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

GB/T 25837-2010

**Qualification of electrical penetration assemblies in
containment structures for nuclear power plants**

核电厂安全壳电气贯穿件的质量鉴定

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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, Shanghai Power Equipment Research Institute. The main drafters. Zhang Jian Qing, Huang Dingzhong, Yang Yin Ning, Geng far Yinji Chuan, Geng Wen line. Qualification of nuclear power plant containment electrical penetrations

1 Scope

China's national standard for the qualification of electrical penetration assemblies in the containment of a nuclear power plant - the sealed feedthroughs that carry every power and signal cable across the containment boundary. They are a contradiction by design: the containment has to stay leaktight through a design basis accident, and yet several thousand conductors have to pass through it, and those same conductors have to keep working during the accident so that the reactor can be monitored and controlled. This standard specifies the test items, the test methods, the test conditions and the acceptance criteria for the qualification of the electrical penetration assemblies of nuclear power plants. It applies to the qualification of the penetrations installed in the containment of pressurized water reactor plants designed and built to the French RCC series of rules, and may be used as a reference for the penetrations of other types of plant. It is the companion that gives concrete effect to the general electrical equipment qualification standard GB/T 12727-2002, and it takes the assembly through the whole programme: the classification and functions of the penetration, the baseline tests, the accelerated thermal and radiation ageing that stands for the service life, the seismic qualification following GB/T 13625-1992, the tests under the extreme conditions of use, the simulation of the design basis accident with the

temperature and pressure transients of its informative annex, the partial discharge measurement to GB/T 7354-2003, the fire resistance and flame propagation tests following the GB/T 18380 series, and the leak rate that has to be demonstrated after all of it. The integrated test sequence table is what makes the programme a qualification rather than a set of tests: the order matters, because each stage has to be endured by an assembly that already carries the damage of the ones before. Issued on 23 December 2010 and in force since 1 May 2011, it is held by SAC/TC 30.

This standard specifies the test project for nuclear power plants EPAs adopted qualification, test methods, test conditions and acceptance Guidelines. This standard applies to the specification with reference to the French RCC series designed and built pressurized water reactor nuclear power plants installed by containment, response guarantee Reactor plant signaling and power delivery between the internal and external electrical member through qualification. The reference standards for other types of nuclear power plant containment electrical penetrations quality identification.

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 2423.22-2002 Environmental testing for electric and electronic products Part 2. Test methods - Test N. Temperature change

GB/T 7354-2003 partial discharge measurement Aging procedures and evaluation of test results.

GB/T 11026.1-2003 heat resistance, electrical insulating materials - Part 1

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

GB/T 13538-1992 nuclear power plant containment electrical penetrations

GB/T 13625-1992 nuclear power plant safety systems of electrical equipment seismic qualification

GB/T 18380.3-2001 Test methods for combustion bunched wires or cables

GB/T 18380.31-2008 burning test and optical fiber cables under fire conditions - Part 31.
vertically mounted bunched wires Cable vertical flame spread test test device EJ/T
1197-2007 Nuclear power plant safety level of electrical equipment qualification test
methods and environmental conditions

3 Terms and Definitions

GB/T 12727-2002 and established 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.