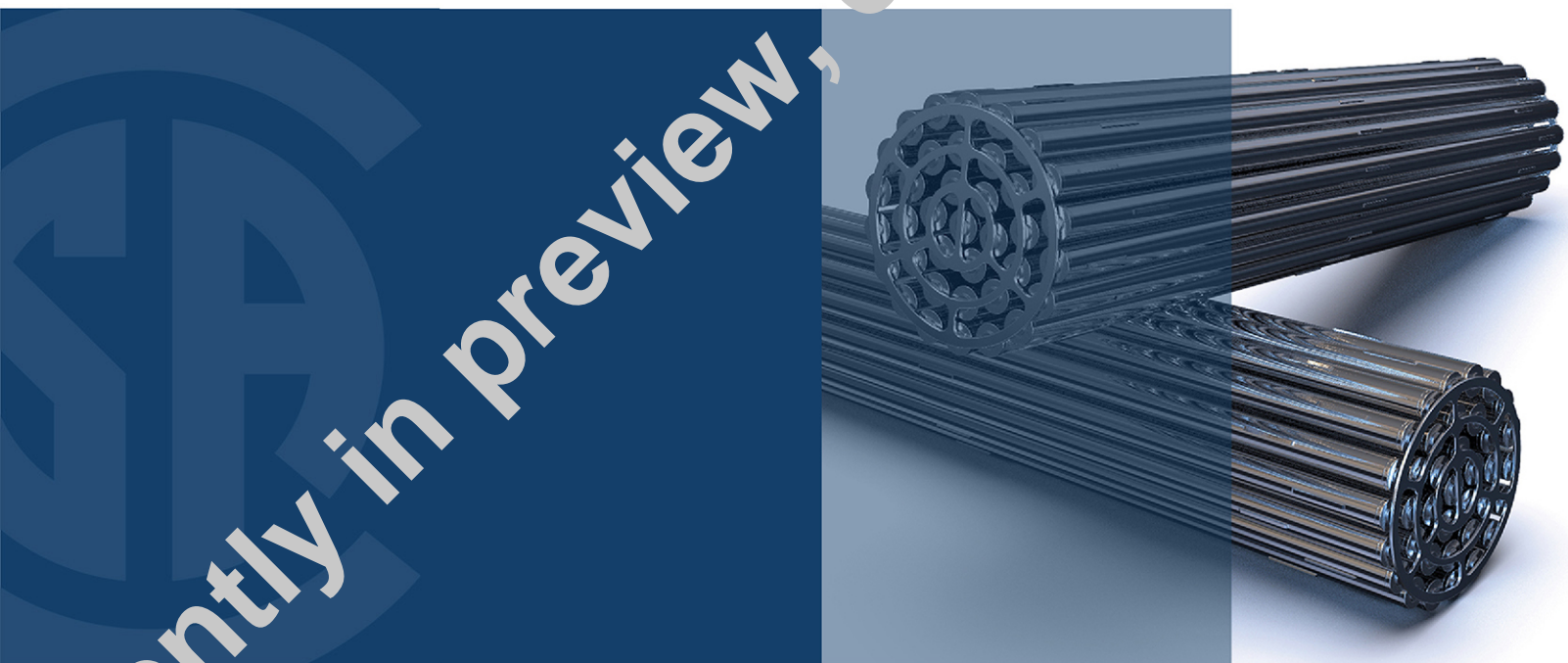


Periodic inspection of CANDU nuclear power plant containment components



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Standards Update Service

CSA N285.5:22
October 2022

Title: *Periodic inspection of CANDU nuclear power plant containment components*

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CSA N285.5:22
***Periodic inspection of CANDU
nuclear power plant containment
components***



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*Published in October 2022 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3*

*To purchase standards and related publications, visit our Online Store at www.csagroup.org/store/
or call toll-free 1-800-463-6727 or 416-747-4044.*

