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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 33683-2025

Replacing GB/T 33683-2017

Technical specifications of surveying navigation and positioning for petroleum geophysical exploration

石油物探测量导航定位技术规范

Issued on: October 5, 2025 **Implemented on: May 1, 2026**

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Standardization Administration of the PRC

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. This document supersedes GB/T 33683-2017 "Technical Specification for Geophysical Surveying and Positioning in Onshore Petroleum Exploration" and is consistent with GB/T 33683-2017. Compared to previous versions, aside from structural adjustments and editorial changes, the main technical changes are as follows:

a) The scope has been changed (see Chapter 1, Chapter 1 of the.2017 edition);

b) Added terms and definitions, including "petroleum geophysical exploration navigation and positioning", "mapping benchmark", "physical point", "mobile station", and "navigation satellite augmentation system". "System", "Relative navigation satellite positioning equipment", "Real-time navigation and positioning interface unit", "Underwater acoustic positioning", "Cable feather angle", "Positioning network" "Nodes" and "prior standard deviation" (see 3.1.2, 3.1.3, 3.1.5, 3.1.8~3.1.15); abbreviations have been added (see 3.2);

c) The title of the chapter "General Provisions" has been changed to "General Principles and Requirements" (see Chapter 4, Chapter 4 of the.2017 edition);

d) The requirements for physical point layout deviation and measurement accuracy have been revised (see 8.2.2.1, 8.2.2.2, and

4.4 of the.2017 version);

e) "Device Detection" has been removed (see

4.5 in the.2017 version);

f) Increased confidentiality requirements for surveying and mapping products (see 4.5);

g) Added time reference requirements for petroleum geophysical exploration navigation and positioning (see 4.6);

h) Added content related to marine exploration and gravity, magnetic and electric exploration in the "Basic Data Preparation" section (see 5.1, 5.2);

i) The content on "Digital Product Testing and Application Platform Construction" has been modified and merged into "Benchmark Unification" (see 5.3,.2017 version 5.3). 5.4);

j) A chapter on "Equipment Performance and Calibration" has been added (see Chapter 6);

1 Scope

GB/T 33683-2025 is the Chinese national standard covering knowing where every shot and

every receiver actually was - the coordinate reference system, the GNSS methods and their accuracy, the positioning of a marine streamer that drifts, the quality control, and the records, because a seismic image is only as good as its geometry. Issued on 5 October 2025, it has been in force since 1 May 2026, replacing GB/T 33683-2017.

This document specifies the basic data preparation, equipment performance and calibration, benchmark establishment and expansion, and other aspects of petroleum geophysical surveying and navigation positioning operations. Oil geophysical surveying navigation and positioning, data processing and archiving, and other operational methods and technical requirements. This document applies to navigation and positioning operations for land and marine geophysical surveys. Navigation and positioning for onshore chemical exploration should be followed by reference.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 8423.2 Terminology for the Petroleum and Natural Gas Industry Part

3.1 Terms and Definitions The terms and definitions defined in

GB/T 8423.2 and the following terms and definitions apply to this document.

3.1.1 Various surveying operations and geographic information collection operations carried out in petroleum geophysical exploration engineering.

3.1.2 In various stages of petroleum geophysical exploration engineering, navigation satellite positioning, radio navigation positioning, acoustic positioning, laser positioning, and magnetic compass orientation are utilized. Various operations performed using techniques such as gyrocompass orientation.

3.1.3 Geodeticdatum The general term for all kinds of starting points, starting surfaces and their corresponding parameters that are determined and established for surveying work. Note

1.Includes geodetic parameters, datum points (geocentric point, leveling point, and gravity benchmark), datum surface, azimuth, and corresponding facilities. etc., also known as geodetic benchmarks.

Note 2.my country's modern surveying and mapping benchmarks include. geodetic benchmarks (plane benchmarks, elevation benchmarks), depth benchmarks, gravity benchmarks, and time benchmarks.