HITACHI

GE Hitachi Nuclear Energy

NEDO-33980
Revision 1
May 2023

Non-Proprietary Information

BWRX-300 Darlington New Nuclear Project (DNNP) Fire Protection System Preliminary Code Compliance Review Report

INFORMATION NOTICE

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REVISION SUMMARY

Revision #	Section Modified	Revision Summary
0	All	Originally Issued as Proprietary Version NEDC-33980P Rev 0
1	All	Initial Issue as Non-Proprietary Version

SYSTEM ABSTRACT

This Code Compliance Review (CCR) is an assessment for compliance with the applicable sections of the Codes of construction and the Codes and Standards (C&S) referenced therein, including:

- National Building Code of Canada (NBCC)
- National Fire Code of Canada (NFCC)
- CSA N293-12, Fire Protection for Nuclear Power Plants (Reference 7-1)
- CSA N293S1:21, Supplement #1 to N293-12, Fire Protection for Nuclear Power Plants (Application to Small Modular Reactors) (Reference 7-2)

The CCR includes documentation of any deviations from the prescriptive requirements of the applicable Codes and Standards, and how the intent of the requirements is met using equivalent or alternative means. Alternative compliances are submitted to the Canadian Nuclear Safety Commission (CNSC) for approval separate from this report submission.

This preliminary CCR is assessing gaps to be closed under detail design rather than Code alternatives or deviations. There could be some instances of use of a graded approach and an alternative to the prescriptive requirements.

1.0 INTRODUCTION

1.1 Purpose

The purpose of this review is to provide information on GE-Hitachi Nuclear Energy (GEH) understanding of the CNSC expectations and regulatory requirements pertaining to Fire Protection (FP). It also confirms that the design, as it is evolving, is meeting the CNSC expectations for FP.

1.2 Scope

The CCR:

A. Addresses all applicable requirements in CSA N293-12 (Reference 7-1) and include applicable sub-tier Codes and Standards

B. Covers all locations within the protected area and areas external to the protected area that are under the scope of this Standard, including non-nuclear exposures

C. Assesses the facility's design and operation against the applicable Codes of construction (e.g., NBCC), the current Fire Code and the applicable nuclear standards

The CCR includes a review or references design input documents of fire protection Structures, Systems, and Components (SSC), such as:

- Suppression systems (e.g., water supply recirculation and pumps)
- Detection systems
- Manual fire suppression equipment (e.g., portable fire extinguishers, hose stations, and fire hydrants)
- Storage, supply, and use of flammable liquids and gases
- FP features (e.g., fire separations, fire doors, and penetration seals)

Where the design of the fire protection feature has been reviewed by an independent third party, the third party review report should be referenced in the CCR (Third Party Review of Fire Protection [[ ]]). Note that a preliminary third party review is currently being performed and a report is to be generated. If alternative solutions are used, the CCR outlines how the intent of the requirements is met. The CCR refers to the correspondence number under which the alternate was approved by the CNSC.

2.0 DESCRIPTION OF FIRE PROTECTION DESIGN STRATEGY

The BWRX-300 leverages the evolutionary Boiling Water Reactor (BWR) FP design strategy of the Nuclear Power Plant, including that of external buildings and SSC integral to plant operation. This strategy requires that SSC important to safety be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat-resistant materials are used wherever practical throughout the unit, particularly in locations such as the containment and Control Room.

Fire detection and firefighting systems of appropriate capacity and capability are provided and designed to minimize the adverse effects of fires on SSC important to safety. This strategy also requires that firefighting systems be designed to ensure that their rupture or inadvertent operation does not significantly impair the safety capability of these SSC.

The BWRX-300 design program for FP addresses the following FP requirements under REGDOC 2.5.2, Design of Reactor Facilities: Nuclear Power Plants, Section 5.12.1 (Reference 7-3):

A. Prevent the initiation of fires

B. Limit the propagation and effects of fires that do occur by:

   1. Quickly detecting and suppressing fires to limit damage

   2. Confining the spread of fires and fire byproducts that have not been extinguished

C. Prevent the loss of redundancy in safety class and safety support systems due to fires

D. Ensure the safe shutdown capabilities in the event of a fire by:

   1. Achieving and maintaining the reactor in subcritical conditions

   2. Achieving and maintaining decay heat removal

E. Ensure that monitoring of critical safety parameters remains available in the event of a fire

F. Prevent exposure, uncontrolled release, or dispersion of hazardous substances, nuclear material, or radioactive material due to fires

G. Prevent the detrimental effects of event mitigation efforts, both inside and outside of containment

H. Ensure structural sufficiency and stability in the event of fire

2.1 Fire Protection Design Codes and Standards

The applicable BWRX-300 FP design Codes and Standards are provided in Applicable Codes and Standards, [[ ]].

The Code compliance tables outline the basis of code compliance and any exemptions or alternatives that are different from Canadian codes and standards that provide equivalent requirements and level of safety. It is expected that additional exemptions and alternatives to Canadian FP codes and standards will be developed as the design detail progresses.

The CCR will be completed as part of the Fire Protection Program development. The codes and standards required for BWRX-300 FP system design and program development, with the applicable revisions, will be identified and distributed to all designers involved.

3.0 METHODOLOGY

This CCR documents the state of compliance of the station and is based on the format used for the Darlington Nuclear Generation Station (DNGS) CCR document NK38-REP-78000-10001. This CCR report is prepared for DNNP-1, BWRX 300 Generating Unit. The methodology of the DNNP-1 document generally consisted of the following tasks:

A. Review of CSA N293-12 (Reference 7-1), NRC NBCC-2015, *National Building Code of Canada 2015* (Reference 7-4), and NRC NBCC-2015, *National Building Code of Canada 2015* (Reference 7-5) to identify design requirements applicable to each station building, which included a review of other applicable codes and standards referenced therein. Compliance matrices of DNNP-1 FP reviewed against the applicable codes are provided as separate tables in this report:

   1. Table 4-1, CSA N293 Compliance Table
   2. Table 4-2, CSA N293S1 Compliance Table
   3. Table 4-3, National Building Code of Canada Compliance Table
   4. Table 4-4, National Fire Code of Canada Compliance Table

B. Where deviations were identified, details of the deviation and the code reference were documented as “gaps”. The gaps were grouped based on subject into “issues” for resolution. A technical resolution was developed for all issues, which examined the intent of the requirement and the consequences of the deviation before drawing a conclusion on its acceptability and whether or not corrective action is needed.

   Compliance status is based on the following criteria:

   - In Compliance = Requirement /Clause is stated/followed in the design
   - Potentially In Compliance = Document indicates intent to follow the Clause
   - Potentially Non-Compliant / Not Potentially In-Compliant = No mention of clause / Intent to follow the clause.
   - Non-Compliant = Intent to not follow the clause.

   Note: To be In Compliance, the design input document must be verified with specific clause basis verified.

   Note: Code clauses that are not applicable to DNNP are listed as not applicable. A future revision of this document will include this as an additional compliance status.

C. Alternative compliances documented as part of the original updates were also reviewed for continued validity under the new design basis (new construction lens). Those considered invalid were also documented as “gaps” and organized into “issues” for resolution.

The CCR covers the FP requirements for DNNP-1 as described in Section 4.0, *Evaluations*. In CCR documents, the CCR methodology follows the requirement of CSA N293-12 (Reference 7-1).

4.0 EVALUATIONS

The following sections provide a general outline of the typical requirements addressed in the detailed review of each station building for compliance with the applicable codes and standards.

4.1 Building Description

Description drawings of the buildings are available as follows:

- [[ ]], Reactor Building General Arrangement Drawing.
- [[ ]], General Arrangement Turbine Building Ground Floor, Black & Veatch.
- [[ ]], General Arrangement Turbine Building Mezzanine Floor El 6.1M, Black & Veatch.
- [[ ]], General Arrangement Turbine Building Operating Floor El 12.2M, Black & Veatch.
- [[ ]], General Arrangement Turbine Building Roof El 30.5M, Black & Veatch.
- [[ ]], General Arrangement Rad Waste Building Ground Floor, Black & Veatch.
- [[ ]], General Arrangement Rad Waste Building Floor El 6.1M, Black & Veatch.
- [[ ]], General Arrangement Rad Waste Building Floor El 13.0M, Black & Veatch.
- [[ ]], General Arrangement Rad Waste Building Roof El 24.38M, Black & Veatch.
- [[ ]], General Arrangement Control Building Ground Floor, Black & Veatch.

4.2 Occupant Load and Classification

As described in life safety requirements document ([[ ]]), occupant load has been determined based on actual need in lieu of as per prescribed method in code. Input on the final personnel loading levels in the various building in the power block are still being determined.

The occupancy classifications for the buildings were determined in accordance with NBCC, Subsections 3.1.2 and 3.2.2. Subsection 3.2.2, Building Size and Construction Relative to Occupancy specifies construction that is required to prevent fire spread and collapse caused by the effects of fires. Requirements where multiple occupancies are contained within a building are found largely in NBCC, Subsection 3.1.3, Multiple Occupancy Requirements. The current approach is to utilize bounding occupant loads and classifications of every building (Reactor Building, Turbine Building, Control Building, and Radwaste Building as described in 06N8095, BWRX-300 Plant Level Architectural and Life Safety Design Specification, Section 3.1 (Reference 7-6). This is the strategy for initial assessments.

4.3 Construction

A description of the construction type of the building is provided with an indication of compliance with the construction requirements of NBCC (Reference 7-4) and CSA N293-12 (Reference 7-1). Requirements and compliance regarding the type of construction, floor assemblies, roof assemblies, and bearing elements (e.g., walls, columns, beams) are discussed.

Mezzanines are addressed separately from building store (floor levels) as they are often open to other floor areas and the impact of a fire on, or in, a mezzanine. Mezzanines can impact building height (NBCC, Article 3.2.1.1 (Reference 7-4)), and NBCC, Subsection 3.2.8, Mezzanines and Openings through Floor Assemblies contains requirements for determining mezzanine construction.

4.4 Interior Finish

CSA N293-12, Clause 6.8.1.4 (Reference 7-1) and NBCC, Subsection 3.1.13 (Reference 7-4) provide requirements relating to the flame-spread rating and smoke developed rating of interior finishes. This section of the report describes the interior finishes of walls, floors, and ceilings, and their compliance with the requirements of CSA N293 and NBCC.

4.5 Fire Separations

NBCC (Reference 7-4) contains requirements for separating rooms or areas from the remainder of the building by fire separations. The requirements for the separation of stories are located in NBCC, Subsection 3.2.2., Building Size and Construction Relative to Occupancy. Other required fire separations include those for separating the following from the remainder of the building:

- Janitor rooms
- Service rooms and spaces
- Waste storage rooms
- Service shafts
- Exits

CSA N293 (Reference 7-1) contains fire separation requirements such as separating rooms storing nuclear substances from the remainder of the building. NFCC (Reference 7-5) has fire separation requirements for separating rooms such as those for the storage of flammable and combustible liquids, compressed gases, dangerous goods, and for hazards and radioactive materials.

4.6 Opening Protection

Any openings in fire separations are required by NBCC, Subsection 3.1.8 (Reference 7-4) to be protected by a closure (e.g., door, window, fire damper) with an appropriate fire protection rating and automatic closing mechanism, or to be sealed with an approved fire stop system having the required rating identified in the Heating Ventilation and Cooling System Design Description.

4.7 Firewalls

Firewalls are special fire separations that subdivide a building into two or more entities that may be considered individual buildings for the purposes of fire protection as per NBCC, Division A, 1.3.3.4 (Reference 7-7). Requirements pertaining to the design and construction of a firewall are contained in NBCC, Subsection 3.1.10, Firewalls.

4.8 Spatial Separation

The requirements for spatial separation between buildings are intended to inhibit fire spread from one building to another. The presence of automatic sprinkler protection, openings in the exposing wall, and the size and construction of the wall impact the potential for spread. Fire exposure protection for a building from adjacent buildings is determined by the requirements in NBCC, Subsection 3.2.3, Spatial Separation and Exposure Protection. In addition to separation of adjacent buildings, Subsection 3.2.3 also contains requirements for protection from exterior exposure between opposite sides of a fire separation in the same building.

4.9 Fire Alarm System

A fire alarm system is one of the major life safety systems that are installed in a building. CSA N293, Clause 7.2 (Reference 7-1), requires that a fire alarm system be installed in all buildings within the scope of the standard. Design and installation requirements are contained in NBCC, Subsection 3.2.4, Fire Alarm and Detection Systems (Reference 7-4).

4.10 Manual Fire Protection

Manual fire protection consists mainly of equipment provided for initial response to extinguish a fire. The two main types of manual fire protection in buildings are provided by portable fire extinguishers and standpipe and hose systems. Portable fire extinguishers are required by NBCC, Article 3.2.5.16 (Reference 7-4), which refers to NFCC (Reference 7-5). NFCC, Article 2.1.5.1 in turn refers to NFPA 10-2007, Standard for Portable Fire Extinguishers (Reference 7-8) for selection and installation requirements. The requirements for providing and installing a standpipe and hose system in a building are found in NBCC, Articles 3.2.5.8 through 3.2.5.11 (Reference 7-4).

4.11 Automatic Suppression Systems

As per CSA N293, Clause 7.3 (Reference 7-1), automatic sprinkler protection shall be provided in nuclear facilities, unless the Fire Hazards Assessment (FHA) demonstrates that the protection goals of CSA N293, Clause 5.2 can otherwise be met. Also, special extinguishing systems can be used in place of automatic sprinkler systems where it can be demonstrated that they provide an adequate level of fire protection. Special extinguishing outside of deluge, foam systems is not currently being considered.

NBCC (Reference 7-4) also contains requirements for the provision of automatic sprinkler protection. Subsection 3.2.2 defines where automatic sprinklers must be provided, and such protection is dependent mainly on building size, height, and construction type.

4.12 Water Supply

CSA N293, Section 7.3.2 (Reference 7-1) and NBCC, Article 3.2.5.7 (Reference 7-4) require that nuclear facilities have an adequate water supply for firefighting.

4.13 Fire Department Access

Access routes for firefighting purposes, as well as access into buildings for firefighting purposes, are required for all buildings. The requirements for such are contained in NBCC, Subsection 3.2.5, Provisions for Firefighting (Reference 7-4).

4.14 Means of Egress

Egress from a building has two components: the path of travel to reach an exit (access to exit), and path of travel within the exit. Means of egress and exiting requirements for buildings are addressed mainly by NBCC, Section 3.3, Safety within Floor Areas, and Section 3.4, Exits (Reference 7-4). Life safety requirement document [[ ]] (Reference 7-6) and individual building reports provide high-level requirements and details for life safety compliance for each building, including:

- [[ ]], BWRX-300 Reactor Building Architectural and Life Safety Assessment (Reference 7-9)
- [[ ]], BWRX-300 Turbine Building Architectural and Life Safety Assessment (Reference 7-10)
- [[ ]], BWRX-300 Control Building Architectural and Life Safety Assessment (Reference 7-11)
- [[ ]], BWRX-300 Radwaste Building Architectural and Life Safety Assessment (Reference 7-12)

4.15 Emergency Lighting, Exit Signage, and Emergency Power

Emergency lighting is required by NBCC to mainly assist occupants in egressing the building in an emergency. Emergency lighting requirements are found in NBCC, Subsection 3.2.7, Lighting and Emergency Power Systems. CSA N293-12, Clause 5.5.1 (Reference 7-1) also requires emergency lighting where Operator manual actions are required to safely shut down a system or process.

Exit signage requirements are contained in NBCC Subsection 3.4.5, Exit Signs.

NBCC, Subsection 3.2.7 (Reference 7-4) also contains requirements for emergency power systems and includes emergency power requirements for fire alarm systems.

4.16 Electrical Equipment and Lightning Protection

Electrical wiring and equipment are required by both CSA N293, Clause 5.7.2.4 (Reference 7-1) and NBCC, Article 3.6.1.2 to be installed in accordance with CSA C22.1-09, Canadian Electrical Code, Part 1 (Reference 7-13).

CSA N293, Clause 6.8.4.1 (Reference 7-1) requires that plant design minimize the use of plastics, wood, and other combustible materials in electrical equipment, cable raceways, and wiring racks.

CSA N293, Clause 6.8.4.4 (Reference 7-1) requires that electrical cables have a limited flame-spread rating and produce a low level of smoke and corrosive gases.

CSA N293, Clause 6.8.9.3 (Reference 7-1) requires that a lightning protection system designed in accordance with NFPA 780-2004, Standard for the Installation of Lightning Protection Systems (Reference 7-14) be provided for all buildings.

4.17 Indoor Storage

NFCC, Section 3.2 contains requirements for general storage of commodities indoors. Details of transient combustible loading are described in [[ ]], OPG DNNP BWRX-300 Life Safety and Fire Hazard Assessment Requirements Document (Reference 7-7).

4.18 Flammable and Combustible Liquids

Storage and handling of flammable and combustible liquids is addressed mainly by the requirements in NFCC, Part 4, Flammable and Combustible Liquids (Reference 7-5). CSA N293, Clause 6.8.5 (Reference 7-1) requires the use of flammable liquids and combustible liquids in equipment for hydraulic power, lubrication, heat transfer, and electrical insulation to be minimized where shown to be a hazard as determined by a fire hazard assessment. The CSA N293 (Reference 7-1) clause also requires systems containing combustible liquids such as lubrication oils and hydraulic oils to be designed to minimize leakage of these liquids. In locations where an uncontrolled leakage of the liquid could negatively affect nuclear or other hazardous material, the design provides devices to collect, divert, and safely contain leakages from pressurized and non-pressurized components in order to prevent the ignition of the oil or to limit the size of a fire.

4.19 Compressed Gas Cylinders

CSA N293, Clause 6.8.6.3 (Reference 7-1) requires the use and storage of compressed gases to meet the requirements of NFCC (Reference 7-5). NFCC, Subsection 3.2.8 does not provide any requirements for the storage of compressed gas cylinders containing non-hazardous gases.

4.20 Industrial Trucks

NFCC, Subsection 3.1.3 (Reference 7-5) includes requirements for the protection of battery-powered industrial trucks and restriction on locations of battery-charging installations.

4.21 Hot Work

Hot work activities, other than those that are part of the normal processes of the facility, are required to comply with NFCC, Section 5.2.

4.22 Control of Firefighting Water

CSA N293, Clause 7.3.3.6 (Reference 7-1) requires that means be provided to prevent firefighting water that might be contaminated by radioactive or other hazardous materials from entering the environment or public drainage systems.

4.23 Ventilation and Smoke Control

CSA N293, Clause 6.8.3 (Reference 7-1) requires High Efficiency Particulate Air (HEPA) filters to meet the combustibility requirements of ANSI/UL 586-04, UL Standard for Safety: High-Efficiency, Particulate, Air Filter Units (Reference 7-15) and ANSI/UL 900-04, UL Standard for Safety Air Filter Units (Reference 7-16).

CSA N293, Section 5.4.3 (Reference 7-1) requires that means be provided to minimize or prevent the products of combustion that may be contaminated by radioactive substances from exiting the building and entering the environment, keeping releases as low as reasonably achievable (refer to FHA table).

NBCC, Article 3.6.5.2 (Reference 7-4) requires vibration isolation connectors to be of noncombustible materials or meet the appropriate requirements of CAN/ULC-S109-03, Flame Tests of Flame-Resistant Fabrics and Films (Reference 7-17).

4.24 Health Requirements

Health requirements included in NBCC, Section 3.7, Health Requirements (Reference 7-4) are primarily concerned with those aspects of the building that could result in sickness or discomfort for the occupants. The requirements address mainly plumbing facilities.

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293-12 (R2017)					Information, In Compliance, Potentially In Compliance, Potentially Non-Compliant, Non-Compliant				
CSA N293	2	Reference Publications	CSA Group CAN/ CSA-B72-M87 (R2013) Installation code for lightning protection systems	Currently not listed in [[ ]], OPG Applicable Codes and Standards Report	Information			As described in [[ ]], Plant Electrical General Design Criteria and Requirements Lightning protection system shall be provided per IEC 62305:2022 SER, Protection Against Lightning – All Parts. Requirements pertaining to programmatic aspects (N-PROG-RA-0012) are addressed through fire protection program audit (FPPA). Their compliance may be evaluated during operations phase/program implementation phase. There will be no further action required in CCR.	Assess Canadian standard against IEC standard
CSA N293	2	Reference Publications	C22.1-09 Canadian Electrical Code, Part I		Information			As described in [[ ]], Plant Electrical General Design Criteria and Requirements DNNP will meet Canadian Electrical Code Part 1 C22.1-21. This section does not identify any specific requirements or require compliance with any specific code or standard.	None
CSA N293	2	Reference Publications	CAN/CSA-C22.2 No. 0.1 7-00 (R2013) Evaluation of properties of polymeric materials	[[ ]], OPG Applicable Codes and Standards Report	Information				In Compliance
CSA N293	2	Reference Publications	C22.2 No. 2556-15 Wire and cable test methods	[[ ]], OPG Applicable Codes and Standards Report	Information				In Compliance
CSA N293	2	Reference Publications	C282-09 Emergency electrical power supply for buildings	[[ ]], OPG Applicable Codes and Standards Report	Information			As described in [[ ]], Plant Electrical General Design Criteria and Requirements, SA C282:19, Emergency Electrical Power Supply for Buildings is specified for DNNP standby diesel generators OPG Project C&S document [[ ]] lists 2019 revision	Assess differences in editions of this standard applied in different documents.
CSA N293	2	Reference Publications	CSA 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 - 2018	[[ ]], OPG Applicable Codes and Standards Report	Information			BWRX-300 project will implement ASME not requirements of the CSA N285 in engineering deliverables as agreed upon by OPG OPG Project C&S document [[ ]] lists 2019 revision	Assess project disposition of CSA N285.

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	2	Reference Publications	CSA N286-12 (R2017) Management system requirements for nuclear facilities	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	CSA N289.3-10 (R2020) Design procedures for seismic qualification of nuclear power plants	[[ ]], OPG Applicable Codes and Standards Report	Information			OPG Project C&S document [[ ]] lists 2019 revision	[[ ]], OPG Project C&S lists 2020 version
CSA N293	2	Reference Publications	CSA N290.5-16 Requirements for electrical power and instrument air systems of CANDU nuclear power plants	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	CSA N290.6-16 Requirements for monitoring and display of nuclear power plant safety functions in the event of an accident	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	CSA N293-12 (R2017) Fire protection for Nuclear Power Plants	[[ ]], OPG Applicable Codes and Standards Report	Information			[[ ]], Code Compliance Review preforms a line by line assessment of N293.	
CSA N293	2	Reference Publications	CSA N293S1:21 Supplement No. 1 to N293-12, Fire protection for nuclear power plants (application to small modular reactors)	[[ ]], OPG Applicable Codes and Standards Report	Information			[[ ]], Code Compliance Review preforms a line by line assessment of N293S1.	Add N293S1 (21) to C&S [[ ]]
CSA N293	2	Reference Publications	CAN/CSA-W117.2-12 Safety in welding, cutting, and Allied Processes	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	CAN/ CSA-Z94.4-11 Selection, use, and care of respirators	[[ ]], OPG Applicable Codes and Standards Report	Information				Add N293 reference CAN/ CSA-Z94.4-11 Selection, use, and care of respirators to C&S [[ ]]
CSA N293	2	Reference Publications	ASME International (American Society of Mechanical Engineers) B31 .1-2020 Power Piping	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	ASTM International (American Society for Testing and Materials) D323-06 Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	EPRI Product ID 1006756, Jul 18, 2003, Technical Report Fire Protection Equipment	[[ ]] OPG Applicable Codes and Standards Report	Information				

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			Surveillance Optimization and Maintenance Guide						
CSA N293	2	Reference Publications	EPRI NP-2660 Hill, JP, 1982 Fire Tests in Ventilated Rooms, Extinguishment of Fire in Grouped Cable Trays (Bulletin 06-04)	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	EPRI Fire protection Equipment Surveillance Optimization and Maintenance Guide, 2003.	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	Factory Mutual 7-101-2013 Fire Protection for Steam Turbines and Electric Generators	[[ ]], OPG Applicable Codes and Standards Report	Information			Described in FHA [[ ]] as basis document for design basis turbine fire	Add to C&S [[ ]]
CSA N293	2	Reference Publications	Government of Canada Nuclear Safety and Control Act, SC 1997, c. 9, and Regulations Transportation of Dangerous Goods Act, SC 1992, c. 34, and Regulations	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	International Atomic Energy Agency (IAEA) Safety Standards Series, Safety Guide No. NS-G-2.1, Vienna (2000) Fire Safety in the Operation of Nuclear Power Plants	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	IAEA, NS-G-1.7, Vienna, 2004 Protection Against Internal Fires and Explosions in the Design of Nuclear Power Plants	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	INSAG Series No. 10, 1996 Defence-in-Depth in Nuclear Safety	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	INSAG Series No. 12, 1999 Basic Safety Principles for Nuclear Power Plants 75-INSAG-3 Rev. 1	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	Safety Reports Series No. 10, 1998 Treatment of Internal Fires in Probabilistic Safety Assessment for Nuclear Power Plants	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	Safety Reports Series No. 46, 2005 Assessment of Defence-in-Depth for Nuclear Power Plants	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	2	Reference Publications	NRC National Research Council National Building Code of Canada-2015	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFCC National Research Council National Fire Code of Canada-2015	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NEI 00-01, Revision 3, Guidance for Post Fire Safe Shutdown Circuit Analysis, NEI Circuit Failure Issues Task Force	[[ ]], OPG Applicable Codes and Standards Report Basis for (Fire Safe Shutdown Assessment) (FSSA) [[ ]]	Information			CSA N293 refers to methodology described in NEI 00-01. FSSA Report [[ ]] describes this methodology with the intent of meeting requirements under detailed design.	FSSA [[ ]] R1 will review against Rev 4 of NEI 00-01
CSA N293	2	Reference Publications	NEI 04-02, Revision 3, Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA 10-2018, Standard for Portable Fire Extinguishers	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 11-2016 Standard for Low-, Medium- and High-Expansion Foam	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	Correct code title in C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 13-2019 Standard for the Installation of Sprinkler Systems	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 13E-2015 Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 14-2019 Standard for the Installation of Standpipe and Hose Systems	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 15-2017 Standard for Water Spray Fixed Systems for Fire Protection	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	2	Reference Publications	NFPA 16-2015 Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	In Compliance Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA-17-2013 Standard for Dry Chemical Extinguishing Systems	[[ ]], OPG Applicable Codes and Standards Report	Information				In Compliance Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA-17A-2013 Standard for Wet Chemical Extinguishing Systems	[[ ]], OPG Applicable Codes and Standards Report	Information				In Compliance Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 20-2019 Standard for the Installation of Stationary Pumps for Fire Protection	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 22-2018 Standard for Water Tanks for Private Fire Protection	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 24-2019 Standard for the Installation of Private Fire Service Mains and their Appurtenances	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 25-2020 Standard for Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 30-2021 Flammable and Combustible Liquids Code	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 30B-2015 Code for Manufacture and Storage of Aerosol Products	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 55-2020 Standard for the Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA 69-2019 Standard on Explosion-Prevention Systems	[[ ]], OPG Applicable Codes and Standards Report	Information				

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	2	Reference Publications	NFPA 72-2019 National Fire Alarm and Signaling Code	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 76-2016 Standard for the Fire Protection of Telecommunications Facilities	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 80A-2017 Recommended Practice for Protection of Buildings from Exterior Fire Exposures	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA-92-2018 Standard for Smoke-Control Systems	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 101-2021 Life Safety Code	[[ ]], OPG Applicable Codes and Standards Report	Information			As described in [[ ]] Plant Level Architectural and Life Safety Design Specification, life safety requirements specified by the primary standards of NFPA 101, the National Fire Protection Association's (NFPA) Life Safety Code, and IBC 2018, the International Building Code are reviewed in addition to Canadian standards.	
CSA N293	2	Reference Publications	NFPA 241-2019 Standard for Safeguarding Construction, Alteration, and Demolition Operations	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA 291-2016 Recommended Practices for Fire Flow Testing and Marking of Hydrants	[[ ]], OPG Applicable Codes and Standards Report	Information				In Compliance Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 600-2020 Standard on Industrial Fire Brigades	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA 701-2019 Standard Methods of Fire Tests for Flame Propagation of Textiles and Films	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA 750-2019 Standard on Water Mist Fire Protection Systems	[[ ]], OPG Applicable Codes and Standards Report	Information				

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	2	Reference Publications	NFPA 780-2020 Standard for the Installation of Lightning Protection Systems	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA 804-2020, Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants	[[ ]], OPG Applicable Codes and Standards Report	Information			Code listed in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	NFPA 805-2020, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA 850-2015 Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 855-2020 Standard for the Installation of Stationary Energy Storage Systems	[[ ]], OPG Applicable Codes and Standards Report	Information			Standard to be applied for lithium and other advanced battery systems Provided for advanced battery design under [[ ]] and FHA [[ ]]	Update C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 921-2014 Guide for Fire and Explosion Investigations	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 1081-2012 Standard for Industrial Fire Brigade Member Professional Qualifications	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
ADD		Reference Publications	NFPA 1620-2020 Standard for Industrial Fire Brigade Member Professional Qualifications	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	NFPA 1710 -2016 Code requirement/code title is wrong. Should be “Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments	[[ ]], OPG Applicable Codes and Standards Report	Information				Update C&S [[ ]]
CSA N293	2	Reference Publications	NFPA 1720-2014 Should be “Standard for the Organization and Deployment of Fire Suppression Operations,	[[ ]], OPG Applicable	Information				Add to C&S [[ ]]

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments"	Codes and Standards Report					
CSA N293	2	Reference Publications	NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems-2021	Added under U43 SDD [[ ]] as contingency	Information			Application of clean agent fire extinguishing systems not defined in preliminary design	Update C&S [[ ]] to 2021 edition
CSA N293	2	Reference Publications	Fire Protection Handbook, National Fire Protection Association (NFPA), Quincy, Massachusetts, 2008, Fire Protection Handbook	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	SFPE Society of Fire Protection Engineers Engineering Guide to Performance-based Fire Protection, Second Edition, 2016	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	Nuclear Insurance Pools Forum (NIPF), 1997 International Guidelines for the Fire Protection of Nuclear Power Plants	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
ADD		Reference Publications	Ontario Building Code 2020 Ontario Building Code	[[ ]], OPG Applicable Codes and Standards Report	Information				
ADD		Reference Publications	Ontario Fire Code 2019 Ontario Fire Code Regulation 213/07	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	UL 586-09 UL Standard for Safety High-Efficiency, Particulate, Air Filter Units	[[ ]], OPG Applicable Codes and Standards Report	Information				
CSA N293	2	Reference Publications	ULC CAN/ULC-S102-10 Method of Test for Surface Burning Characteristics of Building Materials and Assemblies	[[ ]], OPG Applicable Codes and Standards Report	Information			Listed as required standard in FHA [[ ]]	Add to C&S [[ ]]
CSA N293	2	Reference Publications	ULC CAN/ULC-S102.2-10 Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous	[[ ]], OPG Applicable Codes and Standards Report	Information			Listed as required standard in FHA [[ ]]	Add to C&S [[ ]]
CSA N293	2	Reference Publications	ULC CAN/ULC-S107-10 Method of Fire Tests of Roof Coverings	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	2	Reference Publications	ULC CAN/ULC-S109-14 Flame Tests of Flame Resistant Fabrics and Films	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	ULC CAN/ULC-S111-13 Standard Methods of Fire Tests for Air Filter Units	[[ ]], OPG Applicable Codes and Standards Report	Information			Listed as required standard in FHA [[ ]]	Add to C&S [[ ]]
CSA N293	2	Reference Publications	ULC CAN/ULC-S114-05 Standard Method of Test for Determination of Non-Combustibility in Building Materials	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	ULC CAN/ULC-S115-11 Standard Methods of Fire Tests for Fire Stop Systems	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	ULC CAN/ULC-S126-14 Standard Method of Test for Fire Spread Under Roof-Deck Assemblies	[[ ]], OPG Applicable Codes and Standards Report	Information				Add to C&S [[ ]]
CSA N293	2	Reference Publications	ULC CAN/ULC-S524-14 Standard for the Installation of Fire Alarm Systems	[[ ]], OPG Applicable Codes and Standards Report	Information			Listed as required standard in U43 SDD [[ ]]	
CSA N293	2	Reference Publications	ULC CAN/ULC-S537-13 Verification of Fire Alarm Systems	[[ ]], OPG Applicable Codes and Standards Report	Information			Listed as required standard in U43 SDD [[ ]]	Add to C&S [[ ]]
CSA N293	2	Reference Publications	U.S. Department of Energy DOE-STD-1066-99 Fire Protection Design Criteria	[[ ]], OPG Applicable Codes and Standards Report	Information			DOE-STD-1066-2012, Fire Protection, and is approved for use by DOE. Applicable to U.S. DOE Plant	
CSA N293	2	Reference Publications	NUREG-1852, Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire	[[ ]], OPG Applicable Codes and Standards Report	Information			Applicable to U.S. Plant	
CSA N293	2	Reference Publications	USNRC, Supplement No 1 to Generic Letter 86-10, Washington, D.C., 1986 Implementation of Fire Protection Requirements	[[ ]], OPG Applicable Codes and Standards Report	Information			Applicable to U.S. Plant	
ADD		Reference Publications	USNRC, NUREG/CR-6850, EPRI 1011989, Washington, D.C., 2010 Fire Probabilistic Risk Assessment Methods Enhancements	[[ ]], OPG Applicable Codes and Standards Report	Information			Applicable to U.S. Plant	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
ADD		Reference Publications	USNRC, NUREG-0800, Section 9.5.1.1, Washington, D.C., 2009 Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR edition - Fire Protection Program	[[ ]], OPG Applicable Codes and Standards Report	Information			Applicable to U.S. Plant	
ADD			USNRC, Regulatory Guide 1.189, Washington, D.C., Rev. 4, 2021 Fire Protection for Operating Nuclear Power Plants	[[ ]], OPG Applicable Codes and Standards Report	Information			Applicable to U.S. Plant	
CSA N293	3	Definitions and Abbreviations	Header						
CSA N293	4	General requirements	Header						
CSA N293	4.1	Effective Date	This Standard shall come into force on the date specified by the plant licence.		Information				
CSA N293	4.2	Responsibility	Unless otherwise specified, the licensee of a plant is responsible for meeting the requirements of this Standard. The licensee may delegate a tank required by this Standard, but retains overall responsibility for fulfilling its requirements.	Information Only	Information				
CSA N293	4.3	Application for existing sites	Header	Not applicable for DNNP	Not applicable for DNNP	Not applicable for DNNP		Not applicable for DNNP	No further Action
CSA N293	4.3.1	General application	This Standard applies to all plants where its requirements are referenced as license condition by the Authority Having Jurisdiction (AHJ). For facilities licenced for construction prior to the publication of this Standard, (a) the design and construction requirements of this Standard shall not be retroactively applied to existing SSC; and (b) the operational requirements (e.g., general requirement, concepts, programs, operation , analyses, emergency response) of this Standard shall apply.		Information			This is general statement that this standard applies to plants. The licence has not been issued for DNNP, but through the follow Code Compliance review, it will be demonstrated that DNNP complies with this standard.	
CSA N293	4.3.2	Modifications	Application for existing sites	Not applicable for DNNP	Not applicable for DNNP	Not applicable for DNNP		Not applicable for DNNP	No further Action
CSA N293	4.4	Alternatives and performance-based approaches	Header						

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	4.4.1	Alternatives	This Standard is in no way intended to preclude the use of alternative materials, means, measures, procedures, processes, approaches, or technologies where the alternative is demonstrated, with appropriate supporting documentation, to meet the intent of this Standard. Where alternatives are used, the requirement of Clauses 4.4 and 4.5 shall be met.	FP Program under OPG N-PROG-RA-0012_013 Fire Protection [[ ]]	Information				No further Action
CSA N293	4.4.2	Performance-based approaches	Tl1e requirements of this Standard may be met through the implementation of performance-based design or operational approaches that are in accordance with the intent of this Standard, and where the Tahj concurs with the performance-based approach. Where performance-based approaches are used, the requirements of Clauses 4.5 shall be met.	FP Program under OPG N-PROG-RA-0012_013 Fire Protection [[ ]]	Information				No further Action
CSA N293	4.4.3	AHJ concurrence	Alternatives or performance-based design approaches shall be submitted to, and concurrence shall be obtained from, the AHJ prior to implementation	FP Program under OPG N-PROG-RA-0012_013 Fire Protection [[ ]]	Information			BWRX-300 Identification of Alternative and Graded Approaches for DNNP, [[ ]]	concurrence shall be obtained from, the AHJ prior to implementation
CSA N293	4.5	Documentation requirements for alternatives and performance-based approaches	Header						
CSA N293	4.5.1	General	Where alternative or performance-based design or operational approaches are used, they shall be adequately supported by procedures, references, and documentation for review by the AHJ and a qualified third party	FP Program under OPG N-PROG-RA-0012_013 Fire Protection [[ ]]	Information				review by the AHJ and a qualified third party
CSA N293	4.5.2	Documentation details	Header						
CSA N293			Where alternatives or performance-based design or operational approaches are implemented, details of any deviation from the requirements	CCR [[ ]]	Potentially in Compliance			Alternate approaches will be assessed during detailed design using process described under [[ ]] BWRX-300 Alternative and Graded Approaches	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			and procedures stated in this-Standard shall be documented in the code compliance review and considered in the fire hazard assessment	FHA [[ ]] FSSA [[ ]] Plant Level Arch_Life Safety Specification [[ ]]					
CSA N293	4.5.3		Header						
CSA N293			The documentation shall be appropriate for the complexity of the deviation and the potential safety hazard. As a minimum, documentation shall include (a) the goals, objectives, and safety functions of the requirement for which alternatives are sought; (b) the reason why the requirement cannot be met (e.g., high cost, impracticality, better alternative available, conflict with other safety requirements}; (c) a description of the proposed alternative including, as appropriate, a design description, drawings, specifications, etc.; (d) the reasons why the alternative will achieve the intended safety functions, including assumptions, technical references, calculations, test reports, etc.; (e) the inspection, testing, and maintenance requirements of the proposed design to ensure continued performance; (f) operational requirements, such as operating procedures and training; and (g) the decommissioning requirements of the design.	CCR [[ ]] FHA [[ ]]FSSA [[ ]] Plant Level Arch_Life Safety Specification [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	4.6	Fire Protection Assessments	Header						
CSA N293	4.6.1	General	To ensure an adequate level of fire protection, each plant shall conduct fire protection assessments demonstrating compliance with the applicable requirements of this standard. Documents forming part of the fire protection assessments shall	CCR-[[ ]] FHA [[ ]] FSSA [[ ]] Life Safety [[ ]]	Potentially In Compliance	Responsibility for preparing and maintaining Fire Protection Assessment described under Fire Protection Program scope.	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	FP Program requirements in [[ ]] will be captured in FHA document [[ ]]

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			be submitted to the AHJ for acceptance.	[[ ]] Fire Protection BWRX-300 Fire Protection CNSC VDR Focus Area 12 Vendor Design Review					
CSA N293	4.6.2	Existing facilities	Where alternatives or performance-based design or operational approaches are implemented, details of any deviation from the requirements and procedures stated in this Standard shall be documented in the code compliance review and considered in the fire hazard assessment	Not applicable for DNNP	Not applicable for DNNP	Not applicable for DNNP		Not applicable for DNNP	No further Action
CSA N293	4.6.3	New facilities	When included as part of the plant's licence, the facility shall comply with the requirements of this Standard	CCR-[[ ]] FHA [[ ]] FSSA [[ ]] C&S [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Preliminary fire protection assessment completed in accordance with N293	The fire protection assessment shall be prepared for DNNP in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	FP Program requirements in [[ ]] will be captured in FHA document [[ ]].
CSA N293	5	Fire protection concepts	Header						
CSA N293	5.1	General	Header						
CSA N293	5.1.1	Scope	Clause 5 specifies the general fire protection concepts and performance levels applicable to the life cycle of a plant	Information	Information				No further Action
CSA N293	5.1.2	Application	Clauses 6 to 11 state the requirement for achieving the fire protection levels specified in Clause 5	Information	Information				No further Action
CSA N293	5.1.3	Good engineering practice	Where specific design or operational requirements are not addressed in this Standard, the NBCC, or the NFCC. good engineering practice shall apply and, where appropriate, recognized Standards (such as those of the National Fire Protection Association (NFPA)) shall be used.	[[ ]] OPG Applicable Codes and Standards Report	Potentially In Compliance		Potentially In Compliance	Potentially In Compliance	
CSA N293	5.1.4	Performance goal ,	The facility shall be designed, operated, inspected, tested, and	FP Program under OPG N-PROG-RA-	Potentially In Compliance		Potentially In Compliance	Statements on performance goals objectives and criteria are currently included in Fire	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
		objectives, and criteria	maintained so that the goals, objectives, and criteria of Clause 5 are achieved for all postulated fire scenarios and failure modes within the scope of this Standard	0012_013 Fire Protection [[ ]]				Protection Design Document [[ ]]. This content will be moved to FHA document [[ ]] and FSSA [[ ]] under rev 0 of these documents	
CSA N293	5.2	Goals	The fire protection goals for plants are (a) to minimize the risk of radiologic.al releases to the public that are a result of fire; (b) to protect plant occupants from death or injury due to fire; (c) to minimize economic loss resulting from fire damage to structures, equipment, and inventories; and (d) to minimize the impact of radioactive and hazardous materials on the environment as a result of fire .	FP Program under OPG N-PROG-RA-0012_013 Fire Protection [[ ]]	Potentially In Compliance		Potentially In Compliance	Statements on performance goals objectives and criteria are currently included in Fire Protection Design Document [[ ]]. This content will be moved to FHA document [[ ]] and [[ ]]under rev 0 of these documents.	
CSA N293	5.3	Defence-in-depth principle	Header						
CSA N293	5.3.1	General	The defence-in-depth principle shall be used to achieve a high degree of fire protection by providing redundancy, diversity, and balance in fire protection measures. The elements of the defence-in-depth principle are outlined in Clauses 5.3.2 to 5 .3.4.	FP Program under OPG N-PROG-RA-0012_013 Fire Protection [[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	5.3.2	Preventing fires	Design measures shall be put in place to reduce or eliminate, where practicable, combustible materials, and ignition sources, and a fire protection program shall be implemented in all operational modes in order to reduce the occurrence of fires and limit their consequences and severity	FP Program under OPG N-PROG-RA-0012_013 Fire Protection [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	5.3.3	Fire detection and suppression	Means shall be provided to quickly detect and extinguish or control fires	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.3.4	Limiting the effects of fire	Fire separations or other measures shall be provided to limit the spread of fire and its	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire	The fire protection assessments shall be prepared for every plant in accordance with the requirements in	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			effects, thus minimizing the impact on the plant and its occupants				protection assessment	Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.4	Nuclear safety objectives and performance criteria	Header						
CSA N293	5.4.1	Nuclear safety objectives	Header						
CSA N293	5.4.1.1		In the event of a fire, the plant shall be capable of (a) achieving and maintaining the reactor in subcritical conditions; (b) achieving and maintaining decay heat removal; (c) maintaining the integrity of the fission product boundaries; and (d) limiting the release of radioactive materials that are located outside the reactor.	FSSA [[ ]] FHA [[ ]]	Potentially In Compliance	FSSA addresses the items a, b, and c. FHA addresses item d.		These requirements are listed in FSSA Requirements Report [[ ]] The detailed FSSA is in the preliminary stage of development the three items identified are identified as key safety functions to be achieved. The FHA address the impacts on radiological release due fires in the various fire zones.	
CSA N293	5.4.1.2		The safety objectives of Clause 5.4.1.1 shall be maintained for all plant operational modes, including full or partial power operation, start-up, shutdown, and any outages	FSSA [[ ]]	Potentially In Compliance	The current FSSA only addresses the power operation. Further evaluations will need to be completed for the shutdown and outage conditions		FSSA only assessed for at-power presently. Open item created to track assessment of safe shutdown for additional modes of operation	
CSA N293	5.4.2	Nuclear safety performance criteria	Header						
CSA N293	5.4.2.1	General	To achieve the objectives of Clause 5.4.1.1 (a) to (c), the requirements of Clauses 5.4.2.2 to 5.4.2.6 shall be met		Information				
CSA N293	5.4.2.2	Reactor shutdown	Means shall be provided to rapidly insert negative reactivity into the reactor core in order to achieve and maintain subcritical condition and ensure fuel design limits are not exceeded	FSSA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. This item is identified as key safety functions to be achieved		Requirement listed in FSSA Requirement Report [[ ]]	
CSA N293	5.4.2.3	Decay heat removal	Means shall be provided to ensure that fuel is in a safe and stable condition, through the maintenance of sufficient coolant levels and the removal of decay heat from the reactor	FSSA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. This item is identified as key safety functions to be achieved		Requirement listed in FSSA Requirement Report [[ ]]	
CSA N293	5.4.2.4	Barrier to fission product release	Means shall be provided to ensure that nuclear reactor systems that contain radioactive materials or fission products,	FSSA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. This item is identified as key safety functions to be achieved.		Make-up requirements are discussed in FSSA Requirement Report [[ ]].	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			including the reactor coolant system and reactor auxiliary systems, shall not be breached. There shall be no leakage of coolant beyond the capability of the pressure and inventory make-up system. In addition, the containment system's integrity shall not be breached.						
CSA N293	5.4.2.5	Support services	Means for supplying the necessary power, water, compressed air, and other support functions shall be provided to ensure that the criteria of Clauses 5.4.2.2 to 5.4 .2.4 and Clause 5.4.2.6 are met	FSSA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. This item is identified as key safety functions to be achieved		Requirement listed in FSSA Requirement Report [[ ]]	
CSA N293	5.4.2.6	Monitoring of plant parameters	Plant monitoring means shall be provided so that operator are able to perform actions to ensure that the criteria of Clauses 5.4.2.2 to 5.4.2.5 are achieved and maintained. Sufficient instrumentation shall remain available to assess the plant status as defined in CSA N290.6.	FSSA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. This item is identified as key safety functions to be achieved.		Requirement listed in FSSA Requirement Report [[ ]].	
CSA N293	5.4.3	Nuclear safety performance criteria-limiting the release of radioactive material located outside the reactor	Header						
CSA N293	5.4.3.1		To achieve the objective of Clause 5.4.1.1 (d), the requirements of Clauses 5.4.3.2 to 5.4.3.4 shall be met		Information				
CSA N293	5.4.3.2		Radioactive and fissionable material (including spent and new fuel, and radioactive wastes) shall be protected from the effects of fire using appropriate design measures and storage arrangements, including those that minimize exposure to combustible materials	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	5.4.3.3		The release of radioactive materials as a result of a fire or fire suppression activities shall be as low as reasonably achievable	FHA [[ ]] U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review;	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								(b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.4.3.4		Fissionable material shall be protected from becoming critical due to fire or fire suppression activities	FHA [[ ]]	Information Only				
CSA N293	5.5	Life Safety	Header						
CSA N293	5.5.1	Life safety performance objectives	The following life safety performance objectives shall be met during all operational modes and plant configurations: (a) Fire hazard controls shall be included in design and operational stage. (b) Fire notification means shall be provided. (c) Safe egress and/or areas of refuge shall be provided for occupants for use in the event of a fire. (d) A safe environment and other required supports shall be provided for essential staff so that they can perform all necessary plant control functions during and following a fire. (e) Protection tor personnel performing emergency services shall be provided both during and following a fire. Safe access and emergency lighting shall be provided for all area where manual firefighting, evacuations, or operator field actions are expected.	Life Safety Requirements [[ ]] CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	As described in Life Safety Requirements [[[ ]]], In accordance with CSA N293, the listed life safety performance objectives are met during all operational modes and plant configurations	DNNP fire protection assessment is preliminary requiring additional design detail	The fire protection assessments shall be prepared for DNNP in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	5.5.2	Life safety criteria	Header						
CSA N293	5.5.2.1		The life safety objectives of Clause 5.5. I shall be met using either the prescriptive requirements or performance-based criteria outlined in the NBCC and NFCC. Note: Compliance with the prescriptive requirements of the NBCC and NFCC might not be adequate to meet the requirements of Clause 5.5.1 In all cases.	LS Requirements [[ ]] CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	As described in Life Safety Requirements [[[ ]]], life safety objectives are listed as general requirements in accordance with CSA N293,	DNNP fire protection assessment is preliminary requiring additional design detail	The fire protection assessments shall be prepared for DNNP in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	5.5.2.2		Except as otherwise indicated in this Standard, plants shalt be designed, modified, and constructed in accordance with all applicable requirements of the NBCC.	LS requirements [[ ]] CCR-[[ ]]	Potentially In Compliance	As described in Life Safety Requirements [[[ ]]] general requirements, DNNP shall be designed, modified, and constructed in accordance with all applicable requirements of the NBCC.	DNNP fire protection assessment is preliminary requiring additional design detail	It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	5.5.2.3		Except as otherwise indicated in this Standard, plants shall comply with all applicable requirements of the NFCC.	LS requirements [[ ]] CCR-[[ ]]	Potentially In Compliance	As described in Life Safety Requirements [[[ ]]] general requirements, DNNP shall be designed, modified, and constructed in accordance with all applicable requirements of the NBCC.	DNNP fire protection assessment is preliminary requiring additional design detail	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.6	Fire protection assessments (FPA)	Header						
CSA N293	5.6.1	General	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	5.6.2	Modifications	The fire protection assessments shall be updated as necessary to reflect plant modifications, significant changes in fire hazards, and operating experience	CCR-[[ ]]FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7	General fire protection measures	Header						
CSA N293	5.7.1.1	Control of combustible materials	Buildings, both in the protected area or external to the protected area but directly supporting the plant, shall be constructed using noncombustible construction, as defined in the NBCC	FHA [[ ]]	Potentially In Compliance	Section 5.4.5 requires that the buildings shall be constructed of noncombustible materials	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.1.2	Fixtures and internal finishes	The use of building fixtures and interior finishes made of combustible materials shall be minimized in buildings in the protected area or external to the protected area but directly supporting the plant	Refer [[ ]]and FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.1.3	Transient combustible materials	The use of transient combustible materials shall be minimized and controlled so they do not pose a fire hazard beyond the capabilities of existing fire	Refer [[ ]] and FHA [[ ]]	Potentially in Compliance			FHA indicates plans for expected transient combustible material. Per FHA “The loading calculations include the introduction of transient combustibles to any	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			protection measures. Where a fire hazard exceeds these capabilities, temporary or permanent fire protection measures that are commensurate with the fire hazard shall be provided.					area of the plant, subject to administrative controls.”	
CSA N293	5.7.1.4	Permanent storage	Plant design shall ensure that combustible materials, dangerous goods, and liquids and gases used for plant operations are stored, located, and protected to minimize fire hazards and the resultant threats to nuclear and life safety	Refer [[ ]] and FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.1.5	High flash point liquids	Liquids with flash points greater than 93.3 °C (200°F) shall be treated as (a) Class IMA liquids and protected in accordance with the NFCC; or (b) Class NIB liquids and protected in accordance with NFPA 30. These liquids shall be considered in the FPA.	Refer [[ ]] and FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.2	Control of ignition sources	Header						
CSA N293	5.7.2.1	Permanent ignition sources	Installed devices and process operations that, by design, pose a fire hazard shall be identified and analyzed or addressed in the design stage of the plant and shall be eliminated or controlled in order to minimize the occurrence of fires	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.2.2	Temporary ignition sources	Temporary ignition sources Temporary ignition sources (e.g., hot work activities, use of heat producing devices) that support work shall be located or controlled in accordance with the NFCC to ensure that ignition sources do not come into contact with combustible materials or flammable liquids or vapours.	OPG FP Program under OPG N-PROG-RA-0012_013 Fire Protection	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	This is not a function of design and will be taken care of during the development of the Fire protection Program documents. CCR report will be updated to reflect temporary ignitions sources controlled under OPG FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]]) and not addressed in FHA and FSSA.	
CSA N293	5.7.2.3	Electrical equipment and wiring	Electrical equipment and wiring shall be installed in accordance with the Canadian Electrical Code, Part I	[[ ]] OPG Applicable Codes and Standards Report	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA-N293	5.7.2.4	Lightning protection	Buildings and equipment shall be protected from lightning.	[[ ]] OPG Applicable Codes and Standards Report BWRX-300 Plant Electrical Systems Grounding Requirements	Potentially In Compliance	Lightning protection is provided for exposed structures, and buildings housing safety-related and fire protection equipment. Tanks, stacks, etc.	Potentially In Compliance	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.2.5	External fires	The potential for fires external to the plant shall be identified, assessed, and mitigated in accordance with the nuclear and life safety criteria of Clauses 5.4 and S.S.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis The FHA will be modified under future revision to include areas outside the power block that may be risk significant.	
CSA N293	5.7.2.6	Other fire hazards	Explosion hazards shall be eliminated by design, where possible. Where explosion hazard cannot be eliminated, their impact shall be assessed and features shall be provided to ensure that the nuclear and life safety criteria of Clauses 5.4 and 5.5 are met	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis As design details are available, FHA Room Data Sheets and summary conclusions are developed to document and assess internal hazards associated with hazardous and explosive materials such as hydrogen piping	
CSA N293	5.7.3	Fire alarm systems	Fire alarm systems	Refer U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.3.1		A fire alarm system shall be provided in buildings	Refer U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.3.2		The types of fire alarm systems, their performance levels, and associated safety features shall be as a minimum in accordance with (a) this Standard; (b) the NBCC; (c) the NFCC, (d) the FPA; and (e) good engineering practice	Refer U43 SDD [[ ]]	Potentially In Compliance		Potentially In Compliance	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.4	Fire suppression	Header						

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	5.7.4.1	Manual suppression	Header						
CSA N293	5.7.4.1.1	Fire response capability	Fire response capability A fire response program, together with other fire protection measures, shall be capable of meeting the fire protection goals outlined in Clause 5.2. This capability shall cover the entire life cycle of the plant, with the exception of the design stage, and shall be achieved in accordance with Clause 10.	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	CCR document will be updated to reflect that DNNP fire response needs analysis has not been developed (preliminary design) but will be integrated into OPG FP Program under OPG N-PROG-RA-0012_013 Fire Protection. ([[ ]]). This will be an open item for verification of CCR Rev 0 and tracked as PLM Issue.	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis. Fire response needs analysis shall be prepared to comply this clause.	
CSA N293	5.7.4.1.2	Immediacy of response	Immediacy of response Industrial fire brigade members who are responsible for responding to the most resource-demanding fires shall have no plant duties that would prevent an immediate response to these or other fires	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.4.2	Automatic fire suppression systems	Header						
CSA N293	5.7.4.2.1	General	Automatic fire suppression systems shall be provided for building , structures, and equipment, except where it is demonstrated by the FPA or other assessments that fire protection goals can be met using other fire protection measures	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.4.2.2	Requirements	Where automatic suppression systems are provided, they shall be (a) designed and installed in accordance with Clause 7; and (b) inspected, tested, and maintained in accordance with Clause 8.3	Refer U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review;	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								(b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.5	Fire hazard control-layout and separation	Header						
CSA N293	5.7.5.1	General	Header						
CSA N293	5.7.5.1.1		The layout of SSC shall be identified, coordinated, and applied in the early stages of plant design in order to minimize the impact of fire	FHA [[ ]]	Potentially In Compliance			Fire protection is considered in the layout of SSC as design progresses. The Plant Arrangement Discipline Guide reflects consideration for fire, flooding, access, HVAC, radiation areas when laying out buildings	
CSA N293	5.7.5.1.2		Fire separation between floors and areas within each building and between buildings shall be provided in accordance with the NBCC, NFCC, and Clause 6, except in the containment structures	FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.5.1.3		To maintain the nuclear safety objectives of Clause 5.4.1, the fire safe shutdown systems shall be divided into redundant groups, with adequate separation between groups in accordance with Clause 6	FSSA [[ ]] [[ ]], BWRX-300 Plant Cable and Component Separation Requirements [[ ]] Mechanical Equipment Separation for Safety Class 1 Systems	Potentially In Compliance			Redundant trains of fire safe shutdown SSC are listed in FSSA [[ ]]	
CSA N293	5.7.5.1.4		Systems, components, and materials that pose a significant fire hazard shall be located so that the consequences of fire are minimized. Safety-related systems located near a fire hazard shall be provided with a fire separation or spatial separation that is appropriate for the assessed fire hazard, in accordance with the FPA.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	5.7.5.1.5		Cable trays shall be located and protected to reduce the potential for fire spread. Where manual fire suppression is required to meet the fire protection objectives, access to the cable area and adequate clearance	FHA [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			between cable trays shall be provided.						
CSA N293	5.7.5.2	Fire separation	Header						
CSA N293	5.7.5.2.1		Where fire separations are used, the fire-resistance rating shall be appropriate for the fire hazards present in a fire compartment and its adjoining fire compartments. Maintenance of these fire separations shall be in accordance with the NFCC and Clause 8 of this Standard.	FHA [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.5.2.2		The turbine generator building (hall) shall be designed and separated from other areas of the plant such that a fire involving the turbine generator area will not (a) spread to other areas; and (b) result in progressive structural collapse	FHA [[ ]]	Potentially In Compliance	The turbine will be separated from other buildings by 3-hour walls	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.6	Smoke management	Smoke management The production and propagation of smoke and hot gases and their effects on occupants, plant equipment, and building structures shall be addressed in the FPA. Where smoke and heat venting are deemed necessary by the FPA, the design shall be in accordance with Clause 6. Smoke management related to the control room complex shall be in accordance with Clause 5.7.8.5.	FHA [[ ]]	Potentially In Compliance	Smoke management identified for control room.	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	5.7.7	Protection against seismic hazards	Header						
CSA N293	5.7.7.1		Fires that are caused by an earthquake and have an impact on nuclear safety shall be assessed and addressed. These fires shall be prevented; suppressed, or contained such that sufficient SSC remain available to meet the nuclear safety criteria in Clause 5.4, taking into account the potential failure of structures and systems that are not qualified to withstand earthquakes. Fire suppression systems and fire separations credited for earthquakes shall be	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			designed to remain functional following an earthquake.						
CSA N293	5.7.7.2		Where the failure {both direct and consequential) of fire protection systems or fire separations can cause the failure of the plant SSC required to perform nuclear safety functions after an earthquake, these fire protection systems and fire separations shall be seismically qualified to prevent such failures	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.7.3		Regardless of the results of the assessment required by Clause 5.7.7.1, manual fire suppression shall be provided for fires that might occur following an earthquake but are not a direct result of an earthquake	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	5.7.7.4		Fire suppression systems that are designed to function after an earthquake shall be provided with services (e.g., power, water, compressed air) that are qualified to remain functional following the design basis earthquake defined for the plant	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	5.7.7.5		Where manual activation of fire suppression and smoke control systems is credited in the assessment required by Clause 5.7.7 .1, control area and the paths leading to them shall be seismically qualified to rem in accessible	U43 SDD [[ ]]	Potentially In Compliance	Potentially In Compliance	Potentially In Compliance	Open issue to ensure travel paths between main control room (MCR) and SCR meet all applicable requirements	
CSA N293	5.7.8	Control room complex	Header						
CSA N293	5.7.8.1		The control room complex hall be separated from adjoining areas by a fire separation with a fire-resistance rating as specified in Clause 6.7.1.1	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires 2-hour fire separation		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.8.2		Special consideration shall be given to the prevention of fires in the control room complex. Note: See Clause 6.8 for fire prevention requirements	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires provides the requirements for fire protection system in the control complex		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.8.3		The control room complex shall be equipped with means to	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires fire detection with very early warning technology		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			detect fires at their incipient stages						
CSA N293	5.7.8.4		Means shall be provided to limit the spread of fire across equipment within the control room complex. Areas of the control room complex that lie outside the control room, control equipment room(s), and control computer room shall be protected by automatic fire suppression system and shall be separated from the control room and the control equipment room(s) by a fire separation.	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 require sprinklers through the control complex. Separation from other rooms will be fire rated to minimize the potential for fire spread.		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.7.8.5		A smoke management system shall be provided to ensure that (a) the control room remains habitable throughout all fires that are external to the control room complex; and (b) in the event of a fire within the control room complex, including a fire in the control room, the control room remain habitable for a period of time sufficient to enable safe transfer of control to the secondary control area (SCA)	FHA [[ ]] U41 SDD [[ ]] BWRX-300 Control Room and Related Facilities Requirements Specification [[ ]] BWRX-300 Heating, Ventilation, and Cooling System (HVS) [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires smoke management in the control room	Detailed information to address the isolation and purge functions should be added to the FHA,	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	5.8	Fire protection program	Header						
CSA N293	5.8.1	Policy document	The licensee of the plant shall prepare a policy document that establishes and outlines the implementation of fire protection program. The policy document shall define management's authority and responsibilities	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	FP program documented in OPG-N-PROG-0012 provides program requirements at the current Darlington site. This will be applied to the DNNP unit		This is a programmatic section that requires input from OPG	
CSA N293	5.8.2	Development and implementation	A fire protection program shall be developed and implemented in a coordinated manner that takes into account the various fire protection activities of different engineering disciplines, functional groups , and other organization	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	FP program documented in OPG-N-PROG-0012 ([[ ]]) provides program requirements at the current Darlington site. This will be applied to the DNNP unit		This is a programmatic section that requires input from OPG	
CSA N293	5.8.3	Program elements	The fire protection program shall detail how the program will be implemented, managed,	FP Program under OPG N-PROG-RA-0012_013 Fire	Potentially In Compliance	FP program documented in OPG-N-PROG-0012 ([[ ]]) provides program requirements at the		This is a programmatic section that requires input from OPG	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			monitored, and modified during each phase of the life cycle of a plant. Activities specified In the fire protection program for each phase shall include (a) specifying the fire protection organization and their responsibilities; (b) establishing the standards and procedures for design, analysis, and operation, including impairment and compensatory measures; (c) providing staff and training to carry out fire protection responsibilities; (d) preparing and maintaining the FPA; (e) preparing and maintaining documentation of the fire protection design old the plant; (t) managing changes that affect fire protection; (g) managing the storage and handling of flammable liquids, combustible liquid , and compressed gases; (h) housekeeping (including combustible waste); (I) inspection, testing, and maintenance of fire protection design features and equipment; {j) controlling transient combustible material and noncombustible material I; (k) managing fire safety during work activities; (I) fire reporting; (m) controlling sources of ignition; (n) preparing pre-fire plans; (o) conducting drills; and (p) providing quality assurance for the activities outlined in Items (a) to (o).	Protection ([[ ]]).		current Darlington site. This will be applied to the DNNP unit.			
CSA N293	5.8.4	Fire safety plans	Fire safety plans shall be developed and implemented in accordance with the requirements of the NFCC and shall address the life cycle of the plant	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	FP program documented in OPG-N-PROG-0012 ([[ ]]) provides program requirements at the current Darlington site. This will be applied to the DNNP unit		This is a programmatic section that requires input from OPG	
CSA N293	5.8.5	Fire reporting	All fires shall be reported and shall be investigated with respect to any damage to SSC including whether such damage could affect future perform needs	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	FP program documented in OPG-N-PROG-0012 ([[ ]]) provides program requirements at the current Darlington site. This will be applied to the DNNP unit		This is a programmatic section that requires input from OPG	
CSA N293	5.8.6	Work activities	All activities or work shall be managed in accordance with the	FP Program under OPG N-PROG-RA-0012_013 Fire	Potentially In Compliance	FP program documented in OPG-N-PROG-0012 ([[ ]]) provides program requirements at the		This is a programmatic section that requires input from OPG	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			fire protection goals of this Standard	Protection ([[ ]])		current Darlington site. This will be applied to the DNNP unit			
CSA N293	5.9	Fire protection for modifications to operating plants	Heading						
CSA N293	5.9.1	General	All proposed modifications to operating plants shall be assessed to determine their potential impact on fire safety. This assessment shall be completed by the design authority in accordance with Clause 5.9.2.	Not Applicable as DNNP is a new plant					
CSA N293	5.9.2	Assessment	Heading	Not Applicable as DNNP is a new plant					
CSA N293	5.9.2.1		Assessments of modifications shall be performed in two stages, in accordance with Clauses 5.9.2.2 to 5.9.2.8.	Not Applicable as DNNP is a new plant					
CSA N293	5.9.2.2		The first-stage shall be a screening assessment of all modifications for their potential to affect (a) the established design basis of fire protection SSCs; or (b) the fire protection goals and criteria of Clauses 5.2 to 5.5. Note: This Clause does not apply to economic oafs beyond those established by the licensee In accordance with Clause 5. 2, Item (c).	Not Applicable as DNNP is a new plant					
CSA N293	5.9.2.3		The second stage shall be a detailed assessment of those modifications whose first-stage screening assessment indicates a potential to affect fire protection design basis, goals, or criteria.	Not Applicable as DNNP is a new plant					
CSA N293	5.9.2.4		Modifications for which the first-stage assessment indicates a potential impact on fire protection design basis, goals, or criteria shall be subject to a qualified third party	Not Applicable as DNNP is a new plant					

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			review and the review shall be submitted to the AHJ. Note: The purpose of this review Is to provide assurance that the modification w//1 not adversely affect the fire protection design basis, goals, or criteria and to verify comp/lance with this Standard.						
CSA N293	5.9.2.5		Modifications for which the first-stage assessment indicates no potential impact on fire protection goal shall not be subject to any further qualified third party review or require submission to the AHJ.	Not Applicable as DNNP is a new plant					
CSA N293	5.9.2.6		All third party reviews shall be conducted by qualified persons from organizations whose management and financial operations are independent of the design organization. Licensees may, with the concurrence of the AHJ, use their 1ualified design staff, provided that it can be demonstrated that the appropriate level of independence can be maintained.	Not Applicable as DNNP is a new plant					
CSA N293	5.9.2.7		Modifications for which the first-stage assessment indicates a potential impact on fire protection design basis, goals, or criteria shall be considered as new construction for the application of required Codes and Standards.	Not Applicable as DNNP is a new plant					
CSA N293	5.9.2.8		All assessments carried out in accordance with Clause 5.9 shall be maintained as permanent plant records	Not Applicable as DNNP is a new plant					
CSA N293	5.10	Quality assurance	The fire protection program for the life cycle of a plant shall comply with the quality assurance requirements of CSA N286. In addition, (a) periodic audits shall be performed to ensure that the fire protection program is adequate and is being implemented in	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]]).	IPotentially In Compliance	FP program documented in OPG-N-PROG-0012 ([[ ]]) provides program requirements at the current Darlington site. This will be applied to the DNNP unit.		This is a programmatic section that requires input from OPG	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			accordance with Clause 8; and (b) the licensee shall establish a systematic approach to staff training that defines the qualification required for the various responsibilities under the fire protection program.						
CSA N293	6	Design requirements for the prevention and mitigation of fires	Header						
CSA N293	6.1	General	Clause 6 specifies design requirements for the prevention and control of fires, the mitigation of fire hazards, and the protection of plant occupants, equipment, and structures. Clause 6 also specifies some of the means to achieve the nuclear safety goals, objectives, and criteria of Clause 5.	Information				FSSA [[ ]] describes measures to meet nuclear safety goals, objectives and criteria.	
CSA N293	6.2	Objectives	Header						
CSA N293	6.2.1	Redundant systems	Redundant systems To ensure that the nuclear safety objectives stated in Clause 5.4.1 are satisfied, the plant shall be provided with redundant fire safe shutdown systems. These systems shall be functionally independent and physically separated such that at least one group is able to perform the required safety functions in the event of a fire	FSSA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. Separation of required trains of equipment is identified		FSSA [[ ]] describes redundant safe shutdown trains of equipment	
CSA N293	6.2.2	Mitigation measures	Mitigation measures Fire mitigation measures shall include one or more of the following: (a) firewalls; (b) fire separations; (c) spatial separations; (d) heat shields; (e) smoke and heat control; (f) firestop systems; and (g) fire-resistant coatings.	FHA [[ ]] FSSA [[ ]]	Potentially in Compliance	Potentially in Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.3	Separation	Header						
CSA N293	6.3.1	Separation between redundant fire safe shutdown systems	Header						

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	6.3.1.1		The separation of redundant fire safe shutdown systems required by Clause 6.2.1 shall be provided by (a) fire barriers; or (b) spatial separations, in combination with the compensatory measures specified in Clause 6.3.3.3	FSSA [[ ]]	Potentially in Compliance	The detailed FSSA is in the preliminary stage of development. Separation of required trains of equipment is identified		FSSA [[ ]] describes crediting of redundant safe shutdown trains of equipment using credited fire barriers with exception of MCR and containment	
CSA N293	6.3.1.2		Except as permitted in Clause 6.3.1.3, separation between redundant fire safe systems provided by fire barriers meeting the requirements of Clause 6.3.1.4	FSSA [[ ]]	Potentially in Compliance	The detailed FSSA is in the preliminary stage of development. Separation of required trains of equipment is identified		FSSA [[ ]] describes crediting of redundant safe shutdown trains of equipment using credited fire barriers with exception of MCR and containment	
CSA N293	6.3.1.3		Where redundant fire safe shutdown systems are located in the same fire compartment and it is impractical to separate them as required in Clause 6.3.1.1, combustible materials within the fire compartment shall be limited to the combustible materials associated with the SSC needed for operation	FSSA [[ ]] FHA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. No redundant trains of safe shutdown equipment have been identified in the same room with the exception of the Control room		Currently no locations have been identified where redundant Safe Shutdown system are in the same room. As design is completed this will be addressed if needed This provision will be reviewed under detailed design in FSSA [[ ]]	
CSA N293	6.3.1.4		The fire-resistance rating of the separation specified in Item (a) of Clause 6.3.1.1 shall be (a) 3 h; or (b) a lower rating determined by the FPA, when the fire separation is provided in conjunction with an automatic fire suppression system	FSSA [[ ]] FHA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. Separation of required trains of equipment is identified		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.3.1.5		Where fire separations are used for the safety of essential staff or the protection of safety-related systems, closures and firestops shall have a fire protection rating equal to the fire-resistance rating of the separation	FHA [[ ]]	Potentially In Compliance	Section 3.2 specifies that penetrations in a fire barrier be rated to the same rating as the barrier	Action	Where fire separations are used for the safety of essential staff or the protection of safety-related systems, closures and firestops shall have a fire protection rating equal to the fire-resistance rating of the separation	Add N293 6.3.1.5 to FHA [[ ]]
CSA N293	6.3.2	Separation of the turbine generator building (hall)	Header						
CSA N293	6.3.2.1		The structure housing the turbine generator and associated ancillary process equipment (commonly referred to as the turbine generator building or turbine generator hall) may be considered a separate building as defined in the NBCC, provided that the structure is	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires a 3-hour rated fire separation		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			separated from other buildings or structures by a firewall or by a distance that meets the spatial separation and exposure protection requirements of the BCC						
CSA N293	6.3.2.2		The structure housing the turbine generator and associated ancillary process equipment shall be separated from adjacent rooms and areas by a fire separation with a fire-resistance rating not le than 3 h	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires a 3-hour rated fire separation		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.3.2.3		The structure housing the turbine generator and associated ancillary process equipment shall be protected against progressive structural collapse. Except as permitted by Clause 6.3.2.4, structural collapse due to fire shall be prevented by limiting the fire loading or separating the supporting structure with measures such as insulation, sprinklers, or heat removal system	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.3.2.4		The requirements of Clauses 6.3.2.2 and 6.3.2.3 may be addressed by separating the structure housing the turbine generator and associated ancillary process equipment from adjacent rooms and areas using an intervening firewall constructed in accordance with the NBCC. However, for application of other NBCC requirements, the firewall shall be considered a fire separation.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	6.3.3	Spatial separation	Header						
CSA N293	6.3.3.1		Except as required by Clause 6.3.3.3, spatial separation, in combination with additional compensatory measures, may be used instead of fire barriers where the installation of a fire barrier (a) is impractical due to the design of the space or the presence of process equipment and services; or (b) would interfere with nuclear	FHA [[ ]]	Not Applicable	Spatial separation is not used in the design of the BWRX-300		Review of this provision with respect to safe shutdown assessment will be performed in detailed design under FSSA [[ ]]	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			operation or pose a risk to nuclear safety						
CSA N293	6.3.3.2		Spatial separation shall not be used to meet the egress and firewall requirements of the NBCC, except for inside the containment structure	FHA [[ ]]	Not Applicable	Spatial separation is not used in the design of the BWRX-300		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.3.3.3		Where spatial separation is used to satisfy Clause 6.3.3.1, additional compensatory measures shall be used as follows: (a) There shall be no intervening combustible materials, including combustible materials that might be present due to component failure, that can spread a fire across the spatial separation. (b) The damage to more than one group of fire safe shutdown systems located within the same fire compartment that is due to the effects of fire or products of combustion across the spatial separation shall be assessed and prevented. (c) Fire detection and suppression and/or other fire protection measures shall be provided in accordance with the FPA. The electrical power supply to mechanical equipment shall meet the requirements of Clause 7.2.1.13.	FHA [[ ]]	Not Applicable	Spatial separation is not used in the design of the BWRX-300		This clause will be reviewed during detailed design for safe shutdown SSC. The initial strategy is to separate safe shutdown trains using fire barriers under FSSA [[ ]]	
CSA N293	6.4	Protection of fire safe shutdown systems and equipment	Header						
CSA N293	6.4.1	General	General Where a fire hazard is located in the same fire compartment as a fire safe shutdown system or its components, and the fire hazard has the potential to damage or disable the system or its components, fire barriers or spatial separation (as required by Clause 6.2.2) shall be provided	FSSA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. The analysis will demonstrate that fire in will not damage more than one train of safe shutdown equipment, therefore no additional fire barrier is required		The FSSA strategy is to retain separate safe shutdown paths so total burnout in a fire area will not prevent the safe shutdown equipment in the other path in full-filling the safety function. This requirement would be a contingency if needed.	
CSA N293	6.4.2	Physical or spatial separation	Physical or spatial separation Physical or spatial separation between redundant equipment within a fire safe shutdown system shall be provided. The extent of the separation required shall be based on the fire	FSSA [[ ]]	Potentially In Compliance	The detailed FSSA is in the preliminary stage of development. Separation of required trains of equipment is identified		This clause will be reviewed during detailed design for safe shutdown SSC. The initial strategy is to separate safe shutdown trains using fire barriers under FSSA [[ ]]	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			hazards and the vulnerability of the components, as identified in the FPA.						
CSA N293	6.5	Reducing the spread of fire	Header						
CSA N293	6.5.1	Storage of combustible materials	Header						
CSA N293	6.5.1.1		An area or room used for the storage or handling of combustible materials or flammable or combustible liquids, solids, or gases shall be separated from the remainder of the building by a fire separation having a minimum 2 hour resistance rating	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires 2-hour fire barriers for combustible storage		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.5.1.2		The fire-resistance rating of the fire separation required by Clause 6.5.1.1 shall be determined in accordance with the NBCC, the NFCC, or the FPA, whichever is most stringent	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires 2-hour fire barriers for combustible storage		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.5.2	Firestopping	Header						
CSA N293	6.5.2.1		Piping, tubing, wiring, cables, raceways, structural supports, and other equipment that penetrates a fire separation shall be sealed by a fire stop system to provide a fire protection rating equivalent to the fire-resistance rating of the fire separation	FHA [[ ]]	Potentially in Compliance	Section 3.2 specifies that penetrations in a fire barrier be rated to the same rating as the barrier	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]] listing ULC-S115
CSA N293	6.5.2.2		Penetration firestop systems shall have an FH rating in accordance with CAN/ULC-S 115	FHA [[ ]]	Potentially In Compliance	Section 3.2 specifies that penetrations in a fire barrier be rated to the same rating as the barrier	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]] listing ULC-S115. Update the FHA and SDD to identify CAN/ULC-S 115
CSA N293	6.5.2.3		All joints in a fire separation shall be sealed by a firestop system to provide a fire-resistance rating equivalent to the fire-resistance rating of the fire separation. Joint firestop systems shall have an FTH rating in accordance with CA /ULC-S 115.	FHA [[ ]]	Potentially In Compliance	Section 3.2 specifies that penetrations in a fire barrier be rated to the same rating as the barrier	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]] listing ULC-S115. Update the FHA and SDD to identify CAN/ULC-S 115
CSA N293	6.5.2.4		Plant design documentation shall include a record of all firestops, including their locations, fire rating requirements, and methods of qualification (e.g.,		Potentially In Compliance	This is a procurement issue. As the fire stops are identified documentation will be provided	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]] listing ULC-S115.

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			conformance to CAN/ULC S-115)						
CSA N293	6.5.3	Layout of cable trays	Header						
CSA N293	6.5.3.1		Spatial separation or fire barriers shall be provided between cable trays and risers to reduce the potential for fire spread and to allow sufficient space for firefighting	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 provides requirement for separation of cable trays	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]]listing ULC-S115
CSA N293	6.5.3.2		Where fire barriers are adjacent to or between cable trays and risers, ventilation or other measures shall be provided for cables to ensure that the design limits for temperature are not exceeded	FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]] listing ULC-S115.
CSA N293	6.5.3.3		Cable trays and risers shall be located away from fire hazards to reduce the potential for cables to be ignited or damaged by fire	FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]] listing ULC-S115.
CSA N293	6.5.4	Fire protection of structures	Header						
CSA N293	6.5.4.1		To ensure the integrity of fire separation assemblies, structures supporting fire separations shall have a fire-resistance rating greater than or equal to the fire separation being supported. Note: The structures supporting fire separations can include fire separation assemblies, loadbearing walls, columns, beam , and arches	FHA [[ ]]	Potentially In Compliance	Section 4.1.5 includes the requirement for structural integrity for fire barriers		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.5.4.2		The fire protection design of the plant shall assess the impact of fire on building structures and equipment supports. Structural failures during fires shall be prevented where such failures could create unacceptable consequences for any of the fire protection goal .	FHA [[ ]]	Potentially In Compliance	Section 4.1.5 includes the requirement for structural integrity for fire barriers		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.6	Life Safety	Header						
CSA N293	6.6.1	Egress routes	Header						
CSA N293	6.6.1.1		Interior aisles, corridors, stairs, walkway , catwalks, and platform used for egress shall meet NBCC requirements for width,	Refer [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			height, treads, risers, guards, handrails, and headroom						
CSA N293	6.6.1.2		Emergency and exit lighting shall be provided in airlocks and transfer chambers, in addition to the areas required by the NBCC	[[ ]]	Potentially In Compliance	As described in Life Safety Requirements [[[ ]]], emergency lighting requirements, Emergency lighting shall be provided in airlocks and transfer chambers	Develop design detail to provide final fire protection assessment Emergency lighting shall be provided in airlocks and transfer chambers	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.6.1.3		Emergency lighting hall be provided with a minimum 2 h emergency power supply	[[ ]]	Potentially In Compliance	As described in Life Safety Requirements [[[ ]]], emergency lighting requirements, Emergency lighting shall be provided with a minimum 2-hour emergency power supply. ~~Emergency lighting shall be provided in airlocks and transfer chambers~~	Develop design detail to provide final fire protection assessment ~~Potentially~~ In Compliance	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.6.1.4		Except as required in Clause 6.7.2.2, emergency lighting shall provide a minimum average lighting level of 10 lx and a minimum of 1 lx measured at the floor or tread level	[[ ]]	Potentially In Compliance	As described in Life Safety Requirements [[[ ]]], emergency lighting requirements, Emergency lighting shall provide a minimum average lighting level of 10 lux and a minimum 1.1 lux measured at the floor or tread level. ~~Potentially~~ In Compliance	Develop design detail to provide final fire protection assessment	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.6.1.5		Egress routes shall be clearly identified with exit signage, other specialized signage, emergency lighting, or floor demarcation so that exits can be readily located by occupants	[[ ]]	Potentially In Compliance		~~Action~~		Add clause 6.6.1.5 to LS Req document [[ ]]: As described in Life Safety Requirements ([[ ]]), emergency lighting requirements, egress routed shall be clearly identified with exit signage, other specialized signage, emergency lighting, or floor demarcation so that exits can be readily located by occupants
CSA N293	6.6.2	Containment structures	Header						
CSA N293	6.6.2.1	General	General Where compensatory measures acceptable to the AHJ are provided to protect occupants of the containment structure, the following deviations from the NBCC shall be permitted: (a) Containment structure airlocks are not required to meet the NBCC exit requirements for (i) fire protection rating;	Refer [[ ]]	Potentially In Compliance	Containment is inerted during power operation and is not able to be occupied.	Compensatory measure for shutdown conditions should be identified.	Alternatives to code requirements will be presented to the AHJ as described in [[ ]] Rev A BWRX-300 Alternative and Graded Approaches.	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			(ii) fire-resistance rating; (iii) pressurization; (iv) door swing; (v) door release; and (vi) travel distance. (b) The fire separation between floor assemblies that is required by the NBCC, Division B, Articles 3.2.2.73 to 3.2.2.75, does not apply. (c) Open stairways may serve as access to an exit.						
CSA N293	6.6.2.2	Egress from containment structures	Header						
CSA N293	6.6.2.2.1		A minimum of two means of egress from the reactor containment structure shall be provided and shall be located such that one remains available should the other become inaccessible due to fire	Refer [[ ]]	Potentially In Compliance	Potentially In Compliance	Potentially In Compliance	Equivalent requirement in Life Safety Requirement document [[ ]] for NFPA 101 4.5.3.1 Two means of egress, as a minimum, shall be provided in every building or structure, section, and area where size, occupancy, and arrangement endanger occupants attempting to use a single means of egress that is blocked by fire or smoke. The two means of egress shall be arranged to minimize the possibility that both might be rendered impassable by the same emergency condition.	
CSA N293	6.6.2.2.2		Airlock doors shall be designed to remain operable in the event of a fire within the containment structure	Refer [[ ]]	Potentially In Compliance		Action		Provide additional detail in BWRX-300 Primary Containment System [[[ ]]] regarding airlock operability
CSA N293	6.6.2.2.3		For the reactor containment structure, the travel distance to an exit may be measured from the egress door of the containment structure	Refer [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.6.3	Access for firefighting	Where compensatory measures acceptable to the AHJ are provided for window and access panel openings, the requirements of the NBCC, Division B, Sentence 3.2.S. 1 (1), shall not apply	Refer [[ ]]	Potentially In Compliance	No windows or access panels are part of the current design for the reactor building, turbine building, control building or radwaste building			
CSA N293	6.7	Maintaining plant operation during a fire	Header						
CSA N293	6.7.1	Control room complex	Header	Information	Information				

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	6.7.1.1		The control room complex shall be separated from the remainder of the building by a fire separation with a 2 h fire-resistance rating, unless a greater fire-resistance rating is required by the FPA	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires the control room to be separated by 2-hour fire separation		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.7.1.2		The control room complex shall be designed to minimize smoke infiltration during a fire	FHA [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires smoke management in the control room		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.7.1.3		The control room complex shall be protected so that, for a 2 h period following the start of a fire outside the control room complex, it will not contain more than 1% of contaminated air (i.e., products of combustion) by volume	Refer [[ ]] U41 SDD [[ ]]	Potentially In Compliance	Section 4.3.2.2 requires smoke management in the control room		This requirement is contained in U41 SDD [[ ]]	
CSA N293	6.7.2	Travel routes between control rooms	Header						
CSA N293	6.7.2.1		At least two travel routes shall be provided from the main control room to the secondary control room. These routes shall (a) not be subject to common cause failure; (b) be designed and protected in accordance with the width, height, fire-resistance rating, and integrity requirements specified for exits in the NBCC (c) be designed to minimize smoke infiltration during a fire, such that the routes will not contain more than I% of contaminated air; and (d) be provided with emergency lighting in accordance with the NBCC, Division 81 Article 3.2.7.3. Note: Where a secondary control room operator has been assigned, protected travel routes are not necessary.	Refer [[ ]]	Potentially in Compliance	Section 4.3,2,2 identifies the two pathways from the main control room to the secondary control room.	Action		Open issue created to track design details associated with seismic requirements for both travel paths.
CSA N293	6.7.2.2		In areas required for emergency operator action, a minimum lighting level of 10 lx shall be provided at floor level	Refer [[ ]]	Potentially In Compliance	Currently no operator actions identified outside of the control room	Revisit when FHA detailed design completed	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8	Fire prevention by design	Header						
CSA N293	6.8.1	Containment material in	Header						

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
		buildings and interior finishes							
CSA N293	6.8.1.1	Control of combustible materials	Control of combustible materials Buildings shall be constructed using noncombustible construction in accordance with the NBCC. Because limited amounts of combustible material are permitted by the NBCC in buildings of noncombustible construction, the requirements of Clause 6.8.1 are in addition to the NBCC requirements.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	6.8.1.2	Metal roof construction	Metal roof construction Roof decks shall be of a type that does not propagate fire beneath the deck. Types in accordance with CAN/ULC- S126 or considered Class metal deck as defined by Factory Mutual may be used. Roof covering shall not be readily ignitable when exposed to fire. Coverings in accordance with Class A requirements in CAN/ULC- S107 may be used.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Action		Provide additional detail for BWRX 300 roof deck requirements inBWRX-300 General Civil Structural Design Criteria ([[ ]])
CSA N293	6.8.1.3	Combustible materials used in buildings and fixtures	Header						
CSA N293	6.8.1.3.1		The use of building fixtures containing combustible materials shall be minimized in plant buildings	FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add content to FHA [[ ]]
CSA N293	6.8.1.3.2		Exposed foam plastics shall not be used as parts for buildings or fixtures	FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add content to FHA [[ ]]
CSA N293	6.8.1.3.3		Shelves and racks designed for equipment installation and storage shall not be constructed of combustible materials	FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add content to FHA [[ ]]
CSA N293	6.8.1.4	Combustible materials used in interior finishes	Combustible materials used in interior finishes Interior finishes shall meet the following requirements: (a) Interior wall or ceiling finishes shall have a flame-spread rating less than or equal to 25 and smoke development of less than 100 when tested in accordance with CAN/ULC- S102. (b) Interior floor finishes shall	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Action	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	Update C&S [[ ]] to include CAN/ULC- S102

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			have a flame-spread rating less than or equal to 300 and smoke development classification of less than 450 when tested in accordance with ASTM E648 and ASTM E662. (c) Epoxy liner on the containment wall shall have a flame-spread rating less than or equal to 40 when tested in accordance with CAN/ULC-S102 or CAN/ULC-S102.2.						
CSA N293	6.8.2	Design to facilitate control of transient materials	Header						
CSA N293	6.8.2.1		Storage and laydown areas hall be appropriately located, sized, and equipped with fire protection to minimize the fire hazard they pose to nuclear and life safety	FHA [[ ]]	Potentially In Compliance	Storage areas in the reactor building have been identified and will be separated with 2-hour fire barriers	No storage areas have been identified in the Control Building, Turbine Building and Radwaste building. Further review should be complete as the design for these building is finalized	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.2.2		During the operation of the plant, transient materials shall be controlled so that they do not pose a hazard beyond the capabilities of existing fire protection measure . See Clause 8 for specific operational control measures	FHA [[ ]]	Potentially In Compliance		Potentially In Compliance	This is an operational issue and is not part of the design process	
CSA N293	6.8.2.3		Plant design shall incorporate storage facilities that can accommodate the greatest volume of transient combustible materials anticipated during operation and maintenance	FHA [[ ]]	Potentially In Compliance		Determination of the amount of transient combustible needs to be identified	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.2.4		Storage facilities shall be located so that fire within the facilities does not adversely impact safety-related equipment located nearby	FHA [[ ]]	Potentially In Compliance	Storage areas do not contain safety-related equipment and a fire inside a storage area would not spread and affect safety-related equipment due to fire barriers installed	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add content to FHA [[ ]]
CSA N293	6.8.2.5		The facility shall be provided with storage rooms, to minimize the need for the temporary storage or staging of materials outside of storage rooms in the	FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add content to FHA [[ ]]

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			containment structure, reactor auxiliary building, and control room complex						
CSA N293	6.8.3	Control of combustible materials in (Heating, Ventilation and Air Conditioning) (HVAC) equipment	Header						
CSA N293	6.8.3.1		Air-handling ducts, duct connectors, and plenums shall be made of non- combustible materials	Refer FHA [[ ]] U41 SDD [[ ]]	Potentially in Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add content to U41 SDD [[ ]]
CSA N293	6.8.3.2		Air filter media (excluding charcoal filters and HEPA filters) used in air- handling systems shall meet the combustibility requirements of Class 1 in accordance with CAN/ULC-S111	Refer FHA [[ ]] U41 SDD [[ ]]	Potentially in Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.3.3		HEPA filters shall meet the combustibility requirements of ANSI/UL-586	Refer FHA [[ ]] U41 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.3.4		Fire protection for charcoal filters shall be provided to ensure that fires do not spread beyond the filter housing and to prevent the uncontrolled release of contamination into the atmosphere	Refer FHA [[ ]] U41 SDD [[ ]] K30 SDD	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	6.8.4	Control of combustible materials in electrical equipment and cables	Header						
CSA N293	6.8.4.1		Plant design shall minimize the use of plastics, wood, and other combustible materials in electric equipment, cable raceways, and wiring racks	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	6.8.4.2		Electric and control cabinets shall be designed to minimize flame-spread across adjacent cabinets	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review;	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								(b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	6.8.4.3		Electrical cable trays and conduits shall be constructed of noncombustible materials	FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.4.4		Electrical cables shall have a limited flame-spread rating and produce a low level of smoke and corrosive gases. The wires and cables shall exhibit a maximum vertical char of not more than 1.5 m when tested in conformance with the vertical flame tray test (Method 2-FT4) test in CSA C22.2 No. 2556	FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.5	Control of flammable liquids and combustible liquids	Header						
CSA N293	6.8.5.1	General	General In addition to the requirements of the NFCC, the handling, use, and storage of flammable liquids and combustible liquids shall meet the requirements of Clauses 6.8.5.2 and 6.8.5.3	FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.5.2	Use of flammable liquids and combustible liquids in design	Use of flammable liquids and combustible liquids in design The use of flammable liquids and combustible liquids in equipment for hydraulic power, lubrication, heat transfer, and electrical insulation shall be minimized. Where they cannot be eliminated, preference shall be given to liquids with a higher flash point.	FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add requirement to FHA [[ ]]to cover N293 clause 6.8.5.2
CSA N293	6.8.5.3	Containment of combustible liquids	Containment of combustible liquids Systems containing combustible liquids such as lubrication oils and hydraulic oils shall be designed to minimize leakage of these liquids. In locations where an uncontrolled leakage of the liquid could jeopardize fire safe shutdown systems, the design shall provide devices to collect, divert, and safely contain leakages from pressurized and non- pressurized components in order to prevent the ignition of	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis. This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]]	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			the oil or limit the size of fire and achieve fire safe shutdown.						
CSA N293	6.8.6	Control of gases	Header						
CSA N293	6.8.6.1	Reducing the fire and explosion hazards of hydrogen	Reducing the fire and explosion hazards of hydrogen Systems containing hydrogen shall be designed in accordance with NFPA 55. In addition, the design shall meet the following requirements: (a) Hydrogen supply cylinders shall be located apart from safety-related systems in order to prevent damage from fire or explosion. (b) Where piping or tubing containing hydrogen is routed through fire compartments containing fire safe shutdown systems, piping or tubing shall be designed to retain pressure boundary integrity during and following a design basis earthquake.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Action	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]] Add requirement to FHA [[ ]] to cover N293 clause 6.8.6.1.
CSA N293	6.8.6.2	Controlling the production of hydrogen and deuterium in processes	Controlling the production of hydrogen and deuterium in processes that produce hydrogen or deuterium gas shall be designed to prevent the creation of an ignitable mixture. This can be achieved using venting, dilution, controlled combustion, or re- combination. The system shall be designed so that hydrogen control failure sets off an alarm in the main control room and initiates operator action.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Action	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	Add requirement to FHA [[ ]] to cover N293 clause 6.8.6.2
CSA N293	6.8.6.3	Use of compressed gases	Use of compressed gases In addition to the requirements of the NFCC, storage containers and piping for compressed gases shall not be located in the main control room complex and in other fire compartments with safety- related systems unless they are required for equipment or operation within that area. In this case, the design shall assess potential failures of the compressed gas components during a fire and shall ensure that the nuclear safety objectives of Clause 5.4.1 are met	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	There is no intent to store compressed gas containers in the control room or areas containing safety class equipment. FHA room tables will specify areas containing compressed gases and hazards assessed	This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]]

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	6.8.6.4	Aerosol storage	Facilities for aerosol storage shall be designed in accordance with the NFCC and NFPA 30B	FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.7	Bulk storage of dangerous goods	Bulk storage of dangerous goods Bulk storage of dangerous goods shall be (a) located outdoors in detached storage buildings or cut off rooms (see Clause 8.2.4 for additional handling requirements); (b) located to limit exposures that can impact nuclear safety; (c) separated from other buildings in accordance with the NFCC and NFPA 55; and (d) protected by fire separations or spatial separation from outdoor transformers, building egress paths, fire department vehicular access routes, ventilation intake openings, storage warehouses, buildings of combustible construction, water supplies for fire protection, isolation valves that control processes or fire protection systems, and sewage drains.	FHA [[ ]]	Potentially In Compliance	FHA room data sheets assess hazardous substances and estimate combustible loading. Margin for additional transient loading is provided in preliminary evaluation.	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add requirement to FHA [[ ]] to cover N293 clause 6.8.7
CSA N293	6.8.8	Storage of radioactive materials	Storage of radioactive materials Radioactive waste storage rooms and rooms for the storage of radioactive materials shall be separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 2 h.	FHA [[ ]] [[ ]]	Potentially In Compliance	Covered under NBCC clause 3.6.2.2. FHA room data sheets do assess radioactive release from each fire area.	~~Action~~	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add requirement to FHA [[ ]] to cover N293 clause 6.8.8
CSA N293	6.8.9	Control of ignition sources							
CSA N293	6.8.9.1	Minimizing ignition sources by design	Minimizing ignition sources by design Installed devices and process operations that, by design, pose an ignition fire hazard shall be eliminated or controlled to minimize the occurrence of fires	FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.9.2	Minimizing electrical fires	Minimizing electrical fires. Electrical equipment and wiring shall be installed in accordance with the Canadian Electrical Code, Part I	[[ ]] OPG Applicable Codes and Standards Report	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	6.8.9.3	Protection against lightning	Protection against lightning All structures, including buildings, above ground tanks, stacks, antennas, construction cranes,	[[ ]] OPG Applicable	Potentially In Compliance	Lightning protection is provided for exposed structures, and buildings housing		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			and meteorological towers, shall be protected by a lightning protection system in accordance with NFPA 780	Codes and Standards Report BWRX-300 Plant Electrical Systems Grounding Requirements		safety-related and fire protection equipment. Tanks, stacks, etc.			
CSA N293	9.8.9.4	Protection against external fires	Protection against external fires Potential external fires shall be identified and assessed, and protection shall be provided to ensure that the nuclear safety criteria in Clause 5.4 are met. The impact on the plant and its occupants of fires from an external source shall be minimized by site selection, adequate spatial separation, or barriers.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	An open item is created to ensure the CCR will cover all locations within the protected area and areas external to the protected area that are under the scope of CSA N293, including non-nuclear exposures
CSA N293	7	Design and installation requirements for fire protection systems	Header						
CSA N293	7.1	General	Header						
CSA N293	7.1.1	Scope	Clause 7 specifies requirements for the design, installation, and performance of fire alarm systems and fire suppression systems in accordance with the fire protection concepts outlined in Clause 5	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to meet applicable requirements associated with fire alarm and suppression systems	
CSA N293	7.1.2	Qualification	Equipment shall be tested by a nationally recognized fire test laboratory and marked to indicate current compliance with the applicable nationally recognized standard	U43 SDD [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2	Fire alarm systems	Header						
CSA N293	7.2.1	General	Header						
CSA N293	7.2.1.1		Fire alarm systems shall be designed, installed, and verified in accordance with (a) the NBCC; (b) CAN/ULC-S524; (c) CAN/ULC-S537; and (d) the additional requirements of this Standard. In the case of conflict between requirements, the most stringent requirements shall apply.	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	7.2.1.2		In addition to the requirements in Clause 7.2.1.1, fire alarm systems using very early warning fire detection technology shall be designed, installed, and verified in accordance with the requirements of NFPA 76 (including Annex B)	U43 SDD [[ ]] FHA [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.1.3		In addition to the requirements of the NBCC for fire alarm and voice communication systems, fire alarm systems with integrated, supervised, one way voice communication shall be provided in all structures and exterior areas within the protected area, as well as structures and areas external to the protected area where SSC directly support the plant. The supervised one-way voice communication system shall provide main control room staff with a means to give one-way voice instruction to occupants during an emergency. Where intelligible voice communication is not possible (e.g., in locations remote from buildings), audible and visual signal devices and voice communication shall be provided at building entrances.	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.1.4		Means shall be provided for intelligible two-way voice communication between emergency responders and the shift manager throughout the protected area and external areas under the scope of this Standard. Where redundant means of communication are provided, this two-way voice communication system shall not require electrical supervision.	U43 SDD [[ ]] BWRX-300 Human Factors Engineering Design Requirement Document [[ ]]	Potentially In Compliance			[[ ]] contains requirements for a two-way communication system: It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.1.5		The fire alarm system in buildings shall (a) be monitored by a display and control centre located in a central alarm and control facility (CACF) that includes the functions required by the NBCC; (b) meet the requirements of Clause 7.2.1.13 for the protection of electric cables; and (c) where data gathering panels	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			are used, meet the requirements for large-scale networks outlined in CAN/ULC- S524						
CSA N293	7.2.1.6	Staged operation	Header						
CSA N293	7.2.1.6.1		Fire alarm systems shall provide two-stage operation, as follows: (a) first-stage - an alert signal, as defined by the NBCC; and (b) second stage - an alarm signal, as defined by the NBCC.	Potentially in Compliance	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.1.6.2		The alert signal shall be directed to CACF staff and may remain silent throughout the balance of the building to suit the requirements of the plant's emergency notification procedures. On receipt of an alert signal, CACF staff shall have the capability to immediately provide a voice announcement over the fire alarm system, throughout the protected area and external areas under the scope of this Standard.	U43 SDD [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.1.6.3		The alarm signal shall be activated automatically in the event that CACF staff do not acknowledge the signal within 5 min of initial fire alarm system activation. The alarm signal shall be supplemented by voice announcements. There shall be no delay in the ability to override the alarm signal and operate voice communication functions.	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.1.6.4		Buildings less than 500 m^2 (5000 ft2) in building area may be provided with a single stage fire alarm system	U43 SDD [[ ]]	Information				
CSA N293	7.2.1.7		The fire alarm and voice communication systems shall be equipped with backup batteries capable of providing supervisory functions for not less than 24 h. Immediately following this 24 h period, emergency battery power under full load shall be available for not less than 2 h.	U43 SDD [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	7.2.1.8		The power supply for the fire alarm and voice communication systems shall be from a reliable and redundant power supply that is in compliance with CSA C282 or N290.5, and the NBCC requirements for building emergency power	U43 SDD [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.1.9		The MCR shall be considered the CACF	U43 SDD [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment The MCR is in the Control Building	
CSA N293	7.2.1.10	Display and control centre	Header						
CSA N293	7.2.1.10.1		A display and control centre shall be located in the MCR and in each SCA within the plant. The display and control centre shall be a proprietary panel that meets the requirements of Clause 7.1.2, capable of providing detailed information on the location and nature of the signal. In addition, the panel operator shall be able to control the fire alarm system without having to leave his or her station. Note: The panel operator need not be a licenced nuclear operator.	U43 SDD U43 SDD [[ ]]	Potentially in Compliance			Open upon final review of FP drawings	
CSA N293	7.2.1.10.2		Each display and control centre in an SCA shall, as a minimum, provide full display and control for all portions of the fire alarm system that are located within the area under the control of the SCA display and control centre	U43 SDD [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.1.10.3		The fire alarm system shall be capable of transferring control from the MCR display and control centre to the SCA display and control centre. The transfer of control shall be initiated manually from the MCR and shall be incorporated into emergency operating procedures.	U43 SDD [[ ]]	Potentially in Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add statement to U43 SDD [[ ]]: The fire alarm system shall be capable of transferring control from the MCR display and control centre to the SCA display and control centre. The transfer of control shall be initiated manually from the MCR and shall be incorporated into emergency operating procedures.
CSA N293	7.2.1.11		Two independent means of communication shall be provided to notify emergency response agencies, including off-site response agencies	U43 SDD [[ ]] BWRX-300 Human Factors	Potentially in Compliance		Action	BWRX-300 Human Factors Engineering Design Requirement Document [[ ]]: Provisions shall be made to ensure complete internal and external communication capabilities during emergencies.	Add detail to BWRX-300 Human Factors Engineering Design Requirement Document [[ ]]

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
				Engineering Design Requirement Document [[ ]]					Two independent means of communication shall be provided to notify emergency response agencies, including off-site response agencies.
CSA N293	7.2.12	Extinguishing agent releasing systems	Header						
CSA N293	7.2.1.12.1		Automatic fire suppression systems that require fire detection and controls for actuation shall be equipped with hardware qualified in accordance with Clause 7.1.2 for use as an extinguishing agent- releasing system. Releasing hardware, whether integrated in a fire alarm panel or in stand-alone panels, shall be installed and verified in accordance with the requirements for fire alarm systems in the NBCC and CAN/ULC-S524.	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	7.2.1.12.2		Where separate extinguishing agent- releasing panels or modules are integrated into the fire alarm panel, they shall (a) be connected to the building fire alarm system to provide system-wide visual annunciation of all fire, supervisory, and trouble signals that are annunciated on the releasing panel; (b) incorporate a common supervisory signal and a common trouble signal rather than using individual signals; (c) have a manual operation mode to discharge extinguishing agents; and (d) have a power supply, including an emergency power source, that meets the requirements for fire alarm systems in Clauses 7.2.1.7 and 7.2.1.8. Both the normal power supply and the emergency power source shall include power requirements for energized solenoid and alarm relays. In addition, each fire detection zone, individual panel, and individual module shall have its address annunciated on the	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			building fire alarm system and shall be monitored.						
CSA N293	7.2.1.13	Fire endurance of electrical conductors	Header						
CSA N293	7.2.1.13.1		Electrical conductors that are installed in service spaces containing other combustible materials and that are used in connection with fire alarm systems and emergency equipment, including fire alarm cables (e.g., fire-related smoke control equipment, pressurization equipment to limit smoke spread, equipment for the emergency operation of elevators, venting equipment to aid firefighting, the display and control centre fire-related equipment, and the voice communication system), shall be capable of performing their intended functions for not less than 1 h after the start of a fire	U43 SDD [[ ]] FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]] associated with CSA N293 7.2.1.13.1 Electrical conductors that are installed in service spaces containing other combustible materials and that are used in connection with fire alarm systems and emergency equipment, including fire alarm cables (e.g., fire-related smoke control equipment, pressurization equipment to limit smoke spread, equipment for the emergency operation of elevators, venting equipment to aid firefighting, the display and control centre fire-related equipment, and the voice communication system), shall be capable of performing their intended functions for not less than 1 h after the start of a fire.
CSA N293	7.2.1.13.2		Where the central alarm and control facility and the fire alarm control unit are in different fire compartments, the electrical conductors connecting the central alarm and control facility to the fire alarm control unit shall be protected against fire exposure to ensure continued operation for not less than 1 h after the start of a fire	U43 SDD [[ ]] FHA [[ ]]	Potentially In Compliance		Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add detail to FHA [[ ]] associated with CSA N293 7.2.1.13.2 Where the central alarm and control facility and the fire alarm control unit are in different fire compartments, the electrical conductors connecting the central alarm and control facility to the fire alarm control unit shall be protected against fire exposure to ensure continued operation for not less than 1 h after the start of a fire.
CSA N293	7.2.2	Input devices	Header						
CSA N293	7.2.2.1		Manual pull stations shall be located at all exits required by the NBCC. In addition, where the NBCC 60 m (200 ft.) exit rule is used (see the NBCC, Division B, Sentence 3.4.2.5(2)), manual pull stations shall be located along each main aisle so that the maximum travel distance within the aisle to a manual pull station is not more than 30 m (100 ft.) in areas without sprinklers and not more than 45 m (150 ft.) in areas with sprinklers. Note: The term “aisle” refers to corridors,	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			hallways, pathways, or any other means of egress.						
CSA N293	7.2.2.2		Where fire detection is required as specified in Clause 6.3.3.3, Item (c), a fire alarm system providing an equivalent level of performance to very early warning detection technology shall be provided	U43 SDD [[ ]]	Not Applicable			The intent is to comply with requirements for very early warning detection technology	
CSA N293	7.2.2.3		The control room complex shall be equipped with a fire alarm system that uses very early warning fire detection technology. Compensatory measures shall be provided when the system is out of service.	U43 SDD [[ ]] FHA [[ ]]	.Potentially In Compliance		Develop design detail to provide final fire protection details.	Very early fire detection technology is described in FHA [[ ]]under Main Control Room Rm 4170	
CSA N293	7.2.2.4		Alternate fire detection methods shall be considered where fire detectors required by this Standard cannot operate in accordance with their design specifications or where the detection method is not practical for reasons such as high radiation levels or excessive heights. The technical justification for the alternate measure shall be documented in the plant's code compliance review and cross-referenced or otherwise noted in the plant's FPA.	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	7.2.3	Output devices	Header						
CSA N293	7.2.3.1		Accessible spaces, with the exception of the main and secondary control rooms, shall be equipped with audible and/or visual fire alarm signal devices	U43 SDD [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.3.2		Fire alarm signals and voice announcements shall be audible and intelligible in interior areas, in accordance with the NBCC and CAN/ULC-S524. Fire and voice signals shall be distinctive and shall not be capable of being confused with other alarm signals.	U43 SDD [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.3.3		Where visual signals are provided, both visual and audible signals shall operate immediately and simultaneously upon	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			activation of a fire alarm signal. Operators within the main control room shall be capable of selectively discontinuing alarm signals. Visual signals shall meet the requirements of NFPA 72 for synchronization and minimum candela.						
CSA N293	7.2.3.4	Telephone handsets	Header						
CSA N293	7.2.3.4.1		Telephone handsets for local paging announcements may interface with the voice communication system	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.3.4.2		Where the interface in Clause 7.2.3.4.1 is provided, it shall be compatible with the voice communication system and shall not impair the operation of the fire alarm system	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.2.3.4.3		The telephone handset interface shall be disabled during a fire alarm signal condition, except for handsets located within the MCR	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3	Fire suppression	Header						
CSA N293	7.3.1	General	Header						
CSA N293	7.3.1.1		Header						
CSA N293	7.3.1.1.1		The selection of a fire suppression system shall, as a minimum, take into consideration the system's effectiveness in relation to: (a) the design basis fire; (b) performance levels; (c) reliability; and (d) potential damage resulting from the fire suppression agent	Refer [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	7.3.1.1.2		Fire suppression protection, where required by this Standard, shall be provided in accordance with (a) this Standard and in particular with Clause 7.1.2; (b) the NBCC; (c) the NFCC; and (d) additional applicable technical requirements specified in the documents listed in Clause 7.3.1.1.3	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	7.3.1.1.3		Design of systems shall comply with the requirements of the AHJ for pressure-retaining components and shall be in accordance with the following, as applicable: (a) NFPA 10; (b) NFPA 11; (c) NFPA 12; (d) NFPA 12A; (e) NFPA 13; (f) NFPA 14; (g) NFPA 15; (h) NFPA 16; (i) NFPA 17; (j) NFPA 17A; (k) NFPA 20; (l) NFPA 22; (m) NFPA 24; (n) NFPA 25; (o) NFPA 750; (p) NFPA 2001; and (q) FM 7-101	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	7.3.1.2		The automatic fire suppression required by Clause 5.7.4.2.1 shall be provided using automatic sprinkler systems. Where automatic fire suppression systems are not provided, the FPA shall demonstrate that adequate manual fire suppression or passive fire mitigation is provided and that all the fire protection goals are met. Special extinguishing systems may be used in place of automatic sprinkler systems where it can be demonstrated that they provide (a) an adequate level of fire protection for the specific hazard; and (b) an acceptable level of reliability.	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	7.3.1.3		The design of automatic fire suppression systems shall include means to mitigate hazards created by the operation of the suppression system. These hazards include (a) the noise of suppression system discharge; (b) the loss of visibility due to suppression system discharge; (c) asphyxiation hazards created by suppression system discharge; (d) dispersion of the extinguishing agent; (e) flooding; (f) additional loads on structures; (g) shorting of electrical circuits; (h) cooling effects; (i) pressurization;	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			(j) residues and deposits; (k) corrosive products; (l) life safety considerations for plant operators and firefighters (e.g., electric shocks, toxic gases); and (m) discharge of liquids and gases into the environment.						
CSA N293	7.3.1.4		Header						
CSA N293	7.3.1.4.1		In order to achieve the required level of fire safety, fire suppression systems shall be designed and installed in accordance with the applicable documents listed in Clause 7.3.1.1.3	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.1.4.2		In order to meet the structural integrity and material quality control requirements to ensure adequate provisions are made for component support and pressure boundary integrity, fire suppression systems shall be designed, installed, and registered in accordance with the pressure-retaining component requirements of the AHJ. The performance requirements and functional attributes mandated by this Standard shall be maintained.	U43 SDD [[ ]]	Potentially In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.2	Water supply for fire protection	Header						
CSA N293	7.3.2.1		Header						
CSA N293	7.3.2.1.1		Sources of water shall meet the following requirement (a) Water for fire protection hall be stored in reservoirs or tanks, or taken from a large natural body of fresh water (i.e., a lake or river). (b) Only fresh water shall be used as the primary source of supply. Sea water may be used only as a backup water supply. ( ) Municipal water supplies shall not be the primary source of water for fire protection. However, they may be used to supply make-up water to the reservoir or tank.	Refer [[ ]]	Potentially in Compliance	Two dedicated firewater storage tanks are provided, one primary and the other secondary. Fire protection water quality is maintained in accordance with the applicable requirements of NFPA 22. Water quality is compatible with equipment and piping materials used in the (Fire Protection System) (FPS). Water with the potential to induce microbiologically influenced corrosion is not used without appropriate treatment. Connections are installed at the exterior of major buildings to allow a fire department		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
						pumper truck to pump water into the FPS as an auxiliary water supply.			
CSA N293	7.3.2.1.2		The fire protection water supply volume shall be calculated based on the largest expected flow rate for a period of 2 h. The expected flow rate shall be based on the largest concurrent design demand of any automatic water-based suppression system designed in accordance with this Standard, taking into account the corresponding allowance for manual hose stream (including standpipe demands). The hose stream demand shall include the calculated demand for large hoses (88.9 mm [3.5 in] and larger) where required by pre-fire plans described in Clause 10.3 and a minimum attack hose demand of 2850 L/min (750 US gpm). The fire protection water supply shall be capable of delivering this design demand in the event that the hydraulically most favourable portion of the fire main loop is out of service.	Refer [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.2.1.3		Where reservoirs or tanks are used, two separate reservoirs or tanks, each having 100% of the supply volume required in Clause 7.3.2. l .2, shall be provided	Refer [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.2.1.4		Reservoirs or tanks shall be designed in accordance with NFPA 22 and interconnected such that fire pump can take suction from one or both. A failure in one reservoir or tank or its piping shall not cause both reservoirs or tanks to drain.	Refer [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.2.1.5		The ability to draft water from the supply source with fire trucks and inject it into the fire protection water supply system shall be provided. The design drafting capacity shall be the capacity required by the FPA but not less than 7600 L/min (2000 US gpm)	Refer [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.2.1.6		The fire protection water supply may be used on an emergency basis to provide backup to nuclear safety-related systems, as long as the fire protection	Refer [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			water supply systems are designed to deliver the combined fire and nuclear safety flow demands for the duration specified by the applicable design						
CSA N293	7.3.2.2		Fire pumps shall be provided in accordance with this Standard and NFPA 20. In addition, the following requirements shall apply: (a) As a minimum, the fire protection water pumping system design shall be capable of providing 120% of the total required flow rate at the design pressure, assuming failure of the largest pump. (b) Fire pumps shall have automatic start and manual shut-off capabilities. (c) The water supply system for fire protection shall be provided with an automatic pressure maintenance method (e.g., jockey pumps) independent of the fire pumps. (d) As a minimum, the fire protection water pumping system shall consist of at least one diesel-engine-driven fire pump set and one electric-motor-driven fire pump set, with each pump set being capable of providing, the flow rate and pressure specified in Item (a). (e) The fire pump arrangement shall be designed to prevent common cause failure. (f) To prevent common cause failure due to fire, each diesel-driven fire pump, including its engine driver, controls, and day tank, shall be separated from the remaining fire pumps and from the plant by fire separation with a minimum rating of 3 h. (g) Diesel fuel for fire pumps shall be separated so that the fuel is not a fire hazard to safety-related SSC. (h) Each fire pump shall be individually connected to the yard fire main. (i) The following operational elements of fire pumps shall have individual indicators in the CACF: (i) low water level in reservoir or tanks; (ii) power failure to fire pump motor or fire pump engine	U43 SDD [[ ]]	Potentially in Compliance	Potentially in Compliance		Providing fire protection design to meet N293 flow capacity requirements	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			controllers; (iii) running of fire pump; (iv) fire pump trouble; (v) low temperature in the fire pump room and reservoirs or tanks; (vi) abnormal position of isolation valves; and (vii) miscellaneous supervisory signal for other trouble indicators that can be important, such as abnormally high or low water pressures or failure of compressed air source.						
CSA N293	7.3.2.3		The fire protection water distribution system shall be provided in accordance with NFPA 24. In addition, the following requirements shall apply: (a) Distribution of water to fire protection systems shall be through a loop main such that water can reach each building connection from two independent directions. Water mains shall not be buried under buildings. (b) At least two independent connections to the loop main shall be provided for each major building such that each connection is capable of providing the maximum water flow to meet demand and pressure requirements. (c) Means for inspection and flushing of the piping systems shall be provided. (d) Approved visually indicating sectional control valves (e.g., post-indicator valves) shall be provided such that portions of the main can be isolated for maintenance or repair without impairing the fire protection water supply to each major building. (e) Building fire water supply entry points, sprinkler control equipment, standpipe control equipment, and feed mains and bulk mains to water-based suppression systems that are used to satisfy the requirements of Item (b) may be located within buildings in order to supply sprinkler and standpipe systems. (f) Building fire water supply entry points, sprinkler control equipment, standpipe control equipment, and feed mains and	U43 SDD [[ ]]	Potentially in Compliance	Potentially in Compliance		Two independent connections are provided for the RB, TB, CB and RwB	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			bulk mains to water-based suppression systems shall be located in an area that has sprinkler protection, unless the FPA determines that the hazard present is insufficient to challenge the integrity of the piping and supports.						
CSA N293	7.3.3	Automatic and manual water-based fire suppression systems	Header						
CSA N293	7.3.3.1		Where an automatic sprinkler system is required, the design and installation shall be in accordance with NFPA 13 and NFPA 15. The NFPA requirements may be modified in accordance with the requirements of this Standard in order to meet the performance objectives of the system.	U43 SDD [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.3.2		Where multiple automatic sprinkler systems are provided within a common area and can reasonably be expected to operate simultaneously during a fire, the concurrent demand of the automatic sprinkler systems, taking into account hose stream allowance, shall be added to establish the total water demand	U43 SDD [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.3.3		Where main structural steel columns are protected with sidewall sprinklers instead of fireproofing, sidewall sprinklers shall be arranged so that: (a) The vertical distance between sprinklers does not exceed 3 m (10 ft). (b) The highest sidewall sprinkler shall be located within 0.3 m (12 in) of the bottom of the ceiling beams. (c) The sprinklers are placed in an alternating pattern on opposing sides of the column. (d) The sprinklers discharge on the web. Obstructions on the web shall be considered when arranging sidewall sprinklers.	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	7.3.3.4		Cable trays shall be located a minimum of 0.45 m (18 in) below automatic sprinkler deflectors located at ceiling level. Automatic sprinklers shall be arranged such that sprinkler discharge will provide effective fire suppression where cable trays are stacked	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	7.3.3.5		Where automatic sprinkler protection is provided, and where sprinklers are installed below cable trays, they shall be a maximum of 0.15 m (6 in) below the bottom of the cable tray. A passive heat barrier shall be provided that protects the cables and remains in place until the sprinklers have been activated.	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	7.3.3.6		Diking, drainage, a combination of both, or other means of containment shall be provided to limit the spread of flammable and combustible liquids (including firefighting water contaminated with flammable and combustible liquids) and to divert liquid from equipment that, when damaged by water, becomes inoperable and affects nuclear safety. Individual dyke areas shall not exceed 25% of the sprinkler design area, except where the size of the fire compartment is less than 1000 m^2 (10 000 ft2). Diking or the diking/drainage combination shall contain and/or control the volume of liquid and firefighting water within the sprinkler design area based on a 30 min discharge.	FHA [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	7.3.3.7		Oil-filled transformers, including their adjacent non-absorbing ground areas, shall be protected with an automatic water-based spray system, in accordance with NFPA 15 or NFPA 16	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis	
CSA N293	7.3.4	Special extinguishing systems	Header						

