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Surveying and prospecting of active faults

活动断层探测

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard was proposed by the China Earthquake Administration. This standard is under the jurisdiction of the National Seismic Standardization Technical Committee (SAC/TC225). This standard was drafted by: Institute of Geology, China Earthquake Administration, Earthquake Exploration Center of China Earthquake Administration, Earthquake Prediction Research of China Earthquake Administration Research Institute, Institute of Crustal Dynamics, China Earthquake Administration, Beijing Normal University, Institute of Geophysics, China Earthquake Administration, earthquake in Ningxia Hui Autonomous Region Bureau, Seismological Bureau of Shanxi Province, Seismological Bureau of Jiangsu Province, Earthquake Administration of Shaanxi Province, China Earthquake Disaster Prevention Center, China Coal Science and Engineering Group Xi'an Research Institute Limited company. The main drafters of this standard. Xu Xiwei, Liu Baojin, Yang Xiaoping, Yu Guihua, Yan Yongkang, Tian Qinyi, Zhang Jingfa, Du Keping, Ding Zhifeng, Chai Chizhang, Li Zihong, Liu Jianda, Feng Xijie, He Honglin, Li Feng, Tan Xibin, Cheng Jianyuan, Wu Xiyan.

A large number of earthquake cases at home and abroad have shown that active faults are the source of earthquakes and the culprit of earthquake disasters. Active fault earthquake surface rupture And dislocations cause severe direct damage to ground structures (buildings), which are superimposed on seismic vibration damage and aggravate the ground along active faults. The extent of damage and disasters indicates that active faults have a significant control over the distribution of severe earthquake disaster belts. Earthquake prevention at home and abroad Practice experience shows that the space location and structural attributes of active faults are ascertained, and the seismic hazards are evaluated scientifically, on the basis of which reasonable avoidance or Taking effective engineering measures is an effective way to reduce the risk of earthquake disasters and reduce disaster losses. China is located at the junction of multiple plate interactions, with complex geological structures and widely distributed active faults. Many economically-developed areas and major industries In the project site area and along the important lifeline project, there may be active faults in cities and towns with seismic intensity of VII degrees and above. Historically, Beijing, Tian Many densely populated large and

medium-sized cities such as Tianjin, Xi'an and Tangshan have experienced strong earthquakes. Due to the lack of harm to active faults in the past Sufficient cognition, subject to various conditions, and investigations to date on the distribution of active faults and their seismic hazards in the mainland of China The degree is very low, leaving a serious security risk for the use of land planning and development. With the acceleration of economic development and urbanization in China, Seismic safety in urban and rural areas is getting more and more attention, and geological and geophysical exploration techniques have been applied to ascertain the distribution and properties of active faults and to provide urban regulations. The scientific basis for planning, land use, and project construction is to adhere to the principle of "mainly prevention, combination of anti-rescue and anti-rescue measures," and realize "emphasis on disaster relief. An important measure for shifting from "prevention prevention" to "change from disaster reduction to disaster risk reduction." The "Disaster Law" stipulates faults in the conduct of active fault detection and construction engineering evasive activities, and is supported by technical standards to better regulate activities. The fault detection work and its output are one of the important tasks for earthquake disaster prevention at present and in the future. China began to try to conduct active fault detection during the "Ninth Five-Year Plan" period, and gradually formed a set of effective active fault detection technology. The scientific system and working methods have accumulated certain research achievements and work experience, and have successively formulated relevant seismic industry standards and technical specifications. It has played its due role in advancing related work development and application of results. In order to make full use of social resources, China's earthquake is completed with quality and quantity Occurrence of active faults and accurate localization in areas with frequent occurrence of earthquakes or intensities of earthquakes in areas VII and above, implementing the principle of "prevention first" and effectively reducing Earthquake disaster risks provide basic and technical guarantees. It is necessary to formulate national-level technical standards to guide, regulate, and restrict the faults of various industries and activities. Probe behavior. This standard summarizes the achievements of active fault detection in China in the past 20 years, especially the analysis of seismic systems in the past 10 years. On the basis of gains and losses in the implementation of related technical specifications and industry standards, and drawing on the advanced experience of related work in the United States and other countries, The method and system of active fault detection, including the technical system, work flow, main contents, data management and output results, are the activities to be carried out. Basic follow-up of fault detection. It has been proved by practice that shallow seismic exploration is an effective primary geophysical exploration method for detecting and locating hidden faults. Layered borehole surveys are the main technical means for the identification of hidden active faults. Certify the necessary workload, and at the same time encourage the exploration and development of other new geophysical exploration technologies for the accurate positioning of active faults and related disaster mitigation Provide better technical support. Active fault detection

1 Scope

China's national standard for surveying and investigating active faults. An active fault is one that has moved in the recent geological past and can be expected to move again, and locating it precisely is the most consequential piece of earthquake work a city can commission. The reason is that fault rupture is not a hazard that can be designed against: a building can be engineered to survive shaking, and no ordinary building can survive the ground beneath it displacing by metres. So the remedy is avoidance - setting the fault trace, establishing a zone either side of it, and keeping construction out of that zone - and that requires knowing where the fault is to within tens of metres rather than kilometres. The work is a sequence: existing geology and imagery, geophysical profiling to find the structure at depth, drilling to confirm it, and trenching across the trace to date the displaced layers. China has done this systematically for its major cities, and this standard is the method they follow.

This standard specifies the basic provisions, work flow, work content, technical requirements, and detection methods for active fault detection. This standard applies to active fault investigation, identification and detection, and active fault seismic risk assessment and database construction.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 958-2015 Regional Geological Map Legend

GB 6722-2014 Blasting Safety Regulations

GB 12950 seismic exploration explosion safety regulations

GB/T 13923-2006 Basic Geographic Information Element Classification and Code

GB/T 13989-2012 National Basic Scale Topographic Map Framing and Numbering

GB/T 15968-2008 Specification for the production of remote sensing image floor plans

GB/T 18207.1-2008 Earthquake prevention and disaster mitigation - Part 1. Basic terms

GB/T 18207.2-2005 Terminology for prevention and reduction of earthquakes - Part 2. Terminology

GB/T 18208.3-2011 Earthquake field work Part 3. Survey specifications

GB/T 18314-2009 Global Positioning System (GPS) Measurement Specification

GB/T 20257.2-2006 National Basic Scale Map Scheme Part 2. 1.5000 1.10000 Topographic

Map Scheme

GB/T 20257.4-2007 National basic scale map schema Part 4. 1.250000 1.500000 1.1000000 Topographic map

GB/T 20258.2-2006 Basic geographical information element data dictionary Part 2. 1.5000 1.10000 basis geographic letter Information factor data dictionary

3 Terms and definitions

The terms and definitions defined by GB/T 18207.1-2008, GB/T 18207.2-2005 and GB/T 18208.3-2011 and the following