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TITLE
NUCLEAR MANAGEMENT SYSTEM ADMINISTRATION

AUTHORIZATION	
DOCUMENT OWNER:	Shanthini Janarthanan Manager Stakeholder Relations
AUTHORIZATION AUTHORITY:	Zar Khansaheb VP Generation Strategy and Innovation
APPROVAL FOR ISSUE:	Jack Vecchiarelli V.P., Nuclear Regulatory Affairs

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PURPOSE AND SCOPE	
This document describes the business framework and processes established for OPG’s licenced nuclear facilities to demonstrate effective implementation and compliance with the requirements set out in CSA N286-12, Management System Requirements for Nuclear Facilities, as referenced within each facility’s licence conditions.	

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EXCEPTIONS

None.

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1.0 DIRECTION

The framework of programs and processes described within this document apply to all program activities defined in N-CHAR-AS-0002, Nuclear Management System, unless otherwise specified in governance.

Effective implementation and execution of these programs and processes support OPG's licenced nuclear facilities in achieving their safety objectives, ensuring effective monitoring of performance against those objectives, and fostering a healthy safety culture.

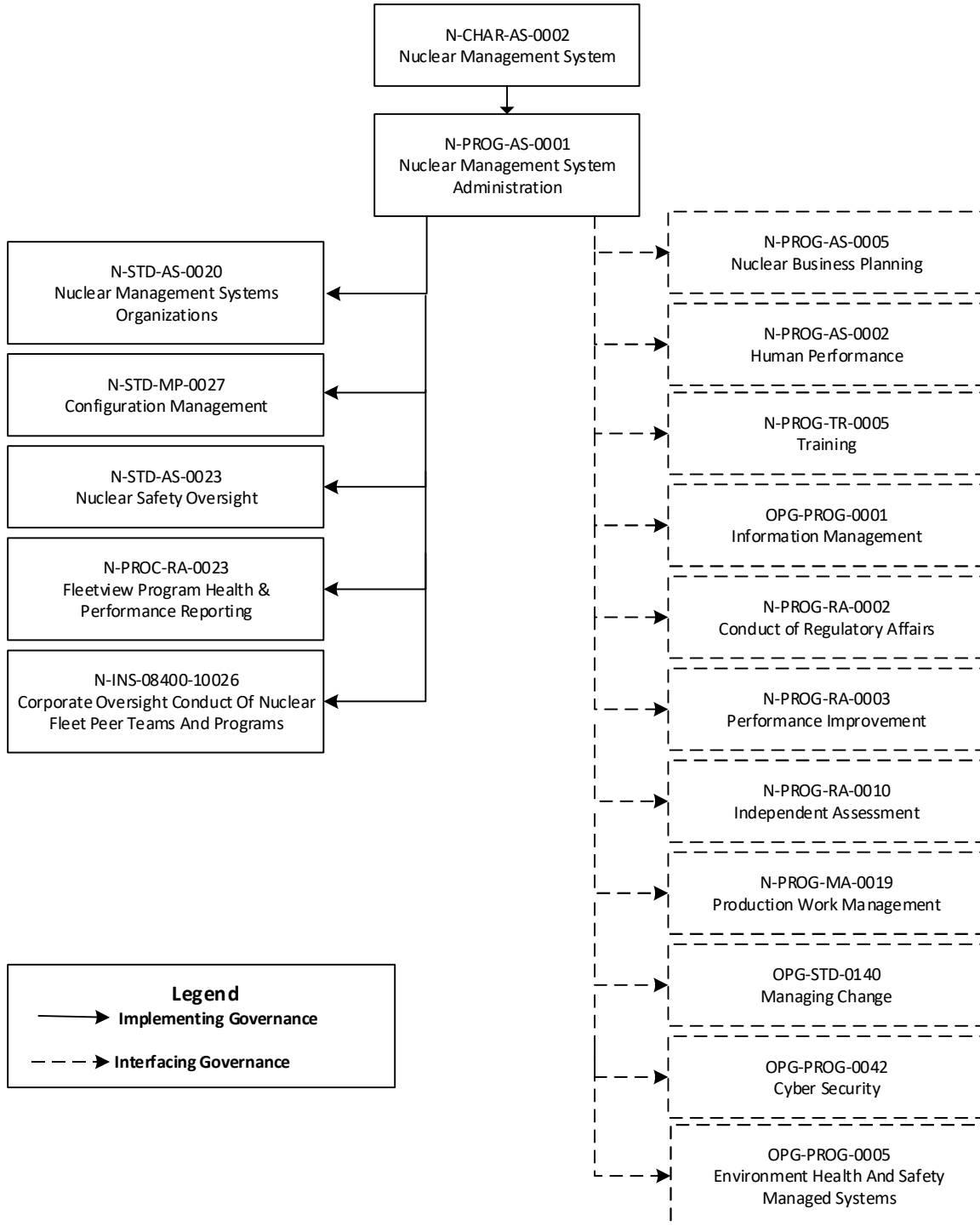
The Nuclear Management System Administration program describes the integration of programs and processes used by OPG nuclear facilities to satisfy CSA N286-12 requirements and to carry out licensed activities in a safe manner.

