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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 42640-2023

Specification for underwater topographic survey by multibeam echosounding system

多波束水下地形测量技术规范

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents" drafting: Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents: This document is proposed by the Ministry of Natural Resources of the People's Republic of China: This document is under the jurisdiction of the National Marine Standardization Technical Committee (SAC/TC283): This document was drafted by: The First Institute of Oceanography, Ministry of Natural Resources, Shandong University of Science and Technology, Institute of Oceanology, Chinese Academy of Sciences: The main drafters of this document: Chen Yilan, Tang Qiuhua, Feng Yikai, Wang Shengli, Yang Fanlin, Luan Zhendong, Zhou Xinghua, Ding Jisheng, Liu Yanxiong, Zhang Kai, Zhang Jianxing, Yang Long: Technical specification for multi-beam underwater topographic survey

1 Scope

GB/T 42640-2023 specifies underwater topographic survey by multibeam echosounder. A multibeam system maps the seabed in a swath rather than along a line, and the result is only as good as the corrections applied to it: the vessel's attitude and heave, the sound velocity profile through the water column, the tide, and above all the patch test that resolves the small angular misalignments between the transducer and the motion sensor, which if left uncorrected bend the seabed into artefacts that look like real relief. The standard sets the general provisions covering the content, the area division, the survey datums, the accuracy and the resolution and coverage, the system configuration, installation and calibration in hardware and software, the survey requirements from preparation through execution, and the data processing, quality control and deliverables. It took effect on 1

December 2023.

This document specifies the general principles, system configuration, installation and calibration, measurement requirements, data processing, resource Material inspection and submission requirements: This document is applicable to the underwater topographic survey of shipborne multi-beam bathymetry systems, and can also be used as a reference for other observation platforms equipped with multi-beam surveys:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

GB 12327 Hydrographic survey specification JTS131 Waterway engineering survey specification

3 Terms and Definitions

The following terms and definitions apply to this document: 3:1 multibeam echo sounder multibeamechosounder Using acoustic beamforming technology, one acoustic signal transmission and reception can obtain multiple sounding points at the same time, realizing the echo of strip depth measurement Sounding device: 3:2 multi-beam A strip sounding system consisting of a multi-beam sounder, auxiliary equipment, and acquisition and processing software:

Note: Auxiliary equipment includes locator, attitude sensor, heading measuring instrument, surface sound velocity instrument, sound velocity profile instrument, and the computer for system control, data acquisition and processing: computer etc: 3:

3 Amplitude swath the banner Bands The intersection of the transmitting beam and multiple receiving beams forms a series of beam footprints, and the series of beam footprints are arranged to form a vertical track direction, Bottom strip measurement range with a certain width: 3:

4 The percentage of the width of the overlapping portion of the amplitude between adjacent survey lines and the survey line spacing: