

ICS 91.120.25
CCS P 15

DB

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

DB/T 81-2020

**Active fault survey - Paleoseismic trenching
(English Translation)**

Issued on: March 30, 2020

Implemented on: July 1, 2020

Issued by: China Earthquake Administration

Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms and definitions
4 Work process
5 Preliminary preparation
6 Location selection
7 Topographic mapping and trench excavation
8 Preparation of the groove record
9 Interpretation of exploration trenches and paleoearthquake identification
10 Sampling and dating
11 Ancient earthquake identification mark
12 Outcomes
Appendix A (informative appendix) Example of trough location
Appendix B (Informative Appendix) Trench Excavation and Record
Appendix C (Normative Appendix) Test Method for Analysis Results of Ancient Earthquake Events
Appendix D (Normative Appendix) Limiting methods for determining the age of ancient earthquake events
Appendix E (informative appendix) Paleoearthquake recognition model and example results
References

Foreword

This standard is one of the series of standards for "Active Fault Exploration". The standard structure and name of the series are expected to be as follows.

- Remote sensing survey for active fault detection (DB/T 69-2017);
- Active fault exploration field geological survey (DB/T 82-2020);
- Active fault exploration and fault geomorphological survey (DB/T 71-2018);
- Active fault exploration, ancient seismic trench exploration (DB/T 81-2020);

- Active fault exploration and drilling;
- Dating test of active fault exploration;
- Active fault exploration and seismic exploration;
- Activity identification of active fault exploration;
- Evaluation of seismic hazard of active fault exploration;
- Graphic symbols for active fault exploration (DB/T 72-2018);
- Active fault exploration database;
- Active fault exploration database detection (DB/T 83-2020);
- Active fault exploration 1:25,000 seismic structure map compilation (DB/T 73-2018);
- Report on the results of active fault exploration;
- 1:5000 active fault mapping (DB/T 53-2013);
- 1:5000 active fault mapping database specification (DB/T 65-2016);

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 "Guidelines for Standardization Work Part 1: Standard Structure and Compilation".

This standard was proposed by the China Earthquake Administration.

This standard is under the jurisdiction of the Earthquake Disaster Prevention Standardization Technical Committee.

Drafting organizations of this standard. Institute of Geology, China Earthquake Administration, Institute of Crustal Stress, China Earthquake Disaster Prevention Center, Institute of Earthquake Prediction, China Earthquake Administration, Seismological Bureau of Ningxia Hui Autonomous Region.

Introduction

Numerous site surveys of major earthquakes at home and abroad and analysis of their disaster phenomena show that active faults are the source of earthquakes and also earthquake disasters.

The culprit. Finding out the exact location of seismically active faults and making scientific evaluations of their attributes and seismic risk is an earthquake disaster risk assessment and the important basic work of earthquake disaster prevention. Since the "Eighth Five-Year Plan" period, my country has gradually promoted the detection of active faults.

Great progress has been made in urban planning, land use, and engineering construction. Some practical experience has been accumulated.

And earthquake science research and other fields have played an important role.

In recent years, the seismic department has organized and carried out active fault detection technology to sort out the work process, work content and work results.

This framework. In order to standardize and guide our country's active fault detection work and its application, the GB/T 3602-2018 "Active Fault Layer detection", the standard provides technical requirements for active fault detection in terms of work content, workflow, technical methods, data management, and outcome output.

The requirements are stipulated. On this basis, further evaluation and analysis of various technical methods to achieve detection purposes are carried out to clarify their technical indicators and Data collection requirements and a standard framework for active fault detection have been constructed.

Paleoseismic trench exploration is one of the main technical methods for active fault detection and location, fault activity identification and seismic risk assessment.

It has been widely used in active fault detection, active fault mapping, and active fault investigation on engineering sites. In view of the identification of trenches and ancient earthquakes Complexity, it is necessary to standardize trenching technology and ancient seismic identification methods, and this standard is specially formulated.

Active fault exploration ancient seismic trough exploration

1 Scope

This standard specifies the preliminary preparation, site selection, site excavation, sample collection, identification of paleo-seismic events and related cost Requirements for data storage.

This standard applies to geological mapping of active faults, urban active fault detection, and paleo-seismic trough exploration in active fault identification. Ground Earthquake scientific investigation can also be used as a reference.

2 Normative references

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

GB/T 15608-2006 China Color System DB/T 65-2016 1.5000 active fault mapping database specification DB/T 69-2017 Active Fault Exploration Remote Sensing Survey DB/T 71-2018 active fault exploration fault geomorphological survey

3 Terms and definitions

The following terms and definitions apply to this document.

There have been active faults since 120,000 years ago, including Late Pleistocene faults and Holocene faults.

[GB/T 3602-2018, definition 3.1] 3.2 There have been faults, but it is difficult to identify the faults of the dislocation plane in the formation.

The amount of slip generated by an active fault during an earthquake rupture.

[GB/T 3602-2018, definition 3.13] 3.4 There are no written records of earthquake events discovered by geological methods.

[GB/T 3602-2018, definition 3.16] 3.5 A valley developed along the fault line.

4 Work process

4.1

Figure 1 shows the ancient seismic trough exploration workflow, including the following 7 stages.

- a) Preliminary preparation;
- b) Location selection;
- c) Topographic mapping and trench excavation;
- d) Preparation of groove record;
- e) Exploration trench interpretation and paleo-seismic identification;
- f) Sampling and dating;
- g) Results and outputs.

4.2

Trench interpretation, sampling and dating, and paleoearthquake identification can be carried out simultaneously.

5.1 Data collection

5.1.1

High-resolution remote sensing images of target faults, research on the activity of existing faults, and results of trench exploration work should be collected.