ISBN 978-1-4883-4565-4

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Contents

Technical Committee on Periodic Inspection of Nuclear Power Plant Components 4

Preface 7

1 Scope 9

2 Reference publications 10

3 Definitions 11

4 General requirements 16

4.1 Operating organization responsibilities 16

4.2 Postulates 17

4.2.1 Nature of periodic inspection 17

4.2.2 Prerequisites 17

4.2.3 Power plant operation 17

4.3 Components subject to periodic inspection 17

4.3.1 General 17

4.3.2 Exemptions 18

4.4 Radiation exposure 18

4.5 Accessibility 18

4.6 Program documents 19

5 Examination methods and procedures 19

5.1 General 19

5.2 Examination methods 20

5.2.1 General 20

5.2.2 Visual examination 20

5.2.3 Surface examination 20

5.2.4 Volumetric examination 20

5.2.5 Thickness measurement 20

5.3 Examination procedures 21

6 Examination personnel 22

6.1 Certification 22

6.2 Qualification 22

6.3 Records 22

7 Inaugural inspection 22

7.1 Timing 22

7.2 Repaired/replaced components 23

7.3 Amendments to periodic inspection program 23

7.4 Extent of inaugural inspection 23

7.5 Inaugural inspection area 23

7.6 Inaugural inspection acceptance standards 23

7.7 Confirmatory inspection 23

8	Periodic inspection	24
8.1	General	24
8.2	Plastic materials	24
8.3	Assessment and determination of examination methods	24
8.3.1	Loadings	24
8.3.2	Loss of material	24
8.3.3	Environmentally assisted cracking	25
8.3.4	Discontinuities	26
8.4	Extent and areas of examination	26
8.4.1	General	26
8.4.2	Visual examination	27
8.4.3	Thickness measurement — Loss of material	27
8.4.4	Surface and volumetric examination for environmentally assisted cracking	28
8.4.5	Surface and volumetric examination for discontinuities	28
8.5	Identical components	30
8.5.1	Single reactor units or common containment systems	30
8.5.2	Multi-unit power plants	30
8.6	Periodic inspection interval	31
8.6.1	General	31
8.6.2	Components requiring vacuum building outage for examination	31
8.6.3	Components requiring dismantling for examination	31
8.6.4	Multi-unit power plants	31
8.6.5	Components subjected to conditions not considered in design specification	32
9	Evaluation of examination results and dispositioning	32
9.1	Evaluation	32
9.2	Acceptance standards and records	32
9.2.1	Acceptance standards — General	32
9.2.2	Visual examination	33
9.2.3	Surface examination	34
9.2.4	Volumetric examination	34
9.2.5	Thickness measurement	35
9.3	Dispositioning	35
9.3.1	General	35
9.3.2	Dispositioning while reactor at power	35
9.3.3	Dispositioning for reactor not at power	36
9.3.4	Dispositioning for minor conditions	36
10	Repair and replacement	37
10.1	General	37
10.2	Periodic inspection program review and amendment	37
10.3	Inaugural inspection requirements	38
10.4	Periodic inspection of components removed from service	38
11	Modifications	38
11.1	General	38
11.2	Program amendment	38
12	Recording requirements and reports	38

12.1	General requirements	38
12.2	Periodic inspection records	39
12.3	Reports	39
12.3.1	Inaugural inspection reports	39
12.3.2	Periodic inspection reports	39

Annex A (informative) — Periodic inspection, material property monitoring, and test programs for fibreglass reinforced plastic (FRP) containment components 58

Annex B (informative) — Guide for periodic inspection 68

Annex C (informative) — Guidance on obtaining AHJ acceptance of non-destructive examination personnel certified to an operating organization-specified standard 77

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Preface

This is the sixth edition of CSA N285.5, *Periodic inspection of CANDU nuclear power plant containment components*. It supersedes the previous editions published in 2018, 2013, 2008, 1990, and 1988.

This Standard is one of a series of Standards intended to provide uniform requirements for CANDU® nuclear power plants.

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

This Standard provides uniform rules for the periodic inspection of containment components, including containment pressure suppression systems in CANDU nuclear power plants. It has been revised and updated to account for new knowledge and experience gained from CANDU research and operations, advances in technology, and changes to the regulatory framework in Canada.

