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

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Basic specifications for national geodesy

国家大地测量基本技术规定

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Foreword

All the technical contents of this standard is mandatory. This standard was proposed by the State Bureau of Surveying and Mapping. This standard by the National Standardization Technical Committee on Geographical Information. The Standard Annexes A and B are normative appendix. This standard was drafted. Standardization Institute of the National Mapping Bureau of Surveying and Mapping, National Geomatics Center of China, the

national mapping agency of the first geodetic The amount of the team, Chinese Academy of Surveying and Mapping. The main drafters of this standard. Shaw school year, Zhang Lei Yue Jianli, Zhang Yanping, Zhang Chuan silver.

In order to meet national economic construction, national defense construction and social development needs, and to strengthen our geodetic work, standardize the behavior of Geodesy, According to "People's Republic of China Surveying and Mapping Law" to develop this standard. This standard is called the geodetic means to determine the location for the establishment and maintenance of Surveying and mapping system benchmarks carried out, the shape of the Earth, gravity Its field changes with time and space surveying and mapping activities. Its task is to establish and maintain geodetic datum, vertical datum, the depth and gravity-based reference Quasi; determining a refinement similar geoid and gravity field model. This standard defined the basic technical requirements of geodesy is to formulate and revise relevant geodetic specific technical standards by major according to. For the establishment and maintenance of specific technical methods and technical requirements of geodetic control network, elevation and gravity control network control network, the system will separate Given appropriate technical standards to guide and standardize the measurements. National Geodetic Survey basic technical requirements

1 Scope

The document that fixes the reference frames on which every map, every cadastral record, every engineering survey and every satellite navigation service in China is built. It specifies the basic technical provisions for national geodesy: the geodetic datum and the geodetic network, the height datum and the vertical control network, the gravity datum and the gravity control network, and the depth datum. It applies to the establishment and the maintenance of the national geodetic control, and it is the authority a surveyor cites for which datum a coordinate is expressed in. Its central act is the adoption of the China Geodetic Coordinate System 2000, the CGCS2000, as the national geodetic datum, with the definition of the system and the constants of its reference ellipsoid given in a normative annex; the national height datum remains the 1985 National Height Datum, whose definition and parameters are given in a second normative annex. Around those it sets the structure of the networks that realise them: the classes of the geodetic network and their relationship, the vertical control network and the quasi-geoid model that converts between the ellipsoidal heights a satellite receiver measures and the normal heights an engineer works in, the gravity datum with its base and control networks and the densification below them, and the depth datum used for hydrographic work. Because the whole of the country's spatial data is referenced to what this document says, it is short, plainly written and unusually consequential: a change here propagates into every dataset in the country. Issued on 20 June 2008 and in force since 1 December 2008.

This standard provides for the establishment and maintenance of geodetic control network,

elevation and gravity control network control network, determine the basic techniques like finger geoid Standard and technical requirements to achieve the national land and sea unified geodetic datum, vertical datum and its corresponding depth reference, gravity base. This standard applies to geodesy activities in the area under the jurisdiction of the People's Republic of China and other sea areas engaged.

2 Terms and definitions

The following terms and definitions apply to this standard.

2.1 Of a coordinate system used to describe the position of any point on Earth, through geocentric, scale, axis point, the rotation speed of the Earth and the Senate Constant test ellipsoid (ellipsoid geometry and physical parameters) and other definitions.

2.2 Concrete realization of geodetic coordinate system that is fixed to the surface of the Earth by a particular set of markers and their measurements at the reference system Coordinates and other parameters reflect.

2.3 Consists of geodetic coordinate systems and geodetic coordinate frame.

2.4 Observation system consisting of a satellite positioning system receiver (including antenna), computer, meteorological equipment, communications equipment and power supply equipment, observation pier EC. It is a continuous long-term follow-up observations of the satellite signal, through a data communications network timing, in real time or on demand data center of the observed data To the data center. It can be stand-alone or network provides real-time, fast or subsequent data services.

2.5 For a variety of purposes related to regional science encrypt certain levels of gravity on the basis of the gravity point of control points on gravity measurements carried out.

3 General

3.1 In compliance with this standard premise, in geodetic measurements and the corresponding activity, operation process should be based on the state geodetic techniques Specifications and technical guidance document as a unified job basis.

3.2 using corners measurement, astronomical measurements, etc. for control measurements, technical requirements and operational procedure should be prescribed by the State Geodetic Survey Technical Specifications and technical guidance document as a unified job basis.

3.3 Geodesy using the error as the accuracy of technical indicators to 2 times the limit of error as error.

3.4 Geodetic instruments used should be subject to legal metrology qualified only after use.

3.5 Geodetic control points should be embedded in a fixed mark stone or logo, its structure

and method of laying should be stable and suitable for the permanent preservation in principle.

4.1 Geodetic Datum

4.1.1 geodetic datum from the Geodetic Coordinate systems and geodetic framework. National geocentric coordinate system as a unified national land coordinate system. Geodetic coordinate frame by a geodetic coordinate system to achieve the geodetic control network embodied.

4.1.2 countries have adopted the 2000 national earth coordinate system, which is defined and constant reference ellipsoid in Appendix A. Transitional period, may be 1954 1980 Beijing Xi'an coordinate system and coordinate system.

4.1.3 geodetic control point coordinates should geodetic (earth longitude B, L geodetic latitude and geodetic height H) or spatial Cartesian coordinates (X, Y, Z) represents.

4.2.1 General provisions

4.2.1.1 geodetic control network in accordance with the precision and purpose into one, two, three, four and so on geodetic control network.

4.2.1.2 geodetic control network can be laid across the stage to ensure accuracy, density and other technical requirements.

4.2.1.3 before the results of astronomical geodetic network was officially abolished, to ensure the accuracy of the premise, you can continue to use as needed.

4.2.1.4 land difficult areas away from the mainland and the island (reef) the geodetic control network fabric testing, because when you really can not meet the conditions specified in this standard, Approved by the provincial administrative departments of surveying and mapping. The technical specifications may be relaxed in accordance with the actual situation.

4.2.2 Geodetic control network

4.2.2.1 First National geodetic control network 4.2.2.1.1 First National geodetic control network by the continuous operation of GPS reference station configuration, it is the backbone and the main branch of the National Geodetic Reference Support to achieve and maintain our three-dimensional, dynamic geocentric coordinate system, geodetic control network to ensure that the three-dimensional geocentric position coordinates accuracy and current trend. 4.2.2.1.2 National First GPS geodetic control network of Continuously Operating Reference Station geocentric coordinates of each component in the average error should be no greater than $\pm 0.5\text{mm}$, relative accuracy should not be less than 1×10^{-8} , the rate of change in the level of error in the coordinates of the direction should be less than $\pm 2\text{mm}$, the vertical direction should not Greater than $\pm 3\text{mm}$. 4.2.2.1.3 First