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	7.3.4.1		Where an automatic sprinkler system is required, and where it is demonstrated in the FPA that an automatic sprinkler system can create an unacceptable hazard, special extinguishing systems may be used. Special extinguishing systems include (a) water mist systems; (b) clean agent extinguishing systems; (c) carbon-dioxide extinguishing systems; (d) foam extinguishing systems; (e) water spray extinguishing systems; (f) foam-water sprinkler systems and foam-water spray extinguishing systems; and (g) dry and wet chemical extinguishing systems.	U43 SDD [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	7.3.4.2		Where special extinguishing systems are used, they shall be designed, installed, maintained, and inspected in accordance with applicable NFPA Standards	U43 SDD [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.5	Portable extinguishers	Header						
CSA N293	7.3.5.1		All areas of the plant shall be protected by portable fire extinguishers, in accordance with the NFCC and NFPA 10	U43 SDD [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.5.2		Extinguishers may be located outside of a fire zone due to radiological conditions or because the area is normally inaccessible	U43 SDD [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.6	Fire hydrants	Header						
CSA N293	7.3.6.1		Outdoor areas shall be provided with fire hydrants, in accordance with NFPA 24	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance	Potentially in Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.6.2		Fire hydrants shall be spaced a maximum of 75 m (250 ft.) apart and shall be located not less than 12.2 m (40 ft.) from the buildings to be protected	[[ ]]	Potentially in Compliance	Potentially in Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.6.3		Fire hydrants shall have one pumper outlet and two hose outlets. Fire hydrants shall have one pumper connection with a diameter of 89 mm (3.5 in) or larger and shall have two hose	[[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			outlets each having a diameter of 64 mm (2.5 in)						
CSA N293	7.3.6.4		Isolation valves that control only water supplies to a fire hydrant shall be post- indicating valves and may be locked open in lieu of fire alarm supervision	[[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.6.5		Wall hydrants shall not be a substitute for yard hydrants	[[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.6.6		Fire hydrants shall be marked in accordance with NFPA 291	[[ ]]	Potentially In Compliance	Potentially In Compliance	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add content to U43 SDD [[ ]]
CSA N293	7.3.7	Standpipes	Standpipes shall be provided in accordance with NFPA 14. In addition, the following requirements shall apply: (a) A minimum of 2850 L/min (750 US gpm) shall be included for manual hose stream demand for all automatic fire suppression system designs. (b) Areas inside the containment structure shall be provided with Class (as defined in NFPA 14). standpipe systems. A dry connection through the containment structure may be manually connected to the standpipe. (c) The minimum pressure available at the Class I hose valve shall be 690 kPa (100 psig) at a flow rate of 950 L/min (250 US gpm).	[[ ]]	Potentially In Compliance	Potentially In Compliance	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Add content to U43 SDD [[ ]]
CSA N293	7.3.8	Manual firefighting	Header						
CSA N293	7.3.8.1		Means for manual firefighting shall be provided in accordance with the NBCC and/or the FPA	Ref U43 SDD [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.3.8.2		Where manual firefighting is credited as a means of fire suppression in the FPA, access for firefighting shall be provided. The access shall be adequate in size for a firefighter dressed in full fire-protective clothing, including a self-contained breathing apparatus (SCBA).	Ref [[ ]] FHA [[ ]]	Potentially In Compliance	Potentially In Compliance		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	7.4	Seismic qualification	Header						

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	7.4.1	General	All fire protection systems shall be seismically designed to satisfy the requirements of NFPA 13 and NBCC, except for fire protection systems specified in Clauses 7.4.2 and 7.4.3. The design and installation of fire protection systems specified in Clause 7.4.2 and 7.4.3 shall comply with CSA N289.3. The following seismic categories shall be used to identify the extent to which SSC are required to remain operational after an earthquake: (a) Seismic Category A - SSC that must retain their pressure boundary integrity, structural integrity, or passive function (i.e., equipment that does not have an active mechanical function but might have an electrical or loadbearing function) during and following an earthquake. (b) Seismic Category B - SSC that must retain their pressure boundary integrity, structural integrity, or active function and in addition must remain operable during and following an earthquake. Category B includes equipment that is not part of the pressure boundary but must operate during and following an earthquake.	Ref [[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements inClause 11 and shall include at least the following:(a) code compliance review;(b) fire hazard assessment; and(c) fire safe shutdown analysis.	
CSA N293	7.4.2	Seismic Category A	Automatic fire suppression systems and all other fire protection equipment shall be seismically qualified to Category A for the following areas: (a) the control room complex; (b) the SCA; (c) seismically qualified access or egress routes; (d) seismically qualified instrumentation rooms; (e) the containment structure; and (f) other areas identified in the seismic design basis. The fire suppression systems design shall prevent seismically induced failure, flooding, or the release of a fire suppression agent.	[[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire protection assessment	The fire protection assessments shall be prepared for every plant in accordance with the requirements in Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	7.4.3	Seismic Category B	In areas containing Category B seismically qualified SSC, a Class standpipe system,	[[ ]]	Potentially In Compliance	DNNP fire protection assessment is preliminary requiring additional design detail	Develop design detail to provide final fire	The fire protection assessments shall be prepared for every plant in accordance with the requirements in	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			including its water supply, shall be qualified in accordance with seismic Category B. The seismically qualified standpipe system shall meet the flow and pressure design requirements for one Class hose station in accordance with NFPA 14.				protection assessment	Clause 11 and shall include at least the following: (a) code compliance review; (b) fire hazard assessment; and (c) fire safe shutdown analysis.	
CSA N293	8	Implementation of the fire protection program	Header						
CSA N293	8.1	General	Clause 8 provides detailed requirements for the fire protection program outlined in Clause 5.8 for the life cycle of the plant. The requirements of Clause 8 are in addition to the requirements of the NBCC and NFCC.	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2	Fire prevention	Header						
CSA N293	8.2.1	Fire safety training	Header						
CSA N293	8.2.1.1		A fire safety training needs analysis shall be performed to identify and document the staff training that necessary. The needs analysis shall be based on a review of work activities, fire hazards, and required responses	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.1.2		all personnel who work in or access the protected area or buildings under the scope of this Standard shall be trained according to the requirements determined by the training needs analysis	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program [[ ]])
CSA N293	8.2.1.3		Training shall be provided within one year of hire for all new staff. Staff with a term of employment of three months Or less shall be exempt from this requirement. Note: This exemption does not apply to those Involved In hot work or fire watch activities.	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.1.4		Fire safety training shall include, as a minimum, the following topics and procedures: (a) fire	N-PROG-RA-0012_013 Fire	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			protection program goals; (b) basic fire prevention; (c) life safety; (d) the use of portable extinguishers; (e) emergency procedures; (f) the maintenance of egress routes; (g) fire equipment availability; (h) the control of transient material, hot work, and ignition sources, as identified and documented by the plant; and (i) the reporting of a fire	Protection ([[ ]])					program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.1.5		During initial training, all staff shall have hands-on training in the use of portable fire extinguishers. This training hall include practice using a portable fire extinguisher in the suppression of a live fire or interactive simulation acceptable to the AHJ .	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.1.6		The re-qualification interval for those topics and procedures specified in Clause 8.2. 1 .4 shall be based on the training needs analysis, but shall in no case exceed three years	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in [[ ]][[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.1.7		For individuals involved in fire watch or hot work activities, hands-on training in the use of portable extinguisher shall be provided at interval not exceeding three years	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.2	Housekeeping	Header						
CSA N293	8.2.3	Minimization and management of combustibles	Header						
CSA N293	8.2.3.1	Combustible waste	Combustible waste shall not be allowed to accumulate at work areas. A program shall be established for the staging, handling, and/or collecting of combustible waste. The intent of Clause 8.2.3.1 is to reduce the amount of combustible material waste to a level as low as reasonably achievable.	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	8.2.3.2	Combustible contents	The combustible contents of buildings shall be minimized and, where practical, noncombustible alternatives shall be used. Panels and screens shall be of noncombustible material or approved materials having fire-retardant characteristic . Tarpaulins, fabrics, or plastic films shall be certified in accordance with the testing specified in NFPA 701 or CAN/ULC-S109.	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.3	Systems, Structures, or Components	When SSC are replaced, repaired, or modified, combustible material components shall be identified and consideration shall be given as to whether there are noncombustible material alternatives available that can be substituted without impacting the design intent of the equipment	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.4	Use and handling of combustible and transient materials	Header						
CSA N293	8.2.3.4.1		Combustible and transient materials shall be stored in areas designed in accordance with Clause 6.5.1	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.4.2		Combustible materials, including fire-retardant coated or treated combustible materials, shall not be stored in the containment structure or in areas designated as sensitive by the FPA	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.4.3		Transient materials hall be minimized and controlled	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	8.2.3.4.4		Wood shall only be used where there is no reasonable alternative. Where wood is used, it shall be qualified as fire-retardant-treated-wood in accordance with the National Code of Canada . Fire-retardant-treated wood means wood or a wood product that has had its surface burning characteristics, such as flame-spread, rate of fuel contribution, and density of smoke developed, reduced by impregnation with fire-retardant chemicals. Wood blocks larger than 150X150 mm shall not require fire-retardant treatment.	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.4.5		Where wood is treated in accordance with Clause 8.2.3.4.4, it shall be inspected prior to each use to ensure that the treatment or coating is intact. Where the treatment or coating is not intact, the wood shall be re-treated or re-coated	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.4.6		Where wood is treated in accordance with Clause 8.2.3.4.4, end of wood piece shall be treated or coated after the wood has been cut	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.5	Fire protection for the handling, use and storage of radioactive materials	Header						
CSA N293	8.2.3.5.1		Radioactive materials shall only be handled, used, and stored in areas designated for these purposes	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.5.2		Radioactive materials shall be stored in areas designed in accordance with Clause 6.8.8	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
									Protection Program ([[ ]])
CSA N293	8.2.3.5.3		Combustible materials shall not be stored in the same fire compartment as radioactive materials unless the fire compartment is a radioactive waste storage room in accordance with Clause 6.8.8	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.5.5		Radioactive materials shall be stored such that they are protected from fires and firefighting activities	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.6	Relocatable structures	Header						As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.6.1		The control of fire loads in the protected area and areas under the scope of this Standard is essential to providing defence-in-depth fire protection. This includes controlling the construction, location, content , and use of relocatable structures	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.6.2		Relocatable structures intended for human occupancy, including associated walkways, stairways, insulation, and skirting, shall comply with the requirements of this Standard and shall be (a) constructed using noncombustible construction, a defined in the NBCC; (b) located in accordance with the NBCC; (c) assessed for additional fire protection provisions in accordance with the objectives of Clause 5.5; (d) equipped with a fire alarm system in accordance with Clause 7.2. This system shall communicate with the CACF and provide information to	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			identify a fire condition or trouble situation affecting a structure and shall identify the structure's location; (e) equipped with portable fire extinguishers, in accordance with Clause 7.3.5; (f) where located outside a building, assessed to determine whether an automatic fire suppression system is required in addition to the requirements of this Standard; and (g) where located inside a building, protected by a fire suppression system that is installed in accordance with this Standard. Note: The requirements of Clause 8.2.3.6.2 except for Clause 8.2.3.6.2, Item (e), do not apply to existing relocatable structures unless moved or relocated. These structures still require assessment under the FPA.						
CSA N293	8.2.3.6.3		A visual inspection of the fire alarm and fire suppression system shall be performed after each relocation of the structure	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.6.4		Prior to the installation of a relocatable structure, the plant FPA shall be reviewed and the impact of the structure shall be assessed. Where the structure impacts the plant, the FPA hall be updated	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.7	Thermal insulating materials	Header						
CSA N293	8.2.3.7.1		Thermal insulating materials shall be provided with suitable protective coverings or drip guards to prevent them from absorbing flammable or combustible liquids or from being physically damaged	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	8.2.3.7.2		Following the completion of a maintenance activity on insulated equipment, the insulation shall be inspected to ensure that it has not absorbed any flammable or combustible liquids and has not deteriorated in any way	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.3.7.3		Insulating materials that have been exposed to flammable or combustible liquids or that exhibit signs of deterioration shall be replaced	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.4	Handling and storage of dangerous goods	Header						
CSA N293	8.2.4.1		Dangerous goods shall be handled, used, and stored in accordance with the NFCC	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.4.2		Administrative procedures shall manage the location, condition, and contents of flammable liquid cabinets to limit their numbers and inventory to those necessary for the operation of the plant	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.4.3		Flammable liquids, flammable solids, combustible liquids, and flammable gases shall not be stored in the containment structure	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.4.4		Compressed gases and cryogenic fluids in portable and stationary containers, cylinders, and tanks shall be stored, used, maintained, and inspected in accordance with the	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			requirements of the NFCC and NFPA 55						Protection Program ([[ ]])
CSA N293	8.2.4.5		Transient compressed gases and cryogenic fluids shall not be handled, used, located, or stored near safety-related equipment unless an assessment determines the consequence of failure is acceptable	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.4.6		The amount of transient compressed gas or cryogenic fluids located in portable containers, cylinders, or tanks shall be minimized	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.4.7		Aerosols shall be handled, used, and stored in accordance with the requirements of the NFCC and NFPA 30B	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.4.8		The handling and storage of dangerous goods shall not be located near the control room or other areas that contain safety-related systems	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.5	Control of hot work	A hot work procedure and permit system shall be developed and implemented in accordance with the requirements of the NFCC. In addition to the requirements of the NFCC, hot work roofing activities shall be checked 2 h and 3 h after the completion of work. These checks shall be done with the use of a thermal imaging camera.	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program ([[ ]])
CSA N293	8.2.6	Control of smoking	Smoking shall be prohibited, except where allowed by applicable bylaws or statutes. Where permitted by applicable bylaws or statutes, smoking shall	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			only take place in designated smoking areas						Protection Program ([[ ]])
CSA N293	8.2.7	Fire protection of safety-related systems	Header						
CSA N293	8.2.7.1		Combustible material, other than that forming part of the approved facilities design, that is located outside of storage areas shall be eliminated where possible or, when required, minimized, controlled, located, and analyzed under a transient material control process such that a fire involving the material is precluded from damaging safety-related systems, or fire safe shutdown SSC	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]]_Rev2 _OPG disposition, it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.7.2		Areas of the facility that contain safety-related systems or fire safe shutdown SSC shall not be used for the maintenance, charging, storage, or parking (temporary or permanent) of vehicles (e.g., sweepers, motorized hand trucks, forklifts, tractors, and industrial trucks)	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]] As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.7.3		Ignition sources (e.g., hot work, vehicles, temporary equipment or wiring, portable heaters, and portable lighting) other than those forming part of the approved facilities design shall be eliminated where possible or, when required, minimized, controlled, located, and analyzed under an ignition source control process so as to prevent the ignition of combustibles and minimize the hazard posed in areas of the facility that contain safety-related systems or fire safe shutdown SSC	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.8	Fire safety during work activities	Header	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
									will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.8.1		Work activities shall be planned and coordinated in accordance with the fire protection goals of this Standard	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.8.2		Work activities and control of transient materials shall be planned and managed to ensure that (a) egress paths are not obstructed; (b) access paths to firefighting equipment are not obstructed; (c) firefighting activities are not compromised; (d) operator field actions are not compromised; and (e) their potential impacts on nuclear safety have been evaluated and minimized	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.9	Reporting and follow-up of fire incidents	Header						
CSA N293	8.2.9.1		The industrial fire brigade shall be notified of an identified emergency incident within 1 min of the CACF being notified of the emergency	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.9.2		Fire incidents shall be investigated. The depth of investigation or analysis shall be determined by the severity of the fire and risk to occupants, environment, and nuclear safety. The scope of any investigation related to economic loss shall be determined by the licensee.	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.9.3		The AHJ shall be notified of any incident that (a) causes personal injury or property damage; (b) results in the mobilization of the emergency response team; or (c) causes fires that result in, or have significant potential to result in, an operating transient	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.9.4		A system shall be developed for each plant that identifies and trends fire incidents, as well as	N-PROG-RA-0012_013 Fire	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			any corrective action taken . Where deficiencies are identified, action plans shall be developed and implemented to prevent the occurrence of similar incidents.	Protection ([[ ]])					]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.2.9.5		The investigation specified in Clause 8.2.9.2 shall also determine the impact on the future performance of the SSC exposed to fire	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.3	Maintenance of fire equipment	Header						
CSA N293	8.3.1	Inspection, testing, maintenance, and operation of fire protection equipment	Header						
CSA N293	8.3.1.1		The inspection, testing, maintenance, and operation of fire protection equipment shall comply with the requirements of this Standard	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.3.1.2		A performance-based inspection, testing, and maintenance program m y be implemented with the concurrence of the AHJ. The performance-based program shall be in accordance with Clauses 4.4 and 4.5 and the NFCC requirements for equivalencies or alternatives	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		It is the intent to comply with these code clauses as design detail is available to support the assessment	As noted in design input request [[ ]], it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program
CSA N293	8.3.2	Impairments to fire protection systems	When a fire protection system is out of service, compensatory measures shall be provided. Impairments to fire protection systems shall be managed through the development of an impairment plan. The impairment plan shall meet the following requirements: (a) The duration of the impairment shall be the shortest period possible. (b) The AHJ shall be notified of the impairment within 24 h, and a copy of the impairment plan shall be submitted to the AHJ where (i) the Impairment results in a fire protection system being	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		As noted in design input request [[ ]]_Rev2 _OPG disposition, it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			unavailable to meet its design intent for a period longer than 12 h; or (ii) the fire protection system is specified in the FPA as protecting fire safe shutdown equipment. (c) Post-maintenance testing shall be performed as required to ensure system functionality. (d) Impairments shall be monitored and delays in return to service shall be reported to management. (e) The impairment plan shall ensure that adequate measures are taken during the impairment to minimize the potential for increased risks. (f) The industrial fire brigade shall be informed of all fire protection system impairments. (g) A written procedure shall be developed and implemented to manage the impairment. As a minimum, the procedure shall include (i) compensatory measures to manage and minimize the risk associated with the impairment;						
CSA N293	8.3.3	Inspections	Header						
CSA N293	8.3.3.1	Inspection requirements	In addition to inspection requirements of the NFCC, the following inspections shall be conducted: (a) Combustible-material-free fire zones, as identified in the FPA, shall be inspected once per day to ensure that no unauthorized combustible materials or fire hazards are present. Where these areas are inaccessible, alternative measures shall be taken to ensure compliance. (b) Welding and other hot work areas (permanent or temporary) shall be inspected at the start of work activities to ensure adequate provisions are in place to prevent the start of fire and to determine that the area is free of unnecessary combustible materials. (c) Areas with high fire hazards and fire sensitive areas, as identified in the FPA, shall be inspected once per day for unsafe conditions that include unauthorized combustible	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		As noted in design input request [[ ]]_Rev2 _OPG disposition, it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			materials, fire hazards, and obstructions to emergency response (e.g., firefighting actions). (d) Doors that are identified in the FPA as fire barriers ensuring fire safe shutdown shall be inspected once per week. (e) Fire barriers (including performance barriers) shall be inspected for degradation or violation. A minimum of 10% of fire barriers shall be inspected each year so that all fire barriers are inspected over a ten-year period.						
CSA N293	8.3.4	Fire protection program audit	Header						
CSA N293	8.3.4.1		The fire protection program audit shall (a) be performed in accordance with CSA N286 by a qualified third party external to the owner or operator of the plant at least once every three years. The audit may be conducted over a three-year period, provided that all aspects of plant operation are reviewed at least once every three years in accordance with this Standard; (b) be a representative assessment of each program element to confirm compliance with the appropriate fire protection Codes, Standards, and industry best practices; and (c) review areas of identified weakness in the fire protection program and areas containing precursors to unsafe fire conditions.	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		As noted in design input request [[ ]]_Rev2 _OPG disposition, it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program	
CSA N293	8.3.4.2		The fire protection program audit shall, as a minimum, review (a) documentation and records to demonstrate compliance with this Standard; Note: Compliance can include conformance with applicable Standards, use of industry best practices, and meeting inspection, testing, and maintenance requirements. (b) fire incidents and follow-up	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		As noted in design input request [[ ]]_Rev2 _OPG disposition, it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			actions; (c) the role of the industrial fire brigade and their responses to incidents; (d) procedures related to the fire protection program; (e) fire protection procedures for inclusion of industry operating experience and evolving industry standards; (f) representative samples of the fire protection inspection, testing, and maintenance program; (g) a sample of plant modifications to ensure compliance with the NBCC and NFCC, as well as to ensure that the impact on the FPA has been evaluated; (h) at least one emergency response team drill, through h direct observation, and assessment of performance levels; (i) identified adverse conditions and their corrective actions, in addition to actual fire incidents. This review shall include the response or corrective actions of management and of the fire protection organization, including the industrial fire brigade; (j) compliance with fire procedures by performing a field inspection of selected areas for procedures such as housekeeping and control of hazards; and (k) the plant's documented fire protection program for compliance and alignment with Codes Standards, and good practice.						
CSA N293	8.3.5	Annual plant condition inspection	Header						
CSA N293	8.3.5.1		A plant condition inspection shall be performed by a qualified third party at least once per year	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		As noted in design input request [[ ]]_Rev2 _OPG disposition, it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program	
CSA N293	8.3.5.2		The plant condition inspection shall consist of a visual inspection of the plant (i.e., a walkdown) to confirm compliance with this Standard and the NFCC	N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potentially In Compliance	As DNNP is incorporated in OPG fire protection plan, it will be in compliance with N293		As noted in design input request [[ ]]_Rev2 _OPG disposition, it is expected DNNP BWRX 300 fire protection program requirements will follow N-PROG-RA-0012 R013 Fire Protection Program	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	9	Fire protection requirements for decommissioning	Header						
CSA N293	9.1	General	Header						
CSA N293	9.1.1	Decommissioning stages	Clause 9 specifies requirements for the three phases of the decommissioning process, which are (a) mothballing; (b) encasement; and (c) dismantling and removal	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations			
CSA N293	9.1.2	Laid-up state	Clause 9 is not intended to apply to plants in a laid-up state where the intention is to restart	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations			
CSA N293	9.1.3	Fire safety requirements	Site fire safety shall be provided in accordance with the NFCC. Demolition activities shall be conducted in accordance with Divi ion B, Section 5.6 of the FCC and with FPA 241	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		Update [[ ]] to reference NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations in decommissioning table	
CSA N293	9.1.4	Fire Safety Plan	A fire safety plan shall be prepared and maintained for all stages of decommissioning	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations	Action	The intent is for the existing OPG fire protection program described under N-PROG-RA-0012_013 Fire Protection ([[ ]]) to include BWRX 300 DNNP. N-PROG-RA-0012_013 Fire Protection includes fire protection scope under decommissioning: The specific program elements are based on the requirements of CSA N293 as it applies to Darlington and Pickering Nuclear Generating Stations, and CSA N393 as it applies to the Nuclear Waste Management Facilities. This program is applicable to the design, construction, commissioning, operation, and decommissioning of nuclear power plants, including Systems, Structures, or Components that directly support the plant and the Protected Area (PA)	This item is tracked as open item under the BWRX 300 Fire Protection CCR Report associated with programmatic aspects such as QA, training, combustible material control and decommissioning. This PLM issue will track code compliance requirements associated with the fire protection program as design details are matured.

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	9.2	Mothballing	Header						
CSA N293	9.2.1	General	Mothballing is the stage of the decommissioning process when the reactor containment is retained but all fuel and radioactive materials are removed	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.2.2	Fire protection assessment	The FPA shall be maintained through the mothballing phase of the plant	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.2.3	Removal of unnecessary combustible materials	Where practical, combustible material shall be removed from the plant	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.2.4	Control of ignition sources	Ignition sources shall be managed in accordance with Clause 8	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.2.5	Fire detection and alarms	Accessible areas of the plant shall be provided with a fire alarm system using detection as required by the NBCC and the FPA. The system hall signal an alarm at a constantly staffed location on site	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.2.6	Fire exits	Fire exits shall be maintained in accordance with the NFCC	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
				Decommissioning provides C&S related to decommissioning					
CSA N293	9.2.7	Fire protection water supply	The fire protection water supply system shall be maintained to supply hydrants, standpipes, hoses, and all other fire protection systems in service in accessible locations	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.2.8	Fire separation	Fire separation shall be provided and maintained in accordance with the FPA	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.2.9	Protection of operating units	In multi-unit plants, the units can be at different stages in the decommissioning process. The FPA for the operating unit(s) shall include a review of the impact of the mothballed unit on the operating unit( ). Services (e.g., electricity, air supplies) routed through mothballed areas shall be protected.	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations.		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.3	Encasement	Header						
CSA N293	9.3.1	General	Encasement is the stage of the decommissioning process when all easily removed parts have been dismantled and removed, and remaining radioactive materials are encased inside some form of shielding structure	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.3.2	Fire protection assessment	The FPA shall be maintained for the plant during the encasement phase, and the consequences of fires in the encased areas shall be assessed	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	9.3.3	Removal of fire hazards	All combustible materials and ignition sources shall be removed from encased areas	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.3.4	Fire separation	The encasement shall be constructed to ensure its integrity in the event of an external fire. The fire-resistance of this encasement shall be determined by the FPA in accordance with the fire loading of the remainder of the protected area or the adjacent outside grounds.	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations.		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.3.5	Fire protection water supply	The fire protection water supply system shall be maintained to supply hydrants, standpipes, hoses, and all other in service fire protection systems in accessible locations	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.3.6	Protection of operating plants	In multi-unit plants, the units can be at different stages in the decommissioning process. The FPA for the operating unit shall include a review of the impact of the encased unit on the operating unit(s)	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.4	Dismantling and removal	Header						
CSA N293	9.4.1	General	Dismantling and removal is the stage of the decommissioning process when all remaining parts of the plant are dismantled and removed or buried,	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design- Decommissioning provides C&S related to decommissioning g provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations			

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	9.4.2	Fire protection assessment	An FPA shall be maintained during the plant dismantling and removal phase, and the consequences of fires shall be assessed	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.4.3	Removal of fire hazards	Where practical, combustible materials hall be removed from the demolition site	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.4.4	Fire hydrants	The fire protection water supply and fire hydrants shall be functional until work is completed	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.4.5	Fire watch	After the removal of the building fire alarm system, fire detection shall be provided by a fire watch that makes regular rounds of the site. The fire watch shall continue until the building is demolished or until all fire hazards are removed.	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations.		It is the intent to comply with these code clauses as design detail is available to support the assessment	
CSA N293	9.4.6	Fire brigade	An on site fire brigade shall be organize in accordance with Clause 10 and NFPA 600. The fire brigade shall remain in service until all fire hazards have been removed from the site	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning provides C&S related to decommissioning	For Information	As design progresses, DNNP is factoring decommissioning in design considerations	Action	It is the intent to comply with these code clauses as design detail is available to support the assessment	Update [[ ]] to reference NFPA 600 in decommissioning table
CSA N293	9.4.7	Protection of operating units	In multi-unit plants, the units can be at different stages of the decommissioning process. The FPA for the operating Unit(s) shall include a review of the impact of the unit being dismantled on the other unit(s).	[[ ]] OPG Codes and Standards Table 3.5-24 Physical Design-Decommissioning	Potentially In Compliance	As design progresses, DNNP is factoring decommissioning in design considerations.		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			Services (e.g., electricity, air supplies) shall be protected during the dismantling phase.	provides C&S related to decommissioning					
CSA N293	10	Fire response capability	Header						
CSA N293	10.1	General	Header						
CSA N293	10.1.1	Fire hazards	Fire response capability commensurate with fire hazards shall be provided for the protected area and the buildings external to the protected area that are under the scope of this Standard for the life cycle of the plant	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Further detail associated with DNNP fire response requirements will be developed as design progresses	
CSA N293	10.1.2	Scope	Fire response capability shall include (a) an industrial fire brigade; (b) a response organization to provide overall control of fires; (c) trained staff who are knowledgeable in the reporting of fires; and (d) trained staff who are knowledgeable in the response to fire (e.g., evacuation procedures)	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Further detail associated with DNNP fire response requirements will be developed as design progresses	
CSA N293	10.1.3	Firefighting	The industrial fire brigade required by Clause 10.1 .2 shall provide advanced exterior and interior firefighting for the entire life cycle of the plant, with the exception of the encasement phase	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Further detail associated with DNNP fire response requirements will be developed as design progresses	
CSA N293	10.1.4	Fire analysis	An analysis of postulated fires shall be conducted to determine industrial fire brigade requirements. The fire analysis shall be documented and maintained.	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Further detail associated with DNNP fire response requirements will be developed as design progresses	
CSA N293	10.1.5	Mutual aid	After the encasement is in place, the firefighting response required by Clause 10.1 .2 may be provided by an off-site municipal fire department. The firefighting response of the municipal fire department shall meet the	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual /	Further detail associated with DNNP fire response requirements will be developed as design progresses	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			requirements of FPA 1710 or NFPA 1720, a applicable, or an equivalent Standard.	Fire Response Capability			preliminary phase.		
CSA N293	10.2	Industrial fire brigade	Header						
CSA N293	10.2.1	General	The industrial fire brigade shall meet the requirements of NFPA 600 and NFPA 1081 unless otherwise specified in this Standard. The requirement for an industrial fire brigade may be met by having a firefighting organization under contract to the licensee and located on sit. The contracted organization hall meet the requirement of NFPA 600 and NFPA 1081.	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase.	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.2.2	Duties	Industrial fire brigade members shall have no other plant duties that prevent immediate response to a fire	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.2.3	Personnel and equipment	The industrial fire brigade shall have sufficient personnel and equipment to protect safety-related plant areas	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.2.4	Operations controlling authority	In the event of fire, the industrial fire brigade leader shall inform the operations controlling authority (OCA) (i.e., the shift manager or shift supervisor) of the fire situation, firefighting actions, and fire progression. All firefighting operations shall be under the authority of the OCA. Decisions affecting plant safety shall be made by the OCA in consultation with the industrial fire brigade leader.	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase.	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.3	Pre-fire planning	Header						
CSA N293	10.3.1	General	The plant shall develop and maintain pre-fire plans. Pre-fire	OPG Fire Protection Plan, N-	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and	DNNP fire response will be	Will employ existing OPG fire protection plan process and procedures from OPG fire	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			plans shall be available to the industrial fire brigade and to the OCA	PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response ([[ ]])		procedures associated with fire response capability	developed as design progresses past conceptual / preliminary phase	protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.3.2	Scope	Pre-fire plans hall, as a minimum, detail the following (a) radiological hazards; (b) chemical hazards; ( ) fire hazard ; (d) firefighting equipment; (e) significant SSC of nuclear safety; (f) firefighting guidelines; (g) fire protection water supply information; and (h) electrical hazards	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.3.3	Maintenance	Pre-fire plans shall be reviewed and updated as necessary, including when changes are made to the FPA	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.4	Industrial fire brigade member qualifications	Header						
CSA N293	10.4.1	Fitness requirements	All industrial fire brigade members shall meet the medical fitness requirement for using a SCBA, in accordance with CAN/CSA-294.4	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.4.2	Training	Heading						
CSA N293	10.4.2.1		All industrial fire brigade members shall receive training in plant design, including plant layout, major systems, and nuclear safety features, at levels appropriate for their specific response roles	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase		

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	6. 10.4.2.2		An operational air management program shall be documented to ensure the health and safety of persons using SCBA in emergency responses. The operational air management program shall ensure that (a) each industrial fire brigade member is aware of (i) the air consumption rates; and (ii) how to care for the SCBA to prevent unnecessary damage; (b) industrial fire brigade members (i) maintain situational awareness of egress routes and the point of no return when entering hot zones; and (ii) are relieved from hot zone duties and exiting the hot zone upon the annunciation of a low air alarm, except for circumstances where an alternative decision is justifiable; and (c) the incident management system is structured such that situational awareness and accountability of the fire crew's air consumption is monitored.	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase		
CSA N293	10.4.3	Radiation protection	All industrial fire brigade members shall receive radiation protection training, including the escorting of off-site mutual aid, at levels appropriate for their specific response roles	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.5	Response coordination and drills	Header						
CSA N293	10.5.1	Incident management	An incident management system that includes the ability to activate the emergency response organization shall be implemented for large fires. Note:	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			An emergency response organization is an appointed group established to activate a response to a major incident	Requirements for Fire Response Capability ([[ ]])			conceptual / preliminary phase		
CSA N293	10.5.2	Mutual aid	Where mutual aid agreements are entered into with local public fire departments or other private fire brigades, the agreement shall be documented. Where the mutual aid agreement is required to meet the needs analysis in Clause 10.1.4, a drill shall be run once a year to test the mutual aid agreement.	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.5.3	Drills	A drill program shall be established that meets the requirements of NFPA 600	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.6	Communications	Header						
CSA N293	10.6.1	General	The industrial fire brigade shall be equipped with an intelligible two-way communication system. Off-site firefighters shall have access to this communication system in order to communicate with the industrial fire brigade while on site	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.6.2	Recording of communications	All radio communications during drills and incidents shall be recorded such that audio playback is available. Note: It is not intended that redundant communication systems be required. If the primary system becomes unavailable, reasonable compensatory measures should be provided.	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.6.3	Security communication	The industrial fire brigade shall be able to communicate with security personnel	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual /	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
				Fire Response Capability ([[ ]])			preliminary phase		
CSA N293	10.6.4	OCA communication	The industrial fire brigade and the OCA shall be able to communicate with each other during the response to a fire	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.7	Equipment	Header						
CSA N293	10.7.1	General	Protective clothing, respiratory protective equipment, radiation monitoring equipment, personal dosimeters, and fire equipment such as hose , nozzles, and fire extinguishers shall be provided to the industrial fire brigade. This equipment hall be in accordance with all applicable Standards	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.7.2	Applicable Standards	Personal protective clothing and equipment hall be in accordance with the requirements of NFPA 600 and NFPA 1 081 , including the Standards referenced therein, shall apply	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.7.3	Readiness	All personal protective clothing and equipment shall be checked at the beginning of each shift to ensure it is functional and in a state of readiness	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.7.4	Maintenance	Personal protective clothing and equipment shall be maintained in accordance with manufacturer's instructions or applicable standards	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
CSA N293	10.7.5	SCBA	The number of SCBA bottles and/or SCBA refilling capability shall be sufficient to ensure that the industrial fire brigade is adequately supplied during firefighting operations	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.7.6	Compatibility of equipment	Off- site fire equipment, where needed, shall be compatible with on site equipment or shall be equipped with adapters to ensure compatibility	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.8	Industrial fire brigade performance criteria	Header						
CSA N293	10.8.1	General	The industrial fire brigade minimum performance requirements of Clause 10.8 are in addition to the other performance requirement specified in Clauses 10.1 to 10.7	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.8.2	Initial response	Heading						
	10.8.2.1		The industrial fire brigade members shall demonstrate at a frequency not exceeding one year, the following: (a) donning turnout gear within 1 min upon tasking; and (b) donning and activating an SCBA unit within 1 min upon tasking	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
	10.8.2.2		The results of the demonstration in Clause 10.8.2.1 shall be documented	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual /	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
				Capability ([[ ]])			preliminary phase		
CSA N293	10.8.3	Set-up and intervention	During fire responses, the industrial fire brigade shall be capable of ( ) establishing an incident command post within 10 min of notification of an emergency; (b) providing size-up information to incident command within 12 min of notification of an emergency; and (c) performing effective and sustained intervention through implementation of the fire attack plan (developed by incident command) within 15 min of being notified of a fire incident	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	10.8.4	Evaluation	The capabilities required y Clauses 10.8.2 and 10.8. shall be evaluated by qualified persons	OPG Fire Protection Plan, N-PROG-RA-0012 and N-STD-RA-0039_006 Requirements for Fire Response Capability ([[ ]])	Potentially In Compliance	DNNP will be added to OPG fire protection plan including process and procedures associated with fire response capability	DNNP fire response will be developed as design progresses past conceptual / preliminary phase	Will employ existing OPG fire protection plan process and procedures from OPG fire protection plan-N-PROG-RA-0012 and N-STD-RA-0039_006	
CSA N293	11	FPA	Header						
CSA N293	11.1	General	General Clause 11 specifies requirements for the preparation of fire protection assessments to meet the fire protection goals, objectives, and criteria specified in Clause 5. See Annex B for detailed guidance.	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	~~Potentially~~ In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase.	Fire protection assessments will be updated as design progresses	
CSA N293	11.2	Development and maintenance of fire protection assessments	Header						
CSA N293	11.2.1	Development	Development The fire protection assessments shall be initiated early in the design of new plants and updated when the plant design is finalized	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase.	Fire protection assessments will be updated as design progresses	
CSA N293	11.2.2	Maintenance	Maintenance The fire protection assessments shall be updated as necessary to reflect plant modifications, significant changes in fire	CCR-[[ ]] FHA [[	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase	Fire protection assessments will be updated as design progresses	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			hazards, operating experience, and operational changes	]] FSSA [[ ]]					
CSA N293	11.2.3	Documentation update	Documentation update The fire protection assessments for an operating plant shall be revised or reaffirmed at least once every five years	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase	Fire protection assessments will be updated as design progresses	
CSA N293	11.3	Scope	Header						
CSA N293	11.3.1	Areas covered	Areas covered The fire protection assessments shall cover all locations within the protected area and areas external to the protected area that are under the scope of this Standard	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase	Fire protection assessments will be updated as design progresses	
CSA N293	11.3.2	Operational modes	Operational modes The fire protection assessments shall cover fires occurring during all operational modes, including power operation, shutdown or start-up, and outages	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase	Fire protection assessments will be updated as design progresses	
CSA N293	11.4	Defence-in-depth principle	Defence-in-depth principle The defence-in-depth principle specified in Clause 5.3 requires that multiple, independent fire protection measures be used to achieve a high degree of assurance that nuclear safety will be maintained at all times. The defence-in depth principle shall be used in the fire protection assessments to help determine the fire protection measures needed to ensure the achievement of the nuclear safety objectives specified in Clause 5.4.1.	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase.	Fire protection assessments will be updated as design progresses	
CSA N293	11.5	Valid assumptions	Valid assumptions Assumptions used and not specified in Clause 11.5, Items (a) to (f), shall be clearly stated and justified in the documentation. When assessing fire hazards and consequences of fires, the following are considered acceptable assumptions: (a) Fires need not be postulated coincident with independent, low-frequency events or accidents in the plant. (b) Two or more simultaneous, independent fires in a plant or adjacent plant units need not be	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase.	Fire protection assessments will be updated as design progresses Extents of Fire Brigade still under consideration.	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			postulated. (c) In a fire safe shutdown analysis, failure of a single component need not be postulated coincident with failures caused by fire. (d) Credit may be given to equipment or components that result in fail-safe conditions after damage by fire or fire suppression action (e.g., loss of power to shut off rods resulting in reactor trip), provided that the fail safe characteristics of the equipment or component are individually assessed against the failure modes induced by the fire or fire suppression action. (e) Manual action by operators may be credited toward the accomplishment of the nuclear safety objectives (provided that the necessary conditions for correct and timely actions have been identified and justified). (f) Credit may be given for repair or replacement of components or circuits that are damaged or disabled by fire, provided that the following conditions are met: (i) to a minimum. (ii) Credit is given only for restoring long-term functions after the reactor has been shutdown, cooled, and depressurized. (iii) It is demonstrated that all necessary work can be completed before the component or circuit is required to act. (iv) Procedures and training are provided for the repair or replacement work. (v) Necessary components, cables, and parts are available on site.						
CSA N293	11.6	Limitations and uncertainties	Limitations and uncertainties Limitations and uncertainties concerning the data and methods used shall be identified. The assessment and analysis shall demonstrate that these limitations and uncertainties are adequately addressed (e.g., by the use of suitable safety margins). Note: Appropriate sensitivity analysis may be necessary to demonstrate suitable safety	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase.	Safety margins are commensurate with the level of the project and will continue to develop as the project develop.	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			margins in light of uncertainties in data and methods.						
CSA N293	11.7	Documentation	Documentation The following documentation is required as a minimum: (a) the SSC required to perform the nuclear safety objectives defined in Clause 5.4 and their location; (b) the general usage of the fire compartment or zone, including the major equipment present; (c) the inventory and configuration of combustible materials in each fire zone; (d) postulation of the design basis fires in each fire zone and assessment of resulting damage to plant SSC; (e) postulation of the failures, and potential failure modes, of equipment in applicable fire zone and assessment of resulting impacts to plant fire safe shutdown; (f) the technical basis of each step in demonstrating the achievement of safety objectives of the standard; (g) fire mitigation measures, including: (i) fire detection; (ii) automatic and manual suppression; (iii) fire separations; (iv) spatial separations; and (v) smoke control; (h) verification that the nuclear safety performance criteria specified in Clause 5.4.2 have been met, or additional fire protection measures that are required; (i) verification that the criteria for the protection of radioactive materials outside the reactor, as defined in Clause 5.4.3, have been met, or additional fire protection measures that are required; (j) compliance with the applicable requirements of this Standard and referenced documents; and (k) assessment of effectiveness, appropriateness, and reliability of the fire protection measures in	CCR-[[ ]] FSSA [[ ]] FHA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase.	Resolution will be addressed as the design progresses. This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]]	

Table 4-1: CSA N293 Compliance Table

Standard	Clause	Description	Code Requirements	Design Input Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			meeting the goals and objectives of this Standard.						
CSA N293	11.8	Quality assurance	Header						
CSA N293	11.8.1	General requirements for quality	General requirements for quality assuranceThe preparation and review of the fire protection assessments required by this Standard shall comply with the quality assurance requirements of CSA N286. The CSA N286 requirements shall also apply to any revisions	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially in Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase	Resolution will be addressed as the design progresses Complete	
CSA N293	11.8.2	Auditing	Auditing Fire protection assessments performed to demonstrate compliance to this Standard shall be auditable	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially in Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase	Resolution will be addressed as the design progresses Complete	
CSA N293	11.8.3	Personnel qualifications	Personnel qualifications The fire protection assessments shall be prepared by personnel with knowledge of fire protection, plant design, and nuclear safety. This qualification of personnel applies to the preparation of the original document and to periodic updating of the assessment.	CCR-[[ ]] FHA [[ ]] FSSA [[ ]]	Potentially In Compliance	Preliminary fire protection assessments have been developed for DNNP	DNNP design currently at preliminary phase.	Resolution will be addressed as the design progresses Complete	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
N293S1-2021				Information, In Compliance, Potentially In Compliance, Potentially Non-Compliant, Non-Compliant				
N293S1	Introduction							
N293S1	S1-1 Scope	This Supplement provides the minimum fire protection requirements for the design, construction, commissioning, and operation of SMRs, including SSC that directly support the plant and the protected area		Information				
N293S1	S1-2 Reference publications	In addition to the publications referenced in CSA N293, this Supplement refers to the following publications, and where such reference is made, it shall be to the editions listed below		Information				
N293S1		CSA Group N393:13, Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances	Not Applicable				As noted in [[ ]], CSA N393:13 is not applicable to DNNP. [[ ]] OPG Applicable Codes and Standards Report	
N293S1		CNSC (Canadian Nuclear Safety Commission) RD/GD-369, August 2011 Licence Application Guide: Licence to Construct a Nuclear Power Plant	Not Applicable				Note: REGDOC-1.1.2, Licence Application Guide: Licence to Construct a Nuclear Power Plant, Version 2 will supersede RD/GD-369	
N293S1		REGDOC-1.1.5, Version 1.0, August 2019 Supplemental Information for Small Modular Reactor Proponents		Information			Currently not referenced by DNNP as licensing basis. This REGDOC should be reference for DNNP	
N293S1		REGDOC-1.1.5, Version 1.0, August 2019Supplemental Information for Small Modular Reactor ProponentsREGDOC 2.5.2, Version 1.0, Design of Reactor Facilities: Nuclear Power Plants		Information			Currently not referenced by DNNP as licensing basis. This REGDOC should be reference for DNNP	
		REGDOC-2.5.2, Version 1.0, Design of Reactor Facilities: Nuclear Power Plants		Information			Initial compliance assessment performed under [[ ]] REGDOC-2.5.2 Compliance Report	
N293S1		IAEA (International Atomic Energy Agency) Safety Reports Series No. 8, Preparation of Fire Hazard Analyses for Nuclear Power Plants		Information				
N293S1		NFPA (National Fire Protection Association)484-2019Standard for Combustible Metals	Not Applicable	Information			This reference added to N293S1 for non-LWR designs	
N293S1		770-2021 Standard on Hybrid (Water and Inert Gas) Fire Extinguishing Systems	[[ ]] OPG Codes and Standards	Information		Action	Currently not in scope but considered for detailed design fire coverage	Add to C&S [[ ]]
N293S1		2010-2020 Standard for Fixed Aerosol Fire-Extinguishing Systems	[[ ]] OPG Codes and Standards	Information		Action	Currently not in scope but considered for detailed design fire coverage	Add to C&S [[ ]]
N293S1		USNRC (United States Nuclear Regulatory Commission) NUREG/CR-6850-2005 Fire PRA Methodology for Nuclear Power Facilities	For Information	Information			Reference requirement for U.S. plant	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
N293S1		NUREG-1852, Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire	For Information	Information			Reference requirement for U.S. plant	
N293S1		CSA N293S1:21 Supplement No. 1 to N293-12, Fire protection for nuclear power plants (application to small modular reactors)	[[ ]] OPG Codes and Standards	Information			Specific allowances for SMR being assessed under detailed design	
N293S1		Regulatory Guide 1.189-2018 Fire Protection for Nuclear Power Plants	For Information	Information			Reference requirement for U.S. plant	
N293S1		Regulatory Guide 1.232-2018 Guidance for Developing Principal Design Criteria for Non-Light Water Reactors	Not Applicable	Information			This reference added to N293S1 for non-LWR designs	
N293S1	S1-3 Definitions and abbreviations	Header						
N293S1	S1-3.1 Definitions	[Add the following] Facility - an assembly of SSC, and/or associated protected area land where radioactive materials are produced, processed, managed, used, handled, stored, or disposed. Industrial fire brigade - fire responders located on site, off-site, or a combination of the two. Note: Requirements of this Supplement or CSA N293 related to industrial fire brigades are intended to be provided by the fire response organizations on site, off-site, or a composite of the two. Operating organization - the entity responsible for operating the nuclear facility. [Source: Adapted from CNSC RD/GD-369.] Small modular reactor - water cooled reactors (smaller than trad optional reactors) and advanced reactors with alternative coolant technologies (i.e., non-water cooled). Notes: 1) SMRs can produce up to a few hundred megawatts, and can be used for the purposes beyond the generation of electricity. In some cases, an SMR could have multiple reactor units with a combined power output equivalent to that of a traditional nuclear power plant. {Source: adapted from CNSC REGDOC-1 .1.5.) 2) SMRs can also be located on sites that differ from those of traditional nuclear power plants. For example, SMRs can be established on small grids where power generation needs are usually less than 300 megawatt electric (MWe) per facility, or at edge-of-grid or off-grid locations where power needs are small - in the range of 2 to 30 MWe. S1-3.2 Abbreviation		Information				
N293S1	S1-3.2 Abbreviations	[Add the following] LMR = liquid metal reactors SMR = small modular reactor		Information				
N293S1	S1-4 General requirements	Header						
N293S1	S1-4.3* Applicability for existing facilities	Header						
N293S1	S1-4.3.1* General application	[Replace this Clause with the following] This Supplement applies to all plants where its requirements are referenced as a licence condition by the AHJ		Information	This is general statement that this standard applies to plants. The license has not been issued for DNNP, but through the follow Code Compliance review, it will be demonstrated that DNNP			

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
					complies with this standard			
N293S1	S1-5 Fire protection concepts	Header						
N293S1	S1-5.4 Nuclear safety objectives and performance criteria	[Add the following] Note: Plants regulated by this Supplement vary considerably in size, complexity, and nuclear risk. For these reasons, the performance criteria to achieve nuclear safety goals may vary. However, the FPA should demonstrate that the mitigation measures that are in place provide assurance that a fire during any operational mode and plant configuration will not prevent the plant from achieving and maintaining the reactor core in a safe and stable condition, and will not result in a radiological release that adversely affects the public, plant personnel, or the environment. Radiological releases should conform with the dose limits and safety goal metrics in CNSC REGDOC-2.5.2.	CCR-[[ ]] FSSA [[ ]] FHA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-5.4.1 Nuclear safety objectives	Header						
N293S1	S1-5.4.1.1	In the event of a fire, the plant shall be capable of achieving the following safety objectives. Each objective may be met using active systems, passive design, and/or inherently safe design: a) reactivity control: to ensure reactor power is controlled and stable; Note: This can be achieved using a fast shutdown system, a slower regulating system, or by inherent negative reactivity of the reactor design. b) heat removal: to ensure heat produced from fission process or decay heat is removed so fuel, reactor, and cooling system boundaries remain safe and intact; Notes: 1) The objective in Item b) may be achieved using active cooling systems or a passive heat removal system, or by inherent robustness of the fuel, reactor core, reactor vessel, and cooling system. 2) The two objectives in Items a) and b) should be fulfilled such that uncontrolled release of radioactive materials from their normal boundaries is prevented (i.e., no abnormal release out of the reactor vessel or primary cooling piping). c) boundaries to retain fission products, including containment/confinement, maintained in accordance with the defence-in-depth principle; and Note: Depending on the reactor design, containment might or might not be subject to high temperature or high pressure. d) limiting the release of radioactive materials that are located outside the reactor.	CCR-[[ ]] FSSA [[ ]] FHA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-5.4.2 Nuclear safety performance criteria	Header						
N293S1	S1-5.4.2.1 General	[Add the following] Refer to the Note under Clause 51-5.4		Information	Information			
N293S1	S1-5.4.2.2	Means shall be provided to introduce negative reactivity into the reactor core in order to render the nuclear reactor subcritical l and maintain subcritical conditions and ensure fuel design limits are not exceeded. Refer to the Note under Clause 51-5.4.	FSSA [[ ]]	Potentially in Compliance	DNNP is LWR technology but revised clause is still met.		It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-5.4.2.3	Decay heat removal [Replace this Clause with the following] Means shall be provided to remove decay heat from the reactor to ensure fuel is in a safe and stable condition and to ensure integrity of the reactor coolant boundary. Note: Means to remove fission product decay heat and other residual heat should be provided. These means may be active or passive systems. Some reactor	FSSA [[ ]]	Potentially in Compliance	DNNP is LWR technology but revised clause is still met.		It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
		designs might also require control of reactor coolant pressure and inventory. The heat removal rate should be sufficient to meet specified fuel design limits and design conditions of reactor core, reactor vessel, and the reactor coolant boundary.						
N293S1	S1-5.4.2.4	Note: SMR designs may incorporate diverse means of moderation, heat removal (coolant), make-up, and containment. Nevertheless, appropriate means should be provided to ensure that radioactive material and fission products are not released in an uncontrolled fashion	FSSA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-5.4.2.6	[Replace this Clause with the following] Plant monitoring means shall be provided so that operators are able to perform actions to ensure that the criteria of Clauses 5.4.2.2 to 5.4.2.5 are achieved and maintained. Area(s) for plant monitoring means shall remain accessible and habitable. In addition, the control equipment shall remain available to the extent that the safety functions can be performed, and the status of the plant can be monitored.	FSSA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-5.4.3 Nuclear safety performance criteria-limiting the release of radioactive material located outside the reactor	[Add the following] Note: Some SMR designs might incorporate non-fuel materials (coolants) that themselves pose a risk of combustion and radioactive release. These designs should include provisions for prevention of combustion of potentially radioactive coolant materials	Not applicable	Information	DNNP is LWR technology. This clause is not applicable			
N293S1	S1-5.4.3.4	[Add the following] Note: While natural uranium fuels cannot become critical in light water, enriched uranium fuels can. This Clause is important for the storage of fuels and the provision of water-based fire suppression systems.		Not Applicable				
N293S1	S1-5.5.2.1	{Add the following] Note: Where the NBCC is referenced, Part 3 of Division B is applicable regardless of building size.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]		Potentially in Compliance		NBCC Part 3 of Division B is sued for assessment of BWRX 300 power block buildings	
N293S1	S1-5.6 FPA	Header						
N293S1	S1-5.6.1 General	[Add the following] Note: Plants regulated by this Supplement vary considerably in size, complexity, and nuclear risk. Using a graded approach, the level of detail of the FPA is to be commensurate with the potential risk to nuclear safety, to persons, the environment and particular characteristics of the reactor design, and the facility activities.	CCR-[[ ]] FSSA [[ ]] FHA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment Graded approach, the level of detail of the FPA is to be commensurate with the potential risk to nuclear safety	
N293S1	S1-5.7 General fire protection measures	Header						
N293S1	S1-5.7.4.1.2 Fire suppression	Immediacy of response [Replace this Clause with the following] For facilities where a manual fire response is required, those who are responsible for responding to the most resource-demanding fires shall have no duties that would prevent an immediate response to these or other fires (refer to Clause 10 for details)	Refer [[ ]] and FHA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
N293S1	S1-5.7.5.2.2 Fire hazard control - Layout and separation	[Add the following] Note: SMRs may be connected to other services (e.g., process heat or hydrogen plant) instead of a turbine. The principle should apply to any adjacent plant	Not Applicable	Information	DNNP is LWR technology with conventional power plant configuration. This clause is not applicable			
N293S1	S1-5.8 Fire protection program	[Add the following] Note: Plants regulated by this Supplement vary considerably in size, complexity, and risk. The FPA should determine the level of detail required of the fire protection program, and this should be commensurate with the risks and particular characteristics of the plant or activities.	FHA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-5.l0*Quality assurance	[Replace this Clause with the following] The fire protection program for the life cycle of an SMR shall comply with the facility-approved quality management system. Modifications, procedures, field activities, or engineering work or analysis shall be independently reviewed to ensure continued adherence to the quality objectives of the operating organization. The operating organization shall ensure that quality principles are applied to all fire protection program elements to verify that fire protection systems are designed, fabricated, implemented, tested, maintained, and operated so that they will function as intended. Arrangements shall be in place to facilitate control of a) design and procurement documents; b) instructions, procedures, and drawings; c) purchased material, equipment, and services; d) inspection, testing, maintenance, and operating status; e) nonconforming items and corrective actions; and f) records and audits. Note: Above is aligned with CSA N393:13.	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potential In Compliance	FP program documented in OPG-N-PROG-0012 provides program requirements at the current Darlington site. This will be applied to the DNNP unit.		This is a programmatic section that needs to be verified by the OPG.	
N293S1	S1-6 Design requirements for the prevention and mitigation of fires	Header						
N293S1	S1-6.2 Objectives	Header						
N293S1	S1-6.2.1* Redundant systems	Redundant systems [Add the following] Note: Defence-in-depth objectives are outlined in REGDOC-2.5.2. This Supplement is intended to provide redundancy to meet safety goals and defence-in-depth objectives and hence should be fully applicable. The delivery of safety functions under fire conditions in various reactor types is achieved by provision of segregated, redundant, and diverse SSC.	FSSA [[ ]]	Potentially in Compliance	The detailed FSSA is in the preliminary stage of development. Separation of required trains of equipment is identified		FSSA [[ ]] describes redundant safe shutdown trains of equipment	
N293S1	S1-6.3* Separation	Header						
N293S1	S1-6.3.1.1 Separation between redundant fire safe shutdown systems	[Replace this Clause with the following] Where two groups of fire safe shutdown systems are provided, the provisions of this Clause shall apply. It shall be demonstrated by analysis and documented in the FPA how the inherent safety of the SMR design meets the nuclear safety intent of this requirement.	FSSA [[ ]]	Potentially in Compliance	The detailed FSSA is in the preliminary stage of development. Separation of required trains of equipment is identified		FSSA [[ ]] describes crediting of redundant safe shutdown trains of equipment	
N293S1	S1-6.3.1.2	{Add the following] Alternatively, it may be demonstrated by analysis and documented in the FPA how the SMR design meets the nuclear safety intent of this requirement.	FSSA [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
N293S1	S1-6.3.1.3	[Add the following] Alternatively, it may be demonstrated by analysis and documented in the FPA how the inherent safety of the SMR design meets the nuclear safety intent of this requirement.	FSSA [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-6.3.1.4*	{Add the following] Where the FPA demonstrates a low level of fire hazard in a fire compartment and that this low level could not be violated during plant operation, a lower fire-resistance rating than 3 h may be permitted.	FSSA [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-6.3.1.5*	[Add the following] Alternatively, it may be demonstrated by analysis and documented in the FPA how the SMR design meets the nuclear safety intent of this requirement.	FSSA [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-6.3.2.1 Separation of the turbine generator building (hall)	[Replace this Clause with the following] The structure housing the turbine generator (for SMRs that have a turbine generator) and associated ancillary process equipment (commonly referred to as the turbine generator building or turbine generator hall) may be considered a separate building as defined in the NBCC, provided that the structure is separated from other buildings or structures by a firewall or by a distance that meets the spatial separation and exposure protection requirements of the NBCC. SMRs shall demonstrate that the turbine generator hazard and the building housing it are adequately protected to meet the intent of this clause and the fire protection goals of this Supplement. Alternative protection levels may be permitted, provided they are justified by analysis and documented in the FPA.	FHA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	**S1-6.3.2.2***	*[Replace this Clause with the following]* Where a turbine generator is included in the SMR design, the structure housing the turbine generator and associated ancillary process equipment shall be separated from adjacent rooms and areas as determined by the FPA.	FHA [[ ]]	Potential In Compliance			It is the intent to separate the BWRX 300 TG	
N293S1	**S1-6.3.2.3***	*[Replace this Clause with the following]* Where a turbine generator is included in the SMR design, the structure housing the turbine generator and associated ancillary process equipment shall be separated from adjacent rooms and areas by a fire separation having a fire-resistance rating of 3 h, except if it can be demonstrated otherwise by the FPA.	FHA [[ ]]	Potential In Compliance			It is the intent to separate the BWRX 300 TG	
N293S1	**S1-6.3.2.4***	*[Add the following]* This Clause only applies where a turbine generator is included in the SMR design.	FHA [[ ]]	Potential In Compliance			It is the intent to separate the BWRX 300 TG	
N293S1	S1-6.3.3.3 Spatial separation	[Add the following] Note: In the space surrounding the reactor, the design should employ more passive and inherently safe measures to protect against fire damage to redundant fire safe shutdown SSC. These features may include reducing the use of combustibles in the equipment and circuits to the greatest practical extent, use of fire barriers on individual components/circuits, and use of inherently safe components or materials (mineral insulated cables, optical	FHA [[ ]]	Potential In Compliance	The rector is contained in the primary containment. Primary containment will be inerted during power operations.		This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]]. Evaluation for non-power operations will be completed.	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
		cables, fail-safe system design). The power supply requirement under Item c) need not apply to SMRs where the electrical power supply to mechanical equipment is not required. An additional measure would be to place the spatial separation under strict fire prevention procedures to prevent increase of fire hazard during plant operation.						
N293S1	S1-6.4* Protection of fire safe shutdown systems and equipment	Header						
N293S1	S1-6.4.1* General	[Add the following] Note: It should be demonstrated by analysis and documented in the FPA how the inherent safety of the SMR design meets the intended defence-in-depth principle for protection of fire safe shutdown systems and control of fire consequences.		Not Applicable			BWRX 300 is not crediting inherent safety as means of shutdown	
N293S1	S1-6.4.2* Physical or spatial separation	Physical or spatial separation [Add the following] Note: It should be demonstrated by analysis and documented in the FPA how the inherent safety of the SMR design meets the intended defence-in-depth principle for protection of fire safe shutdown systems and control of fire consequences. In addition, it should be demonstrated by analysis and documented in the FPA how physical or spatial separation controls fire consequences.	FSSA [[ ]]	Potential In Compliance			This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]]	
N293S1	S1-6.5 Reducing the spread of fire	Header						
N293S1	S1-6.5.3.3 Layout of cable trays	[Add the following] Note: The use of cable trays is a typical feature of large nuclear and other power plants. With substantially fewer cables, the use of conduit or other types of protected cables would preclude the need for compliance with this Clause.	FHA [[ ]]	Potential In Compliance				
N293S1	S1-6.6.2*	Containment structures [Add the following] Clause 6.6.2 is applicable to SMRs whose designs have a containment structure. The FPA, taking plant design into account, shall demonstrate how this safety intent is met. Note: As the SMR technologies evolve, the concept of containment functional performance rather than exclusive reliance on prescriptive containment design criteria is being considered, and for these designs, this Clause might not be relevant.	FHA [[ ]] FSSA [[ ]]	Potential In Compliance			Assessment of containment performance will be further developed under detailed design	
N293S1	S1-6.6.2.2	Egress from containment structures [Add the following] In SMRs that have only small containment volumes and where these spaces are not entered during plant operation, the design for fire egress and exit provisions for occupied areas need not be applied. For entry into containment areas during outages, procedures for entry into confined spaces shall be developed and applied. The SMR design shall demonstrate how this safety intent is met.	FHA [[ ]] FSSA [[ ]]	Potential In Compliance			Assessment of containment performance will be further developed under detailed design	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
N293S1	S1-6.7 Maintaining plant operation during a fire	Header						
N293S1	S1-6.7.1.3 Control room complex	[Replace this Clause with the following] The control room shall maintain the tenability limits required (smoke, visibility, heat, and structural safety) to carry out the required safety operations in the event of a fire. The FPA should demonstrate that tenability limits will be maintained in all fire scenarios for the duration required to ensure that the safety objectives and goals are maintained. In the event that transfer of control to the second control room has to be made, due to loss of equipment functions or adverse room conditions, the design shall ensure the conditions in the control room remain habitable for a sufficient time for operators to follow procedures for a safe transfer.	Refer [[ ]] U41 SDD [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-6.7.2* Travel routes between control rooms	Travel routes between control rooms [Add the following] Note: This Clause is applicable to SMR designs that have both a primary and a secondary control room. The use of a primary and a secondary control room is a safety design feature common to nuclear power plant designs. This is to ensure that means to safely control the reactor is available if one control room becomes unavailable due to fire. The SMR design must demonstrate by analysis documented in the FPA how this safety intent is met.	Refer [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-7 Design and installation requirements for fire protection systems	Header						
N293S1	S1-7.2 Fire alarm systems	Header						
N293S1	S1-7.2.2.3 Input devices	[Add note at the end of the Clause] Note: The FPA should determine what detection is suitable and it might not be very early detection	U43 SDD [[ ]] FHA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-7.3 Fire suppression	Header						
N293S1	S1-7.3.1.1.3 General	[Applicable as is with the following additions to be added in numerical order] • Remove NFPA 12A; • Add NFPA 484, NFPA 770, and NFPA 2010	U43 SDD [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-7.3.2.1.1 Water supply for fire protection	[Replace this Clause with the following] Where water-based supply is relied upon for fire protection {manual or automatic), sources of water shall be a) of sufficient supply to meet the pressure, flow, and duration design requirements of the fire protection systems; and b) drawn from i) a reliable public or private water supply system; ii) water that is stored in reservoirs or tanks; or iii) water that is taken from a large natural body of fresh water (e.g., a lake or river). Sea water may be used only as a backup water supply.	U43 SDD [[ ]]	Potentially in Compliance	Two dedicated firewater storage tanks are provided, one primary and the other secondary. Fire protection water quality is maintained in accordance with the applicable requirements of NFPA 22. Water quality is compatible with equipment and piping materials used in the FPS. Water with the		[[ ]] provides input from OPG on city water line supporting fire water storage tant make-up and supply for pumper truck service.	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
					potential to induce microbiologically influenced corrosion is not used without appropriate treatment. Connections are installed at the exterior of major buildings to allow a fire department pumper truck to pump water into the FPS as an auxiliary water supply.			
N293S1	S1-7.3.2.1.2 *	[Replace this Clause with the following] Where water-based supply is relied upon for fire protection {manual or automatic), a) the fire protection water supply volume shall be calculated based on the largest expected flow rate for a period of 2 h; b) the expected flow rate shall be based on the largest concurrent design demand of any automatic water-based suppression system designed in accordance with this Supplement, taking into account the corresponding allowance for manual hose streams (including standpipe demands); and c) the fire protection water supply shall be capable of delivering this design demand in the event that the hydraulically most favourable portion of the fire main loop is out of service unless demonstrated as not required by the FPA. Note: The hose stream demand may include the calculated demand for large hoses {88.9 mm {3.5 in} and larger] for a minimum attack hose demand of 2850 L/min (750 US gpm), unless demonstrated as not required by the FPA.	U43 SDD [[ ]]		Potentially in Compliance		It is expected that BWRX 300 will meet requirements for fire water capacity and flow under detailed design	
N293S1	S1-7.3.2.1.3	[Replace this Clause with the following] Where reservoirs or tanks are used, two separate reservoirs or tanks, each having 100% of the supply volume required in Clause S1-7.3.2.1.2, shall be provided, unless a lesser redundancy is deemed acceptable as demonstrated by the FPA.	U43 SDD [[ ]]	Potentially in Compliance			It is expected that BWRX 300 will meet requirements for fire water capacity and flow under detailed design	
N293S1	S1-7.3.4.1 *	[Add note at the end of this Clause] Note: Refer to Clause 7.3.1.1.3 for applicable design standards.	U43 SDD [[ ]]	Potentially in Compliance			It is expected that BWRX 300 will meet requirements for water suppression systems and fire special extinguishing systems will be further assessed under detailed design	
N293S1	S1-7.3.4.2 Special extinguishing systems	[Add the following] Note: For liquid metal reactor designs, a specially engineered fire protection system specifically designed to be compatible with the hazards present in the alkali metal is required to mitigate the effects of metal fires as described in NFPA 484. This integrated fire suppression system should include cells, cell liners, catch pans and fire suppression decks, drain lines, drain, and dump tanks, and filtered vents, as applicable.	Not Applicable	Information			These requirements are applicable to sodium fast reactor design to mitigate sodium fires. Not applicable to BWRX 300.	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
N293S1	S1-7.3.6.1 Fire hydrants	[Replace this Clause with the following] Outdoor areas shall be provided with fire hydrants, in accordance with NFPA 24, unless demonstrated as not required by the FPA	U43 SDD [[ ]] FHA [[ ]]	Potential In Compliance				
N293S1	S1-7.3.6.5	[Replace this Clause with the following] Wall hydrants may be used as substitute to yard hydrants for SMRs if the FPA demonstrates that such hydrants will remain available in the event of a fire in the building.	U43 SDD [[ ]] FHA [[ ]]				It is expected that BWRX 300 will meet requirements for hydrants and wall hydrants will be further assessed under detailed design	
N293S1	S1-7.3.7* Standpipes	Standpipes [Replace this Clause with the following] If required by the FPA, standpipes shall be provided in accordance with NFPA 14	U43 SDD [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-7.3.8.2 Manual firefighting	[Replace this Clause with the following] Where manual firefighting is credited in the FPA, access for firefight Ing shall be provided. The access shall be adequate in size for a firefighter dressed in full fire-protective clothing, including a SCBA. Refer to Clause 10.1.4 for fire analysis.	Ref [[ ]] FHA [[ ]]	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-8 Implementation of the fire protection program	Header						
N293S1	S1-8.3 Maintenance of fire equipment	Header						
N293S1	S1-8.3.3.1 Inspections	[Replace Items a), c), and d) with the following] a) Combustible-material-free fire zones, as identified in the FPA, shall be inspected daily unless determined by FPA to ensure that no unauthorized combustible materials or fire hazards are present. Where these areas are inaccessible, alternative measures shall be taken to ensure compliance. b) Areas with high fire hazards and fire sensitive areas, as identified in the FPA, shall be inspected at a frequency determined by FPA for unsafe conditions that include unauthorized combustible materials, fire hazards, and obstructions to emergency response (e.g., firefighting actions). c) Doors that are identified in the FPA as fire barriers ensuring fire safe shutdown shall be inspected once per week unless determined by FPA.	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-8.3.5* Annual plant condition inspection	S1-8.3.5.1 A plant condition inspection shall be performed by a qualified independent person at least once per year	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-10 Fire response capability	Header						
N293S1	S1-10.1 General	Header						
N293S1	S1-10.1.2 Scope	Fire response capability shall be provided based on the analysis of Clause 10.1.4. Notes: 1) The intent of Clause 10.1.2 is to provide a fire response capability and capacity commensurate with the hazards and risks associated with the technology, location, or siting (e.g., taking into consideration the local response capability), environmental protection needs, protection of staff, protection of occupants, and protection of the public. 2) Where manual fire response is required based on the analysis of Clause 10.1.4, this may be provided via a dedicated onsite industrial fire brigade,	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
		facility operational staff, municipal fire departments, other off-site fire response, or a combination of these organizations. 3) Where an industrial fire brigade is determined to be required by Clause 10.1.4, the brigade should meet the requirements for firefighting of this Supplement. 4) The fire response capabilities provided are required to address the unique needs of the hazard associated with the technology to achieve the goals of this Supplement.						
N293S1	S1-10.1.3 Firefighting	[Replace this Clause with the following] The fire response capability shall l be maintained for the entire life cycle of the facility, with the exception of the encasement phase	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-10.1.4* Fire analysis	[Replace this Clause with the following] An analysis of postulated fires shall be conducted to determine the fire response needs of the facility and shall meet the following: a) The analysis shall be documented and maintained; b) The analysis shall be submitted to the AHJ for notification; c) The analysis shall determine at a minimum the capability, personnel, equipment, intervention timelines, qualifications, and training needs of the response capability; d) The analysis shall document mutual aid agreements, capabilities and capacity of mutual aid organizations and assumptions; and e) The analysis shall be prepared by qualified person(s)	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-10.2 Industrial fire brigade	[Add the following] Note: Clause 10.2 applies where an industrial brigade is determined to be required by Clause 10.1.4	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potential In Compliance			It is the intent to comply with these code clauses as design detail is available to support the assessment	
N293S1	S1-10.4 Industrial fire brigade member qualifications	Header						
N293S1	S1-10.4.2 Training	[Add the following] All fire response team members shall receive firefighting training to a level of response commensurate with the facility hazards as determined by the needs analysis, as well as training in site design, including nuclear facility layout, major systems, and nuclear safety features, at levels appropriate for their specific response roles	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])	Potential In Compliance			This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]]	
N293S1	S1-11 FPA	Header						
N293S1	S1-11.5 Valid assumptions	[Replace this Clause with the following] Assumptions used and not specified in Clause 11.5, Items a) to f), shall be clearly stated and justified in the documentation. When assessing fire hazards and consequences of fires, the following are considered acceptable assumptions: a) Fires need not be postulated coincident with independent, low-frequency events or accidents in the plant. b) Two or more simultaneous, independent fires in a plant or adjacent plant units need not be postulated. c) In a fire safe shutdown analysis, failure of a single component need not be postulated coincident with failures caused by fire. d) Credit may be given to equipment or components that are safe by inherent characteristics or that result in fail-safe conditions after damage by fire or fire suppression action, provided that inherent or fail-safe characteristics of the equipment or component are individually assessed against the failure modes induced by the fire or fire	FHA [[ ]] FSSA [[ ]]	Potential In Compliance			This clause will be further reviewed during detailed design for safe shutdown SSC under FSSA [[ ]]	