The governance framework for this program is defined in Figure 1: Nuclear Management System Administration Governance Framework, and displays the hierarchy of documents required for program implementation.

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Figure 1: Nuclear Management System Administration Governance Framework



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1.1 Nuclear Management System for OPG Nuclear and Interfacing Organizations [B1][B7]

The management and operation of OPG nuclear facilities is defined by the programs and associated governing documents as described in N-CHAR-AS-0002, Nuclear Management System.

A management system brings together in a planned and integrated manner the processes necessary to satisfy all regulatory requirements and to carry out licensed activities for OPG’s nuclear facilities with safety as the overriding priority. The requirement to effectively implement a management system is part of each nuclear facility’s licence. Additionally, an effectively implemented management system enables the organization to achieve its safety objectives by monitoring its performance against those objectives and striving to foster a healthy nuclear safety culture.

The Nuclear Management System Administration program, N-PROG-AS-0001, provides the business framework integrated through programs and processes to demonstrate effective implementation and compliance with the requirements set out in CSA N286-12 Management System Requirements for Nuclear Facilities, and N-CHAR-AS-0002. These requirements apply to all workers within OPG supporting licensed activities at nuclear facilities, including corporate organizations, suppliers, and contractors, for the life cycle of the nuclear facility from the initial conception through to the completion of decommissioning.

1.1.1 Management System Principles [B2][B6]

The CSA N286-12 standard is based on a set of 12 management system principles derived from industry best practices. These principles are supported by generic requirements that apply broadly to all requirements within the standard. The standard also outlines specific requirements which apply to particular types of nuclear facilities such as high energy power reactors and waste facilities.

The management system principles apply to both generic and specific requirements within the N286-12 standard and are to be applied using a graded risk-based approach taking into account the safety significance and complexity of the work.

The following 12 management system principles apply to all workers performing or supporting activities at a nuclear facility:

- (1) Safety is a paramount consideration guiding decisions and actions
- (2) The business is defined, planned, and controlled
- (3) The organization is defined and understood
- (4) Resources are managed
- (5) Communication is effective
- (6) Information is managed
- (7) Work is managed
- (8) Problems are identified and resolved

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- (9) Changes are controlled
- (10) Assessments are performed
- (11) Experience is sought, shared, and used
- (12) Management system is continually improved

The Nuclear Management System has programs in place to satisfy the generic requirements. The programs which satisfy generic requirements are referred to as “generic programs” and apply to all programs within the management system unless otherwise exempted.

Both the generic and specific CSA N286-12 requirements are fulfilled through the implementation of programs within N-CHAR-AS-0002, and apply to all related work for OPG nuclear facilities and supporting organizations through a graded approach.

1.1.2 Graded Approach [B3]

The generic and specific requirements of CSA N286-12 may be applied in a manner commensurate with risk. Using a graded risk-based approach, all requirements shall apply to varying degrees depending upon the safety significance and complexity of the work being performed.

If a graded approach is used, the criteria and process used for grading shall be explicitly defined within program governance and documented. While safety is the paramount consideration in the risk grading, other criteria may be used, including but not limited to:

- Consequence of error
- Design complexity
- Process complexity
- Service characteristics
- Service conditions
- Economics
- Past performance

1.2 Generic Programs within the Nuclear Management System [B4]

The following set of programs and standards are generic within the Nuclear Management System, and therefore interface with all other programs within the framework of the Nuclear Management System:

- N-PROG-AS-0001, Nuclear Management System Administration
- N-PROG-AS-0002, Human Performance