The major changes to this edition include the following:

- a) Addressed submission requirements for confirmatory inspections. Revised Clause [12.3.1](#).
- b) Removed requirement for periodic inspection of ligaments in mechanical coupling. Revised Clauses [8.4.5.2](#) and [8.4.5.4](#) and Table [3](#).
- c) Added new Clause [4.6.4](#) to permit submission of a justification for a deviation from requirements of Standard. AHJ acceptance of deviation is required.
- d) Updated Table [3](#) to align with inaugural and periodic inspection areas and requirements as defined in Clauses [7](#) and [8](#). Revised Clauses [7.5.2](#), [8.1](#), [8.3.1.3](#), [8.3.3.3](#), [8.4.3.1](#), and [8.4.5.4](#) and Table [3](#).
- e) Introduced new Annex [C](#) guidance on inspection personnel qualification (an adaptation of CSA N285.4, Annex J). Added a definition for “proficiency demonstration”. Revised Clauses [4.1](#) and [6](#).
- f) Updated requirements for acceptance standards for visual examinations, indications on coated and painted surfaces, and minor condition disposition process. Revised Clauses [9.2.2.1.1](#), [9.2.2.1.2](#), and [9.2.1.4](#) and Table [4](#).
- g) Incorporated other changes to facilitate application and maintain harmonization across CSA N285.4, CSA N285.5, and CSA N285.7:
 - i) Updated definitions for consistency with standardized definitions from CSA, ASME, and CSA N285.4, CSA N285.5, and CSA N285.7. Updated Clauses [3](#) and [8.4.3.2](#).
 - ii) Added guidance note to dispositioning Clauses [9.3.2](#), [9.3.3](#), and [9.3.4](#) to consider adjacent and interfacing components, pipe runs, and supports in determining the need for additional examinations and corrective actions.
 - iii) Updated Annex [B](#) to further align with Annex A of CSA N285.4.
 - iv) Updated the “corrosion related cracking”, “relevant indication”, “allowable indication criteria”, “allowable monitoring indication criteria”, and “allowable reporting indication criteria” phrases. Revised Clauses [3](#), [8.3.1.3](#), [8.3.3](#), [8.4.4](#), [9.2.3.1.2](#), [9.2.3.2.2](#), and [9.2.4.1.4](#) and Figure [2](#).
 - v) Incorporated changes from French verification process (revised Clause [3](#) and Table [4](#)).

The CSA N-Series of Standards provide an interlinked set of requirements for the management of nuclear facilities and activities.

CSA N286 provides overall direction to management to develop and implement sound management practices and controls, while the other CSA Group 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 might provide more specific direction for those requirements.

Users of this Standard are reminded that the operation of nuclear facilities in Canada is subject to the requirements of the *Nuclear Safety and Control Act* and Regulations. The Canadian Nuclear Safety Commission might impose additional requirements to those specified in this Standard.

In order to facilitate adoption by the authority having jurisdiction, this Standard includes some regulatory provisions.

This Standard was prepared by the Technical Committee on Periodic Inspection of Nuclear Power Plant Components under the jurisdiction of 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 and include “Request for interpretation” in the subject line:*
 - a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
 - 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.*

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- 5) *This Standard is subject to review within five years from the date of publication. 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.*

CSA N285.5:22

Periodic inspection of CANDU nuclear power plant containment components

1 Scope

1.1

This Standard specifies requirements for the periodic inspection of containment system components, including containment pressure suppression systems, in CANDU nuclear power plants.

1.2

The periodic inspection requirements specified in this Standard (see Annex B for additional guidance) provide assurance of the structural integrity of metallic and plastic containment system components.

Note: *The following are addressed by other Standards or procedures as specified in Table 1:*

- a) *leak tightness and operability requirements; and*
 - b) *examination and testing requirements for concrete, embedded parts, and elastomeric seals.*
- Periodic inspection, material property monitoring, and test programs for fibreglass reinforced plastic (FRP) containment components are included in Annex A.*

1.3

This Standard specifies requirements for

- a) periodic inspection;
- b) accessibility;
- c) examination methods and procedures;
- d) personnel qualifications;
- e) examination criteria;
- f) periodic inspection program development;
- g) periodic inspection frequency;
- h) evaluation of periodic inspection results;
- i) dispositioning of defects;
- j) repairs;
- k) documentation; and
- l) records.

1.4

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.