Table 4-2: CSA N293 S1 Compliance Table

Standard	Clause	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
		suppression action. e) Manual action by operators may be credited toward the accomplishment of the nuclear safety objectives, provided that the necessary conditions for correct and timely actions have been identified and justified. Note: Refer to NUREG-1852 for guidance. f) Credit may be given for repair or replacement of components or circuits that are damaged or disabled by fire, provided that the following conditions are met: i) Such credits are kept to a minimum. ii) Credit is given only for restoring long-term functions after the reactor has been shut down, cooled, and depressurized. iii) It is demonstrated that all necessary work can be completed before the component or circuit is required to act. iv) Procedures and training are provided for the repair or replacement work. v) Necessary components, cables, and parts are available on site.						

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
National Building Code of Canada 2015					Information, In Compliance, Potentially In Compliance, Potentially Non-Compliant, Non-Compliant				
NBCC	1.3.3.4	Fire Walls	Building Size Determination 1) Where a firewall divides a building, each portion of the building so divided shall be considered as a separate building, except when this requirement is specifically modified in other parts of this Code. (See Note A-1.3.3.4.(1).) 2) Except as permitted in Sentence (3), where portions of a building are completely separated by a vertical fire separation that has a fire-resistance rating of not less than 1 h and extends through all storeys and service spaces of the separated portions, each separated portion is permitted to be considered as a separate building for the purpose of determining building height, provided. a) Each separated portion is not more than 4 storeys in building height and is used only for assembly, residential, and business and personal services occupancies, and b) The unobstructed path of travel for a firefighter from the nearest street to one entrance of each separated portion is not more than 45 m. (See Note A-1.3.3.4.(2).) 3) The vertical fire separation referred to in Sentence (2) may terminate at the floor assembly immediately above a basement provided the basement conforms to Article 3.2.1.2. of Division B.	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.2.1. (1)	Conceptual	1) Except as permitted by Articles 3.1.2.3. to 3.1.2.5., every building or part thereof shall be classified according to its major occupancy as belonging to one of the Groups or Divisions described in Table 3.1.2.1. (See Note A-3.1.2.1.(1).) 2) A building intended for use by more than one major occupancy shall be classified according to all major occupancies for which it is used or intended to be used.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.2.2	Conceptual	Occupancies of Same Classification Any building is deemed to be occupied by a single major occupancy, notwithstanding its use for more than one major occupancy, provided that all occupancies are classified as belonging to the same Group classification or, where the Group is divided into Divisions, as belonging to the same Division classification described in Table 3.1.2.1	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			The U72 Turbine Building corresponds to the code requirement at hand and has been assigned a Group/Division per NBCC's Table 3.1.2.1	
NBCC	3.1.3.1	Conceptual	Separation of Major Occupancies Except as permitted by Sentences (2) and (3), major occupancies shall be separated from adjoining major occupancies by fire separations having fire-resistance ratings conforming to Table 3.1.3.1. 2) NA 3) In a building conforming to the requirements of Articles 3.2.8.2. to 3.2.8.8., the requirements of Sentence (1) for fire separations between major occupancies do not apply at the vertical plane around the perimeter of an opening through the horizontal fire separation	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.3.2	Conceptual	Prohibition of Occupancy Combinations 1) No major occupancy of Group F, Division 1 shall be contained within a building with any occupancy classified as Group A, B or C. 2) Not more than one suite of residential occupancy shall be contained within a building classified as a Group F, Division 2 major occupancy.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance	This requirement is addressed in life safety requirements document [[	Occupant load has been determined based on	Item 5) missing form [[ ]]	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			3) A building conforming to Article 3.2.2.50. shall not contain a) except as provided in Sentence (5), a Group A, Division 1 or 3, Group B, or Group F, Division 2 or 3 major occupancy, or b) a Group A, Division 2 or Group E major occupancy above the second storey. 4) A building conforming to Article 3.2.2.58. shall not contain a) a Group A, Division 1 or 3, Group B, or Group F, Division 1 major occupancy, or b) except as provided in Sentence (5), a Group A, Division 2, Group E, or Group F, Division 2 or 3 major occupancy above the second storey. 5) A building conforming to Article 3.2.2.50. or 3.2.2.58. is permitted to contain a storage garage below the fourth storey. (See Note (A-3.1.3.2.(3) to (5).) (See also Sentence 4.4.2.1.(1).)			]], multiple occupancy, with specific buildings assessed in applicable building code tables	actual need in lieu of as per prescribed method in code. To be approved by AHJ. Location of building population is pending. Effects egress widths	5) A building conforming to Article 3.2.2.50. or 3.2.2.58. is permitted to contain a storage garage below the fourth storey. (See Note A-3.1.3.2.(3) to (5).) (See also Sentence 4.4.2.1.(1).	
NBCC	3.1.4.1 1)		A building permitted to be of combustible construction is permitted to be constructed of combustible materials, with or without noncombustible components.	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.1 2)		The flame-spread rating on any exposed surface of foamed plastic insulation, and on any surface that would be exposed by cutting through the insulation in any direction, shall be not more than 500	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.2 1)		Except as permitted in Sentence (2), foamed plastics that form part of a wall or ceiling assembly in combustible construction shall be protected from adjacent spaces in the building, other than adjacent concealed spaces within attic or roof spaces, crawl spaces, and wall and ceiling assemblies, a) by one of the interior finishes described in Subsections 9.29.4. to 9.29.9., b) provided the building does not contain a Group A, Group B or Group C major occupancy, by sheet metal i) mechanically fastened to the supporting assembly independent of the insulation, ii) not less than 0.38 mm thick, and iii) with a melting point not below 650°C, or c) by any thermal barrier that meets the requirements of Sentence 3.1.5.15.(2)	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.2 2)		A walk-in cooler or freezer consisting of factory-assembled wall, floor or ceiling panels containing foamed plastics is permitted in a building required to be of combustible construction, provided the panels a) are protected on both sides by sheet metal not less than 0.38 mm thick having a melting point not less than 650°C, b) do not contain an air space, and c) when a sample panel with an assembled joint typical of field installation is subjected to the applicable test described in Subsection 3.1.12., have a flame-spread rating not more than that permitted for the space in which they are located or the space that they bound, as applicable	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.2 3)		The flame-spread rating of doors containing foamed plastics shall comply with Sentences 3.1.13.2.(1) to (3)	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.1.4.3 1)		1) Except as required by Sentence (2), optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes that are installed in a building permitted to be of combustible construction shall a) not convey flame or continue to burn for more than 1 min when tested in conformance with the Vertical Flame Test (FT1 rating) in CSA C22.2 No. 0.3, "Test Methods for Electrical Wires and Cables," or b) be located in i) totally enclosed noncombustible raceways (see Note A-3.1.4.3.(1)(b)(i)), ii) masonry walls, iii) concrete slabs, or iv) totally enclosed non-metallic raceways conforming to Clause 3.1.5.23.(1)(b).	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.3 2)		2) Except as permitted in Sentences (3) and (4), optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes that are used for the transmission of voice, sound or data and are installed in a plenum in a building permitted to be of combustible construction shall exhibit the following characteristics when tested in conformance with CAN/ULC-S102.4, "Test for Fire and Smoke Characteristics of Electrical Wiring, Cables and Non-Metallic Raceways," (FT6 rating): a) a horizontal flame distance of not more than 1.5 m, b) an average optical smoke density of not more than 0.15, and c) a peak optical smoke density of not more than 0.5	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.3 3)		3) Except as permitted in Sentence (4), where totally enclosed noncombustible raceways are used in a plenum, exposed components of wiring systems with combustible insulation, jackets or sheathes, including optical fibre cables and electrical wires and cables that are used for the transmission of voice, sound or data, that are installed in the plenum or that extend not more than 9 m from the plenum, including drop down to the floor level, are permitted, provided they exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cable Trays (FT4 rating) in CSA C22.2 No. 0.3, "Test Methods for Electrical Wires and Cables."	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.3 4)		4) Cables or wires within plenums that are used for the transmission of signals in fire alarm systems need not comply with the requirements of Sentence (2)	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.4		Totally enclosed non-metallic raceways used in a plenum in a building permitted to be of combustible construction shall meet the requirements of Clause 3.1.5.23.(1)(a)	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.5		1) If fire-retardant-treated wood is specified in this Part, the wood shall a) be pressure impregnated with fire-retardant chemicals in conformance with CAN/CSA-O80 Series, "Wood Preservation," and b) have a flame-spread rating not more than 25.	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.6		Heavy Timber Construction Alternatives		N/A	Heavy timber construction is			

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
						not being used in the BWRX-300			
NBCC	3.1.4.7		Heavy Timber Construction		N/A	Heavy timber construction is not being used in the BWRX-300			
NBCC	3.1.4.8 1)		1) Not less than 90% of the exterior cladding on each exterior wall of buildings conforming to Article 3.2.2.50. or 3.2.2.58. shall consist of a) noncombustible cladding, or b) a wall assembly that satisfies the criteria of Clause 3.1.5.5.(1)(b).	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.4.8 2)		2) A wall assembly conforming to Clause (1)(b) that includes combustible cladding made of fire-retardant-treated wood shall be tested for fire exposure after the cladding has been subjected to the accelerated weathering test specified in ASTM D 2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.”	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.1 1)		1) Except as permitted by Sentences (2) to (4) and Articles 3.1.5.2. to 3.1.5.24., 3.1.13.4. and 3.2.2.16., a building or part of a building required to be of noncombustible construction shall be constructed with noncombustible materials. (See also Subsection 3.1.13. for the requirements regarding the flame-spread rating of interior finishes.)	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.1 2)		2) Notwithstanding the definition of noncombustible materials stated in Article 1.4.1.2. of Division A, a material is permitted to be used in noncombustible construction provided that, when tested in accordance with ULC-S135, “Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter),” at a heat flux of 50 kW/m^2, a) its average total heat release is not more than 3 MJ/m^2, b) its average total smoke extinction area is not more than 1.0 m^2, and c) the test duration is extended beyond the time stipulated in the referenced standard until it is clear that there is no further release of heat or smoke.	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.1 3)		3) If a material referred to in Sentence (2) consists of a number of discrete layers and testing reveals that the surface layer or layers protect the underlying layers such that complete combustion of the underlying layers does not occur, the test shall be repeated by removing the outer layers sequentially until all layers have been exposed during testing, or until complete combustion has occurred	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.1 4)		4) The acceptance criteria for a material tested in accordance with Sentence (3) shall be based on the cumulative emissions from all layers, which must not exceed the criteria stated in Clauses (2)(a) and (b)	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.2		1) The following minor combustible components are permitted in a building required to be of noncombustible construction: a) paint (see also Clause 3.1.13.1.(2)(b)),	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			b) self-adhesive tapes, mastics and caulking materials, including foamed plastic air sealants, applied to provide a seal between the major components of exterior wall construction, (see also Article 3.6.4.3. for limits on the use of combustible materials in plenum spaces), c) fire stops and fire blocks conforming to Sentence 3.1.9.1.(1) and Article 3.1.11.7., d) tubing for pneumatic controls provided it has an outside diameter of not more than 10 mm, e) adhesives, vapour barriers and sheathing papers, f) electrical outlet and junction boxes, g) wood blocking within wall assemblies intended for the attachment of handrails, fixtures, and similar items mounted on the surface of the wall, and h) similar minor components.						
NBCC	3.1.5.3 1)		1) Combustible roof covering that has an A, B, or C classification determined in conformance with Subsection 3.1.15. is permitted on a building required to be of noncombustible construction	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.3 2)		2) Combustible roof sheathing and roof sheathing supports installed above a concrete deck are permitted on a building required to be of noncombustible construction provided a) the concrete deck is not less than 50 mm thick, b) the height of the roof space above the deck is not more than 1 m, c) the roof space is divided into compartments by fire blocks in conformance with Article 3.1.11.5., d) openings through the concrete deck other than for noncombustible roof drains and plumbing piping are protected by masonry or concrete shafts i) constructed as fire separations having a fire-resistance rating not less than 1 h, and ii) extending from the concrete deck to not less than 150 mm above the adjacent roof sheathing, e) the perimeter of the roof is protected by a noncombustible parapet extending from the concrete deck to not less than 150 mm above the adjacent sheathing, and f) except as permitted by Clause (d), the roof space does not contain any building services.	[[ ]] FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.3 3)		3) Combustible cant strips, roof curbs, nailing strips and similar components used in the installation of roofing are permitted on a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.3 4)		4) Wood nailer facings to parapets, not more than 600 mm high, are permitted on a building required to be of noncombustible construction, if the facings and any roof membranes covering the facings are protected by sheet metal	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.4 1)		1) Combustible skylight assemblies are permitted in a building required to be of noncombustible construction if the assemblies have a flame-spread rating not more than a) 150 provided the assemblies i) have an individual area not more than 9 m^2,	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			ii) have an aggregate horizontal projected area of the openings through the ceiling not more than 25% of the area of the ceiling of the room or space in which they are located, and iii) are spaced not less than 2.5 m from adjacent assemblies and from required fire separations, or b) 75 provided the assemblies i) have an individual area not more than 27 m^2, ii) have an aggregate horizontal projected area of the openings through the ceiling not more than 33% of the area of the ceiling of the room or space in which they are located, and iii) are spaced not less than 1.2 m from adjacent assemblies and from required fire separations.						
NBCC	3.1.5.4 2)		2) Combustible vertical glazing installed no higher than the second storey is permitted in a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.4 3)		3) Except as permitted by Sentence (4), the combustible vertical glazing permitted by Sentence (2) shall have a flame-spread rating not more than 75	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.4 4)		4) The flame-spread rating of combustible glazing is permitted to be not more than 150 if the aggregate area of glazing is not more than 25% of the wall area of the storey in which it is located, and a) the glazing is installed in a building not more than 1 storey in building height, b) the glazing in the first storey is separated from the glazing in the second storey in accordance with the requirements of Article 3.2.3.17. for opening protection, or c) the building is sprinklered throughout	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.4 5)		5) Combustible window sashes and frames are permitted in a building required to be of noncombustible construction provided a) each window in an exterior wall face is an individual unit separated by noncombustible wall construction from every other opening in the wall, b) windows in exterior walls in contiguous storeys are separated by not less than 1 m of noncombustible construction, and c) the aggregate area of openings in an exterior wall face of a fire compartment is not more than 40% of the area of the wall face.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.5 1)		1) Except as provided in Sentences (2) and (3), combustible cladding is permitted to be used on an exterior wall assembly in a building required to be of noncombustible construction, provided a) the building is i) not more than 3 storeys in building height, or ii) sprinklered throughout, and b) when tested in accordance with CAN/ULC-S134, “Fire Test of Exterior Wall Assemblies,” the wall assembly satisfies the following criteria for testing and conditions of acceptance (see Note A-3.1.5.5.(1)(b)): i) flaming on or in the wall assembly does not spread more than 5 m above the opening (see Note A-3.1.5.5.(1)(b)(i)), and	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			ii) the heat flux during the flame exposure on the wall assembly is not more than 35 kW/m 2 measured at 3.5 m above the opening (see Note A-3.1.5.5.(1)(b)(ii)).						
NBCC	3.1.5.5 2)		2) Except as permitted by Articles 3.2.3.10. and 3.2.3.11., where the limiting distance in Tables 3.2.3.1.-B to 3.2.3.1.-E permits an area of unprotected openings of not more than 10% of the exposing building face, the construction requirements of Table 3.2.3.7. shall be met.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.5 3)		3) A wall assembly permitted by Sentence (1) that includes combustible cladding of fire-retardant-treated wood shall be tested for fire exposure after the cladding has been subjected to an accelerated weathering test as specified in ASTM D 2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing”	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.6		1) Combustible components, other than those permitted by Article 3.1.5.5., are permitted to be used in an exterior wall assembly of a building required to be of noncombustible construction, provided a) the building is i) not more than 3 storeys in building height, or ii) sprinklered throughout, and b) the wall assembly i) meets the requirements of Clause 3.1.5.5.(1)(b), or ii) is protected by masonry or concrete cladding not less than 25 mm thick (see Note A-3.1.5.5.(1)(b)).	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.7 1)		1) Except as provided in Sentence (2), factory-assembled wall and ceiling panels containing foamed plastic insulation with a flame-spread rating not more than 500 are permitted to be used in a building required to be of noncombustible construction, provided a) the building i) is sprinklered, ii) is not more than 18 m high, measured from grade to the underside of the roof, and iii) does not contain a Group A, Group B, or Group C major occupancy, and b) the panels i) do not contain an air space, ii) when tested in accordance with CAN/ULC-S138, “Test for Fire Growth of Insulated Building Panels in a Full-Scale Room Configuration,” meet the criteria defined therein, and iii) when a sample panel with an assembled joint typical of field installation is subjected to the applicable test described in Subsection 3.1.12., have a flame-spread rating not more than that permitted for the room or space that they bound.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.7 2)		2) Factory-assembled exterior wall panels containing thermosetting foamed plastic insulation are permitted to be used in a building required to be of noncombustible construction, provided a) the building i) is not more than 18 m high, measured from grade to the underside of the roof, and ii) does not contain a Group B or Group C major occupancy, and b) the wall panels i) do not contain an air space, ii) are protected on both sides by sheet steel not less than 0.38 mm thick,	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			iii) remain in place for not less than 10 min when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,” where the exposed surface includes typical vertical and horizontal joints, and iv) when a sample panel with an assembled joint typical of field installation is subjected to the applicable test described in Subsection 3.1.12., have a flame-spread rating not more than that permitted for the room or space that they bound.						
NBCC	3.1.5.7 3)		3) A walk-in cooler or freezer consisting of factory-assembled wall, floor or ceiling panels containing foamed plastic insulation with a flame-spread rating not more than 500 is permitted to be used in a building required to be of noncombustible construction, provided a) the building is sprinklered, and b) the panels i) are protected on both sides by sheet metal not less than 0.38 mm thick with a melting point not less than 650°C, ii) do not contain an air space, iii) when tested in accordance with CAN/ULC-S138, “Test for Fire Growth of Insulated Building Panels in a Full-Scale Room Configuration,” meet the criteria defined therein, and iv) when a sample panel with an assembled joint typical of field installation is subjected to the applicable test described in Subsection 3.1.12., have a flame-spread rating not more than that permitted for the space in which they are located or the space that they bound, as applicable	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.8		1) Wood nailing elements attached directly to or set into a continuous noncombustible backing for the attachment of interior finishes are permitted in a building required to be of noncombustible construction provided the concealed space created by the wood elements is not more than 50 mm thick	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.9		1) Combustible millwork, including interior trim, doors and door frames, show windows together with their frames, aprons and backing, handrails, shelves, cabinets and counters, is permitted in a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.10 1)		1) Combustible stage flooring supported on noncombustible structural members is permitted in a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.10 2)		2) Wood members more than 50 mm but not more than 300 mm high applied directly to or set into a noncombustible floor slab are permitted for the construction of a raised platform in a building required to be of noncombustible construction provided the concealed spaces created are divided into compartments by fire blocks in conformance with Sentence 3.1.11.3.(2).	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.10 3)		3) The floor system for the raised platform referred to in Sentence (2) is permitted to include a combustible subfloor and combustible finished flooring	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.1.5.10 4)		4) Combustible finished flooring is permitted in a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.11		Combustible Stairs in Dwelling Units		N/A			There are no dwelling units in the BWRX-300	
NBCC	3.1.5.12 1)		1) Except as permitted in Sentences (2) and (3), combustible interior wall and ceiling finishes referred to in Clause 3.1.13.1.(2)(b) that are not more than 1 mm thick are permitted in a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.12 2)		2) Combustible interior wall finishes, other than foamed plastics, that are not more than 25 mm thick are permitted in a building required to be of noncombustible construction, provided they have a flame-spread rating not more than 150 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.12 3)		3) Except as provided in Sentence (4), combustible interior ceiling finishes, other than foamed plastics, that are not more than 25 mm thick are permitted in a building required to be of noncombustible construction, provided they have a flame-spread rating not more than 25 on any exposed surface or on any surface that would be exposed by cutting through the material in any direction, except that not more than 10% of the ceiling area within each fire compartment is permitted to have a flame-spread rating not more than 150	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.12 4)		4) Combustible interior ceiling finishes made of fire-retardant-treated wood are permitted in a building required to be of noncombustible construction, provided they are not more than 25 mm thick or are exposed fire-retardant-treated wood battens	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.13		1) Gypsum board with a tightly adhering paper covering not more than 1 mm thick is permitted in a building required to be of noncombustible construction provided the flame-spread rating on the surface is not more than 25	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.14 1)		1) Foamed plastic insulation shall conform to Article 3.1.5.15	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.14 2)		2) Combustible insulation with a flame-spread rating not more than 25 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.1.5.14 3)		3) Combustible insulation is permitted to be installed above roof decks, outside of foundation walls below ground level, and beneath concrete slabs-on-ground of buildings required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.14 4)		4) Except as provided in Sentences (5) and (6), combustible insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a building required to be of noncombustible construction, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of a) not less than 12.7 mm thick gypsum board mechanically fastened to a supporting assembly independent of the insulation, b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation, c) masonry, or d) concrete.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.14 5)		5) Combustible insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the exterior walls of a building required to be of noncombustible construction that is not sprinklered and is more than 18 m high, measured from grade to the underside of the roof, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of a) gypsum board not less than 12.7 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled, b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation, c) masonry or concrete not less than 25 mm thick, or d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,” will not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 10 min (see Note A-3.1.5.14.(5)(d)) (see also Article 3.2.3.7.).	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.14 6)		6) Combustible insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the interior walls, within ceilings and within roof assemblies of a building required to be of noncombustible construction that is not sprinklered and is more than 18 m high, measured from grade to the underside of the roof, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of a) Type X gypsum board not less than 15.9 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled, conforming to i) ASTM C 1177/C 1177M, “Glass Mat Gypsum Substrate for Use as Sheathing,” ii) ASTM C 1178/C 1178M, “Coated Glass Mat Water-Resistant Gypsum Backing Panel,” iii) ASTM C 1396/C 1396M, “Gypsum Board,” iv) ASTM C 1658/C 1658M, “Glass Mat Gypsum Panels,” or v) CAN/CSA-A82.27-M, “Gypsum Board,” b) non-loadbearing masonry or concrete not less than 50 mm thick,	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			c) loadbearing masonry or concrete not less than 75 mm thick, or d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,” i) does not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 20 min, and ii) remains in place for not less than 40 min.						
NBCC	3.1.5.15 1)		1) Foamed plastic insulation is permitted to be installed above roof decks, outside of foundation walls below ground level, and beneath concrete slabs-on-ground of a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.15 2)		2) Except as provided in Sentences (3) and (4), foamed plastic insulation with a flame-spread rating not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a building required to be of noncombustible construction, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of a) not less than 12.7 mm thick gypsum board mechanically fastened to a supporting assembly independent of the insulation, b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation, c) masonry, d) concrete, or e) any thermal barrier that meets the requirements of classification B when tested in conformance with CAN/ULC-S124, “Test for the Evaluation of Protective Coverings for Foamed Plastic.”	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.15 3)		3) Foamed plastic insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the exterior walls of a building required to be of noncombustible construction that is not sprinklered and is more than 18 m high, measured from grade to the underside of the roof, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of a) gypsum board not less than 12.7 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled, b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation, c) masonry or concrete not less than 25 mm thick, or d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,” does not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 10 min.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.15 4)		4) Foamed plastic insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the interior walls, within ceilings and within roof assemblies of a building required to be of noncombustible construction that is not sprinklered and is more than 18 m high, measured from grade to the underside of the roof, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			a) Type X gypsum board not less than 15.9 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled, conforming to i) ASTM C 1177/C 1177M, “Glass Mat Gypsum Substrate for Use as Sheathing,” ii) ASTM C 1178/C 1178M, “Coated Glass Mat Water-Resistant Gypsum Backing Panel,” iii) ASTM C 1396/C 1396M, “Gypsum Board,” or iv) CAN/CSA-A82.27-M, “Gypsum Board,” b) non-loadbearing masonry or concrete not less than 50 mm thick, c) loadbearing masonry or concrete not less than 75 mm thick, or d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,” i) does not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 20 min, and ii) remains in place for not less than 40 min.						
NBCC	3.1.5.16 1)		1) Except as permitted by Sentence (2), solid lumber partitions not less than 38 mm thick and wood framing in partitions located in a fire compartment not more than 600 m^2 in area are permitted to be used in a building required to be of noncombustible construction in a floor area that is not sprinklered throughout provided the partitions a) are not required fire separations, and b) are not located in a care, treatment or detention occupancy.		N/A			Lumber is not used in partions in the BWRX-300.	
NBCC	3.1.5.16 2)		2) Partitions installed in a building of noncombustible construction are permitted to contain wood framing provided a) the building is not more than 3 storeys in building height, b) the partitions are not located in a care, treatment or detention occupancy, and c) the partitions are not installed as enclosures for exits or vertical service spaces.		N/A			Lumber is not used in partions in the BWRX-300.	
NBCC	3.1.5.16 3)		3) Solid lumber partitions not less than 38 mm thick and partitions that contain wood framing are permitted to be used in a building required to be of noncombustible construction provided a) the building is sprinklered throughout, and b) the partitions are not i) located in a care, treatment or detention occupancy, ii) installed as enclosures for exits or vertical service spaces, or iii) used to satisfy the requirements of Clause 3.2.8.1.(1)(a).		N/A			Lumber is not used in partions in the BWRX-300.	
NBCC	3.1.5.17		Storage Lockers in Residential Building		N/A			The BWRX-300 is not classified as residential	
NBCC	3.1.5.18 1)		1) Except as required by Sentence 3.6.4.3.(1), combustible ducts, including plenums and duct connectors, are permitted to be used in a building required to be of noncombustible construction provided these ducts and duct connectors are used only in horizontal runs	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.18 2)		2) Combustible duct linings, duct coverings, duct insulation, vibration isolation connectors, duct tape, pipe insulation and pipe coverings are permitted to be used in a building required to be of noncombustible construction provided they conform to the appropriate requirements of Subsection 3.6.5	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								during detailed design	
NBCC	3.1.5.18 3)		3) In a building required to be of noncombustible construction, combustible ducts need not comply with the requirements of Sentences 3.6.5.1.(1) and (2) provided the ducts are a) part of a duct system conveying only ventilation air, and b) contained entirely within a dwelling unit.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.19 1)		1) Except as permitted by Clause 3.1.5.2.(1)(d) and Sentences (2) and (3), combustible piping and tubing and associated adhesives are permitted to be used in a building required to be of noncombustible construction provided that, except when concealed in a wall or concrete floor slab, they a) have a flame-spread rating not more than 25, and b) if used in a building described in Subsection 3.2.6., have a smoke developed classification not more than 50.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.19 2)		2) Combustible sprinkler piping is permitted to be used within a sprinklered floor area in a building required to be of noncombustible construction. (See also Article 3.2.5.13)	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.19 3)		3) Polypropylene pipes and fittings are permitted to be used for drain, waste and vent piping for the conveyance of highly corrosive materials and for piping used to distribute distilled or dialyzed water in laboratory and hospital facilities in a building required to be of noncombustible construction, provided a) the building is sprinklered throughout, b) the piping is not located in a vertical shaft, and c) piping that penetrates a fire separation is sealed at the penetration by a fire stop that has an FT rating not less than the fire-resistance rating of the fire separation when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,” with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.20		1) Combustible plumbing fixtures, including wall and ceiling enclosures that form part of the plumbing fixture, are permitted in a building required to be of noncombustible construction provided they are constructed of material having a flame-spread rating and smoke developed classification not more than that permitted for the wall surface of the room or space in which they are installed	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.21 1)		1) Except as required by Sentence (2) and Article 3.1.5.22., optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes are permitted in a building required to be of noncombustible construction, provided a) the wires and cables exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cable Trays (FT4 rating) in CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables,” b) the wires and cables are located in i) totally enclosed noncombustible raceways (see Note A-3.1.4.3.(1)(b)(i)), ii) masonry walls, iii) concrete slabs, iv) a service room separated from the remainder of the building by a fire separation having a fire-resistance rating not less than 1 h, or	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			v) totally enclosed non-metallic raceways conforming to Clause 3.1.5.23.(1)(b), or c) the wires and cables are communication cables used at the service entry to a building and are not more than 3 m long.						
NBCC	3.1.5.21 2)		2) Except as permitted in Sentences (3) and (4), optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes that are used for the transmission of voice, sound or data and are not located in totally enclosed noncombustible raceways are permitted to be installed in a plenum in a building required to be of noncombustible construction, provided the wires and cables exhibit a horizontal flame distance of not more than 1.5 m, an average optical smoke density of not more than 0.15, and a peak optical smoke density of not more than 0.5 when tested in conformance with CAN/ULC-S102.4, “Test for Fire and Smoke Characteristics of Electrical Wiring, Cables and Non-Metallic Raceways,” (FT6 rating).	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.21 3)		3) Except as permitted in Sentence (4), where totally enclosed noncombustible raceways are used in a plenum, exposed components of wiring systems with combustible insulation, jackets or sheathes, including optical fibre cables and electrical wires and cables that are used for the transmission of voice, sound or data, that are installed in the plenum or that extend not more than 9 m from the plenum including drop down to the floor level, are permitted provided they exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cable Trays (FT4 rating) in CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables.”	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.21 4)		4) Cables or wires within plenums that are used for the transmission of signals in fire alarm systems need not comply with the requirements of Sentences (2) and (3)	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.22		1) Combustible travelling cables are permitted on elevating devices in a building required to be of noncombustible construction	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.23 1)		1) Except as required in Sentence (2), subject to the limits on the size of elements that penetrate fire separations as stated in Sentence 3.1.9.3.(2), within a fire compartment of a building required to be of noncombustible construction, totally enclosed non-metallic raceways not more than 175 mm in outside diameter, or of an equivalent rectangular area, are permitted to be used to enclose optical fibre cables and electrical wires and cables, provided a) where the wires and cables in the raceways meet or exceed the requirements of Clause 3.1.5.21.(1)(a), the non-metallic raceways meet the requirements for at least an FT4 rating in i) CAN/CSA-C22.2 No. 262, “Optical Fiber Cable and Communication Cable Raceway Systems,” or ii) CAN/ULC-S143, “Fire Tests for Non-Metallic Electrical and Optical Fibre Cable Raceway Systems,” and b) where the wires and cables in the raceways do not meet or exceed the requirements of Clause 3.1.5.21.(1)(a), the non-metallic raceways exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test (FT4) – Conduit or Tubing on Cable Tray in Clause 6.16 of CSA C22.2 No. 211.0, “General Requirements and Methods of Testing for Nonmetallic Conduit.”	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.5.23 2)		2) Totally enclosed non-metallic raceways used in a plenum in a building required to be of noncombustible construction shall exhibit a horizontal flame distance of not more than 1.5 m, an average optical smoke density of not more than 0.15, and a peak optical smoke density of not	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			more than 0.5 when tested in conformance with CAN/ULC-S102.4, “Test for Fire and Smoke Characteristics of Electrical Wiring, Cables and Non-Metallic Raceways,” (FT6 rating)					during detailed design	
NBCC	3.1.5.24		1) On buildings required to be of noncombustible construction, decorative wood cladding is permitted to be used on the exterior fascias and soffits of marquees or canopies on the building face of a storey having direct access to a street or access route, provided the wood cladding is fire-retardant-treated wood that has been conditioned in conformance with ASTM D 2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing,” before being tested in accordance with CAN/ULC-S102, “Test for Surface Burning Characteristics of Building Materials and Assemblies	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.6		Tents and Air-Supported Structures		N/A	Tents are temporary structures and are not part of the design for BWRX-300. There are no air-supported structures in the design of the BWRX-300.			
NBCC	3.1.7.1	Conceptual	Determination of Ratings 1) Except as permitted by Sentence (2) and Articles 3.1.7.2. and 3.6.3.5., the rating of a material, assembly of materials or a structural member that is required to have a fire-resistance rating, shall be determined on the basis of the results of tests conducted in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials.” 2) A material, assembly of materials or a structural member is permitted to be assigned a fire-resistance rating on the basis of Appendix D.	FHA [[ ]]	Potentially In Compliance	Potentially In Compliance	Action	Add requirement for structural members to FHA [[ ]]: The rating of a material, assembly of materials or a structural member that is required to have a fire-resistance rating, shall be determined on the basis of the results of tests conducted in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials”. Add CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials” to C&S [[ ]].	
NBCC	3.1.7.2		1) The limit on the rise of temperature on the unexposed surface of an assembly as required by the tests referred to in Sentence 3.1.7.1.(1) shall not apply to an exterior wall that has a limiting						