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- N-PROG-AS-0005, Nuclear Business Planning
- N-PROG-TR-0005, Training
- N-PROG-RA-0002, Conduct of Regulatory Affairs
- N-PROG-RA-0003, Performance Improvement
- N-PROG-MA-0019, Production Work Management
- N-PROG-RA-0010, Independent Assessment
- OPG-STD-0140, Managing Change
- OPG-PROG-0001, Information Management
- OPG-PROG-0042, Cyber Security
- OPG-PROG-0005, Environment Health And Safety Managed Systems

The generic requirements apply equally to *Interfacing Organizations* that support activities within the nuclear facilities. *Interfacing Organizations* that own and/or implement requirements at nuclear facilities must fulfill the generic requirements either with the existing generic programs and standards above or with equivalent processes, which are verified to be compliant with all relevant CSA N286-12 requirements per N-FORM-11604 as described in Section 1.3.2.

A full mapping of the generic and specific N286-12 requirements and the corresponding governing document(s) that fulfill each requirement are described in N-LIST-08130-10025, CSA N286-12 to OPG Governance Cross-Matrix.

1.2.1 Interfacing Document Guidelines [B6]

Each program within the Nuclear Management System is required to identify both implementing and interfacing documents as per the requirements in OPG-STD-0001, Requirements for Administrative Governing Documents.

N-PROG-AS-0001 identifies all of the generic program documents listed in Section 1.2 as interfacing. As such, other than N-PROG-AS-0001, the generic program documents listed in Section 1.2 are not required to be listed as interfacing documents within other programs, as all programs within the Nuclear Management System are required to interface with the generic program documents to fulfill their requirements, unless otherwise stated.

- If N-PROG-AS-0001 is identified as an interfacing program, all other generic program documents listed in Section 1.2 are thereby implicitly interfacing with that program and are not required to be explicitly listed as part of the programs interfacing document list.
- Other than N-PROG-AS-0001, the generic program documents listed in Section 1.2 are not required to list the programs that implicitly interface with them via N-PROG-AS-0001. Instead, generic program documents listed in Section 1.2 would identify N-PROG-AS-0001 as

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an interfacing program thereby linking it to all other programs within the Nuclear Management System that use those generic processes.

Program owners may list generic programs in their interfacing documents list if the interface satisfies a specific program requirement, rather than the generic N286-12 requirements.

1.3 Nuclear Management System Implementing Governance and Quality Requirements

The following standards, procedures, and supporting documents are required to implement this program and the quality requirements of the Nuclear Management System.

1.3.1 Nuclear Management System Organizations [B5]

N-STD-AS-0020, Nuclear Management System Organizations, defines and communicates the organizational structure, responsibilities, and authorities that support the Nuclear Management System. This standard includes a summary of the positions holding Authorization Authority for programs within the Nuclear Management System in the Enterprise Operations and Interfacing organizations.

1.3.2 Management System Quality Assurance for Interfacing Organizations

N-FORM-11604, Nuclear Quality Program Checklist, is to be completed by a Program Owner, SPOC, or delegate for any initial issuance of a governing program document, owned by an *Interfacing Organization*, which implements licensed activities in N-CHAR-AS-0002. Additionally, this form is to be completed for any intent revision of the subject program which adds, removes, or changes licensing bases in its scope.

This form documents and verifies the applicability of generic programs and standards identified in Section 1.2 or otherwise identifies the set of governance that are to be followed by the subject program for compliance with each of the generic management system requirements of CSA N286-12. Any program supporting activities within N-CHAR-AS-0002 shall satisfy these generic requirements through either the use of the existing generic programs listed in Section 1.2 or equivalent processes which comply with all relevant N286-12 requirements. N-FORM-11604 also documents any specific N286-12 requirements applicable to subject program. The form should be attached to each applicable program in Asset Suite for assurance that the Program Owner has assessed and addressed the requirement to fulfill the applicable N286-12 requirements.

Continued adherence to CSA N286-12 requirements in a program governance document owned by an *Interfacing Organization* are monitored by N-PROC-RA-0023, Fleetview Program Health and Performance Reporting and N-PROG-RA-0010, Independent Assessment.

1.3.3 CSA N286-12 to OPGN Governance Cross-Matrix

A complete program-level mapping of governing documents that fulfill both the generic and specific requirements of CSA N286-12 is contained within N-LIST-08130-10025, CSA N286-12 to OPG Governance Cross-Matrix. This document provides a programmatic mapping between CSA N286-12 requirements and individual programs. Program Owners shall ensure that specific bases are captured within their program document, indicating the processes used to implement each requirement.

