CSA Group

N285.0-12/N285.6 Series-12

# General requirements for pressure-retaining systems and components in CANDU nuclear power plants/Material Standards for reactor components for CANDU nuclear power plants

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# Preface

This is the second edition of CSA N285.0/N285.6 Series, *General requirements for pressure-retaining systems and components in CANDU nuclear power plants/Material Standards for reactor components for CANDU nuclear power plants.* It supersedes the previous edition of the CSA N285.0/N285.6 Series published in 2008, the previous editions of CSA N285.0 published in 2006, 1995, 1991, and 1981, and the previous editions of the CSA N285.6 Series published in 2005 and 1988.

CSA N285.0 provides general requirements for pressure-retaining systems, components, and supports in CANDU® nuclear power plants.

**Note:** *CANDU (CANada Deuterium Uranium) is a registered trademark of Atomic Energy of Canada Limited (AECL).*

The CSA N285 series of Standards specifies requirements applicable to nuclear power plants in Canada and references the applicable requirements of the ASME *Boiler and Pressure Vessel Code* (*BPVC*). The specific objectives of these Standards are as follows:

- to establish technical requirements for pressure boundary items of CANDU power reactors, in a format that regulatory authorities can reference;
- to establish requirements for each class of system, component, or support, consistent with the *Nuclear Safety and Control Act* (Act) and its Regulations;
- to reference applicable requirements of the ASME *BPVC* where they are appropriate to CANDU power reactors;
- to specify rules and material requirements for the design, fabrication, installation, quality assurance, and inspection of those pressure-retaining components and supports for which the ASME *BPVC* does not specify requirements; and
- to establish rules for the periodic inspection of pressure-retaining components in CANDU nuclear power plants.

The CSA N285 series consists of the following Standards:

- CSA N285.0 — *General requirements for pressure-retaining systems and components in CANDU nuclear power plants;*
- CAN/CSA-N285.1 — this Standard no longer exists as a separate publication; it was incorporated into CAN/CSA-N285.0-95;
- CAN/CSA-N285.2 — this Standard no longer exists as a separate publication; it was incorporated as Annex I of CSA N285.0-08;
- CAN/CSA-N285.3 — this Standard no longer exists as a separate publication; it was incorporated as Annex J of CSA N285.0-08*;*
- CSA N285.4 — *Periodic inspection of CANDU nuclear power plant components*;
- CAN/CSA-N285.5 — *Periodic inspection of CANDU Nuclear power plant containment components;*
- CSA N285.6 Series — *Material Standards for reactor components for CANDU nuclear power plants* (published with CSA N285.0); and
  **Note:** *CSA N285.6.5 was withdrawn in the 2005 edition of the CSA N285.6 Series as the material that it covered (heat-treated Zr-2.5Nb-0.5 Cu wire for fuel-channel spacers) is no longer used for new spacers.*
- CSA N285.8 — *Technical requirements for in-service evaluation of zirconium alloy pressure tubes in CANDU reactors.*

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 specific 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 might provide more specific direction for those requirements.

Users of this Standard are reminded that the design, fabrication, installation, commissioning, and operation of nuclear facilities in Canada are subject to the provisions of the Act and its Regulations. The Canadian Nuclear Safety Commission (CNSC) specifies regulatory and administrative requirements for pressure-retaining systems in their Regulations and regulatory documents. Where CNSC documents conflict with the requirements of this Standard, the CNSC documents take precedence. In this Standard, the CNSC is referred to as the regulatory authority.

The Act and Regulations normally require the following items for a nuclear power reactor: a construction licence, an operating licence, and other licences, certificates, and permits specified by the regulatory authority. These licences and certificates can require the licensee to have the following:

- registered designs for systems, components, and supports;
- registered welding and brazing procedures;
- an accepted overpressure protection report;
- accepted code classifications, including applicable standards;
- accepted record-keeping systems;
- accepted quality assurance programs; and
- accepted periodic inspection programs.

When a licence references this Standard for another type of nuclear reactor facility, Clause 5 of CSA N285.0 should not be considered relevant unless

- the facility has a defined exclusion zone;
- access to the facility is controlled, permitting entry only by authorized personnel; and
- the reactor is inside a containment structure that is capable of limiting releases to the environment in the event of the failure of a pressure-retaining component.

These Standards were prepared by the Subcommittee on Strategic Issues to N285.0 and the Subcommittee on Maintenance of the Technical Background Document and Request for Interpretations, under the jurisdiction of the Technical Committee on CANDU Nuclear Power Plant Systems and Components and the Strategic Steering Committee for Nuclear Power Plants, and have 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*** *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****.*

**(5)** *This Standard is subject to periodic review, 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*** *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.*

*N285.0-12*

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