ICS 07.060
CCS A45

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 42643-2023

Specification for in-situ survey of acoustic properties in marine sediments

海底沉积物声学特性原位调查规范

Issued on: May 23, 2023 **Implemented on: September 1, 2023**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

Table of Contents

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 is drafted by: The Second Institute of Oceanography of the Ministry of Natural Resources, the First Institute of Oceanography of the Ministry of Natural Resources, and Ocean Consulting of the Ministry of Natural Resources Center, China Ocean Engineering Consulting Association: The main drafters of this document: Tao Chunhui, Zhang Guoyu, Li Guanbao, Zhou Jianping, Kan Guangming, Deng Xianming, Wang Jingqiang, Meng Xiangmei, Mao Kejia, Zhang Baolu, Li Ming: Specification for in situ investigation of acoustic properties of seabed sediments

1 Scope

GB/T 42643-2023 covers measuring how sound travels through seabed sediment, on the seabed rather than in a laboratory. The distinction is the point of the document. Sediment brought to the surface in a core has been depressurised, disturbed and partly degassed, and its acoustic properties are no longer those of the material in place - yet those in-place properties are what sub-bottom profiling, sonar performance prediction, foundation design for offshore structures and mine countermeasures all depend on. In-situ measurement avoids the problem and creates its own: the instrument has to be got into the sediment without disturbing what it is about to measure. This document specifies the general rules for

in-situ surveys of the acoustic properties of seabed sediments, the technical specifications for the survey equipment, the conduct of the marine survey, and the requirements for data collation, data processing, survey results and data archiving. Under ICS 07.060 and CCS A45, it is written for marine geophysical survey teams, for the institutes maintaining sediment acoustic databases, and for the offshore engineering and defence users whose models are only as good as the in-situ data behind them.

This document specifies the general rules for the in-situ survey of the acoustic properties of seabed sediments, the technical specifications of survey equipment, marine surveys, data collation and data analysis: Requirements for data processing, investigation results and data archiving:

Note: Unless otherwise specified below, the acoustic characteristics only refer to the acoustic characteristics of longitudinal waves (waves in which particles move in the medium along the direction of propagation): This document is applicable to the in-situ investigation of the acoustic characteristics of seabed sediments, and is used for reference in the investigation of the acoustic characteristics of river and lake sediments:

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/T 12763:

1 Specifications for Marine Survey Part 1: General Rules GB/T 12763:

2 Marine Survey Specification Part 2: Marine Hydrological Observation GB/T 12763:

5 Specifications for Marine Survey Part 5: Survey of Ocean Sound and Light Elements GB/T 12763:

7 Marine survey specification Part 7: Exchange of marine survey data GB/T 12763:

8 Specifications for marine surveys Part 8: Marine geological and geophysical surveys GB/T 12763:

3 Terms and Definitions

The following terms and definitions apply to this document: 3:1 marine sediments The general term for loose state clastic materials such as sand, silt, and clay on the seabed: 3:

2 The propagation speed and attenuation coefficient of sound waves in sediments: 3:

3 Using the measuring probe installed with the acoustic transducer to penetrate into the seabed sediment, the speed of sound wave propagating in the sediment and the sound

attenuation system are studied: The process of conducting field measurements: 3:4 vsed,f The speed at which sound waves of a certain frequency travel through sediments:

Note: The unit is meter per second (m/s), f is the frequency of the sound wave: [Source: GB/T 12763:5-2007, 3:12, modified]