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			distance of 1.2 m or more, provided correction is made for radiation from the unexposed surface in accordance with Sentence 3.2.3.1.(9).						
NBCC	3.1.7.3	Detail Design	Exposure Conditions for Rating 1) Floor, roof and ceiling assemblies shall be rated for exposure to fire on the underside. 2) Firewalls and interior vertical fire separations shall be rated for exposure to fire on each side. 3) Exterior walls shall be rated for exposure to fire from inside the building.	FHA [[ ]]	Information				
NBCC	3.1.7.4.	Minimum Fire-Resistance Rating	1) The use of materials or assemblies having a greater fire-resistance rating than required shall impose no obligation to exceed in whole or in part the minimum fire-resistance ratings required by this Part.	FHA [[ ]]	Potentially In Compliance			Detailed design will assess margin for fire-resistance in power block structures	
NBCC	3.1.7.5	Detail Design	Rating of Supporting Construction 1) Except as permitted by Sentence (2) and by Articles 3.2.2.20. to 3.2.2.90. for mixed types of construction, all loadbearing walls, columns and arches in the storey immediately below a floor or roof assembly required to have a fire-resistance rating shall have a fire-resistance rating not less than that required for the supported floor or roof assembly. 2) Loadbearing walls, columns and arches supporting a service room or service space need not conform to Sentence (1). 3) Except for noncombustible roof assemblies required by Clauses 3.2.2.50.(2)(c) and 3.2.2.58.(2)(c), if an assembly is required to be of noncombustible construction and have a fire-resistance rating, it shall be supported by noncombustible construction.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.8.1	General Requirements	1) Any wall, partition or floor assembly required to be a fire separation shall a) except as permitted by Sentence (2), be constructed as a continuous element, and b) as required in this Part, have a fire-resistance rating as specified (see Note A-3.1.8.1.(1)(b)). 2) Openings in a fire separation shall be protected with closures, shafts or other means in conformance with Articles 3.1.8.4. to 3.1.8.19. and Subsections 3.1.9. and 3.2.8. (See Note A-3.1.8.1.(2).)	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.8.2	Combustible Construction Support	1) Combustible construction that abuts on or is supported by a noncombustible fire separation shall be constructed so that its collapse under fire conditions will not cause the collapse of the fire separation.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.8.3	Continuity of Fire Separations	1) Except as permitted by Sentence 3.6.4.2.(2), a horizontal service space or other concealed space located above a required vertical fire separation, including the walls of a vertical shaft, shall be divided at the fire separation by an equivalent fire separation within the service space. 2) The fire separation required by Sentence (1) shall terminate so that smoke-tight joints are provided where it abuts on or intersects a) a floor, b) a roof slab, or c) a roof deck. 3) Except as required by Subsection 3.6.3. for a shaft penetrating a roof assembly, a shaft, including an exit enclosure, that penetrates a fire separation, shall a) extend through any horizontal service space or any other concealed space, and	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			b) terminate so that smoke-tight joints are provided where the shaft abuts on or intersects i) a floor, ii) a roof slab, or iii) a roof deck. 4) The continuity of a fire separation shall be maintained where it abuts another fire separation, a floor, a ceiling, a roof, or an exterior wall assembly. (See Note A-3.1.8.3.(4).)						
NBCC	3.1.8.4	Detail Design	Determination of Ratings and Classifications 1) Except as permitted by Sentences (2) and 3.1.8.16.(1), the fire protection rating of a closure shall be determined in accordance with a) CAN/ULC-S104, “Fire Tests of Door Assemblies,” b) CAN/ULC-S106, “Fire Tests of Window and Glass Block Assemblies,” or c) CAN/ULC-S112, “Fire Test of Fire Damper Assemblies.” (See Articles 3.1.8.17. to 3.1.8.19. for additional requirements for closures.) 2) Except as permitted by Sentence 3.1.8.12.(1), the fire protection rating of a closure shall conform to Table 3.1.8.4. for the required fire-resistance rating of the fire separation 3) The leakage rate of smoke dampers and combination smoke/fire dampers shall a) be determined in accordance with the applicable provisions in CAN/ULC-S112.1, “Leakage Rated Dampers for Use in Smoke Control Systems,” and b) conform to Class I, II or III of that standard. 4) The leakage rate of a door assembly shall be determined in accordance with ANSI/UL-1784, “Air Leakage Tests of Door Assemblies and Other Opening” Protectives.” Table 3.1.8.4. Fire-Protection Rating of Closures Forming Part of Sentences 3.1.8.4.(2) and 3.1.9.1.(1)	FHA [[ ]]	Potentially In Compliance		Action	Add following codes to FHA [[ ]] and C&S document [[ ]] CAN/ULC-S104, Fire Tests of Door Assemblies CAN/ULC-S106, Fire Tests of Window and Glass Block Assemblies CAN/ULC-S112, Fire Test of Fire Damper Assemblies	
NBCC	3.1.9.1	Detail Design	Penetrations in Fire Separations and Fire Rated Assemblies 1) Except as provided in Sentences (2) to (5) and Article 3.1.9.4., penetrations of a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating… 2) Penetrations of a firewall or a horizontal fire separation that is required to have a fire-resistance rating in conformance with Article 3.2.1.2. shall be sealed at the penetration by a fire stop... 3) Penetrations of a fire separation in conformance with Sentence 3.6.4.2.(2) shall be sealed by a fire stop 4) Sprinklers are permitted to penetrate a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating without having to meet the fire stop requirements... 5) Unless specifically designed with a fire stop, fire dampers are permitted to penetrate a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating without having to meet the fire stop requirements.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.9.2		1) Except as permitted by Articles 3.1.9.3. and 3.1.9.5., pipes, ducts, electrical outlet boxes, totally enclosed raceways or other similar service equipment that penetrate an assembly required to have a fire-resistance rating shall be noncombustible, unless the assembly was tested incorporating that service equipment	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.9.3		1) Optical fibre cables and electrical wires and cables in totally enclosed noncombustible raceways are permitted to penetrate an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			2) Except as permitted by Sentence (3), totally enclosed non-metallic raceways conforming to Article 3.1.5.23., optical fibre cables, and electrical wires and cables, single or grouped, with combustible insulation, jackets or sheathes that conform to the requirements of Clause 3.1.5.21.(1)(a) and that are not installed in totally enclosed noncombustible raceways are permitted to penetrate an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the overall diameter of the single or grouped wires or cables, or the raceways is not more than 25 mm. 3) Single conductor metal sheathed cables with combustible jacketing that are more than 25 mm in overall diameter are permitted to penetrate a fire separation required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the cables are not grouped and are spaced a minimum of 300 mm apart. 4) Combustible totally enclosed raceways that are embedded in a concrete floor slab are permitted in an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the concrete cover between the raceway and the bottom of the slab is not less than 50 mm. 5) Combustible outlet boxes are permitted in an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the opening through the membrane into the box is not more than 0.016 m^2					during detailed design	
NBCC	3.1.9.4		1) Except as provided in Sentence (2), outlet boxes are permitted to penetrate the membrane of an assembly required to have a fire-resistance rating, provided they are sealed at the penetration by a fire stop that has an FT rating not less than the fire-resistance rating of the fire separation when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems.” 2) Except as provided in Sentences 3.1.9.1.(2) and (3), noncombustible outlet boxes that penetrate a vertical fire separation or a membrane forming part of an assembly required to have a fire-resistance rating need not conform to Sentence (1), provided a) they do not exceed i) 0.016 m^2 in area, and ii) an aggregate area of 0.065 m^2 in any 9.3 m^2 of surface area, and b) the annular space between the membrane and the noncombustible electrical outlet boxes does not exceed 3 mm. 3) In addition to the requirements of Sentence (2), outlet boxes on opposite sides of a vertical fire separation having a fire-resistance rating shall be separated by a) a horizontal distance of not less than 600 mm, or b) a fire block conforming to Article 3.1.11.7.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.9.5		1) Combustible sprinkler piping is permitted to penetrate a fire separation provided the fire compartments on each side of the fire separation are sprinklered. 2) Combustible water distribution piping is permitted to penetrate a fire separation that is required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the piping is protected at the penetration with a fire stop in conformance with Sentence (4). 3) Except as permitted by Sentences (4) to (5), combustible piping shall not be used in a drain, waste and vent piping system if any part of that system penetrates a) a fire separation required to have a fire-resistance rating, or b) a membrane that forms part of an assembly required to have a fire-resistance rating. 4) Combustible drain, waste and vent piping is permitted to penetrate a fire separation required to have a fire-resistance rating or a membrane that forms part of an assembly required to have a fire-resistance rating, provided a) the piping is sealed at the penetration by a fire stop that has an F rating not less than the fire-resistance rating required for the fire separation when subjected to the fire test method in	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			CAN/ULC-S115, “Fire Tests of Firestop Systems,” with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side, and b) the piping is not located in a vertical service space. 5) Combustible drain, waste and vent piping is permitted on one side of a vertical fire separation provided it is not located in a vertical service space. 6) Combustible piping for central vacuum systems is permitted to penetrate a fire separation provided the installation conforms to the requirements that apply to combustible drain, waste and vent piping specified in Sentence (4).						
NBCC	3.1.9.6		1) A membrane ceiling forming part of an assembly assigned a fire-resistance rating on the basis of Appendix D is permitted to be penetrated by openings leading into ducts within the ceiling space, provided a) the ducts are sheet steel, and b) the number of openings and their protection conform to the requirements of Appendix D.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.9.7		1) A ceiling assembly used as a plenum shall conform to Article 3.6.4.3	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.10.1	Fire Wall	Prevention of Firewall Collapse 1) Except as permitted by Sentence (2), the connections and supports for structural framing members that are connected to or supported on a firewall and have a fire-resistance rating less than that required for the firewall, shall be designed so that the failure of the framing systems during a fire will not affect the integrity of the firewall during the fire. 2) Sentence (1) does not apply to a firewall consisting of two separate wall assemblies each tied to its respective building frame but not to each other, provided each wall assembly is a) a fire separation having one half of the fire-resistance rating required for the firewall by Sentences 3.1.10.2.(1) and (2), and b) designed so that the collapse of one wall assembly will not cause collapse of the other. 3) A firewall is permitted to be supported on the structural frame of a building of noncombustible construction provided the supporting frame has a fire-resistance rating not less than that required for the firewall. 4) Piping, ducts and totally enclosed noncombustible raceways shall be installed so that their collapse will not cause collapse of the firewall.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.10.2.	Rating of Firewalls	1) A firewall that separates a building or buildings with floor areas containing a Group E or a Group F, Division 1 or 2 major occupancy shall be constructed as a fire separation of noncombustible construction having a fire-resistance rating not less than 4 h, except that where the upper portion of a firewall separates floor areas containing other than Group E or Group F, Division 1 or 2 major occupancies, the fire-resistance rating of the upper portion of the firewall is permitted to be not less than 2 h 2) A firewall that separates a building or buildings with floor areas containing major occupancies other than Group E or Group F, Division 1 or 2 shall be constructed as a fire separation of noncombustible construction having a fire-resistance rating not less than 2 h. 3) Except as permitted by Sentence (4), the required fire-resistance rating of a firewall, except for closures, shall be provided by masonry or concrete. 4) A firewall permitted to have a fire-resistance rating not more than 2 h need not be constructed of masonry or concrete, provided a) the assembly providing the fire-resistance rating is protected against damage that would compromise the integrity of the assembly, and b) the design conforms to Article 4.1.5.17.	FHA [[ ]]	Potentially In Compliance			It is expected that power block building will conform to this clause requirement. An open issue to confirm if walls separating 'buildings', i.e. Turbine Building and Reactor Building will be designed as 'fire barriers' (aka fire separations) or fire walls (i.e. structurally independent fire rated walls with parapets above	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								roof lines of buildings). Terminology used in draft reports isn't clear.	
NBCC	3.1.10.3.	Continuity of Firewalls	1) A firewall shall extend from the ground continuously through, or adjacent to, all storeys of a building or buildings so separated, except that a firewall located above a basement storage garage conforming to Article 3.2.1.2. is permitted to commence at the floor assembly immediately above the storage garage. (See also Sentence 3.1.10.1.(3).) 2) A firewall is permitted to terminate on the underside of a reinforced concrete roof slab, provided a) the roof slab on both sides of the firewall has a fire-resistance rating not less than i) 1 h if the firewall is required to have a fire-resistance rating not less than 2 h, or ii) 2 h if the firewall is required to have a fire-resistance rating not less than 4 h, and b) there are no concealed spaces within the roof slab in that portion immediately above the firewall.	[[ ]] FHA [[ ]]	Potentially In Compliance			Open issue to confirm walls separating 'buildings', i.e. Turbine Building and Reactor Building to be designed as 'fire barriers' (aka fire separations) or fire walls (i.e. structurally independent fire rated walls with parapets above roof lines of buildings). The intent is not to design these fire separations as structurally independent fire rated walls. GEH/B&V will review fire protection documents in draft and update as required to remove this ambiguity.	
NBCC	3.1.10.4.	Parapets	1) Except as permitted by Sentences (2) and 3.1.10.3.(2), a firewall shall extend above the roof surface to form a parapet not less than a) 150 mm high for a firewall required to have a fire-resistance rating not less than 2 h, and b) 900 mm high for a firewall required to have a fire-resistance rating not less than 4 h. 2) A firewall that separates 2 buildings with roofs at different elevations need not extend above the upper roof surface to form a parapet, provided the difference in elevation between the roofs is more than 3 m.	[[ ]] FHA [[ ]]	Potentially In Compliance		Action	Open issue to confirm walls separating 'buildings', i.e. Turbine Building and Reactor Building to be designed as 'fire barriers' (aka fire separations) or fire walls (i.e. structurally independent fire rated walls with parapets above roof lines of buildings). The intent is not to design these fire separations as	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								structurally independent fire rated walls. GEH/B&V will review fire protection documents in draft and update as required to remove this ambiguity.	
NBCC	3.1.10.5	Maximum Openings	1) Openings in a firewall shall conform to the size limits described in Article 3.1.8.6. and the aggregate width of openings shall be not more than 25% of the entire length of the firewall	[[ ]] FHA [[ ]]	Potentially In Compliance			Add this detail to FHA [[ ]] and use requirement for developing procurement of purchased fire rated components as design progresses.	
NBCC	3.1.10.6	Exposure Protection for Adjacent Walls	1) The requirements of Article 3.2.3.14. shall apply to the external walls of 2 buildings that meet at a firewall at an angle less than 135°	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.10.7	Combustible Projections	1) Combustible material shall not extend across the end of a firewall but is permitted to extend across a roof above a firewall that is terminated in conformance with Sentence 3.1.10.3.(2). 2) If buildings are separated by a firewall, combustible projections on the exterior of one building, including balconies, platforms, canopies, eave projections and stairs, that extend outward beyond the end of the firewall, shall not be permitted within 2.4 m of combustible projections and window or door openings of the adjacent building. (See also Article 3.2.3.6.)	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.11		Concealed spaces		N/A			No concealed spaces are currently identified in the BWRX-300	
NBCC	3.1.12.1	Detail Design	Flame-Spread Rating and Smoke Developed Classification Determination of Ratings 1) Except as required by Sentence (2) and as permitted by Sentence (3), the flame-spread rating and smoke developed classification of a material, assembly, or structural member shall be determined on the basis of CAN/ULC-S102 2) The flame-spread rating and smoke developed classification of a material or assembly shall be determined on the basis of not less than three tests conducted in conformance with CAN/ULC-S102.2	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.13	Internal Finish Interior Finishes, Furnishings and Decorative Materials	Header						
NBCC	3.1.13.1. 1	Internal Finish Interior Finishes, Furnishings and	Except as otherwise provided by this Subsection, interior finishes, furnishings and decorative materials shall conform to Section 2.3. of Division B of the NFCC. 2) Interior finish material shall include any material that forms part of the interior surface of a floor, wall, partition or ceiling, including a) interior cladding of plaster, wood or tile, b) surfacing of fabric, paint, plastic, veneer or	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			NBCC fire construction clauses will be further assessed	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
		Decorative Materials	wallpaper, c) doors, windows and trim, d) lighting elements such as light diffusers and lenses forming part of the finished surface of the ceiling, and e) carpet material that overlies a floor that is not intended as the finished floor					during detailed design	
NBCC	These clauses will be	Flame-Spread Rating	3.1.13.2. Flame-Spread Rating 1) Except as otherwise required or permitted by this Subsection, the flame-spread rating of interior wall and ceiling finishes, including glazing and skylights, shall be not more than 150 and shall conform to Table 3.1.13.2. 2) Except as permitted by Sentence (3), doors, other than those in Group A, Division 1 occupancies, need not conform to Sentence (1) provided they have a flame-spread rating not more than 200. (See Note A-3.1.13.2.(2).) 3) Doors within a dwelling unit need not conform to Sentences (1) and (2). 4) Up to 10% of the total wall area and 10% of the total ceiling area of a wall or ceiling finish that is required by Sentence (1) to have a flame-spread rating less than 150 is permitted to have a flame-spread rating not more than 150, except that up to 25% of the total wall area of lobbies described in Sentence 3.4.4.2.(2) is permitted to have a flame-spread rating not more than 150. 5) Except in the case of Group A, Division 1 occupancies, combustible doors, skylights, glazing and light diffusers and lenses shall not be considered in the calculation of wall and ceiling areas described in Sentence (4) 3.1.13.3. Bathrooms in Residential Suites 1) The flame-spread rating of interior wall and ceiling finishes for a bathroom within a suite of residential occupancy shall be not more than 200. 3.1.13.4. Light Diffusers and Lenses 1) The flame-spread rating of combustible light diffusers and lenses in all occupancies other than Group A, Division 1 is permitted to be more than the flame-spread rating limits required elsewhere in this Subsection, provided the light diffusers and lenses a) have a flame-spread rating not more than 250 and a smoke developed classification not more than 600 when tested in conformance with CAN/ULC-S102.2, “Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies,” b) fall to the bottom of the test apparatus before igniting when tested in conformance with CAN/ULC-S102.3, “Fire Test of Light Diffusers and Lenses,” c) are not prevented from falling from the ceiling by construction located beneath the elements, and d) are not used in a corridor that is required to be separated from the remainder of the building by a fire separation or in an exit shaft unless individual diffusers or lenses are not more than 1 m^2 in area and are not less than 1.2 m apart. 3.1.13.5. Skylights 1) Individual combustible skylights in a corridor that is required to be separated from the remainder of the building by a fire separation shall be not more than 1 m^2 in area and not less than 1.2 m apart 3.1.13.6. Corridors 1) Except as permitted by Sentences (2) and (3), the flame-spread rating shall be not more than 75 for the interior wall finish of a) a public corridor, b) a corridor used by the public in an assembly occupancy, or c) a corridor serving classrooms. 2) The flame-spread rating for corridors specified in Sentence (1) is permitted to be waived, provided the flame-spread rating is not more than a) 25 on the upper half of the wall, and b) 150 on the lower half of the wall. 3) Where the floor area is sprinklered throughout, the flame-spread ratings for corridors specified in Sentences (1) and (2) shall be not more than 150. 4) The flame-spread ratings specified in Sentences (1), (2) and (3) apply to occupancies in the corridor as well as to the corridor itself. 5) Except as provided in Sentence (6), the interior ceiling finish of corridors and occupancies referred to in Sentences (1) and (4) shall have a flame-spread rating not more than 25. 6) Where the floor area is sprinklered throughout, the flame-spread rating of the interior ceiling finish of corridors and occupancies referred to in Sentences (1) and (4) shall be not more than 150. 3.1.13.7. High Buildings 1) Except as permitted by Sentences (2) to (4), the interior wall, ceiling and floor finishes in a building regulated by the provisions of Subsection 3.2.6. shall conform to the flame-spread rating requirements in Articles 3.1.13.2. and 3.1.13.11. and to the flame-spread rating and smoke	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			Many of these NBCC requirements will be determined to be not applicable as building design progresses. These clauses will be separated and assessed individually as design detail progresses	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			developed classification values in Table 3.1.13.7. Table 3.1.13.7. Flame-Spread Rating and Smoke Developed Classification in High Buildings Forming Part of Sentence 3.1.13.7.(1) Maximum Flame-Spread Rating Maximum Smoke Developed Classification Location or Element Wall Surface Ceiling Surface(1) Floor Surface Wall Surface Ceiling Surface(1) Floor Surface Exit stairways, vestibules to exit stairs and lobbies described in Sentence 3.4.4.2.(2) 25 25 25 50 50 50 Corridors not within suites (2) (2) 300 100 50 500 Elevator cars 75 75 300 450 450 450 Elevator vestibules 25 25 300 100 100 300 Service spaces and service rooms 25 25 25 50 50 50 Other locations and elements (2) (2) No Limit 300 50 No Limit 2) Except for a building of Group B major occupancy and elevator cars, the flame-spread rating and smoke developed classification of interior wall, floor and ceiling finishes need not conform to the values in Table 3.1.13.7., provided the building is sprinklered. 3) Trim and millwork in an exit stairway, a vestibule to an exit stairway, a lobby described in Sentence 3.4.4.2.(2), or a corridor not within a suite need not conform to the flame-spread rating and smoke developed classification requirements of Sentence (1) provided they have a) a flame-spread rating not more than 150, b) a smoke developed classification not more than 300, and c) an aggregate area not more than 10% of the area of the wall or ceiling on which they occur. 4) A door serving an exit stairway, a vestibule to an exit stairway, a lobby described in Sentence 3.4.4.2.(2), or a corridor not within a suite need not conform to the flame-spread rating and smoke developed classification requirements of Sentence (1) provided a) it has a flame-spread rating not more than 200, b) it has a smoke developed classification not more than 300, and c) the aggregate area of all doors is not more than 10% of the area of the wall in which they are located. 3.1.13.8. Noncombustible Construction 1) In a building required to be of noncombustible construction, a) the flame-spread ratings required by Subsection 3.1.5. shall apply in addition to the requirements in this Subsection, and b) the flame-spread ratings for exits in this Subsection shall also apply to any surface in the exit that would be exposed by cutting through the material in any direction, except that this requirement does not apply to doors, heavy timber construction in a sprinklered building and fire-retardant-treated wood. 3.1.13.9. Underground Walkways 1) Except for paint, the interior wall and ceiling finishes of an underground walkway shall be of noncombustible materials 3.1.13.10. Exterior Exit Passageway 1) The wall and ceiling finishes of an exterior exit passageway that provides the only means of egress from the rooms or suites it serves, including the soffit beneath and the guard on the passageway, shall have a flame-spread rating not more than 25, except that a flame-spread rating not more than 150 is permitted for up to 10% of the total wall area and for up to 10% of the total ceiling area. 3.1.13.11. Elevator Cars 1) The wall and ceiling surfaces of elevator cars shall have a flame-spread rating not more than 75. 2) The wall, ceiling and floor surfaces of elevator cars shall have a smoke developed classification not more than 450.					
NBCC	3.1.14.1		Fire-Retardant-Treated Wood Roof Systems 1) If a fire-retardant-treated wood roof system is used to comply with the requirements of Subsection 3.2.2., the roof deck assembly shall meet the conditions of acceptance of CAN/ULC-S126, “Test for Fire Spread Under Roof-Deck Assemblies.” 2) Supports for the roof deck assembly referred to in Sentence (1) shall consist of a) fire-retardant-treated wood, b) heavy timber construction, c) noncombustible construction, or d) a combination thereof.		Not applicable	Wood roof system not used in BWRX-300 Design.			
NBCC	3.1.14.2		Metal Roof Deck Assemblies	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			1) Except as permitted by Sentence (2), a metal roof deck assembly shall meet the conditions of acceptance of CAN/ULC-S126, “Test for Fire Spread Under Roof-Deck Assemblies,” if a) it supports a combustible material above the deck that could propagate a fire beneath the roof deck assembly, and b) the deck is used to comply with the requirements of Sentences 3.2.2.25.(2), 3.2.2.32.(2), 3.2.2.60.(2), 3.2.2.66.(2), 3.2.2.76.(2) and 3.2.2.83.(2) for noncombustible construction. 2) The requirements of Sentence (1) are waived provided a) the combustible material above the roof deck is protected by not less than 12.7 mm thick gypsum board, mechanically fastened to a supporting assembly if located beneath the roof deck, or by a thermal barrier conforming to one of Clauses 3.1.5.15.(2)(c) to (e) that is located i) on the underside of the combustible material, or ii) beneath the roof deck, b) the building is sprinklered throughout, or c) the roof assembly has a fire-resistance rating not less than 45 min					further assessed during detailed design	
NBCC	3.1.15.1		Roof Covering Classification 1) A roof covering classification shall be determined in conformance with CAN/ULC-S107, “Fire Tests of Roof Coverings.”	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.15.2		Roof Coverings 1) Except as provided in Sentences (2) and (3), every roof covering shall have a Class A, B or C classification as determined in accordance with Article 3.1.15.1. 2) A roof covering is not required to have a Class A, B or C classification for a) a tent, b) an air-supported structure, c) a building of Group A, Division 2 occupancy not more than 2 storeys in building height and not more than 1 000 m^2 in building area provided the roof covering is underlaid with noncombustible material, or d) a steel building system referred to in Article 4.3.4.3., provided the roof covering consists of brick, masonry, concrete, metal sheets or metal shingles. 3) Except as provided in Sentence (4), roof coverings on buildings conforming to Article 3.2.2.50. or 3.2.2.58. shall have a Class A classification where the roof height is greater than 25 m measured from the floor of the first storey to the highest point of the roof. 4) Where buildings conforming to Article 3.2.2.50. or 3.2.2.58. include non-contiguous roof assemblies at different elevations, the roof coverings referred to in Sentence (3) are permitted to be evaluated separately to determine the roof covering classification required	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.1.16.1		Fabric Canopies and Marquees 1) Fabrics used as part of an awning, canopy or marquee that is located within or attached to a building of any type of construction shall conform to CAN/ULC-S109, “Flame Tests of Flame-Resistant Fabrics and Films.”		N/A	No clothe Marquee or awning to be used in the BWRX-300.			
NBCC	3.1.17.1	Conceptual	Occupant Load Determination 1) The occupant load of a floor area or part of a floor area shall be based on a) the number of seats in an assembly occupancy having fixed seats, b) NA c) the number of persons for which the area is designed, but not less than that determined from Table 3.1.17.1. for occupancies other than those described in Clauses (a) and (b), unless it can be shown that the area will be occupied by fewer persons.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance	As described in life safety requirements document ([[ ]]), occupant load has been	Actual occupant load has not yet been determined based on actual requirements	Open Issue exists Occupant loads in the F1 occupancy areas will be defined by actual usage, not by prescribed table method. Prescribed	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
						determined based on actual need in lieu of as per prescribed method in code. To be approved by AHJ. Location of building population is pending. Effects egress widths.	in lieu of prescribed values.	table methods utilize area per person calculations and there-by generate larger than actual occupant loads for industrial plants. Large occupant loads have increased egress requirements than actual conditions need. Most occupancy areas may be sprinklered or un-sprinklered. Un-sprinklered building areas have more conservative egress requirements as a result of a less robust fire protected environment.	
NBCC	3.2.1.1	Detail Design	Exceptions in Determining Building Height 1) A roof-top enclosure provided for elevator machinery, a stairway or a service room used for no purpose other than for service to the building, shall not be consideredas a storey in calculating the building height. 2) NA 3) Except as required by Sentence (5), the space above a mezzanine need not be considered as a storey in calculating the building height, provided a) the aggregate area of mezzanines that are not superimposed does not exceed 40% of the open area of the room in which they are located (see Note A-3.2.1.1.(3)(a)), and b) except as permitted in Sentences (7) and 3.3.2.13.(3), the space above the mezzanine is used as an open area without partitions or subdividing walls higher than 1 070 mm above the mezzanine floor. 4) Except as required by Sentence (5), the space above a mezzanine need not be considered as a storey in calculating the building height, provided a) the aggregate area of mezzanines that are not superimposed and do not meet the conditions of Sentence (3) does not exceed 10% of the floor area in which they are located, and b) the area of a mezzanine in a suite does not exceed 10% of the area of that suite. 5) Except as permitted by Sentence (6), each level of mezzanine that is partly or wholly superimposed above the first level of mezzanine shall be considered as a storey in calculating the building height. 6) Platforms intended solely for periodic inspection and elevated maintenance catwalks need not be considered as floor assemblies or mezzanines for the purpose of calculating building height, provided a) they are not used for storage, and b) they are constructed with noncombustible materials, unless the building is permitted to be of combustible construction. 7) The space above a mezzanine conforming to Sentence (3) is permitted to include an enclosed space whose area does not exceed 10% of the open area of the room in which the mezzanine is located provided the enclosed space does not obstruct visual communication between the open space above the mezzanine and the room in which it is located. (See Note A-3.2.1.1.(3)(a).)8) A service space in which facilities are included to permit a person to enter and to undertake maintenance and other operations pertaining to building services from within the service space	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			need not be considered a storey if it conforms to Articles 3.2.5.14. and 3.3.1.24., and Sentences 3.2.4.18.(10), 3.2.7.3.(2), 3.3.1.3.(7), 3.4.2.4.(3) and 3.4.4.4.(9). (See Note A-3.2.1.1.(8).						
NBCC	3.2.1.2		Storage Garage Considered as a Separate Building 1) A basement used primarily as a storage garage is permitted to be considered as a separate building for the purposes of Subsection 3.2.2. and Sentences 3.2.5.12.(2) and (3), provided the floor and roof assemblies above the basement and the exterior walls of the basement above the adjoining ground level are constructed as fire separations of noncombustible construction having a fire-resistance rating not less than 2 h and protected in conformance with Clause 3.1.10.2.(4)(a), except as permitted by Sentence (2). (See Notes A-3.1.10.2.(4) and A-3.2.5.12.(2).) 2) The exterior wall of a basement that is required to be a fire separation with a fire-resistance rating in accordance with Sentence (1) is permitted to be penetrated by openings that are not protected by closures provided a) the storage garage is sprinklered throughout, b) every opening in the exterior wall is separated from storeys above the opening by a projection of the floor or roof assembly above the basement, extending not less than i) 1 m beyond the exterior face of the storage garage if the upper storeys are required to be of noncombustible construction, or ii) 2 m beyond the exterior face of the storage garage if the upper storeys are permitted to be of combustible construction, or c) the exterior walls of any storeys located above the floor or roof assembly referred to in Sentence (1) are recessed behind the outer edge of the assembly by not less than i) 1 m if the upper storeys are required to be of noncombustible construction, or ii) 2 m if the upper storeys are permitted to be of combustible construction. 3) The floor or roof assembly projection referred to in Clause (2)(b) shall have a fire-resistance rating not less than 2 h and shall have no openings within the projection.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.1.3		Roof Considered as a Wall 1) For the purposes of this Section any part of a roof that is pitched at an angle of 60° or more to the horizontal and is adjacent to a space intended for occupancy within a building shall be considered as part of an exterior wall of the building.		N/A			BWRX-300 does not have any significantly pitched roofs that might be considered walls.	
NBCC	3.2.1.4	Detail Design	Floor Assembly over Basement 1) Except as permitted by Sentence 3.2.2.47.(3), 3.2.2.48.(3), 3.2.2.49.(3), 3.2.2.51.(3), 3.2.2.52.(3), 3.2.2.53.(3) or 3.2.2.54.(3), a floor assembly immediately above a basement shall be constructed as a fire separation having a fire-resistance rating conforming to the requirements of Articles 3.2.2.20. to 3.2.2.90. for a floor assembly, but not less than 45 min. 2) All loadbearing walls, columns and arches supporting a floor assembly immediately above a basement shall have a fire-resistance rating not less than that required by Sentence (1) for the floor assembly.	FHA [[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.1.5	Conceptual	Fire Containment in Basements 1) Except as permitted by Sentences (2) and 3.2.2.15.(3), in a building in which an automatic sprinkler system is not required to be installed by Article 3.2.2.18., every basement shall a) be sprinklered throughout, or b) be subdivided into fire compartments not more than 600 m 2 in area by a fire separation having a fire-resistance rating not less than that required for the floor assembly immediately above the basement. 2) An open-air storey need not conform to Sentence (1)	FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.1.6	Conceptual	Mezzanines 1) The floor assembly of a mezzanine that is required to be considered as a storey in calculating the building height shall be constructed in conformance with the fire separation requirements for floor assemblies stated in Articles 3.2.2.20. to 3.2.2.83	FHA [[ ]]	Potentially In Compliance			Mezzanine areas of the U72 are too big to be labelled as true mezzanine structures. Turbine	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								floor level design is not consistent with Mezzanine code provisions	
NBCC	3.2.2	Auto Sprinkler based on Building Configuration	3.2.2.1. Application 1) Except as permitted by Article 3.2.2.3., a building shall be constructed in conformance with this Subsection to prevent fire spread and collapse caused by the effects of fire. (See Subsection 3.1.3. for fire separations between major occupancies.) 3.2.2.2. Special and Unusual Structures 1) A structure that cannot be identified with the characteristics of a building in Articles 3.2.2.20. to 3.2.2.90. shall be protected against fire spread and collapse in conformance with good fire protection engineering practice. (See Note A-3.2.2.2.(1).) (See also Notes A-3 and A-3.2.5.12.(1).) 3.2.2.3. Exceptions to Structural Fire Protection 1) Fire protection is not required for a) steel lintels above openings not more than 2 m wide in loadbearing walls and not more than 3 m wide in non-loadbearing walls, b) steel lintels above openings more than 2 m wide in loadbearing walls and more than 3 m wide in non-loadbearing walls provided the lintels are supported at intervals of not more than 2 m by structural members with the required fire-resistance rating, c) the bottom flanges of shelf angles and plates that are not a part of the structural frame, d) steel members for framework around elevator hoistway doorways, steel for the support of elevator and dumbwaiter guides, counterweights and other similar equipment, that are entirely enclosed in a hoistway and are not a part of the structural frame of the building, e) steel members of stairways and escalators that are not a part of the structural frame of a building, f) steel members of porches, exterior balconies, exterior stairways, fire escapes, cornices, marquees and other similar appurtenances, provided they are outside an exterior wall of a building, and g) loadbearing steel or concrete members wholly or partly outside a building face in a building not more than 4 storeys in building height and classified as Group A, B, C, D or F, Division 3 major occupancy provided the members are i) not less than 1 m away from any unprotected opening in an exterior wall, or ii) shielded from heat radiation in the event of a fire within the building by construction that will provide the same degree of protection that would be necessary if the member was located inside the building, with the protection extending on either side of the member a distance equal to the projection of the member from the face of the wall. (See also Article 3.2.3.9.)	[[ ]] Plant Level Arch_Life Safety Specification DNNP Site Plans-Single Unit [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.2.4	Conceptual	Buildings with Multiple Major Occupancies 1) The requirements restricting fire spread and collapse for a building of a single major occupancy classification are provided in this Subsection according to its building height and building area. 2) If a building contains more than one major occupancy, classified in more than one Group or Division, the requirements of this Subsection concerning building size and construction relative to major occupancy shall apply according to Articles 3.2.2.5. to 3.2.2.8	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			Open Issue exists Occupant loads in the F1 occupancy areas will be defined by actual usage, not by prescribed table method. Prescribed table methods utilize area per person calculations and there-by generate larger than actual occupant loads for industrial plants. Large occupant loads have increased egress requirements than actual conditions need. • Most	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								occupancy areas may be sprinklered or un-sprinklered. Un-sprinklered building areas have more conservative egress requirements as a result of a less robust fire protected environment.	
NBCC	3.2.2.5	Conceptual	Applicable Building Height and Area 1) In determining the fire safety requirements of a building in relation to each of the major occupancies contained therein, the building height and building area of the entire building shall be used	[[ ]] Plant Level Arch_Life Safety Specification				NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.2.6	Conceptual	Multiple Major Occupancies (1) Except as permitted by Articles 3.2.2.7. and 3.2.2.8. and Sentences 3.2.2.43A.(5) and 3.2.2.50A.(4), in a building containing more than one major occupancy, the requirements of this Subsection for the most restricted major occupancy contained shall apply to the whole building.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			The U72 Turbine Building does not contain more than one major occupancy	.
NBCC	3.2.2.7		1) Except as provided in Article 3.2.2.8. and Sentence 3.2.2.18.(2), in a building in which one major occupancy is located entirely above another major occupancy, the requirements in this Subsection for each portion of the building containing a major occupancy shall apply to that portion as if the entire building were of that major occupancy. 2) If one major occupancy is located above another major occupancy, the fire-resistance rating of the floor assembly between the major occupancies shall be determined on the basis of the requirements of this Subsection for the lower major occupancy. (See also Article 3.1.3.1.) 3) A building that is wholly constructed in accordance with the building area and construction requirements of Article 3.2.2.50. shall not contain a) Group A, Division 2 and Group E major occupancies above the second storey, or b) a storage garage above the third storey (see also Sentence 4.4.2.1.(1)). 4) A building that is wholly constructed in accordance with the building area and construction requirements of Article 3.2.2.58. shall not contain a) Group A, Division 2, Group E, and Group F, Division 2 or 3 major occupancies above the second storey, or b) a storage garage above the third storey (see also Sentence 4.4.2.1.(1))		N/A			The individual buildings in the BWRX-300 design do not have multiple occupancies.	
NBCC	3.2.2.8		1) In a building in which the aggregate area of all major occupancies in a particular Group or Division is not more than 10% of the floor area of the storey in which they are located, these major occupancies need not be considered as major occupancies for the purposes of this Subsection, provided they are not classified as Group F, Division 1 or 2 occupancies		N/A			The individual buildings in the BWRX-300 design do not have multiple occupancies	
NBCC	3.2.2.9		Crawl Spaces 1) For the purposes of Articles 3.1.11.6., 3.2.1.4. and 3.2.1.5., a crawl space shall be considered as a basement if it is a) more than 1.8 m high between the lowest part of the floor assembly and the ground or other surface below,		N/A			No Crawl spaces identified in the BWRX-300 design.	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			b) used for any occupancy, c) used for the passage of flue pipes, or d) used as a plenum in combustible construction. 2) A floor assembly immediately above a crawl space is not required to be constructed as a fire separation and is not required to have a fire-resistance rating provided the crawl space is not required to be considered as a basement by Sentence (1)						
NBCC	3.2.2.10	Conceptual	1) Every building shall face a street located in conformance with the requirements of Articles 3.2.5.4. and 3.2.5.5. for access routes 2) For the purposes of Subsections 3.2.2. and 3.2.5. an access route conforming to Subsection 3.2.5. is permitted to be considered as a street. 3) A building conforming to Article 3.2.2.50. or 3.2.2.58. is considered to face 1 street where not less than 25% of the building perimeter is located within 15 m of a street or streets. 4) A building is considered to face 2 streets provided not less than 50% of the building perimeter is located within 15 m of the street or streets. 5) A building is considered to face 3 streets provided not less than 75% of the building perimeter is located within 15 m of the street or streets. 6) Enclosed spaces, tunnels, bridges and similar structures, even though used for vehicular or pedestrian traffic, are not considered as streets for the purpose of this Part.	[[ ]] Plant Level Arch_Life Safety Specification DNNP Site Plans-Single Unit [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.2.11		Exterior Balconies 1) An exterior balcony shall be constructed in accordance with the type of construction required by Articles 3.2.2.20. to 3.2.2.90., as applicable to the occupancy classification of the building		N/A			No exterior balconies identified in the BWRX-300 design	
NBCC	3.2.2.12		Exterior Passageways 1) An elevated exterior passageway used as part of a means of egress shall conform to the requirements of Articles 3.2.2.20. to 3.2.2.90. for mezzanines.		N/A			No Exterior passageways identified in the BWRX-300 design.	
NBCC	3.2.2.13		Occupancy on Roof 1) A portion of a roof that supports an occupancy shall be constructed in conformance with the fire separation requirements of Articles 3.2.2.20. to 3.2.2.90. for floor assemblies, and not the fire-resistance rating for roof assemblies.	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.2.14	Detail Design	Roof-Top Enclosures 1) A roof-top enclosure for elevator machinery or for a service room shall be constructed in accordance with the type of construction required by Articles 3.2.2.20. to 3.2.2.90. 2) A roof-top enclosure for elevator machinery or for a service room, not more than one storey high, is not required to have a fire-resistance rating. 3) A roof-top enclosure for a stairway shall be constructed in accordance with the type of construction required by Articles 3.2.2.20. to 3.2.2.90. 4) A roof-top enclosure for a stairway need not have a fire-resistance rating nor be constructed as a fire separation.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			As noted in LS Req Document [[ ]], design has not progressed to detail roof-top enclosures. It is expected that if utilized for BWRX 300, roof-top enclosures will meet applicable NBCC requirements. Classified as	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								Potentially in Compliance.	
NBCC	3.2.2.15		Storeys below Ground 1) If a building is erected entirely below the adjoining finished ground level and does not extend more than one storey below that ground level, the minimum precautions against fire spread and collapse shall be the same as are required for basements under a building of 1 storey in building height having the same occupancy and building area. 2) If any portion of a building is erected entirely below the adjoining finished ground level and extends more than one storey below that ground level, the following minimum precautions against fire spread and collapse shall be taken: a) except as permitted by Sentence (3), the basements shall be sprinklered throughout, b) a floor assembly below the ground level shall be constructed as a fire separation with a fire-resistance rating not less than i) 3 h if the basements are used as Group E or Group F, Division 1 or 2 occupancies, or ii) 2 h if the basements are not used as Group E or Group F, Division 1 or 2 occupancies, and c) all loadbearing walls, columns and arches shall have a fire-resistance rating not less than that required for the construction that they support. 3) If the first storey of a building is not required to be sprinklered, sprinklers are not required in the storey immediately below the first storey provided the storey below a) contains only residential occupancies, and b) has at least one unobstructed access opening conforming to Sentence 3.2.5.1.(2) installed on that storey for each 15 m of wall length in at least one wall required by this Subsection to face a street.	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.2.18		Automatic Sprinkler System Required 1) Except as permitted by Sentence (2), an automatic sprinkler system conforming to the requirements of Articles 3.2.4.7., 3.2.4.8., 3.2.4.9. and 3.2.5.12. shall be installed throughout a building regulated by one or more of Articles 3.2.2.20., 3.2.2.21., 3.2.2.22., 3.2.2.23., 3.2.2.24., 3.2.2.26., 3.2.2.27., 3.2.2.29., 3.2.2.31., 3.2.2.33., 3.2.2.36., 3.2.2.37., 3.2.2.38., 3.2.2.39., 3.2.2.40., 3.2.2.41., 3.2.2.42., 3.2.2.43., 3.2.2.44., 3.2.2.45., 3.2.2.46., 3.2.2.47., 3.2.2.48., 3.2.2.51., 3.2.2.54., 3.2.2.55., 3.2.2.57., 3.2.2.59., 3.2.2.61., 3.2.2.63., 3.2.2.64., 3.2.2.65., 3.2.2.67., 3.2.2.69., 3.2.2.70., 3.2.2.71., 3.2.2.72., 3.2.2.74., 3.2.2.75., 3.2.2.77., 3.2.2.79., 3.2.2.80., 3.2.2.82., 3.2.2.84., 3.2.2.86. and 3.2.2.88. 2) If a storey in a building or a floor area is required to have an automatic sprinkler system installed throughout in accordance with one or more of Articles 3.2.2.20. to 3.2.2.90. or Section 3.3., the automatic sprinkler system shall also be installed throughout all lower storeys in the building notwithstanding permission in Articles 3.2.2.20. to 3.2.2.90. to construct one or more of those storeys without installing automatic sprinkler protection.	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.2.19		Buildings Containing Impeded Egress Zones 1) A building containing an impeded egress zone and conforming to the appropriate requirements of Articles 3.2.2.20. to 3.2.2.90. is not required to conform to the requirements of Articles 3.2.2.36. and 3.2.2.37. for a Group B, Division 1 major occupancy provided a) the building is sprinklered throughout, b) it is not more than 1 storey in building height, c) it does not include i) a contained use area, ii) sleeping accommodation, iii) a high-hazard industrial occupancy, or iv) a mercantile occupancy,	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			d) the building area is not more than 6 400 m^2 if the building includes a medium-hazard industrial occupancy, e) the impeded egress zone does not extend beyond the boundaries of the fire compartment in which it is located, and f) the occupant load of the impeded egress zone is not more than 100.						
NBCC	3.2.2.74		Group F, Division 2, Any Height, Any Area, Sprinklered 1) Except as permitted by Sentence 3.2.2.7.(4) and Articles 3.2.2.75. to 3.2.2.79., a building classified as Group F, Division 2 shall conform to Sentence (2). 2) Except as permitted by Article 3.2.2.16., the building referred to in Sentence (1) shall be of noncombustible construction, and a) except as permitted by Sentences 3.2.2.7.(1) and 3.2.2.18.(2), the building shall be sprinklered throughout, b) floor assemblies shall be fire separations with a fire-resistance rating not less than 2 h, c) mezzanines shall have a fire-resistance rating not less than 1 h, and d) loadbearing walls, columns and arches shall have a fire-resistance rating not less than that required for the supported assembly.	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.2.80		Group F, Division 3, Any Height, Any Area, Sprinklered 1) Except as permitted by Sentences 3.2.2.7.(3) and (4) and Articles 3.2.2.81. to 3.2.2.90., a building classified as Group F, Division 3 shall conform to Sentence (2). 2) Except as permitted by Article 3.2.2.16., the building referred to in Sentence (1) shall be of noncombustible construction, and a) except as permitted by Sentences 3.2.2.7.(1) and 3.2.2.18.(2), the building shall be sprinklered throughout, b) floor assemblies shall be fire separations with a fire-resistance rating not less than 2 h, except that floor assemblies are permitted to be fire separations with a fire-resistance rating not less than 1 h in a storage garage with all storeys constructed as open-air storeys, c) mezzanines shall have a fire-resistance rating not less than 1 h, and d) loadbearing walls, columns and arches shall have a fire-resistance rating not less than that required for the supported assembly	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.1	Spatial Separation and Exterior Exposure	3.2.3.1. Limiting Distance and Area of Unprotected Openings 1) Except as permitted by Articles 3.2.3.10. to 3.2.3.12., the area of unprotected openings in an exposing building face for the applicable limiting distance shall be not more than the value determined in accordance with a) Table 3.2.3.1.-B or 3.2.3.1.-C for an exposing building face conforming to Article 3.2.3.2. of a building or fire compartment which is not sprinklered, or b) Table 3.2.3.1.-D or 3.2.3.1.-E for an exposing building face conforming to Article 3.2.3.2. of a sprinklered fire compartment that is part of a building which is sprinklered in conformance with Section 3.2. (See Note A-3.) (See also Article 3.1.6.3.) 2) The area of the unprotected openings in an exposing building face shall be the aggregate area of unprotected openings expressed as a percentage of the area of the exposing building face in Table 3.2.3.1.-B, 3.2.3.1.-C, 3.2.3.1.-D or 3.2.3.1.-E. (See Sentence 3.2.3.2.(1).) 3) For the purpose of determining the type of construction and cladding and the fire-resistance rating of an exterior wall, a) the exposing building face shall be taken as the projection of the exterior wall onto a vertical plane located so that no portion of the exterior wall of the building or of a fire compartment, if the fire compartment complies with the requirements of Article 3.2.3.2., is between the vertical plane and the line to which the limiting distance is measured, and b) the area of unprotected openings shall be determined from Table 3.2.3.1.-B, 3.2.3.1.-C, 3.2.3.1.-D or 3.2.3.1.-E. 4) For the purpose of determining the actual percentage of unprotected openings permitted in an	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			exterior wall, the location of the exposing building face is permitted to be taken at a vertical plane located so that there are no unprotected openings between the vertical plane and the line to which the limiting distance is measured. (See Note A-3.2.3.1.(4).) 5) Except for buildings that are sprinklered, where the limiting distance is 2 m or less, individual unprotected openings in an exposing building face shall be no greater than a) the area stated in Table 3.2.3.1.-A, or b) where the limiting distance is equal to or greater than 1.2 m., the area calculated by Area $=0.24\ (2 \times PD-1.2)^2$ where Area = area of the unprotected opening, and LD = limiting distance. Table 3.2.3.1.-A Maximum Concentrated Area of Unprotected Openings Forming Part of Sentence 3.2.3.1.(5) 6) The spacing between individual unprotected openings described in Sentence (5) that serve a single room or space described in Sentence (7) shall not be less than a) 2 m horizontally of another unprotected opening that is on the same exposing building face and serves the single room or space, or b) 2 m vertically of another unprotected opening that serves the single room or space, or another room or space on the same storey. 7) For the purpose of Sentence (6), “single room or space” shall mean a) two or more adjacent spaces having a full-height separating wall extending less than 1.5 m from the interior face of the exterior wall, or b) two or more stacked spaces that are on the same storey. 8) A limiting distance equal to half the actual limiting distance shall be used as input to Tables 3.2.3.1.-B and 3.2.3.1.-C, where a) the time from receipt of notification of a fire by the fire department until the arrival of the first fire department vehicle at the building exceeds 10 min in 10% or more of all fire department calls to the building, and b) any storey in the building is not sprinklered. (See Notes A-3.2.3.1.(8) and A-3.2.3.) 9) If the surface temperature on the unexposed surface of a wall assembly exceeds the temperature limit of a standard fire test as permitted by Article 3.1.7.2., an allowance shall be made for the radiation from the hot unexposed wall surface by adding an equivalent area of unprotected opening to the area of actual openings as follows: $A_c = A + (A_F \times F_{EO})$ where A_C = corrected area of unprotected openings including actual and equivalent openings, A = actual area of unprotected openings, A_F = area of exterior surface of the exposing building face, exclusive of openings, on which the temperature limit of the standard test is exceeded, and F_{EO} = an equivalent opening factor derived from the following expression: $F_{EO} = (T_U+273)^4 / (T_e+273)^4$ Tu = average temperature in degrees Celsius of the unexposed wall surface at the time the required fire-resistance rating is reached under test conditions,						

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			Te = 892°C for a fire-resistance rating not less than 45 min, 927°C for a fire-resistance rating not less than 1 h, and 1 010°C for a fire-resistance rating not less than 2 h. 10) Unless a closure used to protect an opening in an exposing building face has a protective performance equivalent to that required for the wall assembly in which it is located, an equivalent area of unprotected opening, determined in accordance with the procedures of Sentence (9) shall be added to the greater of a) the actual area of unprotected openings, or b) the corrected area of unprotected openings.						
NBCC	3.2.3.2	Area of Exposing Building Face	3.2.3.2. Area of Exposing Building Face 1) Except as permitted by Sentences (2) and (3), the area of an exposing building face shall be calculated as the total area of an exterior wall facing in one direction on any side of a building measured from the finished ground level to the uppermost ceiling. 2) If a building is divided by fire separations into fire compartments, the area of exposing building face is permitted to be calculated for each fire compartment provided the fire separations have a fire-resistance rating not less than 45 min. 3) In a building that is sprinklered throughout and contains an interconnected floor space, the area of the exposing building face for the interconnected floor space is permitted to be determined by considering each storey as a separate fire compartment notwithstanding openings through the floor assemblies	[[ ]]	Potentially In Compliance			The areas for power block buildings are calculated using definitions and rules from NBCC and reflected in Occupancy Load notes on egress plan drawings in building LS reports [[ ]], [[ ]], [[ ]] and [[ ]]	
NBCC	3.2.3.3		Wall Enclosing Attic or Roof Space 1) An exterior wall enclosing an attic or roof space and located above an exposing building face, shall be constructed in conformance with the requirements for the exposing building face.	[[ ]]	Potentially In Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.4		3.2.3.4. Party Wall 1) A party wall shall be constructed as a firewall. (See Note A-3.2.3.4.(1).)	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.5		3.2.3.5. Wall with Limiting Distance Less Than 1.2 m 1) Openings in a wall that has a limiting distance less than 1.2 m shall be protected by closures whose fire protection rating is in conformance with the fire-resistance rating required for the wall. 2) Wired glass or glass block shall not be used for a closure referred to in Sentence (1).	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.6		3.2.3.6. Combustible Projections 1) Except for a building containing one or 2 dwelling units only, combustible projections on the exterior of a wall that could expose an adjacent building to fire spread and are more than 1 m above ground level, including balconies, platforms, canopies and stairs, shall not be permitted within a) 1.2 m of a property line or the centre line of a public way, or b) 2.4 m of a combustible projection on another building on the same property. 2) Except as provided in Sentence (4), where the exposing building face has a limiting distance of not more than 0.45 m, projecting roof soffits shall not be constructed above the exposing building face. (See Note A-3.2.3.6.(2).)	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			3) Except as provided in Sentence (4), where the exposing building face has a limiting distance of more than 0.45 m, the face of roof soffits shall not project to less than 0.45 m from the property line. (See Note A-3.2.3.6.(2).) 4) The face of a roof soffit is permitted to project to the property line, where it faces a street, lane or public thoroughfare. (See Note A-9.10.14.5.(11) and 9.10.15.5.(10).) 5) Where roof soffits project to less than 1.2 m from the centre line of a lane or public thoroughfare, or from an imaginary line between two buildings or fire compartments on the same property, they shall a) have no openings, and b) be protected by i) not less than 0.38 mm thick sheet steel, ii) unvented aluminum conforming to CAN/CGSB-93.2-M, “Prefinished Aluminum Siding, Soffits, and Fascia, for Residential Use,” iii) not less than 12.7 mm thick gypsum soffit board or gypsum ceiling board installed according to CSA A82.31-M, “Gypsum Board Application,” iv) not less than 11 mm thick plywood, v) not less than 12.5 mm thick OSB or waferboard, or vi) not less than 11 mm thick lumber. 6) For buildings of combustible construction, materials installed to provide the required protection of soffits may be covered with a combustible or noncombustible finish material.						
NBCC	3.2.3.7		Construction of Exposing Building Face 1) Except as provided in Sentences (3) and (4), and Articles 3.2.3.10. and 3.2.3.11., the fire-resistance rating, construction and cladding for exposing building faces of buildings or fire compartments of Group A, B, C, D or Group F, Division 3 occupancy classification shall comply with Table 3.2.3.7. 2) Except as provided in Sentences (3) and (4) and Article 3.2.3.10., the fire-resistance rating, construction and cladding for exposing building faces of buildings or fire compartments of Group E or Group F, Division 1 or 2 occupancy classification shall comply with Table 3.2.3.7 3) Except as provided in Article 3.1.4.8., the requirement in Table 3.2.3.7. for noncombustible cladding for buildings or fire compartments where the maximum permitted area of unprotected openings is more than 10% of the exposing building face is permitted to be waived for exterior wall assemblies that comply with Article 3.1.5.5. 4) Except as provided in Article 3.1.4.8., the requirement in Table 3.2.3.7. for noncombustible cladding for buildings or fire compartments where the maximum permitted area of unprotected openings is more than 25% but not more than 50% of the exposing building face is permitted to be waived where a) the limiting distance is greater than 5 m, b) the building or fire compartment and all combustible attic and roof spaces are sprinklered throughout, c) the cladding i) conforms to Subsections 9.27.6. , 9.27.7. , 9.27.8. , 9.27.9. or 9.27.10., ii) is installed without furring members, or on furring not more than 25 mm thick, over gypsum sheathing at least 12.7 mm thick or over masonry, and iii) after conditioning in conformance with ASTM D 2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing,” has a flame-spread rating not greater than 25 on the exterior face when tested in accordance with Sentence 3.1.12.1.(1), d) the cladding i) conforms to Subsection 9.27.12., ii) is installed with or without furring members over gypsum sheathing at least 12.7 mm thick or over masonry, iii) has a flame-spread rating not greater than 25 when tested in accordance with Sentence 3.1.12.1.(2), and iv) does not exceed 2 mm in thickness exclusive of fasteners, joints and local reinforcements, or e) the exterior wall assembly complies with Article 3.1.5.5.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			5) The construction requirements for the exposing building face stated in Sentences (1) and (2) shall be satisfied before increasing the unprotected opening area as permitted by Sentence 3.2.3.12.(1)						
NBCC	3.2.3.8		Protection of Exterior Building Face 1) Except as permitted by Sentence (3) and in addition to the requirements of Sentences 3.2.3.7.(1) and (2) and where the maximum permitted area of unprotected openings is greater than 10% of the exposing building face, foamed plastic insulation used in an exterior wall of a building more than 3 storeys in building height shall be protected on its exterior surface by a) concrete or masonry not less than 25 mm thick, or b) noncombustible material that complies with the criteria for testing and the conditions of acceptance stated in Sentence (2) when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials.” 2) The criteria for testing and the conditions of acceptance for a wall assembly to satisfy the requirements of Clause (1)(b) are that a) the fire exposed area of the wall assembly shall be not less than 9.3 m^2 and have no dimension less than 2.75 m, b) the exposed surface shall include typical vertical and horizontal joints, c) the test shall be continued for not less than 15 min and the standard time/temperature curve of the referenced standard shall be followed, d) the noncombustible protective material must remain in place and no through openings should develop that are visible when viewed normal to the face of the material, and e) the noncombustible protective material should not disintegrate in a manner that would permit fire to propagate along the surface of the test assembly. 3) The requirements of Sentence (1) are waived for wall assemblies that comply with the requirements of Article 3.1.5.5. (See Note A-3.1.4.1.(1).	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.9		Protection of Structural Members 1) Structural members, including beams, columns and arches, that are placed wholly or partly outside the exterior face of a building and are less than 3 m from the property line or the centre line of a public thoroughfare shall be protected from exterior fire exposure by fire protection having a fire-resistance rating not less than that required for their protection from interior fire exposure, as stated in Articles 3.2.2.20. to 3.2.2.90., but not less than 1 h. 2) Structural members of heavy timber construction, including beams, columns and arches, that are placed wholly or partly outside the exterior face of a building and are 3 m or more from the property line or the centre line of a public thoroughfare need not be covered with noncombustible cladding.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.10		Unlimited Unprotected Openings 1) An exposing building face in a storage garage with all storeys constructed as open-air storeys is permitted to have unlimited unprotected openings provided it has a limiting distance not less than 3 m. 2) The exposing building face of a storey that faces a street and is at the same level as the street is permitted to have unlimited unprotected openings if the limiting distance is not less than 9 m.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.11		Low Fire Load, One Storey Building 1) An exposing building face of a building of low-hazard industrial occupancy conforming to Article 3.2.2.89. is permitted to be of noncombustible construction without a fire-resistance rating provided a) it is not a loadbearing wall, and b) the limiting distance is not less than 3 m.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	

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NBCC	3.2.3.12		Area Increase for Unprotected Openings 1) Except as required by Sentence 3.2.3.7.(5), the maximum area of unprotected openings in any exposing building face of an un-sprinklered building is permitted to be doubled if the openings are glazed with a) glass block conforming to the requirements of Article 3.1.8.16., or b) wired glass assemblies conforming to D-2.3.15. in Appendix D.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.13		Protection of Exit Facilities 1) Except as required by Sentence (3) and as permitted by Sentence 3.4.4.3.(1), if the plane of an exterior wall of an exit enclosure forms an angle less than 135° with the plane of an exterior wall of the building it serves, and an opening in the exterior wall of the exit enclosure could be exposed to fire from an opening in the exterior wall of the building, the opening in either the exterior wall of the exit or the exterior wall of the building shall be protected in conformance with the requirements of Sentence (4) where the opening in the exterior wall of the building is within 3 m horizontally and a) less than 10 m below an opening in the exterior wall of the exit, or b) less than 2 m above an opening in the exterior wall of the exit. (See Note A-3.2.3.14.(1).) 2) If an unenclosed exterior exit stair or ramp could be exposed to fire from an opening in the exterior wall of the building it serves, the opening in the exterior wall of the building shall be protected in conformance with the requirements of Sentence (4) where the opening in the exterior wall of the building is within 3 m horizontally and a) less than 10 m below the exit stair or ramp, or b) less than 5 m above the exit stair or ramp. 3) Except as permitted by Sentence 3.4.4.3.(1), if an exterior exit door in one fire compartment is within 3 m horizontally of an opening in another fire compartment and the exterior walls of these fire compartments intersect at an exterior angle of less than 135°, the opening shall be protected in conformance with the requirements of Sentence (4). 4) The opening protection referred to in Sentences (1), (2) and (3) shall consist of a) glass block conforming to the requirements of Article 3.1.8.16., b) a wired glass assembly conforming to D-2.3.15. in Appendix D, or c) a closure conforming to the requirements of Subsection 3.1.8. and Articles 3.2.3.1. and 3.2.3.14.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.14		1) Except as required by Sentences (3) and 3.2.3.13.(1) or as permitted by Sentence 3.2.3.19.(4), if an unprotected opening in an exterior wall of a fire compartment is exposed to an unprotected opening in the exterior wall of another fire compartment, and the planes of the 2 walls are parallel or at an angle less than 135°, measured from the exterior of the building, the unprotected openings in the 2 fire compartments shall be separated by a distance not less than D_o where $$Do = 2D - (\frac{\theta D}{90})$$ but in no case less than 1 m, and D = the greater required limiting distance for the exposing building faces of the 2 fire compartments, and θ = the angle made by the intersecting planes of the exposing building faces of the 2 fire compartments (in the case where the exterior walls are parallel and face each other, θ = 0°). 2) The exterior wall of each fire compartment referred to in Sentence (1) within the distance, Do, shall have a fire-resistance rating not less than that required for the interior vertical fire separation between the fire compartment and the remainder of the building. 3) Sentence (1) does not apply to unprotected openings of fire compartments within a building that is sprinklered throughout, but shall apply to a) unprotected openings of fire compartments on opposite sides of a firewall, and	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			b) exposure from unprotected openings of a fire compartment that is not protected by an automatic sprinkler system						
NBCC	3.2.3.15		Wall Exposed to Adjoining Roof 1) Except as permitted by Sentence 3.2.3.19.(4), if a wall in a building is exposed to a fire hazard from an adjoining roof of a separate fire compartment that is not sprinklered in the same building, and the exposed wall contains windows within 3 storeys vertically and 5 m horizontally of the roof, the roof shall contain no skylights within 5 m of the exposed wall.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.16		Protection of Soffits 1) Except as permitted by Sentences (3) and (4), where there is a common attic or roof space above more than 2 suites of residential occupancy or above more than 2 patients' sleeping rooms, and the common attic or roof space projects beyond the exterior wall of the building, the soffit, and any opening in the soffit or other surface of the projection located within 2 500 mm of a window or door opening, shall be protected by a) noncombustible material i) not less than 0.38 mm thick, and ii) having a melting point not below 650°C, b) plywood not less than 11 mm thick, c) strandboard or waferboard not less than 12.5 mm thick, or d) lumber not less than 11 mm thick. 2) The soffit protection required by Sentence (1) shall extend the full width of the opening and to not less than 1 200 mm on either side of it, and shall apply to all openings through the soffit within this limit. 3) If an eave overhang is completely separated from the remainder of the attic or roof space by the use of fire blocks, the requirements of Sentence (1) do not apply. 4) The protection required by Sentence (1) for projections is permitted to be omitted if a) the fire compartments behind the window and door openings are sprinklered in accordance with Article 3.2.5.12., and b) all rooms, including closets and bathrooms, having openings in the wall beneath the soffit are sprinklered, notwithstanding exceptions permitted in the standards referenced in Article 3.2.5.12. for the installation of automatic sprinkler systems.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.17		Canopy Protection for Vertically Separated Openings 1) Except as permitted by Sentences (2) and (3), if a storey classified as a Group E or Group F, Division 1 or 2 major occupancy is required to be separated from the storey above by a fire separation, a) every opening in the exterior wall of the lower storey that is located vertically below an opening in the storey above shall be separated from the storey above by a canopy projecting not less than 1 m from the face of the building at the intervening floor level, and b) the canopy required by Clause (a) shall have a fire-resistance rating not less than that required for the floor assembly but need not be more than 1 h, except as required elsewhere in this Subsection. 2) Except as permitted by Sentence (3), the canopy required by Sentence (1) is permitted to be omitted if the exterior wall of the upper storey is recessed not less than 1 m behind the exterior wall containing the opening in the lower storey. 3) The requirements of Sentences (1) and (2) are permitted to be waived if the building is sprinklered throughout	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.18		Covered Vehicular Passageway	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			NBCC fire construction clauses will be	

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			1) A covered vehicular passageway designed as a receiving or shipping area shall be separated from every building or part of a building adjoining it by a fire separation having a fire-resistance rating not less than 1.5 h. 2) A covered vehicular passageway constructed below grade shall be of noncombustible construction.	FHA [[ ]]				further assessed during detailed design	
NBCC	3.2.3.19		Walkway between Buildings 1) Except as required by Sentence 3.2.3.20.(2), if buildings are connected by a walkway, each building shall be separated from the walkway by a fire separation with a fire-resistance rating not less than 45 min . 2) Except as permitted by Sentence (3), a walkway connected to a building required to be of noncombustible construction shall also be of noncombustible construction. 3) A walkway connected to a building required to be of noncombustible construction is permitted to be of heavy timber construction provided a) not less than 50% of the area of any enclosing perimeter walls is open to the outdoors, and b) the walkway is at ground level. 4) A walkway of noncombustible construction used only as a pedestrian thoroughfare need not conform to the requirements of Articles 3.2.3.14. and 3.2.3.15. 5) A walkway between buildings shall be not more than 9 m wide.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.20		Underground Walkway 1) An underground walkway shall not be designed or used for any purpose other than pedestrian travel unless a) the purpose is acceptable to the authority having jurisdiction, and b) sprinklers are installed in any space in the walkway containing an occupancy. 2) Buildings connected by an underground walkway shall be separated from the walkway by a fire separation with a fire-resistance rating not less than 1 h. 3) An underground walkway shall be of noncombustible construction suitable for an underground location. 4) In an underground walkway a) smoke barrier doors shall be installed at intervals of not more than 100 m, or b) the travel distance from the door of an adjacent room or space to the nearest exit shall be not more than one and a half times the least allowable travel distance to an exit for any of the adjacent occupancies as permitted by Sentence 3.4.2.5.(1). 5) An underground walkway between buildings shall be not more than 9 m wide.	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.21		Storage and Process Equipment Located Outdoors 1) Location of outdoor storage and outdoor process equipment in relation to buildings shall conform to Parts 3 and 4 of Division B of the NFC	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.3.22		Installation of Service Lines Under Buildings 21) When a building is erected over existing buried flammable gas mains, such service lines shall be encased in gas-tight conduits in conformance with CAN/CSA-Z662, “Oil and Gas Pipeline Systems.”	[[ ]] Plant Level Arch_Life Safety Specification FHA [[ ]]	Potentially in Compliance			NBCC fire construction clauses will be further assessed during detailed design	
NBCC	3.2.4	Fire Alarm and Detection	3.2.4.1. Determination of Requirement for a Fire Alarm System 1) Except as permitted in Sentences (2) and (3), a fire alarm system shall be installed in buildings in which an automatic sprinkler system is installed. 2) Buildings in which a sprinkler system is installed in accordance with NFPA13D, “Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes,” need not comply with Sentence (1).	[[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	

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			3) Buildings that contain fewer than 9 sprinklers conforming to Sentence 3.2.5.12.(4) need not comply with Sentence (1). 4) Except as permitted by Sentences (5) to (7) and Sentence 3.2.4.2.(4), a fire alarm system shall be installed in a building that is not sprinklered throughout and that contains a) a contained use area, b) an impeded egress zone, c) more than 3 storeys, including the storeys below the first storey, d) a total occupant load more than 300, other than in open-air seating areas, e) an occupant load more than 150 above or below the first storey, other than in open-air seating areas, f) a school, college, or childcare facility, including a daycare facility, with an occupant load more than 40, g) a licenced beverage establishment or a licensed restaurant, with an occupant load more than 150, h) a low-hazard industrial occupancy with an occupant load more than 75 above or below the first storey, i) a medium-hazard industrial occupancy with an occupant load more than 75 above or below the first storey, j) a residential occupancy with sleeping accommodation for more than 10 persons, k) a high-hazard industrial occupancy with an occupant load more than 25, or l) an occupant load more than 300 below an open-air seating area. 5) Where each dwelling unit in an apartment building that is not sprinklered has direct access to an exterior exit facility leading to ground level, a fire alarm system is not required if a) not more than 4 dwelling units share a common means of egress, or b) the building is not more than 3 storeys in building height. 6) A fire alarm system is not required in a hotel or motel 3 storeys or less in building height that is contained in a building that is not sprinklered provided each suite has direct access to an exterior exit facility leading to ground level. 7) A fire alarm system is not required in a storage garage conforming to Article 3.2.2.90. that is contained in a building that is not sprinklered provided there are no other occupancies in the building.						
NBCC	3.2.4.	Fire Alarm System	3.2.4.2. Continuity of Fire Alarm System 1) Except as permitted by Sentence (6), if there are openings through a firewall, other than those for piping, tubing, wiring and totally enclosed noncombustible raceways, the requirements in this Subsection shall apply to the floor areas on both sides of the firewall as if they were in the same building. 2) Except as permitted by Sentence (4), if a building contains more than one major occupancy and a fire alarm system is required, a single system shall serve all occupancies. 3) Except as permitted by Sentence (4), if a fire alarm system is required in any portion of a building, it shall be installed throughout the building. 4) Except as required by Sentence (5), the requirements in this Subsection are permitted to be applied to each portion of a building not more than 3 storeys in building height, in which a vertical fire separation having a fire-resistance rating not less than 1 h separates the portion from the remainder of the building as if it were a separate building, provided there are no openings through the fire separation, other than those for piping, tubing, wiring and totally enclosed noncombustible raceways. 5) The permission in Sentence (4) to consider separated portions of a building as separate buildings does not apply to service rooms and storage rooms. 6) Buildings interconnected by walkways permitted in Articles 3.2.3.19. and 3.2.3.20. or by vestibules provided in conformance with Article 3.2.6.3. shall be treated as separate buildings for the purpose of fire alarm installation required by this Subsection. 3.2.4.3. Types of Fire Alarm Systems 1) A fire alarm system shall be a) a single stage system in	[[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			a Group F, Division 1 occupancy, b) except as permitted in Clause (c), a 2-stage system in a Group B occupancy, c) a single- or 2-stage system in a Group B, Division 3 occupancy where the building is 3 storeys or less in building height, and d) a single- or 2-stage system in all other cases. 3.2.4.4. Description of Fire Alarm Systems 1) A single stage fire alarm system shall, upon the operation of any manual station, waterflow detecting device, or fire detector, cause an alarm signal to sound on all audible signal devices in the system. (See Note A-3.2.4.4.(1).) 2) A 2-stage fire alarm system shall a) cause an alert signal to sound upon the operation of any manual station, waterflow detecting device, or fire detector, b) automatically cause an alarm signal to sound if the alert signal is not acknowledged within 5 min of its initiation, and c) have manual stations, each of which is equipped so that the use of a key or other similar device causes an alarm signal to sound that continues to sound upon removal of the key or similar device from the manual station (see Note A-3.2.4.4.(2)(c)). (See Note A-3.2.4.4.(2).) 3) A 2-stage fire alarm system is permitted to be zone coded so that, upon the operation of any manual station, waterflow detecting device, or fire detector, a) a coded alert signal is sounded indicating the zone of alarm initiation, b) the coded alert signal is repeated in its entirety not less than 4 times, and c) a continuous alert signal is sounded upon completion of the coded signals referred to in Clause (b) and Sentence (4). 4) If a second manual station, waterflow detecting device, or fire detector is operated in a fire alarm system with zone coding as permitted by Sentence (3), in a zone other than that for which the first alert signal was sounded, the coded alert signal for the first zone shall be completed before the coded alert signal for the second zone is repeated not less than 4 times. 3.2.4.5. Installation and Verification of Fire Alarm Systems 1) Fire alarm systems, including the voice communication capability where provided, shall be installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems.” 2) Fire alarm systems shall be verified in conformance with CAN/ULC-S537, “Verification of Fire Alarm Systems,” to ensure they are operating satisfactorily. 3.2.4.6. Silencing of Alarm Signals 1) A fire alarm system shall be designed so that when an alarm signal is actuated, it cannot be silenced automatically before a period of time has elapsed that is not less than a) 5 min for a building not required to be equipped with an annunciator, and b) 20 min for any other building. 2) Except as permitted by Sentence 3.2.4.18.(7) and Sentences 3.2.4.22.(2) and (3), a fire alarm system shall not incorporate manual silencing switches other than those installed inside the fire alarm control unit. (See Note A-3.2.4.6.(2).) 3.2.4.7. Signals to Fire Department 1) A single stage fire alarm system installed in a building of assembly occupancy that has an occupant load more than 300 shall be designed to notify the fire department, in conformance with Sentence (4), that an alarm signal has been initiated. 2) A fire alarm system that includes waterflow-indicating devices shall be designed to notify the fire department in conformance with Sentence (4) when an alarm is initiated. 3) A 2-stage fire alarm system shall be designed to notify the fire department, in conformance with Sentence (4), that an alert signal has been initiated. 4) Notification of the fire department, as required by Sentences (1), (2) and (3), shall be provided in conformance with CAN/ULC-S561, “Installation and Services for Fire Signal Receiving Centres and Systems.” 3.2.4.7.(4).) 5) Where a single stage fire alarm system is installed in a building that is not sprinklered throughout and Sentence (1) does not apply, a legible notice that is not easily removed shall be affixed to the wall near each manual station stating a) that the fire department is to be notified in the event of a fire emergency, and b) the emergency telephone number for the municipality or for the fire department (see Note A-3.2.4.7.(5)(b)). 6) Helicopter landing areas on roofs shall be provided with telephone extensions or means to notify the fire department. 3.2.4.8. Annunciator and Zone Indication 1) Except as permitted by Sentences (3) to (5), an annunciator shall be installed in close proximity to a building entrance that faces a street or an access route for fire department vehicles that complies with Sentence 3.2.5.5.(1). 2) Except as permitted by Sentence (6), the annunciator required by Sentence (1) shall have separate zone indication of the actuation of the alarm initiating devices in each a) floor area so that the area of						

