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

GB/T 47338-2026

**Nuclear facilities - Instrumentation important to safety - Spent
fuel pool instrumentation**

核设施 安全重要仪表 乏燃料水池仪表

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is modified to adopt IEC/IEEE 63113.2021 "Safety-Important Instrumentation for Nuclear Facilities - Instrumentation for Spent Fuel Pools".

This document has undergone the following structural adjustments compared to IEC/IEEE 63113.2021.

---Chapter 4 of IEC/IEEE 63113.2021 has been deleted;

---Added "Appendix A. Improvement Scheme for Monitoring Instruments in Spent Fuel Pools of In-Service Nuclear Facilities", and incorporated IEC/IEEE 63113.2021.

The contents of "Appendix A" have been changed to "Appendix B" of this document.

The technical differences between this document and IEC/IEEE 63113.2021, and the reasons therefor, are as follows.

---Change "Temperature measurement location should include two locations" in "5.1

Measurement range" to "Temperature measurement location should preferably include two positions".

"Setting up" to adapt to the general technical solutions for the design of nuclear facilities in my country;

---IEEE std384 has been replaced with the normatively referenced GB/T 13286 (see 6.4), and the degree of consistency between the two documents is [insert value here].

Modify it to adapt to my country's technological conditions;

---IEC 60709:2018 has been replaced with normatively referenced NB/T.20060 (see 6.4), and the degree of consistency between the two documents is [insert level here].

Modify it to suit my country's technological conditions;

---IEC 60780-323 has been replaced with the normatively referenced GB/T 12727 (see 7.1), and the degree of consistency between the two documents is [insert level here].

Modify it to suit my country's technological conditions;

---IEC 60980-344 has been replaced with the normatively referenced GB/T 13625 (see 7.2), and the degree of consistency between the two documents is [insert level here].

Modify it to suit my country's technological conditions;

---IEC 61513 has been replaced with the normatively referenced GB/T 40444 (see Chapter 9), and the degree of consistency between the two documents is [revision].

Modify it to adapt to my country's technological conditions;

---The normative reference to IEC 61226 (see IEC/IEEE 63113.2021) has been removed, and "System security classification analysis" has been added.

It should meet the requirements of the model standard (see Chapter 9), since the standard for system safety classification analysis is related to its model.

The following editorial changes have been made to this document.

---Abbreviations have been removed (see Chapter 4 of IEC/IEEE 63113.2021);

---IEEE std352 has been replaced with GB/T 9225 (see 5.5) as an informative reference, and the degree of consistency between the two documents is [insert value here].

Modify it to adapt to my country's technological conditions;

---IEC 60812 has been replaced with GB/T 7826 (see 5.5) for informational reference, and the degree of consistency between the two documents is equal.

Similarly, to adapt to my country's technological conditions;

---IEEE std577 has been replaced with GB/T 7163 (see 5.5) as an informative reference;

the consistency level between the two documents is [insert value here].

Modify it to adapt to my country's technological conditions;

---IEC 60068-2-6 (see 7.4) has been replaced with GB/T 2423.10 (referenced for informational purposes). The degree of consistency between the two documents is [insert level here].

Equivalent, to adapt to my country's technological conditions;

---IEC 60068-2-27 (see 7.4) has been replaced with GB/T 2423.5 (referenced for informational purposes). The degree of consistency between the two documents is [insert percentage here].

Equivalent, to adapt to my country's technological conditions;

--- An "Improvement Plan for Monitoring Instruments in Spent Fuel Pools of In-Service Nuclear Facilities" has been added (see Appendix A) to adapt to various in-service nuclear facilities in my country.

The current state of technology and the need for improvement.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Nuclear Instruments and Meters (SAC/TC30).

1 Scope

This document specifies the design, performance, qualification, and display requirements for instruments in safety-critical spent fuel pools at nuclear facilities.

This document applies to instruments used for monitoring the condition of spent fuel pools, namely pool level, pool temperature, and zonal radiation. This document does not apply to instruments used for monitoring spent fuel pool conditions.

Control systems related to spent fuel water tanks, such as. tank cooling control system, isolation valve control system, crane instrumentation and control system, or refueling system.

Machine instruments and control systems.

Note: The improvement plan for spent fuel pool monitoring instruments provided in Appendix A is only applicable to in-service nuclear facilities.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 12727 Safety-level electrical equipment qualification for nuclear power plants (GB/T 12727-2023, IEC/IEEE60780-323.2016, MOD) GB/T 13286 Criteria for Independence of Electrical Equipment and Circuits in Nuclear Power Plants (GB/T 13286-2021, IEEE std384.2018) MOD) GB/T 13625 Seismic Assessment of Safety-Grade Electrical Equipment in Nuclear Power Plants GB/T 40444 General requirements for safety-critical instrumentation and control systems in nuclear power plants (GB/T 40444-2021, IEC 61513:2011) MOD) NB/T.20060 Isolation Guidelines for Safety-Critical Instrumentation and Control Systems in Nuclear Power Plants (NB/T.20060-2012, IEC 60709:2004) MOD) General requirements) the following terms and definitions apply to this document.

Accident conditions

Deviating from normal operation, the operating conditions are less frequent but more severe than expected.

Note: Accident conditions include design basis accidents and design extended conditions.

[Source. GB/T 41143-2021, 3.10] 3.2 Various operational processes that are expected to deviate from normal operation at least once during the operating life of a nuclear power plant; due to the measures already taken in the design.

With appropriate measures, such incidents are unlikely to cause serious damage to safety-critical items or lead to accident conditions.

[Source. GB/T 41143-2021, 3.5]