b>	MSA_Compilation _Dec152021
<b>UKHO</b>	GB5CH001_000
<b>CHS</b>	CHS_HDENC_contours.000
<b>CHINA MSA</b>	TEST-DEP.000

- **List of test softwares**

<b>I4insight</b>	Dkart Bathy System 1.16.7 Dkart Editor 3.4.2
<b>SevenCS</b>	ENC Designer 4.7.0 FME 2021 ENC Bathymetry Plotter 2.0.0 7CS Analyzer 5.0.1
<b>Caris</b>	Caris Base Editor
<b>UKHO</b>	Caris Base Editor v5.4.5 Caris HPD Product Editor v3.2.13
<b>CHS</b>	Caris Base Editor v5.5.19
<b>CHINA MSA</b>	Caris Base Editor v5.4.5

● **Overview of test results**





5. Generally speaking, we believe that the existing softwares can meet the requirements of HDENC production. At the same time, the depth contours auto-generated by different softwares are still different in some areas, and some of them need manual processing. However, the number of depth contours that need to be processed manually is small, which has a limited impact on the production efficiency of HDENC.

#### **Next step**

6. The draft report has been preliminarily prepared. Next, we will send it to the small group members for comments and submit the final report to ENCWG-7 meeting.

#### **Action**

7. The ENCWG is requested to:

- a. **Note** the information provided.