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			coverage for each zone in a building that is not sprinklered is not more than 2 000 m^2, b) floor area so that the area of coverage for each zone is neither i) more than one storey, nor ii) more than the system area limits specified in NFPA 13, “Installation of Sprinkler Systems,” c) shaft required to be equipped with smoke detectors, d) air-handling system required to be equipped with smoke detectors, e) fire extinguishing system required by NFPA 96, “Ventilation Control and Fire Protection of Commercial Cooking Operations,” f) contained use area, g) impeded egress zone, and h) fire compartment required by Sentence 3.3.3.5.(2). (See Note A-3.2.4.8.(2).) 3) An annunciator need not be provided for a fire alarm system if not more than one zone indicator is required by Sentence (2) 4) If an annunciator is not installed as part of a fire alarm system in conformance with Sentence (1), a visual and audible trouble signal device shall be provided inside the main entrance of the building. 5) The requirements of Sentence (1) are waived in a building a) in which an automatic sprinkler system is not installed, b) that has an aggregate area for all storeys of not more than 2 000 m^2, and c) that is not more than 3 storeys in building height. 6) The area limits of Clause (2)(a) are waived for an interior undivided open space used as an arena, a rink, or a swimming pool provided that other spaces in the building that are separated from the open space are individually zoned in accordance with the requirements of Sentence (2). 7) A fire alarm control unit installed in close proximity to a building entrance that faces a street or an access route for fire department vehicles that complies with Sentence 3.2.5.5.(1) is deemed to satisfy the requirement for an annunciator, provided all indicators required for an annunciator or trouble signal device are included on the control unit. 3.2.4.9. Electrical Supervision 1) Electrical supervision shall be provided for a fire alarm system. 2) If a fire alarm system in a building is required to have an annunciator by Sentence 3.2.4.8.(1), except for hose valves, all valves controlling water supplies in a standpipe system shall be equipped with an electrically supervised switch for transmitting a trouble signal to the annunciator in the event of movement of the valve handle. 3) An automatic sprinkler system shall be electrically supervised to indicate a supervisory signal on the building fire alarm system annunciator for each of the following: a) movement of a valve handle that controls the supply of water to sprinklers, b) loss of excess water pressure required to prevent false alarms in a wet pipe system, c) loss of air pressure in a dry pipe system, d) loss of air pressure in a pressure tank, e) a significant change in water level in any water storage container used for firefighting purposes, f) loss of power to any automatically starting fire pump (see Note A-3.2.4.9.(3)(f)), and g) a temperature approaching the freezing point in any dry pipe valve enclosure or water storage container used for firefighting purposes. 4) A fire pump shall be electrically supervised as stipulated in NFPA 20, “Installation of Stationary Pumps for Fire Protection.” 5) Indication of a supervisory signal in accordance with Sentence (3) shall be transmitted to the fire department in conformance with Sentence 3.2.4.7.(4). 3.2.4.10. Fire Detectors 1) Fire detectors required by this Code shall be connected to the fire alarm system. 2) Except as permitted by Sentence (3), if a fire alarm system is required in a building that is not sprinklered, fire detectors shall be installed in the following spaces: a) storage rooms not within dwelling units, b) service rooms not within dwelling units, c) janitors’ rooms, d) rooms in which hazardous substances are to be used or stored (see Note A-3.3.1.2.(1)), e) elevator hoistways and dumbwaiter shafts, and f) laundry rooms in buildings of residential occupancy, but not those within dwelling units. 3) Fire detectors required by Sentence (2) need not be provided within floor areas that are sprinklered. 4) Fire detectors required by Sentence (2) shall be installed in elevator hoistways and dumbwaiter shafts where a sprinkler system is not installed within the hoistway or shaft. 3.2.4.11. Smoke Detectors 1) If a fire alarm system is installed, smoke detectors shall be installed in a) except as permitted in Sentence (2), each sleeping room and each corridor serving as part of a means of egress from sleeping rooms in portions of a building classified as a Group B major occupancy, b) each room in a contained use area and corridors serving those rooms, c) each corridor in portions of a building classified as a Group A, Division 1 major occupancy, d) each public corridor in portions of a building classified as a Group C major occupancy, e) each exit							

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			stair shaft other than those serving only a Group A, Division 4 major occupancy or an open storage garage, f) the vicinity of draft stops required by Article 3.2.8.6., and g) elevator machine rooms. (See Note A-3.2.4.11.(1).) 2) Smoke detectors need not be installed in sleeping rooms and in corridors serving the sleeping rooms within a suite of care occupancy where smoke alarms are installed in accordance with Article 3.2.4.20. 3) Smoke detectors required in the sleeping rooms of a care, treatment or detention occupancy shall, upon actuation, provide an audible and visible signal to staff serving those rooms so that the room or location containing the actuated smoke detector can be easily identified. (See Note A-3.2.4.11.(3).) 4) Smoke detectors required in Clause (1)(g) shall, upon actuation, recall the elevators served by the elevator machine room in which the smoke detector is installed. 5) Except as permitted in Sentences (6) and (7), smoke detectors installed in buildings required to be equipped with a fire alarm system shall be located near the entrance to walkways described in Articles 3.2.3.19. and 3.2.3.20. or vestibules provided in conformance with Article 3.2.6.3. 6) Smoke detectors installed at the entrance to the walkways in conformance with Article 3.1.8.14. shall be deemed to meet the requirements of Sentence (5). 7) Smoke detectors required by Sentence (5) may be replaced with fire detectors in Group F occupancies where the smoke detectors may be subjected to false alarms due to the activities within the building. 3.2.4.12. Prevention of Smoke Circulation 1) If a fire alarm system is installed, an air-handling system shall be designed to prevent the circulation of smoke upon a signal from a duct-type smoke detector if the air-handling system a) serves more than one storey, b) serves more than one suite in a storey, or c) serves more than one fire compartment required by Sentence 3.3.3.5.(2). 3.2.4.13. Vacuum Cleaning System Shutdown 1) A central vacuum cleaning system in a building equipped with a fire alarm system shall be designed to shut down upon actuation of the fire alarm system. 3.2.4.14. Elevator Emergency Return 1) Except as permitted by Sentence (3), in a building having elevators that serve storeys above the first storey and that are equipped with an automatic emergency recall feature, smoke detectors shall be installed in the elevator lobbies on the recall level so that when these smoke detectors are actuated, the elevators will automatically return directly to an alternate floor level. 2) Smoke detectors required by Sentence (1) shall be designed as part of the building fire alarm system. 3) The alternate floor recall feature required by Sentence (1) is not required if the floor area containing the recall level is sprinklered throughout. 3.2.4.15. System Monitoring 1) An automatic sprinkler system shall be equipped with waterflow detecting devices and, if an annunciator is required by Article 3.2.4.8., shall be installed so that each device serves a) not more than one storey, and b) an area on each storey that is not more than the system area limits as specified in NFPA 13, “Installation of Sprinkler Systems.” 2) Waterflow-detecting devices required by Sentence (1) shall be connected to the fire alarm system so that, upon its actuation, an alert signal or an alarm signal is initiated. 3) The actuation of each waterflow detecting device required by Sentence (1) shall be indicated separately on the fire alarm system annunciator. 3.2.4.16. Manual Stations 1) Except as permitted by Sentences (2) and (3), where a fire alarm system is installed, a manual station shall be installed in every floor area near a) every principal entrance to the building, and b) every exit. (See Note A-3.2.4.16.(1).) 2) In a building that is sprinklered throughout, a manual station is not required at an exterior egress doorway from a suite that does not lead to an interior shared means of egress in a hotel or motel not more than 3 storeys in building height, provided each suite is served by an exterior exit facility leading directly to ground level. 3) In a building that is sprinklered throughout, a manual station is not required at an exterior egress doorway from a dwelling unit that does not lead to an interior shared means of egress in a building not more than 3 storeys in building height containing only dwelling units, provided each dwelling unit is served by an exterior exit facility leading directly to ground level. 4)						

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			In a building referred to in Sentences (2) or (3), manual stations shall be installed near doorways leading from shared interior corridors to the exterior. 5) Where a fire alarm system is installed, a manually operated fire alarm station shall be installed on the roof at each exit from a helicopter landing area. 3.2.4.17. Alert and Alarm Signals 1) In a 2-stage fire alarm system described in Sentence 3.2.4.4.(2), the same audible signal devices are permitted to be used to sound the alert signals and the alarm signals. 2) If audible signal devices with voice reproduction capabilities are intended for paging and similar voice message use, other than during a fire emergency, they shall be installed so that alert signals and alarm signals take priority over all other signals. 3) Audible signal devices forming part of a fire alarm or voice communication system shall not be used for playing music or background noise. 3.2.4.18. Audibility of Alarm Systems (See Note A-3.2.4.18.) 1) Audible signal devices forming part of a fire alarm system shall be installed in a building so that a) alarm signals are clearly audible throughout the floor area, and b) alert signals are clearly audible in continuously staffed locations, and where there are no continuously staffed locations, throughout the floor area. (See Note A-3.2.4.18.(1).) 2) The sound pattern of an alarm signal shall conform to the temporal pattern defined in Clause 4.2 of ISO 8201, “Acoustics – Audible emergency evacuation signal.” (See Note A-3.2.4.18.(2).) 3) The sound patterns of alert signals shall be significantly different from the temporal patterns of alarm signals. (See Note A-3.2.4.18.(3).) 4) The fire alarm signal sound pressure level shall be not more than 110 dBA in any normally occupied area. (See Note A-3.2.4.18.(4).) 5) The sound pressure level in a sleeping room from a fire alarm audible signal device shall be not less than 75 dBA in a building of residential or care occupancy when any intervening doors between the device and the sleeping room are closed. (See Note A-3.2.4.18.(5).) 6) Except as required by Sentence (5), the sound pressure level from a fire alarm system’s audible signal device within a floor area shall be not less than 10 dBA above the ambient noise level without being less than 65 dBA. 7) Except as permitted by Sentence (11), audible signal devices located within a dwelling unit shall include a means for them to be manually silenced for a period of not more than 10 min, after which time the devices shall restore themselves to normal operation. (See Note A-3.2.4.18.(7).) 8) Audible signal devices within a dwelling unit or a suite of residential or care occupancy shall be connected to the fire alarm system a) in a manner such that a single open circuit at one device will not impair the operation of other audible signal devices on that same circuit that serve the other dwelling units or suites of residential or care occupancy, or b) on separate signal circuits that are not connected to the devices in any other dwelling unit, public corridor or suite of residential or care occupancy. (See Note A-3.2.4.18.(8) and (9).) 9) In a building or part thereof classified as a residential or care occupancy, a) separate circuits shall be provided for audible signal devices on each floor area, and b) audible signal devices within dwelling units or suites of residential or care occupancy shall be wired on separate signal circuits from those not within dwelling units or suites of residential or care occupancy. (See Note A-3.2.4.18.(8) and (9).) 10) Audible signal devices shall be installed in a service space referred to in Sentence 3.2.1.1.(8) and shall be connected to the fire alarm system. 11) Audible signal devices within dwelling units that are wired on separate signal circuits need not include a means for silencing as required by Sentence (7) provided the fire alarm system includes a provision for an automatic signal silence within dwelling units, where a) the automatic signal silence cannot occur within the first 60 s of operation or within the zone of initiation, b) a subsequent alarm elsewhere in the building will reactuate the silenced audible signal devices within dwelling units, c) after a period of not more than 10 min, the silenced audible signal devices will be restored to continuous audible signal if the alarm is not acknowledged, and d) the voice communication systems referred to in Articles 3.2.4.22. and 3.2.4.23. have a provision to override the automatic signal silence to allow the transmission of voice messages through silenced audible signal device circuits that serve the dwelling units. (See Note A-3.2.4.18.(7).) 12) If a 2-stage fire alarm system has been installed with an automatic signal silence as described in Sentence (11), the system shall be designed so that any silenced audible signal devices serving dwelling units are reactuated whenever an alarm signal is required to be transmitted as part of the second stage. (See Note A-3.2.4.18.(7).)						

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			3.2.4.19. Visual Signals 1) Visual signal devices shall be installed in addition to alarm signals a) in buildings or portions thereof intended for use primarily by persons with a hearing impairment, b) in assembly occupancies in which music and other sounds associated with performances could exceed 100 dBA, c) in any floor area in which the ambient noise level is more than 87 dBA, and d) in any floor area in which the occupants i) use ear protection devices, ii) are located in an audiometric booth, or iii) are located in sound-insulating enclosures. 2) Visual signal devices required by Sentence (1) shall be installed so that the signal from at least one device is visible throughout the floor area or portion thereof in which they are installed. (See Note A-3.2.4.19.(2).) 3.2.4.20. Smoke Alarms 1) Except as provided in Article 3.2.4.21., smoke alarms shall be installed in accordance with this Article. 2) Except as required by Sentence (5) and permitted by Sentence (8), smoke alarms conforming to CAN/ULC-S531, “Smoke Alarms,” shall be installed in each dwelling unit and, except for care, treatment or detention occupancies required to have a fire alarm system, in each sleeping room not within a dwelling unit or suite of care occupancy. 3) At least one smoke alarm shall be installed on each storey of a dwelling unit or suite of care occupancy. 4) On any storey of a dwelling unit containing sleeping rooms, a smoke alarm shall be installed a) in each sleeping room, and b) in a location between the sleeping rooms and the remainder of the storey, and if the sleeping rooms are served by a hallway, the smoke alarm shall be located in the hallway. 5) Where a care occupancy has individual suites for residents, a smoke alarm shall be installed a) in each sleeping room, and b) in a location between the sleeping rooms and the remainder of the suite, and if the sleeping rooms are served by a corridor within the suite, the smoke alarm shall be located in the corridor. 6) A smoke alarm shall be installed on or near the ceiling. 7) Except as permitted in Sentence (8), smoke alarms referred in Sentence (2) shall a) be installed with permanent connections to an electrical circuit (see Note A-3.2.4.20.(7)(a)), b) have no disconnect switch between the overcurrent device and the smoke alarm, and c) in case the regular power supply to the smoke alarm is interrupted, be provided with a battery as an alternative power source that can continue to provide power to the smoke alarm for a period of no less than 7 days in the normal condition, followed by 4 minutes of alarm. 8) Suites of residential occupancy are permitted to be equipped with smoke detectors in lieu of smoke alarms, provided the smoke detectors a) are capable of independently sounding audible signals within the individual suites, b) except as permitted in Sentence (9), are installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems,” and c) form part of the fire alarm system. (See Note A-3.2.4.20.(8).) 9) Smoke detectors permitted to be installed in lieu of smoke alarms as stated in Sentence (8) are permitted to sound localized alarms within individual suites, and need not sound an alarm throughout the rest of the building. 10) If more than one smoke alarm is required in a dwelling unit, the smoke alarms shall be wired so that the actuation of one smoke alarm will cause all smoke alarms within the dwelling unit to sound. 11) A smoke alarm required by Sentence (2) shall be installed in conformance with CAN/ULC-S553, “Installation of Smoke Alarms.” 12) Except as permitted in Sentence (13), a manually operated silencing device shall be incorporated within the circuitry of a smoke alarm installed in a dwelling unit so that it will silence the signal emitted by the smoke alarm for a period of not more than 10 min, after which the smoke alarm will reset and again sound the alarm if the level of smoke in the vicinity is sufficient to reactuate the smoke alarm. 13) Suites of residential occupancy equipped with smoke detectors installed to CAN/ULC-S524, “Installation of Fire Alarm Systems,” as part of the fire alarm system in lieu of smoke alarms as permitted by Sentence (8), need not incorporate the manually operated device required in Sentence (12). (See Note A-3.2.4.20.(8).) 14) The sound patterns of smoke alarms shall a) meet the temporal patterns of alarm signals (see Note A-3.2.4.18.(2)), or b) be a combination temporal pattern and voice relay. 3.2.4.20. Smoke Alarms 1) Except as provided in Article 3.2.4.21., smoke alarms shall be installed in accordance with this Article. 2) Except as required by Sentence (5) and permitted by Sentence (8), smoke alarms conforming to CAN/ULC-S531, “Smoke Alarms,” shall be installed in each dwelling unit and, except for care, treatment or detention occupancies required to have a fire alarm system, in each sleeping room not within a dwelling unit or suite of care occupancy. 3) At least one smoke alarm shall be installed on each storey of a dwelling unit or suite of care occupancy. 4) On any storey of a dwelling unit containing sleeping rooms, a smoke alarm shall						

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			be installed a) in each sleeping room, and b) in a location between the sleeping rooms and the remainder of the storey, and if the sleeping rooms are served by a hallway, the smoke alarm shall be located in the hallway. 5) Where a care occupancy has individual suites for residents, a smoke alarm shall be installed a) in each sleeping room, and b) in a location between the sleeping rooms and the remainder of the suite, and if the sleeping rooms are served by a corridor within the suite, the smoke alarm shall be located in the corridor. 6) A smoke alarm shall be installed on or near the ceiling. 7) Except as permitted in Sentence (8), smoke alarms referred in Sentence (2) shall a) be installed with permanent connections to an electrical circuit (see Note A-3.2.4.20.(7)(a)), b) have no disconnect switch between the overcurrent device and the smoke alarm, and c) in case the regular power supply to the smoke alarm is interrupted, be provided with a battery as an alternative power source that can continue to provide power to the smoke alarm for a period of no less than 7 days in the normal condition, followed by 4 minutes of alarm.8) Suites of residential occupancy are permitted to be equipped with smoke detectors in lieu of smoke alarms, provided the smoke detectors a) are capable of independently sounding audible signals within the individual suites, b) except as permitted in Sentence (9), are installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems,” and c) form part of the fire alarm system. (See Note A-3.2.4.20.(8).) 9) Smoke detectors permitted to be installed in lieu of smoke alarms as stated in Sentence (8) are permitted to sound localized alarms within individual suites, and need not sound an alarm throughout the rest of the building. 10) If more than one smoke alarm is required in a dwelling unit, the smoke alarms shall be wired so that the actuation of one smoke alarm will cause all smoke alarms within the dwelling unit to sound. 11) A smoke alarm required by Sentence (2) shall be installed in conformance with CAN/ULC-S553, “Installation of Smoke Alarms.” 12) Except as permitted in Sentence (13), a manually operated silencing device shall be incorporated within the circuitry of a smoke alarm installed in a dwelling unit so that it will silence the signal emitted by the smoke alarm for a period of not more than 10 min, after which the smoke alarm will reset and again sound the alarm if the level of smoke in the vicinity is sufficient to reactuate the smoke alarm. 13) Suites of residential occupancy equipped with smoke detectors installed to CAN/ULC-S524, “Installation of Fire Alarm Systems,” as part of the fire alarm system in lieu of smoke alarms as permitted by Sentence (8), need not incorporate the manually operated device required in Sentence (12). (See Note A-3.2.4.20.(8).) 14) The sound patterns of smoke alarms shall a) meet the temporal patterns of alarm signals (see Note A-3.2.4.18.(2)), or b) be a combination temporal pattern and voice relay. 3.2.4.21. Residential Fire Warning Systems 1) Except where a fire alarm system is installed or required in a building, smoke detectors forming part of a residential fire warning system installed in conformance with CAN/ULC-S540, “Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance,” are permitted to be installed in lieu of all smoke alarms required by Article 3.2.4.20., provided the system a) is capable of sounding audible signals in accordance with Articles 9.10.19.2. and 9.10.19.5., b) is powered in accordance with Article 9.10.19.4., and c) is provided with a silencing device in accordance with Article 9.10.19.6. 3.2.4.22. Voice Communication Systems for High Buildings 1) A voice communication system required by Subsection 3.2.6. shall a) consist of a two-way means of communication with the central alarm and control facility and to the mechanical control centre from each floor area, and b) be capable of broadcasting pre-recorded, synthesized, or live messages from the central alarm and control facility that are audible and intelligible in all parts of the building, except that this requirement does not apply to elevator cars. 3.2.4.22.(1)(b)). 2) The voice communication system referred to in Sentence (1) shall include a means to silence the alarm signal in a single stage fire alarm system while voice instructions are being transmitted, but only after the alarm signal has initially sounded for not less than 30 s. 3) The voice communication system referred to in Sentence (1) shall include a means to silence the alert signal and the alarm signal in a 2-stage fire alarm system while voice instructions are being transmitted, but only after the alert signal has initially sounded for not less than a) 10 s in hospitals that have supervisory personnel on duty for twenty-four hours each day, or b) 30 s for all other occupancies. 4) The voice communication system referred to in Clause (1)(b) shall be designed so that the alarm signal in a 2-stage fire alarm system can be selectively transmitted to						

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			any zone or zones while maintaining an alert signal or selectively transmitting voice instructions to any other zone or zones in the building. 5) The 2-way communication system referred to in Clause (1)(a) shall be installed so that emergency telephones are located in each floor area near exit stair shafts. 6) Visual signal devices required by Sentence 3.2.4.19.(1) shall continue to emit a visible signal while voice instructions are being transmitted. 7) Where the facility is not equipped with staff trained to provide instructions over the loudspeakers, a pre-recorded message shall be provided 3.2.4.23. One-Way Voice Communication Systems 1) Except for Group B, Division 1 and Group F, Division 1 major occupancies, where a fire alarm system is required under Subsection 3.2.4., a one-way voice communication system shall be installed in buildings where a 2-stage fire alarm system is installed and whose occupant load exceeds 1 000. 2) The one-way voice communication system required by Sentence (1) shall consist of loudspeakers that are a) operated from the central alarm and control facility or, in the absence of such a facility, from a designated area, and b) except in elevator cars, designed and located so that transmitted messages are audible and intelligible in all parts of the building. (See Note A-3.2.4.22.(1)(b).) 3) Where the facility is not equipped with staff trained to provide instructions over the loudspeakers, a pre-recorded message shall be provided. 4) The one-way voice communication system required by Sentence (1) shall meet the silencing and transmission requirements of Sentences 3.2.4.22.(2) to (4) and (6).						
NBCC	3.2.5	Firefighting	3.2.5.1. Access to Above Grade Storeys 1) Except for storeys below the first storey, direct access for firefighting shall be provided from the outdoors to every storey that is not sprinklered throughout and whose floor level is less than 25 m above grade, by at least one unobstructed window or access panel for each 15 m of wall in each wall required to face a street by Subsection 3.2.2. 2) An opening for access required by Sentence (1) shall a) have a sill no higher than 900 mm above the inside floor, and b) be not less than 1 100 mm high by not less than i) 550 mm wide for a building not designed for the storage or use of dangerous goods, or ii) 750 mm wide for a building designed for the storage or use of dangerous goods. 3) Access panels above the first storey shall be readily openable from both inside and outside, or the opening shall be glazed with plain glass. 3.2.5.2. Access to Basements 1) Direct access from at least one street shall be provided from the outdoors in a building that is not sprinklered to each basement having a horizontal dimension more than 25 m 2) The access required by Sentence (1) is permitted to be provided by a) doors, windows or other means that provide an opening not less than 1 100 mm high and 550 mm wide, with a sill no higher than 900 mm above the inside floor, or b) an interior stairway immediately accessible from the outdoors. 3.2.5.3. Roof Access 1) On a building more than 3 storeys in building height where the slope of the roof is less than 1 in 4, all main roof areas shall be provided with direct access from the floor areas immediately below, either by a) a stairway, or b) a hatch not less than 550 mm by 900 mm with a fixed ladder. 3.2.5.4. Access Routes 1) A building which is more than 3 storeys in building height or more than 600 m^2 in building area shall be provided with access routes for fire department vehicles a) to the	[[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	

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			building face having a principal entrance, and b) to each building face having access openings for firefighting as required by Articles 3.2.5.1. and 3.2.5.2. (See Note A-3.2.5.4.(1).) 3.2.5.5. Location of Access Routes 1) Access routes required by Article 3.2.5.4. shall be located so that the principal entrance and every access opening required by Articles 3.2.5.1. and 3.2.5.2. are located not less than 3 m and not more than 15 m from the closest portion of the access route required for fire department use, measured horizontally from the face of the building. 2) Access routes shall be provided to a building so that a) for a building provided with a fire department connection, a fire department pumper vehicle can be located adjacent to the hydrants referred to in Article 3.2.5.15., b) for a building not provided with a fire department connection, a fire department pumper vehicle can be located so that the length of the access route from a hydrant to the vehicle plus the unobstructed path of travel for the firefighter from the vehicle to the building is not more than 90 m, and c) the unobstructed path of travel for the firefighter from the vehicle to the building is not more than 45 m. 3) The unobstructed path of travel for the firefighter required by Sentence (2) from the vehicle to the building shall be measured from the vehicle to the fire department connection provided for the building, except that if no fire department connection is provided, the path of travel shall be measured to the principal entrance of the building. 4) If a portion of a building is completely cut off from the remainder of the building so that there is no access to the remainder of the building, the access routes required by Sentence (2) shall be located so that the unobstructed path of travel from the vehicle to one entrance of each portion of the building is not more than 45 m. 3.2.5.6. Access Route Design 1) A portion of a roadway or yard provided as a required access route for fire department use shall a) have a clear width not less than 6 m, unless it can be shown that lesser widths are satisfactory, b) have a centre line radius not less than 12 m, c) have an overhead clearance not less than 5 m, d) have a change of gradient not more than 1 in 12.5 over a minimum distance of 15 m, e) be designed to support the expected loads imposed by firefighting equipment and be surfaced with concrete, asphalt or other material designed to permit accessibility under all climatic conditions, f) have turnaround facilities for any dead-end portion of the access route more than 90 m long, and g) be connected with a public thoroughfare. (See Note A-3.2.5.6.(1).) 2) For buildings conforming to Article 3.2.2.50. or 3.2.2.58., no portion of the access route described in Sentence 3.2.2.10.(3) shall be more than 20 m below the uppermost floor level						
NBCC	3.2.5.7	Water Supply	1) Every building shall be provided with an adequate water supply for firefighting. (See Note A-3.2.5.7.(1).)	[[ ]]	Potentially In Compliance			This NBCC clause will be further assessed during detail design	
NBCC	3.2.5.8	Standpipe Systems	1) Except as permitted by Sentence 3.2.5.9.(4), a standpipe system shall be installed in a building that is a) more than 3 storeys in building height, b) more than 14 m high measured between grade and the ceiling of the top storey, or c) not more than 14 m high measured between grade and the ceiling of the top storey but has a building area exceeding the area shown in Table 3.2.5.8. for the applicable building height unless the building is sprinklered throughout. Table 3.2.5.8. Building Limits without Standpipe Systems Forming Part of Sentence 3.2.5.8.(1) Building Area, m^2 Occupancy Classification 1 storey 2 storeys 3 storeys Group A 2 500 2 000 1 500 Group C 2 000 1 500 1 000	[[ ]]	Potentially In Compliance			This NBCC clause will be further assessed during detail design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			Group D 4 000 3 000 2 000 Group F, Division 2 1 500 1 500 1 000 Group F, Division 3 3 000 2 000 1 00						
NBCC	3.2.5.9	Standpipe System Design	1) Except as provided in Sentences (2) to (6), Articles 3.2.5.10. and 3.2.5.11., and Sentence 3.2.4.9.(2), the design, construction, installation and testing of a standpipe system shall conform to NFPA 14, “Installation of Standpipe and Hose Systems.” 2) A dry standpipe that is not connected to a water supply shall not be considered as fulfilling the requirements of this Article. 3) If more than one standpipe is provided, the total water supply need not be more than 30 L/s. 4) A standpipe need not be installed in a storage garage conforming to Article 3.2.2.90., provided the building is not more than 15 m high. 5) The residual water pressure at the design flow rate at the topmost hose connection of a standpipe system that is required to be installed in a building is permitted to be less than 690 kPa provided a) the building is sprinklered throughout, b) the water supply at the base of the sprinkler riser is capable of meeting, without a fire pump, the design flow rate and pressure demand of the sprinkler system, including the inside and outside hose allowance, and c) fire protection equipment is available to deliver, by means of the fire department connection, the full demand flow rate at a residual water pressure of 690 kPa at the topmost hose connection of the standpipe system (see Note A-3.2.5.9.(5)(c)). 6) A fire department connection shall be provided for every standpipe system.	[[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.5.10	Hose Connections	1) Hose connections shall be located in exits, in accordance with NFPA 14, “Installation of Standpipe and Hose Systems.” 2) Hose connections are not required within a floor area. 3) Hose connections shall be provided with sufficient clearance to permit the use of a standard fire department hose key. 4) Except as permitted by Sentence (5), 64 mm diam hose connections shall be installed in a standpipe system. 5) Hose connections for 64 mm diam hose are not required in a building that is not more than 25 m high, measured between grade and the ceiling level of the top storey and in which an automatic sprinkler system is not installed.	[[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.5.11	Hose Stations	1) Hose stations for 38 mm diam hose shall be installed for a standpipe system in a building that is not sprinklered throughout. 2) Hose stations for a 38 mm diam hose shall be installed for a standpipe system within every floor area that is not sprinklered throughout. (See Note A-3.2.5.11.(2).) 3) Hose stations shall be located in the floor area within 5 m of exits and at other locations to provide coverage of the entire floor area. 4) A hose station located on one side of a horizontal exit shall be considered to serve only the floor area on that side of the horizontal exit. 5) A hose cabinet shall be located so that its door, when fully opened, will not obstruct the required width of a means of egress. 6) Where a building or part thereof is used as a distillery and the building is sprinklered in conformance with Article 3.2.5.12., small hose (38 mm) stations are permitted to be supplied from interior sprinkler piping. 7) Where a hose station is provided in grain handling and storage facilities in which combustible dusts are produced in quantities or concentrations that create an explosion or fire hazard, fog and fine spray nozzles shall be used instead of nozzles that discharge a solid stream of water to prevent combustible dusts from being raised into suspension.	[[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.5.12		Automatic Sprinkler Systems 1) Except as permitted by Sentences (2), (3) and (4), an automatic sprinkler system shall be designed, constructed, installed and tested in conformance with NFPA 13, “Installation of Sprinkler Systems.” (See Note A-3.2.5.12.(1).) 2) Instead of the requirements of Sentence (1), NFPA 13R, “Installation of Sprinkler Systems in Low-Rise Residential Occupancies,” is permitted to be used for the design, construction and installation of an automatic sprinkler system installed a) in a building of residential occupancy throughout that i) is not more than 4 storeys in building height and conforms to Articles 3.2.2.47., 3.2.2.48., 3.2.2.50., 3.2.2.51. or 3.2.2.54., or	U43 SDD [[ ]]	Potentially in Compliance			Fire suppression system NBCC clause requirements are contained in U43 SDD	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			ii) is not more than 3 storeys in building height and conforms to Article 9.10.1.3., or b) in a building of care occupancy with not more than 10 occupants that is not more than 3 storeys in building height and conforms to one of Articles 3.2.2.42. to 3.2.2.46. (See Note A-3.2.5.12.(2).) 3) Instead of the requirements of Sentence (1), NFPA 13D, “Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes,” is permitted to be used for the design, construction and installation of an automatic sprinkler system installed a) in a building of residential occupancy throughout that contains not more than 2 dwelling units, or b) in a building of care occupancy, provided i) it contains not more than 2 suites of care occupancy, ii) it has not more than 5 residents throughout, and iii) a 30-minute water supply demand can be met. (See Note A-3.2.5.12.(2).) 4) If a building contains fewer than 9 sprinklers, the water supply for these sprinklers is permitted to be supplied from the domestic water system for the building provided the required flow for the sprinklers can be met by the domestic system. 5) If a water supply serves both an automatic sprinkler system and a system serving other equipment, control valves shall be provided so that either system can be shut-off independently. 6) Notwithstanding the requirements of the standards referenced in Sentences (1) and (2) regarding the installation of automatic sprinkler systems, sprinklers shall not be omitted in any room or closet in the storey immediately below a roof assembly. (See Note A-3.2.5.12.(6).) 7) Notwithstanding the requirements of the standards referenced in Sentences (1) and (2) regarding the installation of automatic sprinkler systems, in buildings conforming to Article 3.2.2.50. or 3.2.2.58., sprinklers shall be provided for balconies and decks exceeding 610 mm in depth measured perpendicular to the exterior wall. (See Note A-3.2.5.12.(7).) 8) Sprinklers in elevator machine rooms shall have a temperature rating not less than that required for an intermediate temperature classification and shall be protected against physical damage. (See Note A-3.2.5.12.(8).)						
NBCC	3.2.5.13		Combustible Sprinkler Piping 1) Combustible sprinkler piping shall be used only for sprinkler systems in residential occupancies and other light-hazard occupancies. (See Note A-3.2.5.13.(1).) 2) Combustible sprinkler piping shall meet the requirements of ULC/ORD-C199P, “Combustible Piping for Sprinkler Systems.” 3) Except as permitted by Sentence (5), combustible sprinkler piping shall be separated from the area served by the sprinkler system, and from any other fire compartment, by ceilings, walls, or soffits consisting of, as a minimum, a) lath and plaster, b) gypsum board not less than 9.5 mm thick, c) plywood not less than 13 mm thick, or d) a suspended membrane ceiling with i) steel suspension grids, and ii) lay-in panels or tiles having a mass not less than 1.7 kg/m^2. 4) Except as permitted by Sentence (5), combustible sprinkler piping may be located above a ceiling provided that the distance between the edge of any ceiling opening that is not protected in conformance with Sentence (3) and the nearest sprinkler is not more than 300 mm. 5) Where combustible sprinkler piping has been tested in conformance with ULC/ORD-C199P, “Combustible Piping for Sprinkler Systems,” and has been shown to meet the requirements therein without additional protection, conformance to Sentences (3) and (4) is not required.	U43 SDD [[ ]]	Potentially in Compliance			Fire suppression system NBCC clause requirements are contained in U43 SDD	
NBCC	3.2.5.14		Sprinklered Service Space	U43 SDD [[ ]]	Potentially in Compliance			Fire suppression system NBCC clause	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			1) An automatic sprinkler system shall be installed in a service space referred to in Sentence 3.2.1.1.(8) if flooring for access within the service space is other than catwalks. 2) The sprinkler system required by Sentence (1) shall be equipped with waterflow detecting devices, with each device serving not more than one storey. 3) The waterflow detecting devices required by Sentence (2) shall be connected to the fire alarm system, to a) initiate an alert signal in a 2-stage system or an alarm signal in a single stage system, and b) indicate separately on the fire alarm system annunciator the actuation of each device.					requirements are contained in U43 SDD	
NBCC	3.2.5.15		Fire Department Connections 1) The fire department connection for a standpipe system shall be located so that the distance from the fire department connection to a hydrant is not more than 45 m and is unobstructed. 2) The fire department connection for an automatic sprinkler system shall be located so that the distance from the fire department connection to a hydrant is not more than 45 m and is unobstructed.	U43 SDD [[ ]]	Potentially in Compliance			Fire protection system NBCC clause requirements are contained in U43 SDD	
NBCC	3.2.5.16	Fire Extinguishers	Portable Fire Extinguishers 1) Portable extinguishers shall be provided and installed in accordance with a) provincial or territorial regulations or municipal bylaws, or b) the NFCC, in the absence of the regulations or bylaws referred to in Clause (a). 2) In a Group B, Division 1 major occupancy, portable fire extinguishers are permitted to be located in secure areas, or in lockable cabinets provided a) identical keys for all cabinets are located at all supervisory or security stations, or b) electrical remote release devices are provided and are connected to an emergency power supply.	[[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.5.17		Protection from Freezing 1) Equipment forming part of a fire protection system shall be protected from freezing if a) it could be adversely affected by freezing temperatures, and b) it is located in an unheated area.	U43 SDD [[ ]]	Potentially in Compliance				This requirement is contained in U43 SDD
NBCC	3.2.5.18		Fire Pumps 1) If a fire pump is installed, it shall be installed in accordance with the requirements of NFPA 20, “Installation of Stationary Pumps for Fire Protection.” (See Note A-3.2.5.18.(1).)	U43 SDD [[ ]]	Potentially in Compliance				This requirement is contained in U43 SDD
NBCC	3.2.6	Conceptual	3.2.6.1 Requirement for High Buildings Application 1) Applies to a building a) of Group A, D, E or F major occupancy classification that is more than i) 36 m high, measured between grade and the floor level of the top storey, or ii) 18 m high, measured between grade and the floor level of the top storey, and in which the cumulative or total occupant load on or above any storey above grade, other than the first storey, divided by 1.8 times the width in metres of all exit stairs at that storey, exceeds 300.irements for High Buildings Application.		N/A			The top floor of the reactor building is 13 metres above grade.	
NBCC	3.2.7.1		Minimum Lighting Requirements 1) An exit, a public corridor, or a corridor providing access to exit for the public or serving patients’ sleeping rooms or classrooms shall be equipped to provide illumination to an average level not less than 50 lx at floor or tread level and at angles and intersections at changes of level where there are stairs or ramps. 2) The minimum value of the illumination required by Sentence (1) shall be not less than 10 lx.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			3) Rooms and spaces used by the public shall be illuminated as described in Article 9.34.2.7. 4) Lighting outlets in a building of residential occupancy shall be provided in conformance with Subsection 9.34.2.						
NBCC	3.2.7.2		Recessed Lighting Fixtures 1) A recessed lighting fixture shall not be located in an insulated ceiling unless the fixture is designed for this type of installation	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.7.3		Emergency Lighting 1) Emergency lighting shall be provided to an average level of illumination not less than 10 lx at floor or tread level in a) exits, b) principal routes providing access to exit in open floor areas and in service rooms, c) corridors used by the public, d) corridors serving sleeping rooms in a treatment occupancy, e) corridors serving sleeping rooms in a care occupancy, except corridors serving sleeping rooms within individual suites of care occupancy, f) corridors serving classrooms, g) underground walkways, h) public corridors, i) floor areas or parts thereof where the public may congregate i) in Group A, Division 1 occupancies, or ii) in Group A, Division 2 and 3 occupancies having an occupant load of 60 or more, j) floor areas or parts thereof of daycare centres where persons are cared for, k) food preparation areas in commercial kitchens, and l) public washrooms that are equipped to serve more than one person at a time. 2) Emergency lighting to provide an average level of illumination of not less than 10 lx at floor or catwalk level shall be included in a service space referred to in Sentence 3.2.1.1.(8). 3) The minimum value of the illumination required by Sentences (1) and (2) shall be not less than 1 lx. 4) In addition to the requirements of Sentences (1) to (3), the installation of battery-operated emergency lighting in buildings or part thereof where treatment is provided shall conform to the appropriate requirements of CSA Z32, “Electrical Safety and Essential Electrical Systems in Health Care Facilities.”	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.7.4		Emergency Power for Lighting 1) An emergency power supply shall be a) provided to maintain the emergency lighting required by this Subsection from a power source such as batteries or generators that will continue to supply power in the event that the regular power supply to the building is interrupted, and b) so designed and installed that upon failure of the regular power it will assume the electrical load automatically for a period of i) 2 h for a building within the scope of Subsection 3.2.6., ii) 1 h for a building of Group B major occupancy classification that is not within the scope of Subsection 3.2.6., iii) 1 h for a building constructed in accordance with Article 3.2.2.50. or 3.2.2.58., and iv) 30 min for a building of any other occupancy. (See Note A-3.2.7.4.(1).)	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			2) If self-contained emergency lighting units are used, they shall conform to CSA C22.2 No. 141, “Emergency Lighting Equipment.”						
NBCC	3.2.7.5		Emergency Power Supply Installation 1) Except as required by Articles 3.2.7.6. and 3.2.7.7., an emergency electrical power supply system shall be installed in conformance with CSA C282, “Emergency Electrical Power Supply for Buildings.” (See Sentence 3.2.7.8.(1) for emergency electrical power supply for voice communication systems.)	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.7.6		Emergency Power for Treatment Occupancies 1) Except as required by Article 3.2.7.7., an emergency electrical power supply system for emergency equipment required by this Part for treatment occupancies shall be installed in conformance with CSA Z32, “Electrical Safety and Essential Electrical Systems in Health Care Facilities.” (See Note A-3.2.7.6.(1).)		Not Applicable				
NBCC	3.2.7.7		Fuel Supply Shut-off Valves 1) If a liquid or gas fuel-fired engine or turbine for an emergency electric power supply is dependent on a fuel supply from outside the building, the fuel supply shall be provided with a suitably-identified separate shut-off valve outside the building.	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.7.8		Emergency Power for Fire Alarm Systems 1) Fire alarm systems, including those incorporating a voice communication system, shall be provided with an emergency power supply conforming to Sentences (2), (3) and (4). 2) The emergency power supply required by Sentence (1) shall be supplied from a) a generator, b) batteries, or c) a combination thereof. 3) The emergency power supply required by Sentence (1) shall be capable of providing a) supervisory power for not less than 24 h, and b) immediately following that period, emergency power under full load for not less than i) 2 h for a building within the scope of Subsection 3.2.6., ii) 1 h for a building classified as a Group B major occupancy that is not within the scope of Subsection 3.2.6., iii) 1 h for a building constructed in accordance with Article 3.2.2.50. or 3.2.2.58., iv) 5 min for a building not required to be equipped with an annunciator, and v) 30 min for any other building. (See Note A-3.2.7.8.(3).) 4) The emergency power supply required by Sentence (1) shall be designed so that, in the event of a failure of the normal power source, there is an immediate automatic transfer to emergency power with no loss of information	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.7.9		Emergency Power for Building Services 1) An emergency power supply capable of operating under a full load for not less than 2 h shall be provided by an emergency generator for a) every elevator serving storeys above the first storey in a building that is more than 36 m high measured between grade and the floor level of the top storey and every elevator for firefighters in conformance with Sentence (2), b) water supply for firefighting in conformance with Article 3.2.5.7., if the supply is dependent on electrical power supplied to the building, c) fans and other electrical equipment that are installed to maintain the air quality specified in Articles 3.2.6.2. and 3.3.3.6., d) fans required for venting by Article 3.2.6.6., and e) fans required by Clause 3.2.8.4.(1)(c) and Article 3.2.8.7. in buildings within the scope of Subsection 3.2.6.						

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			2) Except as permitted by Sentence (3), the emergency power supply for elevators required by Clause (1)(a) shall be capable of operating all elevators for firefighters plus one additional elevator simultaneously. 3) Sentence (2) does not apply if the time to recall all elevators under emergency power supply is not more than 5 min, each from its most remote storey to a) the storey containing the entrance for firefighter access referred to in Articles 3.2.5.4. and 3.2.5.5., or b) to a transfer lobby.						
NBCC	3.2.7.10		Protection of Electrical Conductors 1) The protection of electrical and emergency conductors referred to in Clauses (a) to (c) shall conform to the requirements stated in Sentences (2) to (11): a) electrical conductors located within buildings identified in Article 3.2.6.1. serving i) fire alarms, ii) emergency lighting, or iii) emergency equipment within the scope of Articles 3.2.6.2. to 3.2.6.8., b) emergency conductors serving fire pumps required to be installed under Article 3.2.5.18., and c) electrical conductors serving mechanical systems serving i) areas of refuge identified in Clause 3.3.3.6.(1)(b), or ii) contained use areas identified in Clauses 3.3.3.7.(4)(a) and (b). 2) Except as otherwise required by Sentence (3) and permitted by this Article, electrical conductors that are used in conjunction with systems identified in Sentence (1) shall a) conform to CAN/ULC-S139, “Fire Test for Evaluation of Integrity of Electrical Power, Data and Optical Fibre Cables,” including the hose stream application, to provide a circuit integrity rating of not less than 1 h (see Note A-3.2.7.10.(2)(a) and (3)(a)), or b) be located in a service space that is separated from the remainder of the building by a fire separation that has a fire-resistance rating not less than 1 h. 3) Electrical conductors identified in Clause (1)(c) shall a) conform to CAN/ULC-S139, “Fire Test for Evaluation of Integrity of Electrical Power, Data and Optical Fibre Cables,” including the hose stream application, to provide a circuit integrity rating of not less than 2 h (see Note A-3.2.7.10.(2)(a) and (3)(a)), or b) be located in a service space that is separated from the remainder of the building by a fire separation that has a fire-resistance rating not less than 2 h. 4) The service spaces referred to in Clauses (2)(b) and (3)(b) shall not contain any combustible materials other than the conductors being protected. 5) Except as stated in Sentences (7) and (9), the electrical conductors referred to in Sentence (1) are those that extend from the source of emergency power to a) the equipment served, or b) the distribution equipment supplying power to the equipment served, if both are in the same room (see Note A-3.2.7.10.(5)(b)). 6) If a fire alarm transponder or annunciator in one fire compartment is connected to a central processing unit or another transponder or annunciator located in a different fire compartment, the electrical conductors connecting them shall be protected in accordance with Sentence (2). 7) Fire alarm system branch circuits within a storey that connect transponders and individual devices need not conform to Sentence (2). (See Note A-3.2.7.10.(7).) 8) Except as permitted in Sentence (9), if a distribution panel supplies power to emergency lighting, the power supply conductors leading up to the distribution panel shall be protected in accordance with Sentence (2). 9) Conductors leading from a distribution panel referred to in Sentence (8) to emergency lighting units in the same storey need not conform to Sentence (2).	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			10) Distribution panels serving emergency lighting units located on other storeys shall be installed in a service room separated from the floor area by a fire separation having a fire-resistance rating of at least 1 h. 11) Conductors leading from a distribution panel to emergency lighting units located on other storeys shall be protected in accordance with Sentence (2) between the distribution panel and the floor area where the emergency lighting units are located.						
NBCC	3.2.8.1		Mezzanines and openings through Floor Assemblies Application 1) Except as permitted by Article 3.2.8.2. and Sentence 3.3.4.2.(3), the portions of a floor area or a mezzanine that do not terminate at an exterior wall, a firewall or a vertical shaft shall a) terminate at a vertical fire separation having a fire-resistance rating not less than that required for the floor assembly and extending from the floor assembly to the underside of the floor or roof assembly above, or b) be protected in conformance with the requirements of Articles 3.2.8.3. to 3.2.8.8. 2) The penetration of a floor assembly by an exit or a vertical service space shall conform to the requirements of Sections 3.4., 3.5. and 3.6. 3) A floor area containing sleeping rooms in a building of Group B, Division 2 major occupancy shall not be constructed as part of an interconnected floor space	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.8.2		Exceptions to Special Protection 1) A mezzanine need not terminate at a vertical fire separation nor be protected in conformance with the requirements of Articles 3.2.8.3. to 3.2.8.8. provided the mezzanine a) serves a Group A, Division 1 major occupancy, b) serves a Group A, Division 3 major occupancy in a building not more than 2 storeys in building height, or c) serves a Group A, C, D, E or F major occupancy and i) is 500 m^2 or less in area, and ii) conforms to Sentence 3.2.1.1.(3) or (4). 2) Except for floors referred to in Sentence 3.1.10.3.(1) and Article 3.2.1.2., openings through a horizontal fire separation for vehicular ramps in a storage garage are not required to be protected with closures and need not conform to this Subsection. 3) If a closure in an opening in a fire separation would disrupt the nature of a manufacturing process, such as a continuous flow of material from storey to storey, the closure for the opening is permitted to be omitted provided precautions are taken to offset the resulting hazard. (See Note A-3.2.8.2.(3).) 4) An interconnected floor space in a Group B, Division 1 occupancy need not conform to the requirements of Articles 3.2.8.3. to 3.2.8.8. provided the interconnected floor space does not interconnect more than 2 adjacent storeys. 5) Except as permitted by Sentence (6), openings for escalators and inclined moving walks need not conform to the requirements in Articles 3.2.8.3. to 3.2.8.8. provided a) the opening for each escalator or walk does not exceed 10 m^2, b) the building is sprinklered throughout, and c) the interconnected floor space contains only Group A, Division 1, 2 or 3, Group D or Group E major occupancies (see Note A-3.2.8.2.(6)(c)). 6) An interconnected floor space need not conform to the requirements of Articles 3.2.8.3. to 3.2.8.8., provided a) it consists of the first storey and the storey next above or below it, but not both	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	

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			b) it is sprinklered throughout or, where the building area is not more than one half of the area permitted by Subsection 3.2.2., the openings through the floor are used only for stairways, escalators or moving walks (see Note A-3.2.8.2.(6)(b)), and c) it contains only Group A, Division 1, 2 or 3, Group D, Group E, or Group F, Division 2 or 3 major occupancies (see Note A-3.2.8.2.(6)(c)).						
NBCC	3.2.8.3		Sprinklers 1) A building containing an interconnected floor space shall be sprinklered throughout.	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.8.4		Vestibules 1) An exit opening into an interconnected floor space shall be protected at each opening into the interconnected floor space by a vestibule a) with doorways that are not less than 1.8 m apart, b) that is separated from the remainder of the floor area by a fire separation that is not required to have a fire-resistance rating (see Note A-3.1.8.1.(1)(b)), and c) that is designed to limit the passage of smoke so that the exit stair shaft does not contain more than 1% by volume of contaminated air from the fire floor, assuming an outdoor temperature equal to the January design temperature on a 2.5% basis determined in accordance with Subsection 1.1.3. (see Note A-3.2.8.4.(1)(c)). 2) An exit opening into an interconnected floor space shall conform to Sentence 3.4.3.2.(6). 3) If an elevator hoistway opens into an interconnected floor space and into storeys above the interconnected floor space, either the elevator doors opening into the interconnected floor space or the elevator doors opening into the storeys above the interconnected floor space shall be protected by vestibules conforming to Sentence (1)	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.8.5		Protected Floor Space 1) A protected floor space used to satisfy the requirements of Clause 3.4.3.2.(6)(b) shall a) be separated from the interconnected floor space by a fire separation having a fire-resistance rating not less than that required for the floor assembly of the storey in which it is located, b) have all openings in the vertical fire separation between a protected floor space and the adjacent interconnected floor space protected by vestibules conforming to Sentence 3.2.8.4.(1), and c) be designed so that it is not necessary to enter the interconnected floor space to reach an exit.	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.8.6		Draft Stops 1) A draft stop shall be provided at each floor level within an interconnected floor space, immediately adjacent to and surrounding the opening, and shall be not less than 500 mm deep measured from ceiling level down to the underside of the draft stop.	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.8.7		Mechanical Exhaust System 1) A mechanical exhaust system shall be provided to remove air from an interconnected floor space at a rate of 4 air changes per hour. (See Note A-3.2.8.7.(1).) 2) The mechanical exhaust system required by Sentence (1) shall be actuated by a switch located on the storey containing the entrance for firefighter access referred to in Articles 3.2.5.4. and 3.2.5.5. near the annunciator for the fire alarm system.	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.2.8.8		Combustible Content Limits 1) An interconnected floor space shall be designed so that the combustible contents, excluding interior finishes, in those parts of a floor area in which the ceiling is more than 8 m above the floor, are limited to not more than 16 g of combustible material for each cubic metre of volume of the interconnected floor space.	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.2.9		Integrated Fire protection and life Safety Systems 3.2.9.1 Testing 1) Where fire protection and life safety systems and systems with fire protection and life safety functions are integrated with each other, they shall be tested as a whole in accordance with CAN/ULC-S1001, “Integrated Systems Testing of Fire Protection and Life Safety Systems,” to verify that they have been properly integrated. (See Note A-3.2.9.1.(1).)	FHA [[ ]]	Potentially In Compliance			It is expected applicable clauses will be met when assessed during detailed design	
NBCC	3.3.1.1		Separation of Suites 1) Except as permitted by Sentences (2) and (3), each suite in other than business and personal services occupancies shall be separated from adjoining suites by a fire separation having a fire-resistance rating not less than 1 h. (See also Subsection 3.3.3. for care, treatment or detention occupancies, Article 3.3.4.2. for residential occupancies, and Article 3.1.8.7. for fire dampers.) 2) The fire-resistance rating of the fire separation required by Sentence (1) is permitted to be less than 1 h but not less than 45 min provided the fire-resistance rating required by Subsection 3.2.2. is permitted to be less than 1 h for a) the floor assembly above the floor area, or b) the floor assembly below the floor area, if there is no floor assembly above. 3) Occupancies that are served by public corridors conforming to Clause 3.3.1.4.(4)(b) in a building that is sprinklered throughout, are not required to be separated from one another by fire separations provided the occupancies are a) suites of business and personal services occupancy, b) fast food vending operations that do not provide seating for customers, c) suites of mercantile occupancy, or d) any combination of these occupancies.		Not Applicable				
NBCC	3.3.1.2	Conceptual	Hazardous Substances, Equipment and Processes 1) Except as provided in Subsections 3.3.5. and 3.3.6., the storage, handling and use of hazardous substances shall be in conformance with a) provincial or territorial regulations or municipal bylaws, or b) in the absence of the regulations or bylaws referred to in Clause (a), the NFCC. (See Note A-3.3.1.2.(1).) 2) Systems for the ventilation of cooking equipment that is not within a dwelling unit and is used in processes producing grease-laden vapours shall be designed and installed in conformance with Articles 3.6.3.5., 6.3.1.7. and 6.9.1.3. (See Note A-3.3.1.2.(2).) 3) A fuel-fired appliance shall not be installed in a corridor serving as an access to exit.	FHA [[ ]]	Potentially In Compliance			It is expected that clauses associated with hazardous substances will be met when assessed during detailed design	
NBCC	3.3.1.3	Conceptual Means of Egress	Means of Egress 1) Access to exit within floor areas shall conform to Subsections 3.3.2. to 3.3.5., in addition to the requirements of this Subsection. 2) If a podium, terrace, platform or contained open space is provided, egress requirements shall conform to the appropriate requirements of Sentence 3.3.1.5.(1) for rooms and suites. 3) Means of egress shall be provided from every roof which is intended for occupancy, and from every podium, terrace, platform or contained open space. 4) At least two separate means of egress shall be provided from a roof, used or intended for an occupant load more than 60, to stairs designed in conformance with the requirements regarding exit stairs stated in Section 3.4. 5) A roof-top enclosure shall be provided with an access to exit that leads to an exit a) at the roof level, or b) on the storey immediately below the roof. 6) A roof-top enclosure which is more than 200 m 2 in area shall be provided with at least 2 means of egress. 7) Two points of egress shall be provided for a service space referred to in Sentence 3.2.1.1.(8) if a) the area is more than 200 m 2, or b) the travel distance measured from any point in the service space to a point of egress is more than 25 m. 8) Except as permitted by Sentences 3.3.4.4.(5) and (6), each suite in a floor area that contains more than one suite shall have a) an exterior exit doorway, or	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			Roof access / egress is pending as determined by the HVAC system design for roof enclosures. Multiple means of egress issues on said levels of U72	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			b) a doorway i) into a public corridor, or ii) to an exterior passageway. 9) Except as permitted by this Section and by Sentence 3.4.2.1.(2), at the point where a doorway referred to in Sentence (8) opens onto a public corridor or exterior passageway, it shall be possible to go in opposite directions to each of 2 separate exits.						
NBCC	3.3.1.4	Conceptual Public Corridor Separations	Public Corridor Separations 1) Except as otherwise required by this Part or as permitted by Sentence (4), a public corridor shall be separated from the remainder of the storey by a fire separation. 2) Except as permitted by Sentence (3) and Clauses (4) (a) and (b), the fire separation between a public corridor and the remainder of the storey shall have a fire-resistance rating not less than 45 min. 3) If a storey is sprinklered throughout, no fire-resistance rating is required for a fire separation between a public corridor and the remainder of the storey, provided the corridor does not serve a care, treatment or detention occupancy or a residential occupancy. (See Note A-3.1.8.1.(1)(b).) 4) No fire separation is required in a sprinklered floor area between a public corridor and a) except as required by Sentences 3.3.3.5.(8) and 3.3.4.2.(1), and notwithstanding Sentence 3.4.2.4.(2), the remainder of a storey, provided the travel distance from any part of the floor area to an exit is not more than 45 m, b) a room or a suite, provided the public corridor complies with Sentence 3.3.1.9.(6) and Clause 3.4.2.5.(1)(d), or c) a space containing plumbing fixtures required by Subsection 3.7.2., provided the space and the public corridor are separated from the remainder of the storey by a fire separation having a fire-resistance rating not less than that required between the public corridor and the remainder of the storey	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			No public corridors in Reactor structure. The U72 Turbine Building does not employ public corridors.	
NBCC	3.3.1.5	Conceptual	Egress Doorways1) Except for dwelling units, a minimum of 2 egress doorways located so that one doorway could provide egress from the room or suite as required by Article 3.3.1.3. if the other doorway becomes inaccessible to the occupants due to a fire which originates in the room or suite, shall be provided for every room and every suite a) that is used for a high-hazard industrial occupancy and whose area is more than 15 m 2,b) intended for an occupant load more than 60, c) in a floor area that is not sprinklered throughout, andi) the area of a room or suite is more than the value inTable 3.3.1.5.-A, orii) the travel distance within the room or suite to the nearestegress doorway is more than the value in Table 3.3.1.5.-A, ord) in a floor area that is sprinklered throughout and does not contain a high-hazard industrial occupancy and i) the travel distance to an egress doorway is more than 25 m, or ii) the area of the room or suite is more than the value in Table 3.3.1.5.-B. 2) Where 2 egress doorways are required by Sentence (1), they shall be placed at a distance from one another equal to or greater than one third of the maximum overall diagonal dimension of the area to be served, measured as the shortest distance that smoke would have to travel between the nearest required egress doors.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			Multiple means of egress issues on said levels of U72.	
NBCC	3.3.1.6	Conceptual	Travel Distance 1) If more than one egress doorway is required from a room or suite referred to in Article 3.3.1.5., the travel distance within the room or suite to the nearest egress doorway shall not exceed the maximum travel distances specified in Clauses 3.4.2.5.(1)(a), (b), (c) and (f) for exits.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is the intent to meet applicable NBCC clauses Travel distance issues on said levels of U72. No issues in Reactor Building	
NBCC	3.3.1.7		Protection on Floor Areas with a Barrier-Free Path of Travel 1) Every floor area above or below the first storey that is not sprinklered throughout and that has a barrier-free path of travel shall a) be served by an elevator i) conforming to Sentences 3.2.6.5.(4) to (6),	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance				

