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

GB/T 12788-2021

Replacing GB/T 12788-2008

Criteria for class 1E power systems for nuclear power plants

核电厂安全级电力系统准则

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part

1. Structure and Drafting Rules of Standardization Documents" Drafting. This document replaces GB/T 12788-2008 "Nuclear Power Plant Safety Level Power System Guidelines", compared with GB/T 12788-2008, except for In addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) The terms and definitions of "passive reactor design" have been added (see 3.17);
- b) An example of a passive nuclear power plant safety-level power system has been added (see Figure 3);
- c) Added the description of the safety-level power system of passive nuclear power plants (see 5.1.1);
- d) Modify "circuit breaker" to "isolating device" (see 5.2.2.5, 5.3.2.5, 5.2.2.5, 5.3.2.5 of the.2008 edition);
- e) The design requirements for the DC power system of passive nuclear power plants have been added (see 5.3.1);
- f) The design requirements for battery chargers of passive nuclear power plants have been added (see 5.3.4.3). Please note that some of the contents of this document may involve patents. The issuing agency of this document is not responsible for identifying patents. This document was proposed and managed by the National Standardization Technical Committee for Nuclear Instruments (SAC/TC30). Drafting organization of this document. Shanghai Nuclear Engineering Research and Design Institute Co., Ltd. The main drafters of

this document. Shao Junyun, Ma Tao, Gu Shenjie, Lu Peifang, Tao Guo. The previous versions of the documents replaced by this document are as follows:

---GB/T 12788-1991, GB/T 12788-2000, GB/T 12788-2008. Criteria for safety-level power systems of nuclear power plants

1 Scope

GB/T 12788-2021 is the Chinese national standard on criteria for class 1e power systems for nuclear power plants, in the field of energy and heat transfer engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 20 August 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 March 2022. Classification: ICS 27.120.20, CCS F 83. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies nuclear power plants.

- a) The main design criteria and design measures of the safety-level power system, these criteria and measures can make the safety-level power system in the applicable Meet its functional requirements under working conditions caused by design basis events;
- b) Test and monitoring requirements for safety-level power systems;
- c) Criteria for safety-level power systems shared by multi-unit nuclear power plants;
- d) Document requirements for safety-level power systems. This document applies to the safety level parts of the following systems and equipment in single-unit and multi-unit nuclear power plants.

---AC power system;

---DC power system;

---Instrumentation and Control (I This document does not apply to priority power sources, generators and busbars of units, generator circuit breakers, main (i.e. step-up) transformers, auxiliary (i.e. Use) transformers, starting transformers, connecting lines to switchyards of nuclear power plants, switchyards, transmission lines and transmission networks (see Figures 2 and 3).

2 Normative references

The contents of the following documents constitute the indispensable clauses of this

document through normative references in the text. Among them, dated quotations Only the version corresponding to that date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to This document.

GB/T 5204 Nuclear Power Plant Safety System Periodic Test and Monitoring

GB/T 7163 Reliability analysis requirements for safety systems in nuclear power plants

GB/T 9225 General Principles of Reliability Analysis of Nuclear Power Plant Safety System

GB/T 12727 Nuclear power plant safety level electrical equipment appraisal

GB/T 12790 Nuclear power plant safety-level electrical equipment and system file identification method

GB/T 13177 Priority power supply for nuclear power plants

GB/T 13284.1 Nuclear Power Plant Safety System Part