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**N290.5-16**

# **Requirements for electrical power and instrument air systems of CANDU nuclear power plants**

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# Preface

This is the third edition of CSA N290.5, *Requirements for electrical power and instrument air systems of CANDU nuclear power plants*. It supersedes the previous editions, published in 2006 and 1990.

**Note:** *CANDU (CANada Deuterium Uranium) is a ®Registered trademark of Atomic Energy of Canada Ltd., used under exclusive license by Candu Energy Inc, a Member of the SNC-Lavalin Group.*

Changes to this edition include new requirements, guidance, and recommendations for beyond design basis accident requirements arising from the Fukushima Daiichi event including requirements for design extension conditions.

Consistent with industry initiatives to further classify and subdivide the beyond design basis accident regime, this Standard has been updated to address design extension conditions to the extent they are applicable to electrical power and instrument air systems. Other requirements for beyond design basis accidents are addressed in CSA N290.16.

The CSA N-Series Standards provide an interlinked set of requirements for the management of nuclear facilities and activities. The CSA N286 Standard provides overall direction to management to develop and implement sound management practices and controls, while the other CSA nuclear Standards provide technical requirements and guidance that support the management system. This Standard works in harmony with CSA N286 and does not duplicate the generic requirements of CSA N286; however, it can provide more specific direction for those requirements.

This Standard reflects the operating experience of the Canadian nuclear power industry.

Users of this Standard are reminded that the design, manufacture, construction, commissioning, operation, and decommissioning of nuclear facilities in Canada are subject to the provisions of the *Nuclear Safety and Control Act* and its supporting *Regulations*.

This Standard was prepared by the Subcommittee on Requirements for Electrical Power and Instrument Air Systems of CANDU Nuclear Power Plants, under the jurisdiction of the Technical Committee on Reactor Control Systems, Safety Systems, and Instrumentation of Nuclear Power Plants and the Strategic Steering Committee on Nuclear Standards, and has been formally approved by the Technical Committee.

## Notes:

- 1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
- 2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
- 3) *This Standard was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity”. It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*
- 4) *To submit a request for interpretation of this Standard, please send the following information to [inquiries@csagroup.org](mailto:inquiries@csagroup.org) and include “Request for interpretation” in the subject line:*
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  - b) *provide an explanation of circumstances surrounding the actual field condition; and*
  - c) *where possible, phrase the request in such a way that a specific “yes” or “no” answer will address the issue.*

*Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at [standardsactivities.csa.ca](http://standardsactivities.csa.ca).*

- 5) *This Standard is subject to review five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to [inquiries@csagroup.org](mailto:inquiries@csagroup.org) and include "Proposal for change" in the subject line:*
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  - b) *relevant clause, table, and/or figure number;*
  - c) *wording of the proposed change; and*
  - d) *rationale for the change.*

# ***N290.5-16***

## ***Requirements for electrical power and instrument air systems of CANDU nuclear power plants***

### **1 Scope**

#### **1.1**

This Standard covers the design, procurement, qualification, construction, installation, testing, commissioning, and documentation of CANDU nuclear power plant electrical power and instrument air systems.

#### **1.2**

Electrical power and instrument air systems of CANDU nuclear power plants include all structures, systems, and components that are necessary to meet the plant design requirements, including the requirements for design extension conditions (DECs).

#### **1.3**

Electrical power systems consist of the Class I, II, III, IV, and other electrical systems that are required to meet the plant design requirements.

#### **1.4**

Instrument air systems consist of the components of the plant instrument air system and other provisions to provide compressed gas that is necessary to meet the plant design requirements.

#### **1.5**

This Standard was developed specifically for CANDU nuclear power plant designs and satisfies the applicable requirements of CNSC REGDOC-2.5.2.

#### **1.6**

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.