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			ii) protected against fire in conformance with Clauses 3.2.6.5.(3)(b) or (c), and iii) in a building over 3 storeys in building height, protected against smoke movement so that the hoistway will not contain more than 1% by volume of contaminated air from a fire floor during a period of 2 h after the start of a fire, assuming an outdoor temperature equal to the January design temperature on a 2.5% basis determined in conformance with Subsection 1.1.3., b) be divided into at least 2 zones by fire separations conforming to Sentences (2), (3) and 3.1.8.5.(6) so that (see Note A-3.3.1.7.(1)(b)) i) persons with physical disabilities can be accommodated in each zone, and ii) the travel distance from any point in one zone to a doorway leading to another zone shall be not more than the value for travel distance permitted by Sentence 3.4.2.5.(1) for the occupancy classification of the zone, c) in the case of residential occupancies, be provided with balconies conforming to Sentence (4), except on the storey containing the barrier-free entrance required by Article 3.8.2.2., d) have an exterior exit at ground level, or e) have a ramp leading to ground level. (See Note A-3.3.1.7.(1).) 2) Except as permitted by Sentence (3), the fire separations referred to in Clause (1)(b) shall have a fire-resistance rating not less than 1 h. 3) The fire-resistance rating of the fire separations referred to in Clause (1)(b) is permitted to be less than 1 h but not less than 45 min provided the fire-resistance rating required by Subsection 3.2.2. is permitted to be less than 1 h for a) the floor assembly above the floor area, or b) the floor assembly below the floor area, if there is no floor assembly above. 4) A balcony required by Clause (1)(c) shall a) have direct barrier-free access from the suite or floor area b) be not less than 1.5 m deep from the outside face of the exterior wall to the inside edge of the balcony, and c) provide not less than 1.5 m^2 of balcony space for each non-ambulatory occupant and 0.5 m^2 for each ambulatory occupant.						
NBCC	3.3.1.8		Headroom Clearance 1) Except within the floor area of a storage garage, the minimum headroom clearance in every access to exit shall conform to the requirements of Article 3.4.3.4. for exits. (See also Sentence 3.3.5.4.(5).)	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.1.9	Conceptual	Corridors 1-6) NA 7) Except for a dead-end corridor that is entirely within a suite or as permitted by Sentences 3.3.3.3.(1) and 3.3.4.4.(6), a dead-end corridor is permitted provided it is not more than 6 m long	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses The U72 Turbine Building does not have any corridors	
NBCC	3.3.1.15		Exterior Passageways 1) An exterior passageway leading to a required exit shall conform to the requirements of Section 3.4. for exterior exit passageways.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.1.16		Tapered Treads in a Curved Flight 1) Flights of stairs shall consist solely of a) straight flights, or b) curved flights complying with Sentence (2). 2) Tapered treads in a curved flight that is not required as an exit shall have	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			a) a minimum run of 150 mm, b) a run not less than 280 mm when measured at a point 300 mm from the centre line of the handrail at the narrow end of the tread, and c) a riser conforming to Sentence 3.4.6.8.(2). 3) Tapered treads shall have a consistent angle and uniform run and rise dimensions in accordance with the construction tolerances stipulated in Article 3.4.6.8. when measured at a point 300 mm from the centre line of the handrail at the narrow end of the tread. 4) All tapered treads within a flight shall turn in the same direction						
NBCC	3.3.1.17		Capacity of Access to Exits (See Article 3.3.1.9. for minimum widths of corridors.) 1) The capacity of an access to exit shall be based on the occupant load of the portion of the floor area served. 2) In an access to exit the required width of ramps with a slope not more than 1 in 8, doorways, and corridors shall be based on not less than 6.1 mm per person. 3) In an access to exit the required width of a ramp with a slope more than 1 in 8 shall be based on not less than 9.2 mm per person. 4) In an access to exit from a floor area used or intended to be used for patients in a Group B, Division 2 occupancy or residents in a Group B, Division 3 occupancy, the required width of corridors, doorways, and ramps shall be based on not less than 18.4 mm per person. 5) The capacity of stairs in an access to exit shall conform to the requirements for stairs in Sentences 3.4.3.2.(1) to (3). 6) In a building that is not sprinklered throughout in accordance with Sentence 3.2.5.12.(1), an access to exit that is part of the principal entrance serving a dance hall or a licensed beverage establishment with an occupant load more than 250 shall provide at least one half of the required exit width.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.1.18		Guards 1) Except as provided in Sentence (5) and Article 3.3.2.9., a guard not less than 1 070 mm high shall be provided a) around any roof to which access is provided for purposes other than maintenance, b) at openings into smoke shafts referred to in Subsection 3.2.6. that are less than 1 070 mm above the floor, and c) at each raised floor, mezzanine, balcony, gallery, interior or exterior vehicular ramp, and at other locations where (see Note A-9.8.8.1.) i) the difference in elevation is more than 600 mm between the walking surface and the adjacent surface, or ii) the adjacent surface within 1.2 m of the walking surface has a slope of more than 1 in 2. 2) Except as provided in Sentences (3) and 3.3.2.9.(4) and Articles 3.3.4.7. and 3.3.5.10., openings through guards shall be of a size that prevents the passage of a spherical object whose diameter is more than 100 mm. 3) Openings through guards other than those required by Sentence (1) that serve occupancies other than industrial occupancies shall be of a size that a) prevents the passage of a spherical object whose diameter is 100 mm, or b) permits the passage of a spherical object whose diameter is 200 mm. (See Note A-9.8.8.5.(3).) 4) Except for guards conforming to Article 3.3.5.10., guards that protect a level located more than one storey or 4.2 m above the adjacent level shall be designed so that no member, attachment or opening located between 140 mm and 900 mm above the level protected by the guard facilitates climbing. (See Note A-9.8.8.6.(1).) 5) Sentence (1) does not apply	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			a) to the front edges of stages, b) to loading docks, or c) where access is provided for maintenance purposes only.						
NBCC	3.3.1.19		Transparent Doors and Panels 1) Except as permitted by Sentence (5), a glass or transparent door shall be designed and constructed so that the existence and position of the door is readily apparent, by attaching visually contrasting hardware, bars or other permanent fixtures to it. 2) The visibility of fully glazed transparent doors, sidelights and panels shall be enhanced through the inclusion of mullions, markings or other elements that a) are visually contrasting, b) are at least 50 mm high, c) extend the full width of the door, sidelight or panel, and d) are located between 1 350 mm and 1 500 mm above the floor. 3) A glass door shall be constructed of a) laminated or tempered safety glass conforming to CAN/CGSB-12.1-M, “Tempered or Laminated Safety Glass,” or b) wired glass conforming to CAN/CGSB-12.11-M, “Wired Safety Glass.” 4) Except as permitted by Sentence (5), transparent panels used in an access to exit that, because of their physical configuration or design, could be mistaken as a means of egress shall be made inaccessible by barriers or railings. 5) Sliding glass partitions that separate a public corridor from an adjacent occupancy and that are open during normal working hours need not conform to Sentences (1) and (4), provided the partitions are suitably marked in conformance with Sentence (2) to indicate their existence and position. 6) Where vision glass is provided in doors or transparent sidelights, the lowest edge of the glass shall be no higher than 900 mm above floor level. 7) Glass in doors and in sidelights that could be mistaken for doors, within or at the entrances to dwelling units and in public areas, shall conform to the requirements of Article 9.6.1.4. 8) A window in a public area that extends to less than 1 000 mm above the floor and is located above the second storey in a building of residential occupancy, shall be protected by a barrier or railing to not less than 1 070 mm above the floor, or the window shall be non-openable and designed to withstand the lateral design loads for balcony guards required by Article 4.1.5.14.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.1.20		Exhaust Ventilation and Explosion Venting 1) Except as provided in Sentence (2), an exhaust ventilation system designed in conformance with the appropriate requirements of Part 6 shall be provided in a building or part of a building in which dust, fumes, gases, vapour or other impurities or contaminants have the potential to create a fire or explosion hazard. (See also Article 4.2.4.13.) 2) Where a fire separation required to have a fire-resistance rating is penetrated by a ventilation system required by Sentence (1) for power-ventilated enclosures in laboratories, the ducts shall be a) continuously enclosed from the first penetrated fire separation to any subsequent fire separations or concealed spaces and all the way through to the outdoors so that the highest fire-resistance rating of all the penetrated fire separations is maintained, and b) exempted from the requirement to be equipped with a fire damper, smoke damper and fire/smoke damper as stated in Article 3.1.8.7. 3) Explosion relief devices, vents or other protective measures conforming to Subsection 6.3.1. and Article 6.9.1.2. shall be provided for a space in which substances or conditions that have the potential to create an explosion hazard are present as a result of the principal use of a building	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.3.1.21		Janitors' Rooms 1) Except as permitted by Sentences (2) and (3), a room or space within a floor area for the storage of janitorial supplies shall be separated from the remainder of the building by a fire separation having a fire-resistance rating not less than 1 h. 2) The fire-resistance rating of the fire separation required by Sentence (1) is permitted to be less than 1 h but not less than 45 min provided the fire-resistance rating required by Subsection 3.2.2. is permitted to be less than 1 h for a) the floor assembly above the floor area, or b) the floor assembly below the floor area, if there is no floor assembly above. 3) The fire separation required by Sentence (1) is not required to have a fire-resistance rating if the floor area in which the room or space is located is sprinklered throughout.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.1.22		Common Laundry Rooms 1) Except as permitted by Sentences (2) and (3), in a building of residential occupancy, a laundry room in a floor area that is not within a dwelling unit shall be separated from the remainder of the building by a fire separation having a fire-resistance rating not less than 1 h. 2) The fire-resistance rating of the fire separation required by Sentence (1) is permitted to be less than 1 h but not less than 45 min provided the fire-resistance rating required by Subsection 3.2.2. is permitted to be less than 1 h for a) the floor assembly above the floor area, or b) the floor assembly below the floor area, if there is no floor assembly above. 3) The fire separation required by Sentence (1) is not required to have a fire-resistance rating if the floor area in which the laundry room is located is sprinklered throughout.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.1.23		Obstructions 1) No obstruction shall be permitted in any occupancy that would restrict the width of a normal means of egress from any part of a floor area to less than 750 mm unless an alternative means of egress is provided adjacent to, accessible from, and plainly visible from the obstructed means of egress. (See Note A-3.3.1.23.(1).)	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.1.24		Signs in Service Spaces 1) Illuminated signs conforming to Sentences 3.4.5.1.(2) and (6) shall be provided to indicate the direction to egress points in a service space referred to in Sentence 3.2.1.1.(8).	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.1.25		Welding and Cutting 1) Except as provided in Sentence (2), welding and cutting operations shall be carried out in a room a) separated from the remainder of the building by a fire separation having a fire-resistance rating not less than 1 h, or b) protected by an automatic fire extinguishing system. 2) Sentence (1) shall not apply to industrial occupancies where the welding and cutting operations do not present a fire or explosion hazard to adjacent areas.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.2		Assembly Occupancy		N/A			No assembly Occupancies are identified in the BWRX-300 design	
NBCC	3.3.3		Care, Treatment or Detention Occupancies		N/A			No Care. Treatment or detention Occupancies are	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								identified in the BWRX-300 design	
NBCC	3.3.4		Residential Occupancy		N/A			No residential Occupancies are identified in the BWRX-300 design	
NBCC	3.3.5.1		Scope 1) This Subsection applies to industrial occupancies		Information				
NBCC	3.3.5.2		Fire Extinguishing Systems 1) In addition to other requirements in this Code for the installation of automatic fire extinguishing systems, an appropriate fire extinguishing system shall be installed in every industrial occupancy floor area to provide protection if required by a) provincial or territorial regulations or municipal bylaws, or b) the NFC, in the absence of the regulations or bylaws referred to in Clause (a).	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.5.4		Repair and Storage Garages 1) If access is provided from a storage garage to a stair tower or elevator serving occupancies above the level of the storage garage, the access shall be through a vestibule conforming to Sentence 3.3.5.7.(4). 2) Treads and landings in interior stairs that extend to the roof of a storage garage shall be designed to be free of accumulations of ice and snow. 3) A mechanical storage garage not more than 4 storeys in building height, in which no persons other than parking attendants are permitted above the street floor level, need not have a fire separation between the exits and the remainder of the building. 4) A garage shall be provided with natural or mechanical ventilation in conformance with the requirements of Subsection 6.3.1. and Article 6.9.1.2. to prevent excessive accumulation of carbon monoxide, exhaust fumes or flammable and toxic vapours. 5) The clear height in a storage garage shall be not less than 2 m. 6) Where garage floors or ramps are 600 mm or more above the adjacent ground or floor level, every opening through such floors and the perimeter of floors and ramps shall be provided with a) a continuous curb not less than 140 mm high, a guard not less than 1 070 mm high, and a vehicle guardrail not less than 500 mm high conforming to Sentence (7), or b) a full-height wall conforming to Sentence (7). 7) Vehicle guardrails and full-height walls required in Sentence (6) shall be designed and constructed to withstand the loading values stipulated in Sentence 4.1.5.15.(1). 8) Except for open-air storeys, every storey of a storage garage or repair garage located below grade shall be sprinklered.	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.5.5		Repair Garage Separation 1) A repair garage and any ancillary spaces serving it, including waiting rooms, reception rooms, tool and parts storage areas and supervisory office space, shall be separated from other occupancies by a fire separation having a fire-resistance rating not less than 2 h.	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.5.6		Storage Garage Separation 1) Except as permitted by Sentences 3.3.4.2.(4) and (5), a storage garage shall be separated from other occupancies by a fire separation with a fire-resistance rating not less than 1.5 h.	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.5.7		Vestibules 1) Except as provided in Sentence (2), if access is provided through a fire separation between a storage garage and a Group A, Division 1 or Group B occupancy, the access shall be through a vestibule conforming to Sentence (4).	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			2) If access is provided through a fire separation between a storage garage and a Group B, Division 3 occupancy with not more than 10 occupants, access need not be through a vestibule, provided the fire separation complies with Clauses 3.3.4.2.(5)(b) to (d). 3) In a building more than 3 storeys in building height, access through a fire separation between a storage garage and a Group A, Division 2, 3 or 4, or a Group C occupancy, shall be through a vestibule conforming to Sentence (4). 4) If access is provided through a vestibule, as required by Sentences (1), (3) and 3.3.5.4.(1), the vestibule shall a) be not less than 1.8 m long, b) be ventilated i) naturally to outside air by a vent that has an unobstructed area of not less than 0.1 m^2 for each door that opens into the vestibule but not less than 0.4 m^2, or ii) mechanically at a rate of 14 m3/h for each square metre of vestibule floor surface area, and c) have openings between the vestibule and an adjoining occupancy provided with self-closing doors with no hold-open devices	[[ ]] R0 Plant Level Arch_Life Safety Specification					
NBCC	3.3.5.8		Dispensing of Fuel 1) Facilities for the dispensing of fuel having a flash point below 37.8°C shall not be installed above any space intended for occupancy. 2) Facilities for the dispensing of fuel having a flash point below 37.8°C shall not be installed in any building, except that this requirement does not apply to a canopy which is open on not less than 75% of its perimeter	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.5.9		Multiple-Tenant Self-Storage Warehouses 1) Except as provided in Sentence 3.9.3.1.(5) or unless the building is sprinklered throughout, each individual tenancy in a multiple-tenant self-storage warehouse classified as an industrial occupancy shall be separated from the remainder of the building by a fire separation having a fire-resistance rating not less than 45 min.	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.5.10		Guards 1) Except where they serve storage garages, guards in industrial occupancies are permitted to consist of a) a top railing, and b) one or more intermediate rails spaced such that openings through the guard are of a size that prevents the passage of a spherical object whose diameter is 535 mm.	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.6.1		Design of Hazardous Areas Application 1) This Subsection applies to design and fire protection requirements for buildings or parts thereof used for the storage, handling, use and processing of dangerous goods, including flammable liquids and combustible liquids, in quantities in excess of those identified in Table 3.2.7.1. of Division B of the NFC. (See Note A-3.3.6.1.(1).)	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.6.3		Indoor Storage of Anhydrous Ammonia and Flammable, Toxic and Oxidizing Gases 1) Where required by the NFC, cylinders of dangerous goods classified as flammable gases stored indoors shall be located in a room a) that is separated from the remainder of the building by a gas-tight fire separation having a fire-resistance rating of at least 2 h, b) that is located on an exterior wall of the building, c) that can be entered from the exterior, and d) whose closures leading to the interior of the building are	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			i) equipped with self-closing devices that keep the closures closed when not in use, and ii) constructed so as to prevent the migration of gases from the room into other parts of the building. 2) Where required by the NFC, cylinders of anhydrous ammonia or dangerous goods classified as toxic or oxidizing gases stored indoors shall be located in a room a) that is separated from the remainder of the building by a gas-tight fire separation having a fire-resistance rating of at least 1 h, b) that is located on an exterior wall of the building, c) that can be entered from the exterior, and d) whose closures leading to the interior of the building are i) equipped with self-closing devices that keep the closures closed when not in use, and ii) constructed so as to prevent the migration of gases from the room into other parts of the building.						
NBCC	3.3.6.4		Storage and Dispensing Rooms for Flammable Liquids and Combustible Liquids 1) Fire separations for rooms where flammable liquids and combustible liquids are stored are required to be constructed with a fire-resistance rating in conformance with Subsection 4.2.9. of Division B of the NFC. 2) Where Class IA or IB liquids specified in Subsection 4.1.2. of Division B of the NFC are dispensed within a storage room, the room shall be designed to prevent critical structural and mechanical damage from an internal explosion in conformance with good engineering practice such as that described in NFPA 68, “Explosion Protection by Deflagration Venting.” (See Note A-3.3.6.4.(2).)	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.6.5		Tire Storage 1) A tire storage area designed to contain more than 375 m3 of rubber tires shall be separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 2 h. (See Note A-3.3.6.5.(1).)		Not Applicable				
NBCC	3.3.6.6		Ammonium Nitrate Storage 1) Where Article 3.2.9.1. of Division B of the NFC applies due to the quantity and nature of the stored product, and as stipulated in Sentences (2) to (6), buildings used for the storage of ammonium nitrate shall be classified as medium-hazard industrial occupancies (Group F, Division 2). 2) Buildings intended for the storage of ammonium nitrate shall be not more than one storey in building height. 3) Buildings intended for the storage of ammonium nitrate shall not a) have basements or crawl spaces, or b) contain open floor drains, tunnels, elevator pits or other pockets that might trap molten ammonium nitrate. 4) Buildings intended for the storage of ammonium nitrate shall have not less than 0.007 m^2 of vent area for each square metre of storage area, unless mechanical ventilation is provided. 5) All flooring in storage areas described in Sentence (1) shall be constructed of noncombustible materials. 6) Buildings intended for the storage of ammonium nitrate shall be designed to prevent the ammonium nitrate from coming into contact with building materials that a) will cause the ammonium nitrate to become unstable, b) may corrode or deteriorate by reason of contact with the ammonium nitrate, or c) will become impregnated with the ammonium nitrate. (See Note A-3.3.6.6.(6).)		Not Applicable				

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.3.6.7		Flooring Materials 1) Floors in areas where dangerous goods are stored shall be constructed of impermeable materials to prevent the absorption of chemicals.	U43 SDD [[ ]] FHA [[ ]]	Potentially in Compliance			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.6.8		Fire Separations in Process Plants 1) In process plants, areas where unstable liquids are handled or where small scale unit chemical processes occur shall be separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 2 h.		Not Applicable			It is the intent to meet applicable NBCC clauses	
NBCC	3.3.6.9		Basements and Pits 1) Process plants where Class I and II flammable liquids and combustible liquids are handled shall not be constructed with basements or covered pits.	U43 SDD [[ ]] FHA [[ ]]	~~Potentially in Compliance~~			It is the intent to meet applicable NBCC clauses	It is the intent to meet applicable NBCC clauses
NBCC	3.4.1.1	Conceptual	Scope Exit facilities complying with this Section shall be provided from every floor area that is intended for occupancy. (See Note A-3.4.1.1.(1).)	[[ ]] Plant Level Arch_Life Safety Specification	~~Potentially in Compliance~~			It is the intent to meet applicable NBCC clauses	
NBCC	3.4.1.2	Conceptual	Separation of Exits 1) Except as permitted by Sentence (2), if more than one exit is required from a floor area, each exit shall be separate from every other exit leading from that floor area. 2) If more than 2 exits are provided from a floor area, exits are permitted to converge in conformance with Sentence 3.4.3.1.(2), provided the cumulative capacity of the converging exits does not contribute more than 50% of the total required exit width for the floor area.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance	Multiple 'exits' issues on said levels of U72.		It is the intent to meet applicable NBCC clauses	
NBCC	3.4.1.6	Restricted Use of Horizontal Exits	Restricted Use of Horizontal Exits 1) Except as permitted by Sentence (2), horizontal exits shall not comprise more than one half of the required number of exits from any floor area. 2) NA Definition of Horizontal Exit: "Horizontal exit means an exit from one building to another by means of a doorway, vestibule, walkway, bridge or balcony."	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance		.	One of the two required exits terminates through a horizontal egress through the Control Building. 50% maximum allowed is not exceeded	
NBCC	3.4.2.1	Conceptual	Minimum Number of Exits 1) Except as permitted by Sentences (2) to (4), every floor area intended for occupancy shall be served by at least 2 exits. 2) A floor area in a building not more than 2 storeys in building height, is permitted to be served by one exit provided the total occupant load served by the exit is not more than 60, and a) in a floor area that is not sprinklered throughout, the floor area and the travel distance are not more than the values in Table 3.4.2.1.-A, or b) in a floor area that is sprinklered throughout i) the travel distance is not more than 25 m, and ii) the floor area is not more than the value in Table 3.4.2.1.-B	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance	Multiple 'exits' issues on said levels of U72		It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	
NBCC	3.4.6.10		Horizontal Exits 1) The floor area on each side of a horizontal exit shall be sufficient to accommodate the occupants of both floor areas, allowing not less than 0.5 m^2 of clear floor space per person, except that 1.5 m 2 shall be provided for each person in a wheelchair and 2.5 m 2 for each bedridden patient. 2) If vestibules, enclosed balconies or bridges are used as parts of a horizontal exit, their clear width shall be not less than that of the exit doorways opening into them, except that handrails are not permitted to project into this clear width more than 100 mm. 3) In a horizontal exit where there is a difference in level between the connected floor areas, slopes not more than those specified for ramps in Article 3.4.6.7. are permitted to be used. 4) No stairs or steps shall be used in a horizontal exit. 5) If 2 doors are provided in a horizontal exit that comprises a part of the required number of exits from the floor areas on both sides of the exit a) the doors shall be mounted adjacent to each	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			other with the door on the right side in the direction of travel through the horizontal exit swinging in the direction of travel through the horizontal exit, and b) signs shall be provided on each side of the horizontal exit to indicate the door that swings in the direction of travel from that side. (See Note A-3.4.6.10.(5).) 6) If a horizontal exit utilizes bridges between buildings or outside balconies, the bridges or balconies shall conform to Article 3.2.3.19.						
NBCC	3.8.2.1	Conceptual	Accessibility Exceptions (See Note A-3.8.2.1.)1) The requirements of this Section apply to all buildings excepta) NAb) buildings of Group F, Division 1 major occupancy, andc) buildings that are not intended to be occupied on a daily or full-time basis, including automatic telephone exchanges, pumphouses and substations.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			CB is only structure designed for barrier-free requirements. This clause is not applicable for other power block structures	
NBCC	A-3.1.2.1.(1)	Conceptual	Major Occupancy Classification Group D - Offices Group F, Division 3 - Power plants	[[ ]] Plant Level Arch_Life Safety Specification	Information				
NBCC	3.2.2.80	Conceptual	Group F, Division 3, Any Height, Any Area, Sprinklered 1) Except as permitted by Sentences 3.2.2.7.(3) and (4) and Articles 3.2.2.81. to 3.2.2.90., a building classified as Group F, Division 3 shall conform to Sentence (2). 2) Except as permitted by Article 3.2.2.16., the building referred to in Sentence (1) shall be of noncombustible construction, and a) except as permitted by Sentences 3.2.2.7.(1) and 3.2.2.18.(2), the building shall be sprinklered throughout, b) floor assemblies shall be fire separations with a fire-resistance rating not less than 2 h, except that floor assemblies are permitted to be fire separations with a fire-resistance rating not less than 1 h in a storage garage with all storeys constructed as open-air storeys, c) mezzanines shall have a fire-resistance rating not less than 1 h, and d) loadbearing walls, columns and arches shall have a fire-resistance rating not less than that required for the supported assembly	[[ ]] Plant Level Arch_Life Safety Specification	~~Potentially in Compliance~~			Alternative compliance through CSA 293 as primary fire protection in lieu of full sprinkler coverage	
NBCC	3.2.2.89	Conceptual	Group F, Division 3, One Storey, Any Area, Low Fire Load Occupancy 1) A building classified as Group F, Division 3 is permitted to conform to Sentence (2) provided it is a) not more than 1 storey in building height, b) used solely for low fire load occupancies such as i) power generating plants, or ii) plants for the manufacture or storage of noncombustible materials, and c) not limited in building area. 2) The building referred to in Sentence (1) shall be of noncombustible construction	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			The U71 Reactor Building is not a single storey structure	
NBCC	3.2.7	Lighting & Emergency Power	3.2.7.1. Minimum Lighting Requirements 1) An exit, a public corridor, or a corridor providing access to exit for the public or serving patients' sleeping rooms or classrooms shall be equipped to provide illumination to an average level not less than 50 lx at floor or tread level and at angles and intersections at changes of level where there are stairs or ramps. 2) The minimum value of the illumination required by Sentence (1) shall be not less than 10 lx 3) Rooms and spaces used by the public shall be illuminated as described in Article 9.34.2.7. 4) Lighting outlets in a building of residential occupancy shall be provided in conformance with Subsection 9.34.2 3.2.7.2. Recessed Lighting Fixtures 1) A recessed lighting fixture shall not be located in an insulated ceiling unless the fixture is designed for this type of installation.	[[ ]]	Potentially In Compliance			It is expected that BWRX 300 building architecture including lighting will meet applicable clauses as assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.2.7.3	Detail Design Emergency Lighting	Emergency Lighting 1) Emergency lighting shall be provided to an average level of illumination not less than 10 lx at floor or tread level in a) exits, b) principal routes providing access to exit in open floor areas and in service rooms, c) corridors used by the public, d) NA e) NA f) NA g) underground walkways, h) public corridors, i) floor areas or parts thereof where the public may congregate i) NA ii) in Group A, Division 2 and 3 occupancies having an occupant load of 60 or more, j) NA k) NA l) public washrooms that are equipped to serve more than one person at a time. 2) Emergency lighting to provide an average level of illumination of not less than 10 lx at floor or catwalk level shall be included in a service space referred to in Sentence 3.2.1.1.(8). 3) The minimum value of the illumination required by Sentences (1) and (2) shall be not less than 1 lx. 4) In addition to the requirements of Sentences (1) to (3), the installation of battery-operated emergency lighting in buildings or part thereof where treatment is provided shall conform to the appropriate requirements of CSA Z32, “Electrical Safety and Essential Electrical Systems in Health Care Facilities.”	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that BWRX 300 building architecture including lighting will meet applicable clauses as assessed during detailed design	
NBCC	3.2.8.1	Mezzanines and Openings through Floor Assemblies	Mezzanines and Openings through Floor Assemblies 1) Except as permitted by Article 3.2.8.2. and Sentence 3.3.4.2.(3), the portions of a floor area or a mezzanine that do not terminate at an exterior wall, a firewall or a vertical shaft shall a) terminate at a vertical fire separation having a fire-resistance rating not less than that required for the floor assembly and extending from the floor assembly to the underside of the floor or roof assembly above, or b) be protected in conformance with the requirements of Articles 3.2.8.3. to 3.2.8.8. 2) The penetration of a floor assembly by an exit or a vertical service space shall conform to the requirements of Sections 3.4., 3.5. and 3.6. 3) A floor area containing sleeping rooms in a building of Group B, Division 2 major occupancy shall not be constructed as part of an interconnected floor space	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	
NBCC	3.2.8.2		Exceptions to Special Protection1) A mezzanine need not terminate at a vertical fire separation nor be protected in conformance with the requirements of Articles 3.2.8.3. to 3.2.8.8. provided the mezzaninea) NAb) NAc) serves a Group A, C, D, E or F major occupancy andi) is 500 m 2 or less in area, and ii) conforms to Sentence 3.2.1.1.(3) or (4).2) NA3) If a closure in an opening in a fire separation would disrupt the nature of a manufacturing process, such as a continuous flow of material from storey to storey, the closure for the opening is permitted to be omitted provided precautions are taken to offset the resulting hazard. (See Note A-3.2.8.2.(3).)4) NA5) NAb) the building is sprinklered throughout, and c) the interconnected floor space contains only Group A, Division 1, 2 or 3, Group D or Group E major occupancies (see Note A-3.2.8.2.(6)(c)).6) An interconnected floor space need not conform to the requirements of Articles 3.2.8.3. to 3.2.8.8., provideda) it consists of the first storey and the storey next above or below it, but not both b) it is sprinklered throughout or, where the building area is not more than one half of the area permitted by Subsection 3.2.2., the openings through the floor are used only for stairways, escalators or moving walks (see Note A-3.2.8.2.(6)(b)), andc) it contains only Group A, Division 1, 2 or 3, Group D, Group E, or Group F, Division 2 or 3 major occupancies (see Note A-3.2.8.2.(6)(c))	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			NBCC clause will be further assessed as power block buildings are more fully designed	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.3.1	Safety within Floor Areas	3.3.1.1. Separation of Suites 1) Except as permitted by Sentences (2) and (3), each suite in other than business and personal services occupancies shall be separated from adjoining suites by a fire separation having a fire-resistance rating not less than 1 h. (See also Subsection 3.3.3. for care, treatment or detention occupancies, Article 3.3.4.2. for residential occupancies, and Article 3.1.8.7. for fire dampers.) 2) The fire-resistance rating of the fire separation required by Sentence (1) is permitted to be less than 1 h but not less than 45 min provided the fire-resistance rating required by Subsection 3.2.2. is permitted to be less than 1 h for a) the floor assembly above the floor area, or b) the floor assembly below the floor area, if there is no floor assembly above. 3) Occupancies that are served by public corridors conforming to Clause 3.3.1.4.(4)(b) in a building that is sprinklered throughout, are not required to be separated from one another by fire separations provided the occupancies are a) suites of business and personal services occupancy, b) fast food vending operations that do not provide seating for customers, c) suites of mercantile occupancy, or d) any combination of these occupancies.	[[ ]]	Potentially In Compliance			It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	
NBCC	3.3.1.2.	Hazardous Substances, Equipment and Processes	1) Except as provided in Subsections 3.3.5. and 3.3.6., the storage, handling and use of hazardous substances shall be in conformance with a) provincial or territorial regulations or municipal bylaws, or b) in the absence of the regulations or bylaws referred to in Clause (a), the NFCC. (See Note A-3.3.1.2.(1).) 2) Systems for the ventilation of cooking equipment that is not within a dwelling unit and is used in processes producing grease-laden vapours shall be designed and installed in conformance with Articles 3.6.3.5., 6.3.1.7. and 6.9.1.3. (See Note A-3.3.1.2.(2).) 3) A fuel-fired appliance shall not be installed in a corridor serving as an access to exit.	[[ ]]	Potentially In Compliance			It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	
NBCC	3.3.1.3.	Means of Egress	1) Access to exit within floor areas shall conform to Subsections 3.3.2. to 3.3.5., in addition to the requirements of this Subsection. 2) If a podium, terrace, platform or contained open space is provided, egress requirements shall conform to the appropriate requirements of Sentence 3.3.1.5.(1) for rooms and suites. 3) Means of egress shall be provided from every roof which is intended for occupancy, and from every podium, terrace, platform or contained open space. 4) At least two separate means of egress shall be provided from a roof, used or intended for an occupant load more than 60, to stairs designed in conformance with the requirements regarding exit stairs stated in Section 3.4. 5) A roof-top enclosure shall be provided with an access to exit that leads to an exit a) at the roof level, or b) on the storey immediately below the roof. 6) A roof-top enclosure which is more than 200 m^2 in area shall be provided with at least 2 means of egress. 7) Two points of egress shall be provided for a service space referred to in Sentence 3.2.1.1.(8) if a) the area is more than 200 m^2, or b) the travel distance measured from any point in the service space to a point of egress is more than 25 m. 8) Except as permitted by Sentences 3.3.4.4.(5) and (6), each suite in a floor area that contains more than one suite shall have a) an exterior exit doorway, or b) a doorway i) into a public corridor, or ii) to an exterior passageway. 9) Except as permitted by this Section and by Sentence 3.4.2.1.(2), at the point where a doorway referred to in Sentence (8) opens onto a public corridor or exterior passageway, it shall be possible to go in opposite directions to each of 2 separate exits.	[[ ]]	Potentially In Compliance			It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	
NBCC	3.3.1.4.	Public Corridor Separations	1) Except as otherwise required by this Part or as permitted by Sentence (4), a public corridor shall be separated from the remainder of the storey by a fire separation. 2) Except as permitted by Sentence (3) and Clauses (4)(a) and (b), the fire separation between a public corridor and the remainder of the storey shall have a fire-resistance rating not less than 45 min. 3) If a storey is sprinklered throughout, no fire-resistance rating is required for a fire separation between a public corridor and the remainder of the storey, provided the corridor does not serve a care, treatment or detention occupancy or a residential occupancy. (See Note A-3.1.8.1.(1)(b).) 4) No fire separation is required in a sprinklered floor area between a public corridor and a) except as required by Sentences 3.3.3.5.(8) and 3.3.4.2.(1), and notwithstanding Sentence 3.4.2.4.(2), the remainder of a storey, provided the travel distance from any part of the floor area to an exit is not more than 45 m, b) a room or a suite, provided the public corridor complies with Sentence 3.3.1.9.(6) and Clause 3.4.2.5.(1)(d), or c) a space containing plumbing fixtures required by Subsection 3.7.2., provided the space and the public corridor are separated from the remainder of the storey by a fire separation having a fire-resistance rating not less than that required between the public corridor and the remainder of the storey.	[[ ]]	Potentially In Compliance				

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.3.1.5.	Egress Doorways	1) Except for dwelling units, a minimum of 2 egress doorways located so that one doorway could provide egress from the room or suite as required by Article 3.3.1.3. if the other doorway becomes inaccessible to the occupants due to a fire which originates in the room or suite, shall be provided for every room and every suite a) that is used for a high-hazard industrial occupancy and whose area is more than 15 m^2, b) intended for an occupant load more than 60, c) in a floor area that is not sprinklered throughout, and i) the area of a room or suite is more than the value in Table 3.3.1.5.-A, or ii) the travel distance within the room or suite to the nearest egress doorway is more than the value in Table 3.3.1.5.-A, or d) in a floor area that is sprinklered throughout and does not contain a high-hazard industrial occupancy and i) the travel distance to an egress doorway is more than 25 m, or ii) the area of the room or suite is more than the value in Table 3.3.1.5.-B. 2) Where 2 egress doorways are required by Sentence (1), they shall be placed at a distance from one another equal to or greater than one third of the maximum overall diagonal dimension of the area to be served, measured as the shortest distance that smoke would have to travel between the nearest required egress doors.	[[ ]]	Potentially In Compliance				
NBCC	3.3.1.6	Travel Distance	1) If more than one egress doorway is required from a room or suite referred to in Article 3.3.1.5., the travel distance within the room or suite to the nearest egress doorway shall not exceed the maximum travel distances specified in Clauses 3.4.2.5.(1)(a), (b), (c) and (f) for exits	[[ ]]	Potentially In Compliance				
NBCC	3.3.1.7.	Protection on Floor Areas with a Barrier-Free Path of Travel	3.3.1.7. Protection on Floor Areas with a Barrier-Free Path of Travel 1) Every floor area above or below the first storey that is not sprinklered throughout and that has a barrier-free path of travel shall a) be served by an elevator i) conforming to Sentences 3.2.6.5.(4) to (6), ii) protected against fire in conformance with Clauses 3.2.6.5.(3)(b) or (c), and iii) in a building over 3 storeys in building height, protected against smoke movement so that the hoistway will not contain more than 1% by volume of contaminated air from a fire floor during a period of 2 h after the start of a fire, assuming an outdoor temperature equal to the January design temperature on a 2.5% basis determined in conformance with Subsection 1.1.3., b) be divided into at least 2 zones by fire separations conforming to Sentences (2), (3) and 3.1.8.5.(6) so that (see Note A-3.3.1.7.(1)(b)) i) persons with physical disabilities can be accommodated in each zone, and ii) the travel distance from any point in one zone to a doorway leading to another zone shall be not more than the value for travel distance permitted by Sentence 3.4.2.5.(1) for the occupancy classification of the zone, c) in the case of residential occupancies, be provided with balconies conforming to Sentence (4), except on the storey containing the barrier-free entrance required by Article 3.8.2.2., d) have an exterior exit at ground level, or e) have a ramp leading to ground level. (See Note A-3.3.1.7.(1).) 2) Except as permitted by Sentence (3), the fire separations referred to in Clause (1)(b) shall have a fire-resistance rating not less than 1 h. 3) The fire-resistance rating of the fire separations referred to in Clause (1)(b) is permitted to be less than 1 h but not less than 45 min provided the fire-resistance rating required by Subsection 3.2.2. is permitted to be less than 1 h for a) the floor assembly above the floor area, or b) the floor assembly below the floor area, if there is no floor assembly above. 4) A balcony required by Clause (1)(c) shall a) have direct barrier-free access from the suite or floor area b) be not less than 1.5 m deep from the outside face of the exterior wall to the inside edge of the balcony, and c) provide not less than 1.5 m^2 of balcony space for each non-ambulatory occupant and 0.5 m^2 for each ambulatory occupant.	[[ ]]	Potentially In Compliance				Barrier-free design is a standard plant design consideration for the CB. NBCC clause will be further assessed under detailed design. Add clause in NBCC to [[ ]]
NBCC	3.3.1.8	Headroom Clearance	1) Except within the floor area of a storage garage, the minimum headroom clearance in every access to exit shall conform to the requirements of Article 3.4.3.4. for exits. (See also Sentence 3.3.5.4.(5).)	[[ ]]	Potentially In Compliance				
NBCC	3.3.1.9.	Corridors	1) The minimum width of a public corridor shall be 1 100 mm 2) Except as required by Sentence 3.3.3.3.(3), the minimum unobstructed width of a corridor used by the public or a corridor serving classrooms or patients' sleeping rooms shall be 1 100 mm. 3) Except as permitted by Sentence (4), obstructions located within 1 980 mm of the floor shall not project more than 100 mm horizontally into an exit passageway, a public corridor, a corridor used by the public or a corridor serving classrooms or patients' sleeping rooms in a manner that would create a hazard for a person with a visual disability travelling adjacent to the walls. 4) The horizontal projection of an obstruction referred to in Sentence (3) is permitted to be more than 100 mm provided the clearance between the obstruction and the floor is less than 680 mm. (See Note A-3.3.1.9.(4).) 5) If a corridor contains an occupancy, the occupancy shall not reduce the unobstructed width of the	[[ ]]	Potentially In Compliance				

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			corridor to less than its required width. 6) If a public corridor conforming to Clause 3.4.2.5.(1)(d) contains an occupancy, a) the occupancy shall be located so that for pedestrian travel there is an unobstructed width not less than 3 m at all times adjacent and parallel to all rooms and suites that front onto the public corridor, and b) the combined area of all occupancies in the public corridor shall be not more than 15% of the area of the public corridor. 7) Except for a dead-end corridor that is entirely within a suite or as permitted by Sentences 3.3.3.3.(1) and 3.3.4.4.(6), a dead-end corridor is permitted provided it is not more than 6 m long.						
NBCC	3.3.1.10	Aisles	1) Except as otherwise stated in this Section, aisles shall be provided in conformance with the NFCC	[[ ]]	Potentially In Compliance				It is expected power block building aisles will meet NBCC requirements
NBCC	3.3.1.12.	Sliding Doors	1) Except as permitted by Sentences (2) and 3.3.1.11.(5), a sliding door provided in the locations described in Article 3.3.1.11. shall a) be designed and installed to swing on the vertical axis in the direction of travel to the exit when pressure is applied, and b) be identified as a swinging door by means of a label or decal affixed to it. 2) In a Group B, Division 1 occupancy, or in an impeded egress zone in other occupancies, sliding doors used in an access to exit need not conform to Sentence (1) and Article 3.3.1.11. 3) Movable partitions used to separate a public corridor from an adjacent business and personal services occupancy or a mercantile occupancy need not conform to Sentence (1) and Sentences 3.3.1.11.(1) and (2), provided the partitions are not located in the only means of egress. (See Note A-3.3.1.12.(3).)	[[ ]]	Potentially In Compliance				
NBCC	3.3.1.13.	Doors and Door Hardware	1) Except as required by Article 3.3.3.4., a door that opens into or is located within a public corridor or other facility that provides access to exit from a suite shall a) provide a clear opening of not less than 800 mm if there is only one door leaf, b) in a doorway with multiple leaves, have the active leaf providing a clear opening of not less than 800 mm, c) not open onto a step, and d) have a threshold not more than 13 mm higher than the surrounding finished floor surface, except where it i) is used to confine the spillage of flammable liquids within a service room or within a room in an industrial occupancy, or ii) provides access to an exterior balcony, unless the balcony is required by Clause 3.3.1.7.(1)(c). 2) Except as provided in Sentences (6) and (7), a door in an access to exit shall be readily openable in travelling to an exit without requiring keys, special devices or specialized knowledge of the door opening mechanism. 3) Except as permitted by Sentence (4), door release hardware shall comply with Clause 3.8.3.8.(1)(b) and the door shall be openable with not more than one releasing operation. (See also Sentence 3.8.3.6.(4).) 4) An egress door from an individual dwelling unit or from a suite of residential occupancy is permitted to be provided with additional devices that require a releasing operation additional to the main door release hardware, provided the devices are readily operable from the inside without the use of keys, special devices or specialized knowledge. (See Note A-3.3.1.13.(4).) 5) Door release hardware shall be installed not more than 1 200 mm above the finished floor. 6) An egress door in an access to exit serving a contained use area or an impeded egress zone is permitted to be equipped with locking devices, provided they can be released either locally or remotely in conformance with Sentence (8) or (9). (See Note A-3.3.1.13.(6).) 7) A door in an access to exit is permitted to be equipped with an electromagnetic lock conforming to Sentence 3.4.6.16.(4) or (5). 8) Local locking devices permitted by Sentence (6) shall be operable by a key from both sides of the door. 9) Controls for the remote release of door locking devices permitted by Sentence (6) shall be located in an area readily available to security personnel. 10) Locking devices permitted by Sentence (6) that are electrically operated shall be a) designed to operate on emergency power, and b) capable of manual release by security personnel.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	
NBCC	3.3.1.14	Ramps and Stairways	Ramps and Stairways 1) Except as permitted by Sentence (2), Article 3.3.4.7. and Subsection 3.3.2., ramps and stairways that do not serve as exits shall conform to the requirements for exit ramps and stairways stated in Sentence 3.4.3.2.(8) and Articles 3.4.3.4., and 3.4.6.1. to 3.4.6.9. 2) Ramps and stairways that serve service rooms, service spaces or industrial occupancies need not comply with Sentence (1), provided a) they are intended only for occasional use for servicing equipment and machinery, and b) they do not serve as exits	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.3.5.3	Industrial Occupancy - Basements	Industrial Occupancy - Basements 1) A basement shall not be used for the storage, manufacture or handling of volatile solids, liquids or gases that generate explosive air-vapour mixtures or for processes that involve explosive dusts. 2) Entrances and exits to a basement and to rooms containing building services shall be separate from the remainder of the building in a building in which a) the storage, manufacture or handling of volatile materials can generate explosive air-vapour mixtures, or b) processes occur that produce explosive dusts. 3) Basements and rooms referred to in Sentence (2) shall be separated from the remainder of the building with a vapour tight separation.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that BWRX 300 building architecture will meet applicable clauses as assessed during detailed design	For Reactor Building Vapour tight requirement is a detailed requirement to be confirmed at a later date. The U72 Turbine Building does not have a basement.
NBCC	3.3.6	Design of Hazardous Areas	Heading						
NBCC	3.3.6.1.	Application	1) This Subsection applies to design and fire protection requirements for buildings or parts thereof used for the storage, handling, use and processing of dangerous goods, including flammable liquids and combustible liquids, in quantities in excess of those identified in Table 3.2.7.1. of Division B of the NFC. (See Note A-3.3.6.1.(1).)	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is expected that the BWRX 300 plant will meet applicable clauses associated with dangerous goods when fully assessed for final configuration under detailed design	
NBCC	3.3.6.2	Design of Hazardous Areas	Design of Hazardous Areas Storage of Dangerous Goods 1) Solid and liquid dangerous goods classified as oxidizers or organic peroxides shall be separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 2 h. 2) Reactive materials shall be separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 2 h. (See Note A-3.3.6.2.(2).) 3) The design of buildings or parts thereof used for the storage of dangerous goods classified as explosives shall conform to the “Explosives Act” and its Regulations, published by Natural Resources Canada. 4) Where wiring or electrical equipment is located in areas in which flammable gases or vapours, combustible dusts or combustible fibres are present in quantities sufficient to create a hazard, such wiring and electrical equipment shall conform to CSA C22.1, “Canadian Electrical Code, Part I,” for hazardous locations. (See Note A-3.3.6.2.(4).)	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that the BWRX 300 plant will meet applicable clauses associated with dangerous goods when fully assessed for final configuration under detailed design	
NBCC	3.3.6.3.	Indoor Storage of Anhydrous Ammonia and Flammable, Toxic and Oxidizing Gases			Not Applicable				
NBCC	3.3.6.4.	Storage and Dispensing Rooms for Flammable Liquids and Combustible Liquids	1) Fire separations for rooms where flammable liquids and combustible liquids are stored are required to be constructed with a fire-resistance rating in conformance with Subsection 4.2.9. of Division B of the NFC. 2) Where Class IA or IB liquids specified in Subsection 4.1.2. of Division B of the NFC are dispensed within a storage room, the room shall be designed to prevent critical structural and mechanical damage from an internal explosion in conformance with good engineering practice such as that described in NFPA 68, “Explosion Protection by Deflagration Venting.” (See Note A-3.3.6.4.(2).)	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is expected that the BWRX 300 plant will meet applicable clauses associated with dangerous goods when fully assessed for final	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								configuration under detailed design	
NBCC	3.3.6.5	Tire Storage			Not Applicable				
NBCC	3.3.6.6	Ammonium Nitrate Storage			Not Applicable				
NBCC	3.3.6.	Flooring Materials	1) Floors in areas where dangerous goods are stored shall be constructed of impermeable materials to prevent the absorption of chemicals.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is expected that the BWRX 300 plant will meet applicable clauses associated with dangerous goods when fully assessed for final configuration under detailed design	
NBCC	3.3.6.8	Fire Separations in Process Plants	1) In process plants, areas where unstable liquids are handled or where small scale unit chemical processes occur shall be separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 2 h		Not Applicable				
NBCC	3.3.6.9.	Basements and Pits.	1) Process plants where Class I and II flammable liquids and combustible liquids are handled shall not be constructed with basements or covered pits.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is expected that the BWRX 300 plant will meet applicable clauses associated with dangerous goods when fully assessed for final configuration under detailed design	
NBCC	3.4	Exits	Header						
NBCC	3.4.1.1	Conceptual	Scope Exit facilities complying with this Section shall be provided from every floor area that is intended for occupancy. (See Note A-3.4.1.1.(1).)	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is expected that exits will meet applicable clauses when fully assessed for final configuration under detailed design	
NBCC	3.4.1.2.	Separation of Exits	1) Except as permitted by Sentence (2), if more than one exit is required from a floor area, each exit shall be separate from every other exit leading from that floor area. 2) If more than 2 exits are provided from a floor area, exits are permitted to converge in conformance with Sentence 3.4.3.1.(2), provided the cumulative capacity of the converging exits does not contribute more than 50% of the total required exit width for the floor area.	[[ ]]	Potentially In Compliance			It is expected that exits will meet applicable clauses when fully assessed for final configuration under detailed design	
NBCC	3.4.1.3	Access to Exits	1) Access to exits shall conform to Section 3.3	[[ ]]	Potentially In Compliance			It is expected that exits will meet applicable clauses when fully assessed for final	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								configuration under detailed design	
NBCC	3.4.1.4.	Types of Exit	3.4.1.4. Types of Exit 1) Subject to the requirements of this Section, an exit from any floor area shall be one of the following, used singly or in combination: a) an exterior doorway, b) an exterior passageway, c) an exterior ramp, d) an exterior stairway, e) a fire escape (conforming to Subsection 3.4.7.), f) a horizontal exit, g) an interior passageway, h) an interior ramp, or i) an interior stairway 3.4.1.5. Exterior Exit Passageways 1) Access to an exterior exit passageway from a floor area shall be through exit doors at the floor level. 3.4.1.6. Restricted Use of Horizontal Exits 1) Except as permitted by Sentence (2), horizontal exits shall not comprise more than one half of the required number of exits from any floor area. 2) In a hospital or nursing home with treatment, horizontal exits serving patients' sleeping rooms shall comprise not more than two thirds of the required number of exits from any floor area. (See Note A-3.4.1.6.(2).) 3.4.1.7. Slide Escapes 1) A slide escape shall not be erected on any building as a required exit, but is permitted to be provided as an additional egress facility if unusual hazards are foreseen 3.4.1.8. Transparent Doors and Panels 1) Glass and transparent panels in an exit shall conform to the appropriate requirements of Article 3.3.1.19. for glass and transparent panels in an access to exit. 3.4.1.9. Mirrors near Exits 1) No mirror shall be placed in or adjacent to any exit in a manner that would confuse the direction of exit.	[[ ]]	Potentially In Compliance			It is expected that exits will meet applicable clauses when fully assessed for final configuration under detailed design	
NBCC	3.4.1.5.	Exterior Exit Passageways.	1) Access to an exterior exit passageway from a floor area shall be through exit doors at the floor level.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance			Additional assessment against these code clauses will be performed during detailed design. If the clause is applicable, It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.1.6	Restricted Use of Horizontal Exits	1) Except as permitted by Sentence (2), horizontal exits shall not comprise more than one half of the required number of exits from any floor area. 2) In a hospital or nursing home with treatment, horizontal exits serving patients' sleeping rooms shall comprise not more than two thirds of the required number of exits from any floor area. (See Note A-3.4.1.6.(2).)	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance			Additional assessment against these code clauses will be performed during detailed design. If the clause is applicable, It is expected that BWRX 300 will meet the intent of these code requirements.	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.4.1.7	Slide Escapes	1) A slide escape shall not be erected on any building as a required exit, but is permitted to be provided as an additional egress facility if unusual hazards are foreseen.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance			Additional assessment against these code clauses will be performed during detailed design. If the clause is applicable, It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.1.8.	Transparent Doors and Panels.	1) Glass and transparent panels in an exit shall conform to the appropriate requirements of Article 3.3.1.19. for glass and transparent panels in an access to exit.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance.			Additional assessment against these code clauses will be performed during detailed design. If the clause is applicable, It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.1.9	Mirrors near Exits	1) No mirror shall be placed in or adjacent to any exit in a manner that would confuse the direction of exit	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance			Additional assessment against these code clauses will be performed during detailed design. If the clause is applicable, It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.1.10	Combustible Glazing in Exits	3.4.1.10. Combustible Glazing in Exits 1) Combustible glazing is not permitted in wall or ceiling assemblies or in closures used to construct an exit enclosure.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance			Additional assessment against these code clauses will be performed during detailed design. If the clause is applicable, It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.2.1.	Minimum Number of Exits	1) Except as permitted by Sentences (2) to (4), every floor area intended for	FHA [[ ]]	Potentially in Compliance			Additional assessment	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			occupancy shall be served by at least 2 exits. 2) A floor area in a building not more than 2 storeys in building height, is permitted to be served by one exit provided the total occupant load served by the exit is not more than 60, and a) in a floor area that is not sprinklered throughout, the floor area and the travel distance are not more than the values in Table 3.4.2.1.-A, or b) in a floor area that is sprinklered throughout i) the travel distance is not more than 25 m, and ii) the floor area is not more than the value in Table 3.4.2.1.-B. Table 3.4.2.1.-A Criteria for One Exit (Floor Area Not Sprinklered Throughout) Forming Part of Sentence 3.4.2.1.(2) Table 3.4.2.1.-B Criteria for One Exit (Floor Area Sprinklered Throughout) Forming Part of Sentence 3.4.2.1.(2) 3) Except as permitted by Sentence (4), if Sentence (2) permits a single exit from a floor area classified as Group B or Group C occupancy; the exit shall be an exterior doorway not more than 1.5 m above adjacent ground level. 4) The requirements of Sentences (1) and (2) are permitted to be waived for dwelling units that have an access to exit conforming to Sentences 3.3.4.4.(1) to (4). 5) Exits are not required directly from roof-top enclosures that are provided with access to exits in conformance with Sentences 3.3.1.3.(5) and (6).	[[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document				against these code clauses will be performed during detailed design. It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.2.2		Means of Egress from Mezzanines 1) Except as permitted by Sentences (2) and (3), the space above a mezzanine shall be served by means of egress leading to exits accessible at the mezzanine level on the same basis as floor areas. 2) The means of egress from a mezzanine need not conform to Sentence (1), provided a) the mezzanine is not required to terminate at a vertical fire separation, as permitted in Sentence 3.2.8.2.(1), b) the occupant load of the mezzanine is not more than 60, c) the area of the mezzanine does not exceed the area limits stated in Table 3.4.2.2., and d) the distance limits stated in Table 3.4.2.2. measured along the path of travel are not exceeded from any point on the mezzanine to i) an egress door serving the space that the mezzanine overlooks, if the space is served by a single egress door, or ii) the egress stairway leading to an access to exit in the space below if that space is required to be served by 2 or more egress doorways in conformance with Sentence 3.3.1.5.(1). 3) At least half of the required means of egress from a mezzanine shall comply with Sentence (1) if the mezzanine is not required to terminate at a fire separation as permitted by Sentence 3.2.8.2.(1)	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			No mezzanines are proposed for the reactor structure. For Turbine Building Floor areas are being indicated as mezzanines when they should be floors. Floors are required to not be grated.	
NBCC	3.4.2.3	Conceptual	Distance between Exits1) Except as provided in Sentence (2), the least distance between 2 exits from a floor area shall be a) one half the maximum diagonal dimension of the floor area but need not be more than 9 m for a floor area having a public corridor, or b) one half the maximum diagonal dimension of the floor area, but not less than 9 m for all other floor areas. (See Note A-3.4.2.3.(1).)2) Exits need not comply with Sentence (1) where a) the floor area is divided so that not less than one third of the floor area is on each side of a fire separation, and b) it is necessary to pass through the fire separation to travel from one exit to another exit.3) The minimum distance between exits referred to in Sentence (1) shall be the shortest distance that smoke would have to travel between the exits, assuming that the smoke will not penetrate an intervening fire separation.4) The distance between 2 exterior discharges of exit stairs serving the same floor area shall be a) not less than 9 m, or b) not less than 6 m, wherei) the building is sprinklered throughout, andii) the 2 exterior discharges are located within 15 m of a street.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that travel paths will meet applicable clauses when fully assessed for final configuration under detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.4.2.4	Conceptual	Travel Distance 1) Except as permitted by Sentence (2), for the purposes of this Subsection, travel distance means the distance from any point in the floor area to an exit measured along the path of travel to the exit. 2) The travel distance from a suite or a room not within a suite is permitted to be measured from an egress door of the suite or room to the nearest exit, provided a) the suite or room is separated from the remainder of the floor area by a fire separation i) having a fire-resistance rating not less than 45 min in a floor area that is not sprinklered throughout, or ii) which is not required to have a fire-resistance rating, in a floor area that is sprinklered throughout, and b) the egress door opens onto i) an exterior passageway, ii) a corridor used by the public that is separated from the remainder of the floor area in conformance with the requirements in Article 3.3.1.4. for the separation of public corridors, or iii) a public corridor that is separated from the remainder of the floor area in conformance with Article 3.3.1.4. (see Note A-3.1.8.1.(1)(b)). 3) Travel distance to an exit shall be not more than 50 m from any point in a service space referred to in Sentence 3.2.1.1.(8).	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that travel paths will meet applicable clauses when fully assessed for final configuration under detailed design	
NBCC	3.4.2.5	Conceptual	Location of Exits 1) Except as permitted by Sentences (2) and 3.3.2.5.(6), if more than one exit is required from a floor area, the exits shall be located so that the travel distance to at least one exit shall be not more than a) 25 m in a high-hazard industrial occupancy, b) 40 m in a business and personal services occupancy, c) 45 m in a floor area that contains an occupancy other than a high-hazard industrial occupancy, provided it is sprinklered throughout, d) 105 m in any floor area, served by a public corridor, in which rooms and suites are not separated from the remainder of the floor area by a fire separation, provided i) the public corridor is not less than 9 m wide, ii) the ceiling height in the public corridor is not less than 4 m above all floor surfaces, iii) the building is sprinklered throughout, and iv) not more than one half of the required egress doorways from a room or suite open into the public corridor if the room or suite is required to have more than one egress doorway, e) 60 m in any storage garage that conforms to the requirements of Article 3.2.2.90., and f) 30 m in any floor area other than those referred to in Clauses (a) to (e). 2) Except for a high-hazard industrial occupancy, Sentence (1) need not apply if exits are placed along the perimeter of the floor area and are not more than 60 m apart, measured along the perimeter, provided each main aisle in the floor area leads directly to an exit. 3) Exits shall be located and arranged so that they are clearly visible or their locations are clearly indicated and they are accessible at all times.	[[ ]]Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that exits will meet applicable clauses when assessed under detailed design	
NBCC	3.4.2.6.	Principal Entrances	1) For the purposes of this Section, at least one door at every principal entrance to a building providing access from the exterior at ground level shall be designed in accordance with the requirements for exits. 2) In a building that is not sprinklered throughout in accordance with Sentence 3.2.5.12.(1), the principal entrance serving a dance hall or a licensed beverage establishment with an occupant load more than 250 shall provide at least one half of the required exit width.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance.			Additional assessment against these code clauses will be performed during detailed design. It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.3	Width and Height of Exits	Heading						

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.4.3.1	Exit Width Based on Occupant Load	1) For the purpose of determining the aggregate width of exits, the occupant load of every room or floor area shall be determined in conformance with Subsection 3.1.17. 2) Except as permitted by Sentence 3.4.3.2.(4), the required exit width shall be cumulative if 2 or more exits converge.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially Non-Compliant			Assumed compliance pending final determination of occupant load distribution. There is a low Occ load for the aggregate building in general. Actual occupant load has not yet been determined based on actual requirements in lieu of prescribed values.	
NBCC	3.4.3.2		1) Except as permitted by Sentence (3), the minimum aggregate required width of exits serving floor areas intended for assembly occupancies, residential occupancies, business and personal services occupancies, mercantile occupancies, and industrial occupancies shall be determined by multiplying the occupant load of the area served by a) 6.1 mm per person for ramps with a slope of not more than 1 in 8, doorways, corridors and passageways, b) 8 mm per person for a stair consisting of steps whose rise is not more than 180 mm and whose run is not less than 280 mm, or c) 9.2 mm per person fori) ramps with a slope of more than 1 in 8, orii) stairs, other than stairs conforming to Clause (b).2) NA.3) NA.4) Except as required by Sentences 3.4.3.2.(5) and (6), the required exit width need not be cumulative in an exit serving 2 or more floor areas located one above the other.5) NA.6) The required exit width for exit stairs that serve interconnected floor space designed in accordance with Articles 3.2.8.3. to 3.2.8.8. shall be cumulative, unless a) the stairs provide not less than 0.3 m 2 of area of treads and landings for each occupant of the interconnected floor space (see Note A-3.4.3.2.(6)(a)), or b) protected floor spaces conforming to Article 3.2.8.5. are provided at each floor level and the protected floor space on a floor level has not less than 0.5 m 2 of space for each occupant of that floor level of the interconnected floor space. (See Note A-3.4.3.2.(6).)7) If more than one exit is required, every exit shall be considered as contributing not more than one half of the required exit width. 8) NA	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that exits will meet applicable clauses when assessed under detailed design	
NBCC	3.4.3.3	Exit Width Reduction	1) Except as permitted by Sentences (2) and (4), no fixture, turnstile or construction shall project into or be fixed within the required width of an exit. 2) Swinging doors in their swing shall not reduce the required width of exit stairs or landings to less than 750 mm or reduce the width of an exit passageway to less than the minimum required width. 3) Doors shall be installed so that, when open, they do not diminish nor obstruct the required width of the exit. 4) Handrails and construction below handrails, including handrail supports and stair stringers, shall not project more than 100 mm into the required width of a means of egress.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance			Additional assessment against these code clauses will be performed during detailed design. It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.3.4	Detail Design	Headroom Clearance 1) Except as permitted by Sentences (4) and (5), every exit shall have a clear height over the clear width of the exit of not less than 2 050 mm. 2) The clear height of stairways shall be measured vertically over the clear width of the stairway, from the straight line tangent to the tread and landing nosings to the lowest element above. (See Note A-9.8.7.4.) 3) The clear height of landings shall be measured within the clear width of the landing vertically to the lowest element above. 4) Except as permitted by Sentence (5), the headroom clearance for doorways shall be not less	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance			It is expected that exits will meet applicable clauses when assessed under detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			than 2 030 mm. 5) No door closer or other device shall be installed so as to reduce the headroom clearance of a doorway to less than 1 980 mm.						
NBCC	3.4.4	Fire Separation of Exits	Heading						
NBCC	3.4.4.1	Detail Design	Fire-Resistance Rating of Exit Separations 1) Except as permitted by Sentences (2), 3.3.5.4.(3), 3.4.4.2.(2) and 3.4.4.3.(1), every exit shall be separated from the remainder of the building by a fire separation having a fire-resistance rating not less than that required by Subsection 3.2.2., but not less than 45 min, for a) the floor assembly above the storey, or b) the floor assembly below the storey, if there is no floor assembly above. 2) The fire-resistance rating of the fire separation referred to in Sentence (1) need not be more than 2 h. 3) NA	[[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			It is expected that separation of exits will meet applicable clauses when assessed under detailed design	
NBCC	3.4.4.2.	Exits through Lobbies	Heading						
NBCC			1) Except as permitted by Sentence (2), no exit from a floor area above or below the first storey shall lead through a lobby. 2) Not more than one exit from a floor area is permitted to lead through a lobby, Provided a) the lobby floor is not more than 4.5 m above grade, b) the path of travel through the lobby to the outdoors is not more than 15 m, c) the adjacent rooms or premises having direct access to the lobby do not contain a care, residential or industrial occupancy, d) the lobby is not located within an interconnected floor space other than as described in Sentence 3.2.8.2.(6), e) the lobby conforms to the requirements for exits, except that i) rooms other than service rooms and storage rooms are permitted to open onto the lobby, ii) the fire separation between the lobby and a room used for the sole purpose of control and supervision of the building need not have a fire-resistance rating, iii) the fire separation between the lobby and adjacent occupancies that are permitted to open onto the lobby need not have a fire-resistance rating provided the lobby and adjacent occupancies are sprinklered, and iv) passenger elevators are permitted to open onto the lobby, provided the elevator doors are designed to remain closed except while loading and unloading passengers, and (see Note A-3.4.4.2.(2)(e)) f) a fire separation, constructed in accordance with Sentence 3.4.4.1.(1), is maintained between the lobby and any exit permitted by this Sentence to lead through the lobby.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification BWRX-300 Human Factors Engineering Design Requirement Document	Potentially in Compliance			Additional assessment against these code clauses will be performed during detailed design. It is expected that BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.4.3	Exterior Passageway Exceptions	Heading						
NBCC			1) The requirements of Sentences 3.4.4.1.(1) and 3.2.3.13.(1) and (3) do not apply to an exterior exit passageway provided a) not less than 50% of the exterior side is open to the outdoors, and b) an exit stair is provided at each end of the passageway.	FHA [[ ]] [[ ]] Plant Level Arch_Life Safety Specification	Potentially in Compliance			Additional assessment against these code clauses will be performed during detailed design. It is expected that	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
				BWRX-300 Human Factors Engineering Design Requirement Document				BWRX 300 will meet the intent of these code requirements.	
NBCC	3.4.4.4	Detail Design	Integrity of Exits1) A fire separation that separates an exit from the remainder of the building shall have no openings except for a) standpipe and sprinkler piping, b) electrical wires and cables, totally enclosed noncombustible raceways and noncombustible piping that serve only the exit, c) openings required by the provisions of Subsection 3.2.6, d) exit doorways, and e) wired glass and glass block permitted by Article 3.1.8.16.2) Exits within scissors stairs and other contiguous exit stairways shall be separated from each other by a smoke-tight fire separation having a fire-resistance rating not less than that required for the floor assembly through which they pass.3) Fire separations separating contiguous stairs described in Sentence (2) shall not be pierced by doorways, ductwork, piping or any other openings that affect the continuity of the separation.4) A fuel-fired appliance shall not be installed in an exit.5) An exit shall not be used as a plenum for a heating, ventilating or air conditioning system.6) An exit shall be designed for no purpose other than for exiting, except that an exit is permitted also to be designed to serve as an access to a floor area.7) A service room shall not open directly into an exit.8) Storage rooms, washrooms, toilet rooms, laundry rooms and similar ancillary rooms shall not open directly into an exit.9) Service spaces referred to in Sentence 3.2.1.1.(8) shall not open directly into an exit.	[[ ]] Plant Level Arch_Life Safety Specification	Potentially In Compliance				
NBCC	3.4.5	Exit Signs	Header						
NBCC	3.4.5.1	Exit Signs	1) Every exit door shall have an exit sign placed over or adjacent to it if the exit serves a) a building more than 2 storeys in building height, b) a building having an occupant load of more than 150, or c) a room or floor area that has a fire escape as part of a required means of egress. 2) Every exit sign shall a) be visible on approach to the exit, b) consist of a green and white or lightly tinted graphical symbol meeting the colour specifications referred to in ISO 3864-1, “Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs and safety markings,” and c) conform to ISO 7010, “Graphical symbols – Safety colours and safety signs – Registered safety signs,” for the following symbols (see Note A-3.4.5.1.(2)(c)): i) E001 emergency exit left, ii) E002 emergency exit right, iii) E005 90-degree directional arrow, and iv) E006 45-degree directional arrow. 3) Internally illuminated exit signs shall be continuously illuminated and a) where illumination of the sign is powered by an electrical circuit, be constructed in conformance with CSA C22.2 No. 141, “Emergency Lighting Equipment,” or b) where illumination of the sign is not powered by an electrical circuit, be constructed in conformance with CAN/ULC-S572, “Photoluminescent and Self-Luminous Exit Signs and Path Marking Systems.” 4) Externally illuminated exit signs shall be continuously illuminated and be constructed in conformance with CAN/ULC-S572, “Photoluminescent and Self-Luminous Exit Signs and Path Marking Systems.” (See Note A-3.4.5.1.(4).) 5) The circuitry serving lighting for externally and internally illuminated exit signs shall a) serve no equipment other than emergency equipment, and b) be connected to an emergency power supply as described in Article 3.2.7.4. 6) Where no exit is visible from a public corridor, from a corridor used by the public in a Group A or B major occupancy, or from principal routes serving an open floor area having an occupant load of more than 150, an exit sign conforming to Clauses (2)(b) and (c) with an arrow or pointer indicating the direction of egress shall be provided. 7) Except for egress doorways described in Sentence 3.3.2.4.(4), an exit sign conforming to Sentences (2) to (5) shall be placed over or adjacent to every egress doorway from rooms with an occupant load of more than 60 in Group A, Division 1 occupancies, dance halls, licensed beverage establishments, and other similar occupancies that, when occupied, have lighting levels below that which would provide easy identification of the egress doorway.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit signs will be further developed under detailed design	
NBCC	3.4.5.2.	Signs for Stairs and Ramps at Exit Level	1) In a building more than 2 storeys in building height, any part of an exit ramp or stairway that continues up or down past the lowest exit level shall have a posted sign clearly indicating that it does not lead to an exit.						