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1.3.4 Configuration Management [B10][B14]

N-STD-MP-0027, Configuration Management, draws requirements from CSA N286.10-16, Configuration Management for High Energy Reactor Facilities. N-STD-MP-0027 ensures Ontario Power Generation Nuclear facilities are operated, maintained, and modified in conformance with their design and licensing basis.

This standard applies governance addressing:

- (a) Facility physical configuration, supporting hardware, and software, including: facility Systems, Structures, or Components (SSCs), waste management facilities, training simulators, engineered tools, nuclear fuel, and process control computers.
- (b) Policies, programs and procedures which contain information that could impact the design and licensing basis, physical configuration, or any configuration item or information.
- (c) Staff that support operation and preservation of OPG assets (e.g., site staff, Nuclear Engineering, Learning and Development, Performance Improvement, Nuclear Operations, and contract service providers).

1.3.5 Nuclear Management System Software and Supporting Technologies [B8][B9]

Nuclear Management System software and supporting technologies include any IT software, system, or service that is required to meet the requirements of CSA N286-12.

Program Owners shall ensure that such software and supporting technologies meet the following quality requirements:

- (a) The software or technology shall be assessed for adequacy, cyber security and approved for use.
- (b) The software shall be placed under configuration management and change control.
- (c) The software shall be classified as per N-PROG-MP-0006, Software, and the appropriate governance followed.
- (d) Software or technology Cyber Essential Assets (CEAs) shall be identified and classified in accordance with OPG-PROG-0042, Cyber Security.
- (e) CEAs shall be placed under configuration management and change control in accordance with OPG-PROG-0042.

IT support requirements should be identified by the Program Owner to the Director, IT Services.

Requirements for software and supporting technologies that directly involve Nuclear SSCs are addressed through N-PROG-MP-0006, and N-PROG-MP-0001, Engineering Change Control.

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1.4 Nuclear Management System Effectiveness [B11][B12][B13]

The management system undergoes continual improvement through trend analysis of adverse issues and periodic assessments.

The following tools and processes are used to monitor indicators, detect adverse trends, analyze and resolve gaps, and confirm the effectiveness of the Nuclear Management System.

1.4.1 Fleetview Program Health and Performance Reporting

N-PROC-RA-0023, Fleetview Program Health and Performance Reporting, describes the process for performing a program health and performance review, and reporting results to the Nuclear Executive Committee. This process ensures that *Top Management* assesses the effectiveness of the Nuclear Management System, and opportunities for improvement are sought out to drive improvements in safety.

Each Program Owner shall review and report on the performance and overall health of their Program, in accordance with N-PROC-RA-0023.

Through the Fleetview Program Health and Performance Reporting process, the Program Owner shall establish performance indicators and targets. Each program shall be monitored against these indicators to measure overall effectiveness, identify adverse trends, and initiate corrective actions.

1.4.2 Nuclear Executive Committee Oversight

Top Management is the highest ranking worker responsible for the nuclear facility and therefore the Nuclear Management System, which within OPG is the Chief Nuclear Officer (CNO), hereafter referred to as CNO. The CNO may delegate aspects of oversight to the Nuclear Executive Committee (NEC), and leaders from select *Interfacing Organizations*. The NEC monitors the effectiveness of the Nuclear Management System through the Fleetview Reporting process per N-PROC-RA-0023.

1.4.3 Corporate Oversight Conduct Of Nuclear Fleet Peer Teams And Programs

A Peer Team is a forum for bringing together the Centre-led Functional Area Manager (CFAM)/Program Owner and the Site Functional Area Managers (SFAM) responsible for a Nuclear fleet program in order to drive measurable improvement in areas of Program execution, performance, convergence, efficiency, and cost reduction across the fleet. A Peer Team is defined and governed by N-INS-08400-10026, Corporate Oversight Conduct Of Nuclear Fleet Peer Teams And Programs.

1.4.4 Nuclear Safety Oversight

N-STD-AS-0023, Nuclear Safety Oversight, summarizes the framework and accountabilities for nuclear safety oversight, as well as the external and internal processes used for oversight and assessment of nuclear safety. This standard applies to all aspects of nuclear operations, and to all work and other activities undertaken at or in support of the stations.

