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NB

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

NB/T 10882-2021

**Guidelines for risk prevention and control of cascade reservoirs
safety**

梯级水库群安全风险防控导则

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Foreword

This document was issued on 22 December 2021 by the National Energy Administration of the PRC and takes effect on 22 June 2022.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 27.140, Chinese classification P 59.

In accordance with the requirements of the Notice of the National Energy Administration on Issuing the Second Batch of the 2014 Plan for the Formulation (Revision) of Energy Industry Standards (Guo Neng Ke Ji [2015] No. 12), the drafting group of this guideline carried out extensive investigation and research, conscientiously summarized practical experience and, on the basis of widely soliciting opinions, formulated this guideline.

The main technical contents of this guideline are: general provisions, terms, basic requirements, risk prevention and control of cascade reservoirs in the planning stage, risk prevention and control of cascade projects in the design stage, risk prevention and control of cascade projects in the construction stage, risk prevention and control of cascade reservoirs in the operational stage, risk prevention and control of cascade projects in the decommissioning stage, and preparation of the risk assessment and prevention and control report.

This guideline is under the administration of the National Energy Administration, is proposed by and under the routine management of China Renewable Energy Engineering Institute, and the specific technical contents are interpreted by the Energy Industry Standardization Technical Committee of Hydropower Survey and Design (NEA/TC 15).

Any comments or suggestions arising during the implementation of this guideline should be sent to China Renewable Energy Engineering Institute (Address: No. 2 Liupukang

Beixiaojie, Xicheng District, Beijing; Postal code: 100120).

Chief development organization of this guideline: China Renewable Energy Engineering Institute.

Participating development organizations of this guideline: China Institute of Water Resources and Hydropower Research; PowerChina Chengdu Engineering Corporation Limited; PowerChina Northwest Engineering Corporation Limited; PowerChina Zhongnan Engineering Corporation Limited; Yalong River Hydropower Development Company, Ltd.; Yellow River Upstream Hydropower Development Co., Ltd.; Guoneng Dadu River Basin Hydropower Development Co., Ltd.; Huaneng Lancang River Hydropower Inc.; Wuling Power Corporation Ltd.; Xi'an University of Technology.

The foreword lists the principal drafting staff of this guideline, 31 persons in total, headed by Zhou Jianping.

The foreword also lists the principal reviewers of this guideline, 28 persons in total.

Publication Information

NB/T 10882-2021 is an Energy Industry Standard of the People's Republic of China, Guidelines for Risk Prevention and Control of Cascade Reservoirs Safety (Chinese title: ?????????????). ICS 27.140, CCS P 59. Issued on 2021-12-22 and implemented on 2022-06-22 by the National Energy Administration.

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The standard was released by Announcement No. 6 of 2021 of the National Energy Administration, dated 22 December 2021, which, in accordance with the Standardization Law of the People's Republic of China and the Administrative Measures for Energy Standardization, approved 356 energy industry standards (Attachment 1), including the Code for Design of Forced Grouting Engineering in Underground Coal Mines, and 25 foreign-language editions of energy industry standards (Attachment 2), including the Technical Code for Design and Calculation of Combustion System of Fossil-fired Power Plant.

In the catalogue of industry standards attached to the announcement, NB/T 10882-2021 appears as serial No. 33, with no standard superseded and no adopted international standard, approval date 2021-12-22 and implementation date 2022-06-22.

Structure of the Standard

Chapter 3 is completed by Section 3.5 Risk Prevention and Control, starting on page 9.

Chapter 4 Risk Prevention and Control of Cascade Reservoirs in Planning Stage (page 11) comprises 4.1 General Requirements, 4.2 Risk Identification in Planning Stage, 4.3 Risk Analysis and Assessment in Planning Stage and 4.4 Risk Control in Planning Stage.

Chapter 5 Risk Prevention and Control of Cascade Projects in Design Stage (page 14) comprises 5.1 General Requirements, 5.2 Risk Identification in Design Stage, 5.3 Risk Analysis and Assessment in Design Stage and 5.4 Risk Control in Design Stage.

Chapter 6 Risk Prevention and Control of Cascade Projects in Construction Stage (page 18) comprises 6.1 General Requirements, 6.2 Risk Identification in Construction Stage, 6.3 Risk Analysis and Assessment in Construction Stage and 6.4 Risk Control in Construction Stage.

Chapter 7 Risk Prevention and Control of Cascade Reservoirs in Operational Stage (page 21) comprises 7.1 General Requirements, 7.2 Risk Identification in Operational Stage, 7.3 Risk Analysis and Assessment in Operational Stage and 7.4 Risk Control in Operational Stage.

Chapter 8 Risk Prevention and Control of Cascade Projects in Decommissioning Stage (page 25) comprises 8.1 General Requirements, 8.2 Risk Identification in Decommissioning Stage, 8.3 Risk Analysis and Assessment in Decommissioning Stage and 8.4 Risk Control in Decommissioning Stage.

Chapter 9 Preparation of Risk Assessment and Prevention and Control Report starts on page 27.

Appendix A Basic Information Requirements for Risk Prevention and Control of Cascade Reservoirs starts on page 29.

Appendix B Probability Analysis Method starts on page 31.

Appendix C Dam Break Flood Analysis Method for Cascade Reservoirs starts on page 34.

Appendix D Risk Loss Estimation Method starts on page 40.

The back matter comprises the Explanation of Wording in This Guideline (page 45) and the List of Quoted Standards (page 46).

The document closes with the Addition: Explanation of Provision, starting on page 47.

1 Scope

NB/T 10882-2021 is the Chinese guide for assessing and controlling the safety risk of cascade reservoirs - a series of dams built one below another on the same river. A cascade changes the nature of dam safety: the failure of one dam releases a flood into the reservoir of the next, and if that dam cannot pass or contain it, the failure propagates down the river. The guide addresses that chain across the whole life of the cascade, from planning and