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

GB/T 25838-2010

**Qualification of safety class resistance temperature detectors
for nuclear power plants**

核电厂安全级电阻温度探测器的质量鉴定

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. This standard is GB/T 12727-2002 "nuclear power plant safety systems of electrical equipment qualification" supporting standards for execution GB/T 12727-2002 "nuclear power plant safety systems of electrical equipment qualification" requirement to provide a specific implementation conditions. The standard proposed by China National Nuclear Corporation. This standard by the National Nuclear Instrument Standardization Technical Committee (SAC/TC30) centralized. This standard was drafted. Nuclear Industry Standardization Institute, Branch of China Nuclear Power Technology Research Institute, Beijing Branch. The main drafters of this standard. Choi Jung north, Qiu Jianwen, in the magnificent, Pian Yao Zheng, Geng Wen line. Nuclear power plant safety level of resistance temperature detectors Qualification

1 Scope

China's national standard for the qualification of safety class resistance temperature detectors used in nuclear power plants. It specifies the qualification programme, the tests and the documentation by which an RTD is shown fit for safety class service. A resistance temperature detector is a simple device - a platinum element whose resistance varies predictably with temperature - and it is the primary temperature measurement of a nuclear plant: the reactor coolant temperature it reports drives the reactor protection system, and a wrong reading is not a measurement error but a false trip or, worse, a failure to trip. Qualification is the process of demonstrating that the device will still give a correct reading after everything that could happen to it. That is a different exercise from calibration and far broader. A safety class instrument must be shown to perform not only in normal conditions but after ageing over its qualified life, after the seismic event the plant is designed for, and during and after the design basis accident - which for an instrument inside containment means a steam and chemical spray environment at elevated temperature and pressure with a large radiation dose, sustained for the duration the accident analysis assumes. And the sequence matters: the specimen is aged first, then seismically tested, then exposed to the accident environment, because a device qualified fresh proves nothing about the same

device at the end of its life. So the standard sets out the qualification programme and its order, the ageing and its acceleration, the seismic and environmental tests, the required accuracy and response time and their verification, the failure criteria, and the documentation package that constitutes the qualification record. Issued on 23 December 2010 and in force since 1 May 2011.

This standard specifies the safety level of nuclear power plants pilot project RTD qualification used, test conditions, test methods and test Income guidelines. This standard applies to the qualification of PWR nuclear power plant safety level resistance temperature detectors. This standard is also available for other types of nuclear power plant safety level resistance temperature detectors to identify the reference quality.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the edition are not applicable to the present file. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 2421.1-2008 Environmental testing for electric and electronic products and Overview Guide

GB/T 2423.4-2008 Environmental testing for electric and electronic products Part 2. Test methods - Test Db. Damp heat (12h 12h cycle)

GB/T 2423.10-2008 Environmental testing for electric and electronic products Part 2. Test methods Test Fc. Vibration (sinusoidal)

GB/T 12727-2002 nuclear power plant safety systems of electrical equipment qualification

GB/T 13625-1992 nuclear power plant safety systems of electrical equipment seismic qualification EJ1039-1996 Island nuclear power plant machinery and equipment nondestructive testing specification EJ/T 1197-2007 Nuclear power plant safety level of electrical equipment qualification test methods and environmental conditions

JB/T 8622-1997 industrial platinum RTD technical conditions and indexing table

IEC 60751.2008 Industrial platinum resistance thermometers and platinum temperature sensors (Industrialplatinumthermometersand platinumtemperaturesensors)

IEC 62397.2007 nuclear power plant instrumentation and control systems resistance temperature detectors (Nuclearpowerplants-Instrumentationandcontrolimportanttosafety-Resistancetemperaturedetectors)

3 Terms and Definitions

GB/T 12727-2002 define the following terms and definitions apply to this document.

3.1 Identification procedures qualification procedure To provide certain equipment quality certification program.

3.2 Conditioning test conditions The test samples were exposed to the test environment to determine the impact of these conditions on the test samples.

3.3 Pretreatment pre-conditioning In order to eliminate or partially eliminate the test sample in response to previous experience, the processing done before the test samples in test conditions.

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