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NB

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

NB/T 25044.4-2016

**Code for construction quality acceptance of nuclear power
conventional island and balance of plant - Part 4:
Instrumentation and control**

核电厂常规岛及辅助配套设施建设施工质量验收规程 第4部分：热工仪表及控制
装置

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Foreword

This document was issued on 5 December 2016 by the National Energy Administration of the PRC and takes effect on 1 May 2017.

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 27.120, Chinese classification F81.

This part was drafted in accordance with the rules given in GB/T 1.1-2009 Directives for standardization - Part 1: Structure and drafting of standards.

NB/T 25044 Code for construction quality acceptance of nuclear power plant conventional island and balance of plant is divided into 8 parts: Part 1: Civil works; Part 2: Turbine generator unit; Part 3: Circulating water system equipment; Part 4: Thermal instrumentation and control devices; Part 5: Water treatment and hydrogen generation systems; Part 6: Piping; Part 7: Heating, ventilation and air conditioning; Part 8: Thermal insulation and painting.

This part is Part 4 of NB/T 25044. It was proposed by and is under the jurisdiction of the China Electricity Council.

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Comments or suggestions arising during the implementation of this standard should be sent to the Standardization Management Center of the China Electricity Council (No. 1, Baiguang Road Ertiao, Beijing, 100761).

1 Scope

NB/T 25044.4-2016 is Part 4 of the Chinese code for construction quality acceptance of the conventional island and balance of plant of nuclear power plants, and it covers thermal instrumentation and control devices. The instruments of a turbine plant - temperature sensors, pressure tappings, flow orifices and nozzles, level vessels, transmitters, gauges, switches and flow meters - are small items, but a badly installed tapping or a leaking impulse line gives the control system a false reading, and the part exists to make the installation of each one verifiable. It sets the scope, the normative references and the defined terms, then the general requirements: the division of the instrumentation works into unit, sub-unit, item and inspection lot, and the table assigning each to the parties responsible for inspection and supervision. The acceptance tables follow item by item: installation of temperature elements, pressure and differential pressure tappings and their impulse lines, orifice plates, flow nozzles and flanges, level measuring vessels, local gauges and switches, transmitters and analysers, and flow meters. Each table states the inspection items, the quality standard with its permitted deviations, and the method of checking. Later parts of the same document cover instrument cabling, control panels and cabinets, earthing, and the commissioning of the instrumentation, with the acceptance records to be kept. It applies to PWR stations built in China.

This standard specifies the requirements for construction quality acceptance of thermal instrumentation and control devices of the conventional island and balance of plant of nuclear power plants.

This standard is applicable to construction quality acceptance of thermal instrumentation and control devices of the conventional island and balance of plant of newly built, extended and reconstructed nuclear power plants; other nuclear projects may refer to it.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition (including all amendments) applies.

GB 8624-2012 Classification for burning behavior of building materials and products.

GB/T 12666 Test methods on flame-retardant for single electric wire and cable.

GB 23864-2009 Fire-stopping and sealing materials.

GB 28374-2012 Fire resistant coating for cable.

GB 50168-2006 Code for construction and acceptance of cable line electric equipment installation engineering.

GB 50300-2013 Unified standard for constructional quality acceptance of building engineering.

GB 50303-2015 Code for acceptance of construction quality of electrical installation in building.

GB 50343-2012 Technical code for protection of building electronic information system against lightning.

DL/T 5210.4-2009 Code for construction quality acceptance and evaluation of electric power construction - Part 4: Thermal instrumentation and control devices.

DL/T 1118 Technical code for welding of conventional island of nuclear power plant.

NB/T 20122 Regulations for construction quality acceptance and handover acceptance management of nuclear engineering.

NB/T 20123 Regulations for division of nuclear engineering into divisional, sub-item and item works.

NB/T 25043.4 Code for construction of conventional island and balance of plant of nuclear power plant - Part 4: Thermal instrumentation and control devices.

3 Terms and definitions

3.1 Conventional island (CI): general term for the turbine generator unit and auxiliary facilities of a nuclear power plant and the buildings in which they are located.

3.2 Balance of plant (BOP): auxiliary facilities serving the main process, specially provided to achieve specific functions of the conventional island of a nuclear power plant.

3.3 Detecting and measuring instrument: instrument that determines the value of a measured variable or the characteristics and state of a quantity.

3.4 Tap: special pipe fittings, outlets, connecting valves and similar components provided on the measured object for installing and connecting detecting elements.

3.5 General temperature detector: element measuring fluid temperature, such as thermocouples, resistance thermometers, bimetallic thermometers and pressure-type thermometers.

3.6 Special temperature detector: element measuring the temperature of special locations, such as special resistance thermometers for thrust pad temperature, bearing temperature and turbine casing wall temperature.

4 General

4.1 This standard is formulated to strengthen quality management of nuclear power construction projects, improve construction quality and unify construction quality acceptance of thermal instrumentation and control devices of the conventional island and balance of plant of nuclear power plants.

4.2 Construction and acceptance of thermal instrumentation and control devices of the conventional island and balance of plant shall follow the valid technical documents of the design and manufacturing organizations; where there is no explicit provision, NB/T 25043.4 and this standard shall apply.

4.3 Division into items, sub-divisional works, divisional works and unit works shall be carried out in accordance with NB/T 20123.

4.4 A quality plan should cover one system or one set of equipment and all construction activities; a quality plan generally includes several work steps, each work step corresponds to one inspection lot, and each item work corresponds to one quality plan.

4.5 Construction quality acceptance shall be carried out by inspection lot, item, sub-divisional work, divisional work and unit work; the result has only the qualified grade, and nonconformances shall be handled in accordance with 5.1.14.

5.1 General requirements

5.1.1 The construction quality of thermal instrumentation and control devices of the conventional island and balance of plant shall be inspected and accepted in accordance with this standard and NB/T 20122, and acceptance sign-off shall be completed.

5.1.2 The construction organization shall prepare the construction quality acceptance scope division table according to the scope of the works it undertakes and this clause; it shall be implemented after review and confirmation by the supervision (or owner) organization.

5.1.3 For projects under general contracting or other management modes, the supervision (or owner) organization may add acceptance organizations in the acceptance organization