This standard also encompasses the following third-party reviews that provide independent effectiveness reviews for functional areas, sites, or programmatic assessments:

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- Nuclear Oversight Audits
- World Association of Nuclear Operators (WANO) Areas for Improvement and Recommendations
- Nuclear Safety Review Board and Waste Review Board Findings and Insights

1.5 Roles and Accountabilities Applicable to Programs within the Nuclear Management System

1.5.1 Authorization Authority of a Program within the Nuclear Management System

The Authorization Authority within the Nuclear Management System is delegated by the CNO to members of OPG's Senior Leadership Team who are accountable for the change management of a governing program document(s) and to ensure the integrity of N-CHAR-AS-0002 is maintained.

Senior Leadership Team refers to OPG staff in a Band E position or higher.

The Authorization Authority's roles and accountabilities are to:

- 1.5.1.1 Approve Programs as delegated by the CNO to ensure integrity of N-CHAR-AS-0002 is maintained within the licensing basis for each nuclear facility.

1.5.2 Program Owner of a Program within the Nuclear Management System

The Program Owner is the position-holder who has the accountability for content, accuracy, and execution of a governance program document. A Program Owner is the document owner of the program, and assumes the generic accountabilities attributed to document owners as specified in OPG-PROC-0001, Process Administrative Governance Documents.

A Program Owner's roles and accountabilities are to:

- 1.5.2.1 Provide oversight that administrative Governance requirements, as per OPG-STD-0001, Requirements for Administrative Governance Documents, are fulfilled.
- 1.5.2.2 Conduct reviews of processes to identify preventive actions and improvements.
- 1.5.2.3 Provide oversight by monitoring and routinely reporting on overall program effectiveness through the use of a common set of metrics in accordance with N-PROC-RA-0023:
- (a) Drive for consistency of program application.
 - (b) Ensure industry best practices and internal and external Operating Experience are assessed and implemented as appropriate.
 - (c) Track indicators such that performance of the program is clear, and that immediate adjustment of the process is possible if necessary.

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- (d) Utilize additional indicators to monitor the performance of the program and to demonstrate whether the specified targets have been reached.
- (e) Periodically monitor and assess the effectiveness and consistent execution of the programs governance documents, such as procedures and standards. The impact of assessments, and any significant related corrective actions should be captured in the Fleetview Program Health and Performance reports.

1.5.2.4 Manage and communicate program requirements related to the Nuclear Management System Administration program:

- (f) Ensure all Nuclear Management System activities in the program are conducted in accordance with the Nuclear Management System Administration program, or an alternate set of approved governance that establishes and implements the generic management system requirements of CSA N286-12, Section 4.
- (g) Classify all software required to support the program in accordance with N-PROG-MP-0006, and apply the required governance controls defined in N-PROG-MP-0006, N-PROG-AS-0001, or OPG-CHAR-0002, Chief Information Office Management
- (h) Establish change management plans for program changes as per OPG-STD-0140, Managing Change.

2.0 ROLES AND ACCOUNTABILITIES

2.1 Chief Nuclear Officer (CNO)

The CNO is the highest ranking worker responsible for the Nuclear Management System.

- 2.1.1 May delegate aspects of oversight of the Nuclear Management System to the Nuclear Executive Committee (NEC) members.

2.2 Vice-President, Generation Strategy and Innovation

- 2.2.1 Assumes Authorization Authority role and generic accountabilities for the Nuclear Management System Administration program as described in Section 1.5.1.

2.3 Manager, Stakeholder Relations

- 2.3.1 Assumes Program Owner role for and generic accountabilities for this program as described Section 1.5.2.
- 2.3.2 Ensures governance changes are reviewed for compliance with CSA N286-12 requirements.
- 2.3.3 Provides oversight to ensure that *Interfacing Organizations* adhere to requirements of the Nuclear Management System Administration program to satisfy applicable license requirements.

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3.0 DEFINITIONS AND ACRONYMS

3.1 Definitions

Interfacing Organization is an organization that does not report to the CNO, but owns and/or executes programs within the Nuclear Management System, and works in partnership with the CNO to ensure the integrity of the Nuclear Management System is maintained.

Top Management is the highest ranking worker responsible for the nuclear facility, and therefore the Nuclear Management System. Within OPG, this is the Chief Nuclear Officer (CNO).

