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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 17943-2025

Replacing GB/T 17943-2000

Specification for astrogeodetic surveying

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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. This document replaces GB/T 17943-2000 "Specification for Geodetic and Astronomical Measurement". Compared with GB/T 17943-2000, except for structural adjustment and In addition to editorial changes, the main technical changes are as follows:

- a) The "Scope" has been changed (see Chapter 1, Chapter 1 of the.2000 edition);
- b) Added "Terms and Definitions" (see Chapter 3);
- c) Added "Abbreviations" (see Chapter 4);

- d) The requirements for measurement datum, accuracy, point layout, measurement technology, human-instrument error determination, instrument verification and inspection have been changed (see Chapter 5, 3.2~3.5, Chapter 4 of the.2000 edition)
- e) "Methods of observation" has been changed (see Chapter 6, Chapter 5 of the.2000 edition);
- f) "Data Processing" has been changed (see Chapter 7, Appendix H and Appendix I, Chapter 6 of the.2000 edition);
- g) The time sign recording method, instrument orientation method, and solar apparent position calculation method have been deleted (see Appendix A, Appendix B and Appendix C of the.2000 edition). Appendix F);
- h) The method for determining the geographic meridian has been changed (see Appendix A and Appendix E of the.2000 edition);
- i) The determination of centrifugal elements has been modified (see Appendix B, Appendix C of the.2000 edition);
- j) The instrument test method has been changed, and the timekeeping equipment stability test method has been added (see Appendix C to Appendix G, Appendix.2000 Edition). Record D). Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the 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 Technical Committee for Geographic Information Standardization (SAC/TC230). This document was drafted by: Surveying and Mapping Standardization Institute of the Ministry of Natural Resources, the First Geodetic Survey Team of the Ministry of Natural Resources, Xi'an Aerial Optical Instrument Factory, Strategic Support Force Information Engineering University. The main drafters of this document are. Pang Shangyi, Guo Weixin, Zhang Chao, Zhang Hongying, Li Feizhan, Chang Junqin, Wu Tong, Liu Xiaoqiang, Chen Zhen, Liu Shengzhen, Zhao Xin, Gong Jian, Guo Jiefei, Xue Guidong, Cheng Yaxuan. The previous versions of this document and the documents it replaces are as follows:

---First published in.2000 as GB/T 17943-2000;

---This is the first revision. Specification for geodetic and astronomical measurements

1 Scope

GB/T 17943-2025 is the Chinese national standard on specification for astrogeodetic surveying, in the field of natural and applied sciences. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 30 May 2025 by the State Administration for Market

Regulation; Standardization Administration of China, and has been in force since 1 September 2025. Classification: ICS 07.040, CCS A76. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the requirements for geodetic and astronomical measurements, as well as the requirements for observation methods, data processing, and data compilation and submission, and describes Related verification methods. This document applies to astronomical longitude, latitude and azimuth measurements carried out in a static manner.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 24356 Quality inspection and acceptance of surveying and mapping results

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 The theory and method of determining the astronomical longitude, latitude and azimuth of a point on the ground by observing the celestial coordinate position of a celestial body at a certain moment.

Note. Geodetic and astronomical surveying is mainly used for ground reference system orientation, vertical deviation determination, engineering orientation and plane survey control network direction error control. The tasks include. determining vertical deviation for establishing national and regional geoid models; providing orientation parameters for establishing ground coordinate systems; It provides a directional reference for engineering construction and a azimuth reference for calibrating the geographic meridian at a specified location.

3.2 The Jet Propulsion Laboratory of the United States compiled the data based on ground-based optical and radio technology and the orbits of spacecraft around celestial bodies in the solar system. The solar system ephemeris includes the parameters of the position, speed, mass, shape and attitude of the sun, moon, earth and various planets.

Note. In.1997, the International Astronomical Union (IAU) designated the DE405 ephemeris as the dynamical realization of the International Celestial Reference System.

3.3 The total station electronic tachometer is used to measure the time and altitude angle of stars evenly distributed in each quadrant passing through the approximate contour circle to determine the astronomical Longitude, latitude method.

3.4 A method of observing the North Star (star) and recording the clock time to determine the sidereal hour angle and obtain the astronomical azimuth of the ground target.

3.5 A digital camera that is composed of an optical telescope, an imaging device, a precision inclinometer, a rotating platform, etc., and is used to take images of stars at the zenith of the station.