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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 20256-2019

Replacing GB/T 20256-2006

Specifications for gravimetric control surveying

国家重力控制测量规范

Issued on: March 25, 2019 **Implemented on: October 1, 2019**

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Standardization Administration of China

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1 Scope

China's national specification for gravimetric control surveying - the establishment of the network of points at which the acceleration due to gravity is known to high accuracy. It specifies the principles for laying out the gravity control network and its points, the absolute gravity measurement, the relative gravity measurement, the plane coordinate and elevation measurement, the data processing and the inspection and acceptance of results, and it applies to the construction of the national gravity control network - the datum points, base points, first-order points and their corresponding points. Gravity is not constant over the earth. It varies with latitude, with elevation, with the density of the rock beneath and with the tides, and the variations are large enough to matter for a surprising range of work: the geoid and therefore the relationship between GPS heights and heights above sea level; the calibration of any instrument whose reading depends on weight; inertial navigation; and geophysical prospecting, in which the anomaly being sought may be a few parts per million of the total field. All of it rests on a network of known values, and this standard is how that network is built and held. The absolute measurements at the datum points are made by free-fall interferometry and define the scale; the relative measurements, made with spring or superconducting gravimeters, carry values between points and are the bulk of the field work; and because a relative gravimeter drifts continuously, the observation scheme, the loop closure and the drift modelling are what make its results usable at all. The standard also fixes the siting and construction of the points, since a gravity point has to be on stable ground and remain so for decades, the plane and height determination of each point, the adjustment, and the acceptance of the results. Issued on 25 March 2019 and in force since 1 October 2019, it replaces GB/T 20256-2006.

This standard stipulates the establishment of the gravity control network (point) layout principle, absolute gravity measurement, relative gravity measurement, plane coordinates and Elevation measurement, data processing, results inspection and acceptance, etc. This standard is applicable to the construction of the national gravity control network, the application of the reference point, the basic point, the first point and the corresponding point.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this article. Pieces. For undated references, the latest edition (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 Gravity reference point gravitydatumpoint Benchmark The gravity value is measured by a high-precision absolute gravimeter and used as a reference point for the national gravity control network.

3.2 Gravity datum gravitydatum The reference point in the national gravity control network.

3.3 Gravity basic point basicgravitypoint Foundation The gravity control point determined by the relative gravity measurement and the overall adjustment is determined by the gravity value of the reference point in the national gravity control network.

3.4 First-order firstorderpoint Taking the gravity reference point of the gravity control point of the national gravity control network and the gravity value of the basic point as the initial value, determined by the relative gravity joint measurement and the overall adjustment A gravity control point with a lower accuracy than the base point.

3.5 Derivegravitypoint A point of gravity or an auxiliary point of a point.

3.6 Segment difference In gravity measurement, the difference in gravity between two adjacent points.

3.7 Line gravimetricline In the relative gravity measurement, a gravity joint measurement line composed of two or more gravity points.

10 Results inspection and acceptance

15 Appendix A (Normative Appendix) National Gravity Control Network Gravity Point Mark and Mark Specification

16 Appendix B (Normative Appendix) Notes on National Gravity Control Points

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 20256-2006 "National Gravity Control Measurement Specification". This standard is compared with GB/T 20256-2006 To change as follows:

--- Revised the wording of the original standard and the language of unclear or ambiguous expression; revised the method of expression of the unit of measure in the original standard, The form and the symbols in the partial formula.

--- In the normative reference document, GJB2228-1994 Global Positioning System (GPS) geodetic rules were deleted, CH1002-1995 Surveying and Mapping Product Inspection and Acceptance Regulations, CH1003-1995 Surveying and Mapping Product Quality Evaluation Standards; GB/T 24356 surveying and mapping results quality inspection and acceptance.

--- Deleted the "second-order point" and related information in the text. At present, the density of China's gravity basic network and first-class network has met the requirements for use. The second-order point as a control point is no longer laid in China.