3.2 Abbreviations and Acronyms

CFAM	Centre-led Functional Area Manager
CNO	Chief Nuclear Officer
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
IT	Information Technology
NEC	Nuclear Executive Committee
SFAM	Site Functional Area Manager
SPOC	Single Point of Contact
SSC	Systems, Structures, or Components
WANO	World Association of Nuclear Operators

4.0 BASES AND REFERENCES

4.1 Bases

- [B1] N286-12 Clause 4.1.1, Management System shall be defined and implemented
- [B2] N286-12 Clause 4.1.2, Management System principles
- [B3] N286-12 Clause 4.1.3, Graded Approach
- [B4] N268-12 Clause 4.2(c), Interactions between individuals, technology, and the organization
- [B5] N286-12 Clause 4.4(a), Management shall define organizational structure
- [B6] N286-12 Clause 4.4(b), Management shall define internal and external interfaces
- [B7] N286-12 Clause 4.7.1, Management shall define, document, control, and maintain processes that comprise the Management System
- [B8] N286-12 Clause 4.8.2(e), Conduct of work shall be authorized and carried out using controlled processes

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- [B9] N286-12 Clause 4.8.2(f), Conduct of work shall be authorized and carried out using controlled practices
- [B10] N286-12 Clause 4.10, Requirements for changes
- [B11] N286-12 Clause 4.13(b), Management shall assess the effectiveness of the Management system
- [B12] N286-12 Clause 4.13(d), Management shall maintain awareness of changes in its business environment
- [B13] N286-12 Clause 4.13(e), Management shall seek opportunities to improve processes
- [B14] N286-12 Clause 7.5, Configuration Management

4.2 References

4.2.1 Performance References

CSA N286-12, Management System Requirements for Nuclear Facilities
N-CHAR-AS-0002, Nuclear Management System
N-FORM-11604, Nuclear Quality Program Checklist
N-INS-08400-10026, Corporate Oversight Conduct Of Nuclear Fleet Peer Teams And Programs
N-LIST-08130-10025, CSA N286-12 to OPG Governance Cross Matrix
N-PROC-RA-0023, Fleetview Program Health and Performance Reporting
N-PROG-MP-0006, Software
N-STD-AS-0020, Nuclear Management System Organizations
N-STD-AS-0023, Nuclear Safety Oversight
OPG-PROG-0001, Information Management

4.2.2 Developmental References

GS-G-3.1, IAEA Safety Standard: Application of the Management System for Facilities and Activities
INPO 19-003, Staying on Top - Advancing a Culture of Continuous Improvement
INPO 20-001, Gap, Driver, Actions That Get Results
N286.0.1-14, Commentary on N286-12, Management System Requirements for Nuclear Facilities
N286.10-16, Configuration Management for High Energy Reactor Facilities
OPG-STD-0001, Requirements for Administrative Governance Documents
PROL- 13.01/2025, Nuclear Power Reactor Operating Licence, Darlington
PROL- 48.00/2018, Nuclear Power Reactor Operating Licence, Pickering

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5.0 REVISION SUMMARY

This is an **intent** revision.

- DCR# 144530: Section 1.5.2.3 updated to clarify that Program Owners have sufficient control over implementation of governance documents such as programs, procedures and standards. This DCR addresses CNSC Action Notice OPG-2017-003-AN03 Notice 4(b), (Ref. N-CORR-00531-18574).
- DCR# 144708: Section 1.2.1 updated to clarify program interfacing references.
- DCR# 144848: Section 1.3.4 updated with bases for N286-12 clause 4.10 and 7.5.
- DCR# 144927: Section 1.2 updated title of N-PROG-RA-0003 to Performance Improvement (Formerly called Corrective Action).
- DCR# 146042: Section 1.3.5 updated to reference cyber security.
- DCR# 146103: Updated reference to N-INS-08400-10026 to Corporate Oversight, Conduct of Nuclear Fleet Peer Teams and Program.
- DCR#148030: Section 1.5.1 updated to define Authorization Authority role.
DCR#154899: Updated roles and accountabilities in document to reflect recent org changes.
- DCR#146876: Section 1.2 added bases for N286-12 clause 4.2 (c).
- Section 1.2 and Figure 1: Added OPG-PROG-0005, Environment Health And Safety Managed Systems (formally OPG-PROG-0010, Health And Safety Management System Program) as generic program and interfacing program.
- Section 1.2: added OPG-PROG-0042, Cyber Security as generic program.
- Section 3.1: Updated definition of Interfacing Organizations.
- DCR#156368: Added INPO 19-003 and INPO 20-001 to developmental references