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.4.6.	Types of Exit Facilities (See Note A-3.4.6.)	Heading						
NBCC	3.4.6.1.	Slip Resistance of Ramps and Stairs	1) The surfaces of ramps, and landings and treads a) shall have a finish that is slip-resistant, and b) if accessible to the public, shall have either a colour contrast or a distinctive pattern to demarcate the leading edge of the tread and the leading edge of the landing, as well as the beginning and end of a ramp. 2) Treads and landings of exterior *exit* stairs more than 10 m high shall be designed to be free of ice and snow accumulations.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]] BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.2	Minimum Number of Risers	1) Except as permitted by Sentence 3.3.2.15.(1), every *flight* of interior stairs shall have not less than 3 risers.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]] BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.3.	Maximum Vertical Rise of Stair Flights and Required Landings	1) No *flight* of stairs shall have a vertical rise of more than 3.7 m between floors or landings, except that a *flight* of stairs serving as an *exit* in a Group B, Division 2 *occupancy* shall have a vertical rise not more than 2.4 m between floors or landings. 2) Except as provided in Sentence (3), a landing shall be provided a) at the top and bottom of each *flight* of interior and exterior stairs, b) at the top and bottom of every section of ramp, c) where a doorway opens onto a stair or ramp, d) where a ramp opens onto a stair, and e) where a stair opens onto a ramp. 3) A landing may be omitted at the bottom of an exterior stair or ramp, provided there is no gate, door or fixed obstruction within the lesser of a) the width of the stair or ramp, or b) 1 100 mm.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]] BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.4.	Dimensions of Landings (See Note A-3.4.6.4.)	1) Except as provided in Sentence (2), a landing shall be at least as wide and as long as the width of the stairway in which it occurs. 2) In a straight stairway and in a stairway that turns less than 90°, the length of the landing need not be more than the lesser of a) the required width of stair, or b) 1 100 mm. 3) The length of a landing shall be measured perpendicular to the nosing of adjacent steps, at a distance equal to half the length required in Sentence (2), from the narrow edge of the landing.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			4) Where a doorway or stairway empties onto a ramp through a side wall, there shall be a level area extending across the full width of the ramp, and for a distance of 300 mm on either side of the wall opening, except one side if it abuts on an end wall. 5) Where a doorway or stairway empties onto a ramp through an end wall, there shall be a level area extending across the full width of the ramp and along its length for not less than 900 mm						
NBCC	3.4.6.5.	Handrails	1) One handrail shall be provided on stairs that are less than 1 100 mm in width. 2) One handrail shall be provided on each side of a) stairs that are 1 100 mm or more in width, b) curved *flights* of any width, and c) ramps. 3) In addition to Sentence (2), intermediate handrails shall be provided so that a) a handrail is reachable within 750 mm of all portions of the required *exit* width, b) at least one portion of the stair or ramp between two handrails is the minimum width required for stairways or ramps (see Sentences 3.4.3.2.(8) and 3.4.3.3.(4)), and c) all other portions of the stair or ramp between two handrails have a clear width of 510 mm or more. 4) Where a stair or ramp is wider than its required *exit* width, handrails shall be located along the most direct path of travel. (See Note A-3.4.6.5.(4). 5) Handrails shall be continuously graspable along their entire length, be free of any sharp or abrasive elements, and have a) a circular cross-section with an outside diameter not less than 30 mm and not more than 43 mm, or b) a non-circular cross-section with a perimeter not less than 100 mm and not more than 125 mm and whose largest cross-sectional dimension is not more than 45 mm. 6) The height of handrails on stairs, on aisles with steps and on ramps shall be measured vertically from the top of the handrail to a) a straight line drawn tangent to the tread nosings of the stair or aisle step served by the handrail (see Note A-9.8.7.4.), or b) the surface of the ramp, floor or landing served by the handrail. 7) Except as provided in Sentence (8) and Clause 3.8.3.5.(1)(e), the height of handrails on stairs, on aisles with steps and on ramps shall be a) not less than 865 mm, and b) not more than 1 070 mm. 8) Handrails installed in addition to required handrails need not comply with Sentence (7). 9) Required handrails shall be continuously graspable throughout the length of a) a ramp, and b) a *flight* of stairs, from the bottom riser to the top riser. (See Note A-9.8.7.2.) 10) Except where interrupted by doorways, at least one handrail shall be continuous throughout the length of a stairway or ramp, including at landings. (See Note A-3.4.6.5.(10).) 11) Handrails shall be terminated in a manner that will not obstruct pedestrian travel or create a hazard. (See Note A-3.4.6.5.(10).) 12) At least one handrail at the side of a stairway or ramp shall extend horizontally not less than 300 mm beyond the top and bottom of the stairway or ramp. (See Note A-3.4.6.5.(10).) 13) The clearance between a handrail and any surface behind it shall be not less than a) 50 mm, or	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			b) 60 mm if the surface behind the handrail is rough or abrasive. 14) Handrails and their supports shall be designed and constructed to withstand the loading values specified in Sentence 4.1.5.14.(7). 15) A ramp shall have handrails on both sides.						
NBCC	3.4.6.6.	Guards	1) Every *exit* shall have a wall or a well-secured *guard* on each side, where a) there is a difference in elevation of more than 600 mm between the walking surface and the adjacent surface, or b) the adjacent surface within 1.2 m of the walking surface has a slope of more than 1 in 2. (See Note A-9.8.8.1.) 2) Except as required by Sentence (4), the height of *guards* for *exit* stairs and *exit* ramps as well as their landings shall be not less than 1 070 mm. 3) The height of *guards* shall be measured vertically to the top of the *guard* from a) a line drawn through the outside edges of the stair nosings, or b) the surface of the ramp or landing. 4) The height of *guards* for exterior stairs and landings more than 10 m above adjacent ground level shall be not less than 1 500 mm measured vertically to the top of the *guard* from the surface of the landing or from a line drawn through the outside edges of the stair nosings. 5) Except as provided in Sentence 3.3.1.18.(3) and Articles 3.3.4.7. and 3.3.5.10., *guards* in *exits* shall not have any openings that permit the passage of a spherical object whose diameter is more than 100 mm. 6) In a stairway, a window for which the distance measured vertically between the bottom of the window and a line drawn through the outside edges of the stair nosings is less than 900 mm, or a window that extends to less than 1 070 mm above the landing, shall a) be protected by a *guard* that is i) located approximately 900 mm above a line drawn through the outside edges of the stair nosings, or ii) not less than 1 070 mm high measured to the top of the *guard* from the surface of the landing, or b) be fixed in position and designed to resist the lateral design loads specified for *guards* and walls in Articles 4.1.5.14. and 4.1.5.16. 7) Except for *guards* conforming to Article 3.3.5.10., *guards* that protect a level located more than one *storey* or 4.2 m above the adjacent level shall be designed so that no member, attachment or opening located between 140 mm and 900 mm above the level being protected by the *guard* facilitates climbing. (See Note A-9.8.8.6.(1).)	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.7.	Ramp Slope (See also Article 3.8.3.5.)	1) Except as required for aisles by Article 3.3.2.5., the maximum slope of a ramp shall be a) 1 in 10 in any *assembly*, *care*, *treatment*, *detention* or *residential occupancy*, b) 1 in 6 in an *industrial occupancy*, c) 1 in 8 in all other *occupancies*, and d) 1 in 10 for an exterior ramp.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.8	Treads and Risers	1) Except as permitted for *dwelling units* and by Sentence 3.4.7.5.(1) for fire escapes, steps for stairs shall have a *run* of not less than 280 mm between successive steps.	[[ ]] Plant Level Arch_Life Safety Specification.		Potentially in Compliance		Requirements associated with exit facilities will be further developed	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
		(See Note A-9.8.4.)	2) Steps for stairs referred to in Sentence (1) shall have a rise between successive treads not less than 125 mm and not more than 180 mm. 3) Except as provided in Article 3.3.4.7. and except for fire escape stairs, stairs that are principally used for maintenance and service, and stairs that serve *industrial occupancies* other than *storage garages*, steps for stairs shall have no open risers. 4) Except in fire escape stairs and where an exterior stair adjoins a *walkway* as permitted in Sentence 3.4.6.3.(3), risers, measured as the vertical nosing-to-nosing distance, shall be of uniform height in any one *flight*, with a maximum tolerance of a) 5 mm between adjacent treads or landings, and b) 10 mm between the tallest and shortest risers in a *flight*. 5) Except in fire escape stairs, treads shall have a uniform *run* with a maximum tolerance of a) 5 mm between adjacent treads, and b) 10 mm between the deepest and shallowest treads in a *flight*. 6) Treads and risers shall not differ significantly in *run* and rise in successive *flights* in any stair system. 7) The slope of treads or landings shall not exceed 1 in 50. 8) Except as permitted by Sentence (10), the top of the nosing of stair treads shall have a rounded or beveled edge extending not less than 6 mm and not more than 13 mm measured horizontally from the front of the nosing. 9) The front edge of stair treads in *exits* and public *access to exits* shall be at right angles to the direction of *exit* travel. 10) If resilient material is used to cover the nosing of a stair tread, the minimum rounded or beveled edge required by Sentence (8) is permitted to be reduced to 3 mm.	FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.				under detailed design	
NBCC	3.4.6.9.	Curved Flights in Exits	1) *Exit* stair *flights* shall consist solely of a) straight *flights*, or b) curved *flights* complying with Sentence (2). 2) A curved *flight* used as an *exit* shall have a) a handrail on each side, b) a minimum *run* of 240 mm, c) a *run* that conforms to Article 3.4.6.8. when measured at a point 300 mm from the centre line of the handrail at the narrow end of the tread, and d) an inside radius that is not less than twice the stair width. 3) *Tapered treads* shall have a consistent angle and uniform *run* and rise dimensions in accordance with the construction tolerances stipulated in Article 3.4.6.8. when measured at a point 300 mm from the centre line of the handrail at the narrow end of the tread. 4) All *tapered treads* within a *flight* shall turn in the same direction.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.10.	Horizontal Exits	1) The *floor area* on each side of a *horizontal exit* shall be sufficient to accommodate the occupants of both *floor areas*, allowing not less than 0.5 m^2 of clear floor space per person, except that 1.5 m^2 shall be provided for each person in a wheelchair and 2.5 m^2 for each bedridden patient. 2) If vestibules, enclosed balconies or bridges are used as parts of a *horizontal exit*, their clear width shall be not less than that of the *exit* doorways opening into them, except that handrails are not permitted to project into this clear width more than 100 mm. 3) In a *horizontal exit* where there is a difference in level between the connected *floor areas*, slopes not more than those specified for ramps in Article 3.4.6.7. are permitted to be used.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			4) No stairs or steps shall be used in a *horizontal exit*. 5) If 2 doors are provided in a *horizontal exit* that comprises a part of the required number of *exits* from the *floor areas* on both sides of the *exit* a) the doors shall be mounted adjacent to each other with the door on the right side in the direction of travel through the *horizontal exit* swinging in the direction of travel through the *horizontal exit*, and b) signs shall be provided on each side of the *horizontal exit* to indicate the door that swings in the direction of travel from that side. (See Note A-3.4.6.10.(5).) 6) If a *horizontal exit* utilizes bridges between *buildings* or outside balconies, the bridges or balconies shall conform to Article 3.2.3.19.						
NBCC	3.4.6.11.	Doors	1) The distance between a stair riser and the leading edge of a door during its swing shall be not less than 300 mm. 2) Except as provided in Sentence (3) and where doorways are used to confine the spillage of *flammable liquids* within a *service room* or within a room in an *industrial* *occupancy*, a threshold for a doorway in an *exit* shall be not more than 13 mm higher than the surrounding finished floor surface. 3) Except for doors providing access to ground level as required by Clause 3.3.1.7.(1)(d) and (e), an *exit* door is permitted to open onto not more than one step which shall be not more than 150 mm high where there is a risk of blockage by ice or snow. 4) *Exit* doors shall be clearly identifiable. (See Note A-3.4.6.11.(4).) 5) No door leaf in an *exit* doorway with more than one leaf shall be less than 610 mm wide. 6) Where an *exit* door leading directly to the outside is subject to being obstructed by parked vehicles or storage because of its location, a visible sign or a physical barrier prohibiting such obstructions shall be installed on the exterior side of the door.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.12.	Direction of Door Swing	1) Except for doors serving a single *dwelling unit* and except as permitted by Sentence (2) and Article 3.4.6.14., every *exit* door shall a) open in the direction of *exit* travel, and b) swing on its vertical axis. 2) *Exit* doors need not conform to Sentence (1), where a) they serve *storage garages* serving not more than one *dwelling unit*, b) they serve accessory *buildings* serving not more than one *dwelling unit*, c) they i) serve storage *suites* not more than 28 m^2 in area that are on the *first storey* in warehousing *buildings*, and ii) open directly outdoors at ground level, or d) they serve individual self-service storage units referred to in Section 3.9.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.13.	Self-closing Devices	1) An *exit* door that is normally required to be kept closed a) shall be provided with a self-closing mechanism, and b) shall never be secured in an open position except as permitted by Sentence 3.1.8.14.(1).	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
				Design Requirement Document.					
NBCC	3.4.6.14.	Sliding Doors	1) Except as permitted by Sentences (2) and 3.4.6.12.(2), an *exit* door leading directly to outdoors at ground level is permitted to be a sliding door provided it conforms to Sentence 3.3.1.12.(1). 2) An *exit* door serving a Group B, Division 1 *occupancy*, or an *impeded egress zone* in other *occupancies*, is permitted to be a sliding door that does not conform to Sentence 3.3.1.12.(1) provided it is designed to be released in conformance with Article 3.3.1.13.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.15.	Revolving Doors	1) Except as permitted by Sentence (3), a revolving door, if used, shall a) be collapsible, b) have hinged doors providing equivalent exiting capacity located adjacent to it, c) be used as an *exit* from the ground floor level only, d) not be used at the foot of any stairway, and e) have all glass in door leaves and enclosure panels conforming to i) CAN/CGSB-12.1-M, “Tempered or Laminated Safety” Glass,” or ii) CAN/CGSB-12.11-M, “Wired Safety Glass.” 2) Except as permitted by Sentence (3), a revolving door shall not be considered to have an exiting capacity for more than 45 persons. 3) An electrically powered revolving door is not required to conform to Sentences (1) and (2) provided a) the door leaves will collapse and stop automatic rotation of the door system and not obstruct the doorway if a force not more than that specified in Sentence 3.4.6.16.(2) is applied at the centre of a door leaf, b) the door leaves are capable of being opened from inside the *building* without requiring keys, special devices, or specialized knowledge of the door opening mechanism, c) the allowable exiting capacity is based on the clear width of passage through the door enclosure when the doors are fully collapsed, d) a permanent sign, whose centre line is between 1 000 mm and 1 500 mm above the floor, is placed on each face of each door leaf indicating the method for collapsing the door leaf in an emergency, and e) glass used for door leaves and enclosure panels is safety glass conforming to i) CAN/CGSB-12.1-M, “Tempered or Laminated Safety” Glass,” or ii) CAN/CGSB-12.11-M, “Wired Safety Glass.”	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.16.	Door Release Hardware	1) Except for devices on doors serving a *contained use area* or an *impeded egress zone* designed to be remotely released in conformance with Article 3.3.1.13., and except as permitted by Sentences (4) and (5) and Article 3.4.6.17., locking, latching and other fastening devices on a principal entrance door to a *building* as well as those on every *exit* door shall include release hardware complying with Clause 3.8.3.8.(1)(b) to permit the door to be readily opened from the inside with not more than one releasing operation and without requiring keys, special devices or specialized knowledge of the door opening mechanism. (See Note A-3.4.6.16.(1).)	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			2) If a door is equipped with a latching mechanism, a device that will release the latch and allow the door to swing wide open when a force of not more than 90 N is applied to the device in the direction of travel to the *exit* shall be installed on a) every *exit* door from a *floor area* containing an *assembly occupancy* having an *occupant load* more than 100, b) every door leading to an *exit* lobby from an *exit* stair shaft, and every exterior door leading from an *exit* stair shaft in a *building* having an *occupant load* more than 100, and c) every *exit* door from a *floor area* containing a *high-hazard industrial occupancy*. 3) Except as required by Sentence 3.8.3.6.(8), every *exit* door shall be designed and installed so that, when the latch is released, the door will open under a force of not more than 90 N, applied at the knob or other latch releasing device. 4) Electromagnetic locks that do not incorporate latches, pins or other similar devices to keep the door in the closed position are permitted to be installed on doors, other than those leading directly from a *high-hazard industrial occupancy*, provided a) the *building* is equipped with a fire alarm system, b) the locking device releases upon actuation of the *alarm signal* from the *building*'s fire alarm system, c) the locking device releases immediately upon loss of power controlling the electromagnetic locking mechanism and its associated auxiliary controls, d) except for locking devices installed in conformance with Sentence (5), the locking device releases immediately upon actuation of a manually operated switch readily accessible only to authorized personnel, e) except as provided in Clause (k), a force of not more than 90 N applied to the door opening hardware initiates an irreversible process that will release the locking device within 15 s and not re-lock until the door has been opened, f) upon release, the locking device must be reset manually by the actuation of the switch referred to in Clause (d), g) a legible sign is permanently mounted on the door to indicate that the locking device will release within 15 s of applying pressure to the door opening hardware, h) the total time delay for all electromagnetic locks in any path of egress to release is not more than 15 s, i) where a bypass switch is installed to allow testing of the fire alarm system, actuation of the switch i) can prevent the release of the locking device by the fire alarm system, as stated in Clause (b), during the test, and ii) causes an audible and visual signal to be indicated at the fire alarm annunciator panel required by Article 3.2.4.9. and at the monitoring station specified in Sentence 3.2.4.8.(4), j) emergency lighting is provided at each door, and k) where they are installed on doors providing emergency crossover access to *floor areas* from *exit* stairs in accordance with Article 3.4.6.18., i) the locking device releases immediately upon the operation of a manual station for the fire alarm system located on the wall on the *exit* stair side not more than 600 mm from the door, and ii) a legible sign with the words "re-entry door unlocked by fire alarm" written in letters at least 25 mm high with a stroke of at least 5 mm is permanently mounted on the door on the *exit* stair side. (See Note A-3.4.6.16.(4).) 5) Electromagnetic locks that do not incorporate latches, pins or other similar devices to keep the door in the closed position are permitted to be installed on doors in Group B, Division 2 and Division 3 *occupancies*, provided a) the *building* is	Design Requirement Document.					

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			i) equipped with a fire alarm system, and ii) *sprinklered*, b) the electromagnetic lock releases upon i) actuation of the *alarm signal* from the *building*'s fire alarm system, ii) loss of its power supply and of power to its auxiliary controls, iii) actuation of a manually operated switch that is readily accessible at a constantly attended location within the locked space, and iv) actuation of the manual station installed within 0.5 m of each door and equipped with an auxiliary contact, which directly releases the electromagnetic lock, c) upon release, the electromagnetic lock requires manual resetting by actuation of the switch referred to in Subclause (b)(iii), d) a legible sign with the words "EMERGENCY EXIT UNLOCKED BY FIRE ALARM" written in letters at least 25 mm high with a stroke at least 5 mm wide is permanently mounted on the door, e) the operation of any by-pass switch, where provided for testing of the fire alarm system, sets off an audible signal and a visual signal at the fire alarm annunciator panel and at the monitoring station referred to in Sentence 3.2.4.7.(4), and f) emergency lighting is provided at the doors. (See Note A-3.4.6.16.(5).) 6) Door hardware for the operation of the doors referred to in this Section shall be installed at a height not more than 1 200 mm above the finished floor.						
NBCC	3.4.6.17.	Security for Banks and Mercantile Floor Areas	1) If a *building* is *sprinklered* throughout, the requirements of Sentence 3.4.6.16.(1) are permitted to be waived for *exit* and egress doors complying with Sentences (2) to (9) that serve a *floor area* or part of a *floor area* used exclusively for a) a bank, or b) the sale of retail merchandise. (See Note A-3.4.6.17.(1).) 2) *Exit* and egress doors referred to in Sentence (1) shall be designed to prevent locking at any time that the part of the *floor area* that they serve is open to the public. 3) A sign with the words "This door shall not be locked at any time that the public" is present" in letters not less than 50 mm high shall be permanently affixed to both sides of doors referred to in Sentence (1). 4) *Exit* and egress facilities complying with Sentences (5) to (9) shall be incorporated for egress by persons other than the public from a *floor area* or a *floor area* referred to in Sentence (1) during times when the public is neither present nor being admitted to the area that they serve. 5) In *exit* and egress facilities referred to in Sentence (4), at least one door at each *exit* and egress location shall a) be operable in conformance with Sentence 3.4.6.16.(1), or b) be equipped with locks conforming to Sentence 3.4.6.16.(4) that release immediately i) if an *alert signal* or *alarm signal* is initiated in the fire alarm system, or ii) the sprinkler system is actuated. 6) A door referred to in Sentence (5) shall be permanently and distinctly marked to indicate that it is an emergency *exit*. 7) *Exit* and egress facilities required for evacuation of persons other than the	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			public from a *floor area* or a part of a *floor area* referred to in Sentence (1) shall have an aggregate width based on the maximum number of persons other than the public and determined in accordance with Articles 3.4.3.1. to 3.4.3.3. 8) Travel distance to an *exit* referred to in Sentence (7) shall not exceed the travel distance determined in accordance with Subsection 3.4.2. 9) *Exit* and egress doors serving a *floor area* or part of a *floor area* referred to in Sentence (1) are permitted to be equipped with locks that require keys, special devices or specialized knowledge of the door opening mechanism provided a) the doors do not lead into *exit* stairs, b) the doors do not lead from *exit* stairs to the exterior of the *building*, c) the doors do not serve any other *occupancy*, d) the area served contains at least one telephone i) that is accessible and in operation at all times, ii) that is not coin or card operated, and iii) marked to indicate that it is for emergency use, e) the area served is illuminated by normal power or by emergency power when the doors are locked, f) there are provisions that enable an announcement to be made throughout the area served before the locks are fastened, and g) the locks are designed for use during times that the *building* is not occupied.						
NBCC	3.4.6.18.	Emergency Crossover Access to Floor Areas	1) Except as permitted in Sentence (2), doors providing access to *floor areas* from *exit* stairs shall not have locking devices to prevent entry into any *floor area* from which the travel distance up or down to an unlocked door is more than 2 *storeys.* 2) Doors referred to in Sentence (1) are permitted to be equipped with electromagnetic locks, provided they comply with Sentences 3.4.6.16.(4) and (5). 3) Doors referred to in Sentence (1) shall be identified by a sign on the stairway side to indicate that they are openable from that side. 4) Locked doors intended to prevent entry into a *floor area* from an *exit* stair shall a) be identified by a sign on the stairway side to indicate the location of the nearest unlocked door in each direction of travel, and b) be openable with a master key that fits all locking devices and is kept in a designated location accessible to firefighters or be provided with a wired glass panel not less than 0.0645 m^2 in area and located not more than 300 mm from the door opening hardware. 5) Where access to *floor areas* through unlocked doors is required by Sentence (1), it shall be possible for a person entering the *floor area* to have access through unlocked doors within the *floor area* to at least one other *exit*	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.6.19.	Floor Numbering	1) Arabic numerals indicating the assigned floor number shall a) be mounted permanently on the stair side of the wall at the latch side of doors to *exit* stair shafts, b) be not less than 60 mmhigh, raised approximately 0.7 mm above the surface, c) be located 1 500 mm from the finished floor and not more than 300 mm from the door, and d) be contrasting in colour with the surface to which they are applied (see Note A-3.4.6.19.(1)(d)).	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with exit facilities will be further developed under detailed design	
NBCC	3.4.7.	Fire Escapes	Header						

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NBCC	3.4.7.1.	Scope	1) Except as permitted by Sentence (2), fire escapes shall not be erected on a *building*. 2) If it is impracticable to provide one or more of the *exit* facilities listed in Article 3.4.1.4., fire escapes conforming to Articles 3.4.7.2. to 3.4.7.7. are permitted to serve *floor areas* in an existing *building* provided the *floor areas* served are not more than a) 2 *storeys* above ground level in *care*, *treatment* or *detention occupancies*, and b) 5 *storeys* above ground level in other *occupancies*.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with fire escapes will be further developed under detailed design	
NBCC	3.4.7.2	Fire Escape Construction	1) Fire escapes shall be of metal or concrete, of the stair type extending to ground level, constructed throughout in a strong substantial manner and securely fixed to the *building*, except that wooden fire escapes are permitted to be used on *buildings* of *combustible construction* if all posts and brackets are not less than 89 mm in their least dimension and all other woodwork is not less than 38 mm in its least dimension.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with fire escapes will be further developed under detailed design	
NBCC	3.4.7.3	. Access to Fire Escapes	1) Access to fire escapes shall be from corridors through doors at floor level, except that access from a *dwelling unit* is permitted to be through a casement window having an unobstructed opening not less than 1 100 mm high by 550 mm wide with a sill height of not more than 900 mm above the inside floor. 2) The clear area of a fire escape balcony onto which a door opens, shall be not less than 1 $m^{2.}$	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with fire escapes will be further developed under detailed design	
NBCC	3.4.7.4	Protection of Fire Escapes	1) If a fire escape serves any *storey* above the second, openings located in a zone described in Sentence (2), including access doorways in the exterior walls of the *building* to which the fire escape is attached, shall be protected by *closures* conforming to Subsection 3.1.8 2) The zone referred to in Sentence (1) extends from any balcony, platform or stairway of a fire escape to a distance a) 3 m horizontally, b) 10 m below, or c) 1.8 m above.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with fire escapes will be further developed under detailed design	
NBCC	3.4.7.5.	Stairs	1) Stairs shall be inclined at an angle of not more than 45° with the horizontal, and their steps shall have risers not more than 210 mm high and treads not less than 220 mm wide exclusive of nosing. 2) Stairway headroom shall be not less than 1 950 mm plus the height of one riser measured vertically above the nosing of any tread or platform. 3) The width of a fire escape shall conform to Articles 3.4.3.1. to 3.4.3.3., except that the width is permitted to be reduced to 550 mm provided the fire escape serves a) not more than 3 storeys, and	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with fire escapes will be further developed under detailed design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			b) not more than 15 persons. 4) If a flight of stairs leading to the ground at the foot of a fire escape is not fixed in position, it shall be held in the raised position without a latch or locking device, and shall be fitted with a counterbalancing device that will permit it to be easily and quickly brought into position for use.						
NBCC	3.4.7.6	Guards and Railings	1) The open sides of every platform, balcony and stairway forming part of a fire escape shall be protected by guards not less than 920 mm high measured vertically above the nosing of any tread or platform. 2) The top rail of a guard is permitted to serve as a handrail if it is free from obstructions which could break a handhold. 3) A wall handrail shall be installed if the fire escape is more than 550 mm wide. 4) Unless it can be shown that the size of openings that exceed this limit does not present a hazard, there shall be no opening that permits the passage of a sphere whose diameter is more than 100 mm through a guard for a fire escape. 5) Unless it can be shown that the location and size of an opening do not present a hazard, a guard for a fire escape shall be designed so that no member, attachment or opening located between 140 mm and 900 mm above a platform or the nosing of any tread will facilitate climbing.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with fire escapes will be further developed under detailed design	
NBCC	3.4.7.7.	Landings	1) Platforms for a fire escape shall be provided in conformance with the requirements for stair landings in Articles 3.4.6.3. and 3.4.6.4.	[[ ]] Plant Level Arch_Life Safety Specification. FHA [[ ]] HFE [[ ]]_BWRX-300 HFE Design Requirement Document.		Potentially in Compliance		Requirements associated with fire escapes will be further developed under detailed design	
NBCC	Section 3.5	Vertical Transportation	Header						
NBCC	3.5.1.	General	Header						
NBCC	3.5.1.1.	Scope	1) This Section applies to vertical transportation facilities installed in a *building*, including elevators, escalators and dumbwaiters. 2) Elevators in a *building* within the scope of Subsection 3.2.6. shall conform to Articles 3.2.6.4., 3.2.6.5. and 3.2.6.6.	BWRX-300 Cranes, Hoists, and Elevators (CHE) [[ ]]		Potentially in Compliance		Design of elevators will be further assessed during details design	
NBCC	3.5.2.	Standards	Header						
NBCC	3.5.2.1.	Elevators, Escalators and Dumbwaiters	1) The design, construction, installation and *alteration* of every elevator, escalator and dumbwaiter shall conform to a) provincial or territorial regulations or municipal bylaws, or b) ASME A17.1/CSA B44, “Safety Code for Elevators and Escalators,” in the absence of the regulations or bylaws referred to in Clause (a).	BWRX-300 Cranes, Hoists, and Elevators (CHE) [[ ]]		Potentially in Compliance		Design of elevators will be further assessed during details design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			(See Note A-3.5.2.1.(1).) 2) Before being placed in service, every elevator, escalator or dumbwaiter installation, including safety and control devices, shall be inspected and tested in accordance with a) provincial or territorial regulations or municipal bylaws, or b) ASME A17.1/CSA B44, “Safety Code for Elevators and Escalators,” in the absence of the regulations or bylaws referred to in Clause (a). (See Note A-3.5.2.1.(1).) 3) Passenger elevators shall conform to Appendix E of ASME A17.1/CSA B44, “Safety Code for Elevators and Escalators.”						
NBCC	3.5.3	Fire Separations	Header						
NBCC	3.5.3.1.	Fire Separations for Elevator Hoistways	1) Except as permitted by Sentence (2), a vertical service space used as an elevator hoistway shall be separated from all other portions of each adjacent storey by a fire separation having a fire-resistance rating conforming to Table 3.5.3.1. for the fire-resistance rating required by Subsection 3.2.2. for a) the floor assembly above the storey, or b) the floor assembly below the storey, if there is no floor assembly above. Table 3.5.3.1. Fire Separation for Vertical Transportation Space Forming Part of Articles 3.5.3.1.and 3.5.3.2. 2) Passenger elevators, other than those provided for firefighters in accordance with Article 3.2.6.5., are permitted to be located within interconnected floor space without being enclosed in a hoistway separated from the remainder of the building, provided the elevator machinery is located in a room separated from the remainder of the building by a fire separation having a fire-resistance rating not less than that required for hoistways by Sentence (1).	BWRX-300 Cranes, Hoists, and Elevators (CHE) [[ ]]		Potentially in Compliance		Design of elevators will be further assessed during details design	
NBCC	3.5.3.2	Vertical Service Spaces for Dumbwaiters	1) A vertical service space containing a dumbwaiter shall be separated from all other portions of each adjacent storey by a fire separation having a fire-resistance rating conforming to Table 3.5.3.1. for the fire-resistance rating required by Subsection 3.2.2. for a) the floor assembly above the storey or b) the floor assembly below the storey, if there is no floor assembly above.	BWRX-300 Cranes, Hoists, and Elevators (CHE) [[ ]]		Potentially in Compliance		Design of elevators will be further assessed during details design	
NBCC	3.5.3.3.	Fire Separations for Elevator Machine Rooms	1) Except as permitted by Sentence (2), a room containing elevator machinery shall be separated from all other parts of the building by a fire separation having a fire-resistance rating not less than that required for the vertical service space containing the elevator hoistway. 2) A room containing elevator machinery need not be separated from the elevator hoistway that it serves provided the room and the hoistway are separated from all other parts of the building by a fire separation having a fire-resistance rating not less than that required for the vertical service space containing the elevator hoistway.	BWRX-300 Cranes, Hoists, and Elevators (CHE) [[ ]]		Potentially in Compliance		Design of elevators will be further assessed during details design	
NBCC	3.5.4	Dimensions and Signs	Header						
NBCC	3.5.4.1.	Elevator Car Dimensions	1) If one or more elevators are provided in a building, all storeys shall be served by at least one elevator which has inside dimensions that will accommodate and provide adequate access for a patient stretcher 2 010 mm long and 610 mm wide in the prone position. (See Note A-3.5.4.1.(1).) 2) An elevator satisfying the requirements of Sentence (1) shall be clearly	BWRX-300 Cranes, Hoists, and Elevators (CHE) [[ ]]		Potentially in Compliance		Design of elevators will be further assessed during details design	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			identified on the main entrance level of the building.						
NBCC	3.5.4.2.	Floor Numbering	1) Arabic numerals indicating the assigned floor number shall be mounted permanently on both jambs of passenger elevator hoistway entrances in conformance with Appendix E of ASME A17.1/CSA B44, “Safety Code for Elevators and Escalators.”	BWRX-300 Cranes, Hoists, and Elevators (CHE) [[ ]]		Potentially in Compliance		Design of elevators will be further assessed during details design	
NBCC	3.6.1.2	Electrical Wiring	3.6.1.2. Electrical Wiring and Equipment 1) The installation of electrical wiring and electrical equipment shall conform to the requirements of a) provincial or territorial regulations or municipal bylaws, or b) CSA C22.1, “Canadian Electrical Code, Part I,” in the absence of the regulations or bylaws referred to in Clause (a)	[[ ]], Plant Electrical General Design Criteria and Requirements	Potentially In Compliance				
NBCC	3.6.5.2	Vibration Isolation-Combustibility	Vibration Isolation Connectors 1) Except as permitted by Sentence (2), vibration isolation connectors in air duct systems shall be noncombustible. 2) Combustible fabric vibration isolation connectors are permitted provided they a) are not more than 250 mm long, b) comply with the flame-resistance requirements of CAN/ULC-S109, “Flame Tests of Flame-Resistant Fabrics and Films,” and c) are not used in a location where they are exposed to heated air or radiation from heat sources that could cause the exposed surface temperature to be more than 120°C.	[[ ]] U41 SDD [[ ]]	Potentially In Compliance		Action	To be developed under detailed design stage Add clause to U41 SDD [[ ]]	
NBCC	3.7	Health Requirements	3.7.1. Height of Rooms 3.7.1.1. Room and Space Height 1) The height of every room and space shall be sufficient so that the ceiling or ceiling fixtures do not obstruct movement or activities below. 2) The unobstructed height in dwelling units shall conform to Subsection 9.5.3. 3.7.2. Plumbing Facilities 3.7.2.1. Plumbing and Drainage Systems 1) Except as permitted in Sentence (2), if the installation of a sanitary drainage system is not possible because of the absence of a water supply, sanitary privies, chemical closets or other means for the disposal of human waste shall be provided. 2) Waterless urinals are permitted to be used in buildings provided with a water supply. 3.7.2.2. Water Closets 1) Except as permitted by Sentence (4), water closets shall be provided for each sex assuming that the occupant load is equally divided between males and females, unless the proportion of each sex expected in the building can be determined with reasonable accuracy. (See Note A-3.7.2.2.(1).) 2) If a single universal washroom is provided in accordance with the requirements of Section 3.8., the total number of persons in the building used to determine the number of water closets to be provided, is permitted to be reduced by 10 before applying Sentence (6), (7), (8), (12), (13) or (14). 3) Except as permitted by Sentence (2), if only one universal washroom is provided in accordance with Section 3.8., the water closet in this room shall not be taken into consideration in determining the number of water closets required by this Article, unless a single water closet is permitted in accordance with Sentence (4). 4) Both sexes are permitted to be served by a single water closet if the occupant load in an occupancy referred to in Sentence (6), (10), (12), (13), (14) or (16) is not more than 10. 5) Urinals are permitted to be substituted for two thirds of the number of water closets required by this Article for males, except that if only 2 water closets are required for males, one urinal is permitted to be substituted for one of the water closets. 6) Except as permitted by Sentences (4), (7) and (8), the number of water closets required for assembly occupancies shall conform to Table 3.7.2.2.-A 7) The number of water closets required for primary schools and daycare centres shall be at least one for each 30 males and one for each 25 females. 8) The number of water closets required for places of worship and undertaking premises shall be at least one for each 150 persons of each sex. 9) The number of water closets required for a treatment or detention occupancy shall be determined on the basis of the special needs of the occupancy. 10) Except as permitted by Sentences (4) and (7), the number of water closets required for a care or residential occupancy shall be at least one for each 10 persons of each sex. 11) At least one water closet shall be provided for each dwelling unit. 12) Except as permitted by Sentence (4), the number of water closets required for a business and personal services occupancy shall conform to Table 3.7.2.2.-B. 13) Except as	[[ ]]	Potentially In Compliance			Portions of these requirements are applicable. The intent is to comply with these clauses unless overridden by higher level codes (e.g. CSA N293). These clauses will be decomposed and assessed as design matures. To be developed under detailed design stage	

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			permitted by Sentences (4) and (16), the number of water closets required for a mercantile occupancy shall be at least one for each 300 males and one for each 150 females. 14) Except as permitted by Sentence (4), the number of water closets required for an industrial occupancy shall conform to Table 3.7.2.2.-C. 15) In a building whose floor area is more than 600 m^2 and that includes one or more individual tenant spaces for a business and personal services occupancy or mercantile occupancy, water closets shall be located so that they are accessible to the public when the building is occupied. 16) The number of water closets required in a suite of mercantile occupancy whose area is not more than 500 m^2 is permitted to be determined in accordance with Table 3.7.2.2.-B based solely on the total number of staff. 3.7.2.3. Lavatories 1) Except as permitted by Sentence (2), at least one lavatory shall be provided in a room containing one or 2 water closets or urinals, and at least one additional lavatory shall be provided for each additional 2 water closets or urinals. 2) Wash fountains in circular form are permitted to be provided in lieu of lavatories required by Sentence (1) provided each 500 mm of circumference is considered to be the equivalent of one lavatory. 3) Any shelf or projection above a lavatory shall be located so that it will not be a hazard. 4) Lavatories required by Sentence (1) shall be equipped with faucets that a) operate automatically, or b) have a manual control that i) complies with Clause 3.8.3.8.(1)(b), ii) does not require the application of continuous force to maintain water flow, and iii) where metered, provides at least 10 s of water flow. 3.7.2.4. Mobile Home Facilities 1) If mobile homes do not have individual sanitary facilities connected to a central water supply and drainage system, a service building shall be provided for public use. 2) The service building required by Sentence (1) shall contain a) at least one water closet for each sex if the service building facilities serve not more than 10 mobile homes, and b) an additional water closet for each sex for each additional 10 mobile homes. 3) If a service building is required by Sentence (1), it shall contain lavatories as required by Sentence 3.7.2.3.(1) and at least a) one laundry tray or similar facility, and b) one bathtub or shower for each sex. 3.7.2.5. Safety Glass 1) Glass, other than safety glass, shall not be used for a shower or bathtub enclosure. 3.7.2.6. Surface Protection 1) Wall and floor surfaces below the uppermost surfaces of a urinal shall be protected from deterioration by impervious and durable material for a distance from the urinal to a point not less than 900 mm from the projected outline of the urinal on to the wall or floor. 2) Floor surfaces around a water closet shall be protected from deterioration by an impervious and durable material for a distance not less than 900 mm from the projected outline of the water closet on the floor. 3.7.2.7. Floor Drain 1) A floor drain shall be installed in a washroom containing a urinal equipped with an automatic flushing device. 3.7.2.8. Grab Bars 1) Grab bars shall a) be slip-resistant and free of any sharp or abrasive elements, b) be mounted on surfaces that are free of any sharp or abrasive elements, c) be able to resist a load of not less than 1.3 kN applied vertically or horizontally, d) be 30 mm to 40 mm in diameter, and e) where mounted on a wall, have a clearance of 35 mm to 45 mm from the wall. 3.7.2.9. Bathtubs 1) Where a bathtub is installed in a hotel or a motel, it shall a) have a clear floor space at least 750 mm wide along its length, except that a water closet or a lavatory is permitted to encroach this space, b) have faucets and other controls that conform to Clause 3.8.3.8.(1)(b), c) have a slip-resistant bottom surface, d) have grab bars that i) conform to Sentence 3.7.2.8.(1), ii) are not less than 1 200 mm long located vertically at the end of the bathtub that is adjacent to						

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			the clear floor space, with the lower end between 180 mm and 280 mm above the bathtub rim, and iii) are not less than 1 200 mm long located horizontally along the length of the bathtub at 180 mm to 280 mm above the bathtub rim, and e) be capable of being accessed along its full length with no tracks mounted on the bathtub rim. 3.7.3. Medical Gas Piping Systems 3.7.3.1. Medical Gas Piping 1) If a non-flammable medical gas piping system is installed, it shall be installed in conformance with a) CSA Z7396.1, “Medical Gas Pipeline Systems – Part 1: Pipelines for Medical Gases, Medical Vacuum, Medical Support Gases, and Anaesthetic Gas Scavenging Systems” and b) Part 3 of Division B of the NFCC.						
NBCC	3.8	Accessibility Barrier-Free Design	3.8.1.1. Scope 1)This Section is concerned with the barrier-free design of buildings. 2) Buildings and facilities required to be barrier-free in accordance with Subsection 3.8.2. shall be designed in accordance with Subsection 3.8.3 3.8.2.2. Entrances (See Note A-3.8.2.2.) 1) In addition to the barrier-free entrances required by Sentence (2), not less than 50% of the pedestrian entrances of a building referred to in Sentence 3.8.2.1.(1) shall be barrier-free and shall lead from a) the outdoors at sidewalk level, or b) a ramp that complies with Subsection 3.8.3. and leads from a sidewalk. 2) A suite of assembly occupancy, business and personal services occupancy or mercantile occupancy that is located in the first storey of a building, or in a storey to which a barrier-free path of travel is provided, and that is completely separated from the remainder of the building so that there is no access to the remainder of the building, shall have at least one barrier-free entrance. 3) A barrier-free entrance required by Sentence (1) or (2) shall be designed in accordance with Subsection 3.8.3. 4) At a barrier-free entrance that includes more than one doorway, only one of the doorways is required to be designed in accordance with Subsection 3.8.3. 5) If a walkway or pedestrian bridge connects two barrier-free storeys in different buildings, the path of travel from one storey to the other storey by means of the walkway or bridge shall be barrier-free 3.8.2.3. Areas Requiring a Barrier-Free Path of Travel (See Note A-3.8.2.3.) 1) Except as permitted by Sentence (2), a barrier-free path of travel from the entrances required by Sentences 3.8.2.2.(1) and (2) to be barrier-free shall be provided throughout the entrance storey and within all other normally occupied floor areas served by a passenger elevator, escalator, inclined moving walk, or other platform-equipped passenger-elevating device. (See Article 3.3.1.7. for additional requirements regarding floor areas above or below the first storey to which a barrier-free path of travel is required.) 2) A barrier-free path of travel for persons in wheelchairs is not required a) to service rooms, b) to elevator machine rooms, c) to janitor’s rooms, d) to service spaces, e) to crawl spaces, f) to attic or roof spaces, g) to floor levels not served by a passenger elevator, a platform-equipped passenger-elevating device, an escalator, or an inclined moving walk, h) to high-hazard industrial occupancies, i) within portions of a floor area with fixed seats in an assembly occupancy where those portions are not part of the barrier-free path of travel to spaces designated for wheelchair use, j) within floor levels of a suite of residential occupancy that are not at the same level as the entry level to the suite, k) within a suite of residential occupancy that has not been designated by an authority having jurisdiction to be accessible for use by persons with physical disabilities, or l) within those parts of a floor area that are not at the same level as the entry level, provided amenities and uses provided on any raised or sunken level are accessible on the entry level by means of a barrier-free path of travel. 3) In an assembly occupancy, the number of spaces designated for wheelchair use within rooms or areas with fixed seats shall conform to Table 3.8.2.3. (See also Article 3.8.3.21. for additional requirements.) 3.8.3.2. Barrier-Free Path of Travel	[[ ]]	1) The requirements of this Section apply to all buildings except a) NA b) buildings of Group F, Division 1 major occupancy, and c) buildings that are not intended to be occupied on a daily or full-time basis, including automatic telephone exchanges, pumphouses and substations.		Under discussion with OPG and raised under [[ ]]	Under discussion with OPG Potential application for control room only. The Control Building will be the only barrier-free design per the following sections of the NBCC. The other buildings will fall under 3.8.2.1 exception (c)	

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Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			1) Except as required elsewhere in this Part or as permitted by Article 3.8.3.6. pertaining to doorways, the unobstructed width of a barrier-free path of travel shall be not less than 920 mm. 2) Interior and exterior walking surfaces that are within a barrier-free path of travel shall a) have no opening that will permit the passage of a sphere more than 13 mm in diameter, b) have any elongated openings oriented approximately perpendicular to the direction of travel, c) be stable, firm and slip-resistant, d) have a cross slope no steeper than 1 in 50, e) be bevelled at a maximum slope of 1 in 2 at changes in level between 6 mm and 13 mm, and f) be provided with sloped floors or ramps at changes in level more than 13 mm. (See Note A-3.8.3.2.(2).) 3) A barrier-free path of travel is permitted to include ramps, passenger elevators or other platform-equipped passenger-elevating devices to overcome a difference in level. 4) The width of a barrier-free path of travel that is more than 30 m long shall be increased to not less than 1 500 mm for a length of 1 500 mm at intervals not exceeding 30 m. 3.8.3.3. Exterior Walks 1) Exterior walks that form part of a barrier-free path of travel shall a) have a slip-resistant, continuous and even surface, b) be not less than 1 100 mm wide, and c) have a level area conforming to Clause 3.8.3.5.(1)(c) adjacent to an entrance doorway. 3.8.3.4. Exterior Passenger-Loading Zones 1) If an exterior passenger-loading zone is provided, it shall have a) an access aisle not less than 1 500 mm wide and 6 000 mm long adjacent and parallel to the vehicle pull-up space, b) a curb ramp, where there are curbs between the access aisle and the vehicle pull-up space, and c) a clear height of not less than 2 750 mm at the pull-up space and along the vehicle access and egress routes. 3.8.3.5. Ramps 1) A ramp located in a barrier-free path of travel shall a) have a clear width not less than 870 mm (see Note A-3.4.3.4.), b) have a slope not more than 1 in 12 (see Note A-3.8.3.5.(1)(b)), c) have a level area not less than 1 500 by 1 500 mm at the top and bottom and at intermediate levels of a ramp leading to a door, so that on the latch side the level area extends not less than i) 600 mm beyond the edge of the door opening where the door opens toward the ramp, or ii) 300 mm beyond the edge of the door opening where the door opens away from the ramp, (see Note A-3.8.3.5.(1)(c)), d) have a level area not less than 1 200 mm long and at least the same width as the ramp i) at intervals not more than 9 m along its length, and ii) where there is an abrupt change in the direction of the ramp, and e) except as provided in Sentences (2) and (3), be equipped with handrails conforming to Article 3.4.6.5., except that they shall be not less than 865 mm and not more than 965 mm high, and f) be equipped with guards conforming to Article 3.4.6.6. 2) Handrails installed in addition to required handrails need not comply with the height requirements stated in Clause (1)(e). 3) The requirement for handrails in Clause (1)(e) need not apply to a ramp serving as an aisle for fixed seating. 4) The surfaces of ramps and landings shall a) be hard or resilient where the ramp is steeper than 1 in 15 (see Note A-3.8.3.5.(4)(a)), b) have a cross slope no steeper than 1 in 50, and c) where exposed to water, be designed to drain. 5) Ramps and landings not at grade or adjacent to a wall shall have edge protection consisting of a) a curb not less than 75 mm high, or b) a raised barrier or rail located not more than 100 mm from the ramp or landing surface. 6) Floors or walks in a barrier-free path of travel having a slope steeper than 1 in 20 shall be designed as ramps 3.8.3.6. Doorways and Doors 1) Except where stated otherwise, this Article applies to swinging and sliding doors. 2) Every doorway that is located in a barrier-free path of travel shall have a clear width not less than 800 mm when the door is in the open position. (See Note A-3.8.3.6.(2).) 3) Doorways in a path of travel to at least one bathroom within a suite of residential occupancy shall have a clear width not less than 800 mm when the doors are open. (See Note A-3.8.3.6.(3).) 4) Door-operating devices						

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			shall a) comply with Clause 3.8.3.8.(1)(b), and b) be operable at a height between 900 mm and 1 100 mm above the floor. (See Note A-3.8.3.6.(4).) 5) A threshold for a doorway referred to in Sentences (2) and (3) shall be not more than 13 mm higher than the finished floor surface and shall be bevelled to facilitate the passage of wheelchairs.6) Power door operators required by Sentence 3.8.2.7.(1) shall a) activate automatically or through the use of controls that i) are located in a barrier-free path of travel, ii) are marked with the International Symbol of Access, iii) are located clear of the door swing and no more than 1 500 mm from that door swing, iv) comply with Subclause 3.8.3.8.(1)(a)(ii), v) are operable from a height between 150 mm and 300 mm as well as between 900 mm and 1 100 mm above the floor, and vi) are operable by touching or approaching any part of their surface with a fist, arm or foot, and b) unless equipped with safety sensors, i) fully open the door in not less than 3 s, and ii) require a force not more than 65 N to stop movement of the door. (See Note A-3.8.3.6.(6) and (7).) 7) A cane-detectable guard shall be installed on the hinged side of power-assisted doors that swing open into the path of travel. (See Note A-3.8.3.6.(6) and (7).) 8) Except as provided in Sentence (9) and except for a door with a power door operator complying with Sentence (6), when unlatched, a door in a barrier-free path of travel shall open when the force applied to the handle, push plate or latch releasing device is not more than a) 38 N in the case of an exterior swinging door, b) 22 N in the case of an interior swinging door, or c) 22 N in the case of a sliding door. 9) Sentence (8) does not apply to a door at the entrance to a dwelling unit, or where greater forces are required in order to close and latch the door against the prevailing difference in air pressure on opposite sides of the door. (See Note A-3.8.3.6.(9).) 10) Except for a door at the entrance to a dwelling unit, a closer for an interior door in a barrier-free path of travel shall have a closing period of not less than 3 s measured from when the door is in an open position of 70° to the doorway, to when the door reaches a point 75 mm from the closed position, measured from the leading edge of the latch side of the door. (See Note A-3.8.3.6.(10).) 11) Unless equipped with a power door operator complying with Sentence (6), a swinging door in a barrier-free path of travel shall have a clear space on the latch side extending the height of the doorway and not less than a) 600 mm beyond the edge of the door opening if the door swings toward the approach side, and b) 300 mm beyond the edge of the door opening if the door swings away from the approach side. (See Note A-3.8.3.6.(11).) 12) A vestibule located in a barrier-free path of travel shall be arranged to allow the movement of wheelchairs between doors and shall provide a distance between 2 doors in series of not less than 1 200 mm plus the width of any door that swings into the space in the path of travel from one door to another. 13) Only the active leaf in a multiple-leaf door in a barrier-free path of travel need conform to the requirements of this Article. 14) Except as provided in Clause 3.8.3.5.(1)(c), the floor surface on each side of a door in a barrier-free path of travel shall be level within a rectangular area a) as wide as the door plus the clearance required on the latch side by Sentence (11), and b) whose dimension perpendicular to the closed door is not less than the width of the barrier-free path of travel but need not exceed 1,500 mm. 3.8.3.7. Passenger-Elevating Devices 1) A passenger-elevating device referred to in Article 3.8.2.3. shall conform to CSA B355, “Lifts for Persons with Physical Disabilities.” 3.8.3.8. Controls 1) Controls described in this Section shall a) where located in or adjacent to a barrier-free path of travel, and unless otherwise stated, i) be mounted 400 mm to 1 200 mm above the floor, ii) be adjacent to and centred on either the length or the width of a clear floor space of 1 350 mm by 800 mm, and b) be operable i) with one hand in a closed fist position, without requiring tight grasping, pinching with fingers, or twisting of the wrist, and ii) unless otherwise stated, with a force not more than 22 N 3.8.3.9. Accessibility Signs						

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			1) Signs required by Article 3.8.2.10. shall incorporate the International Symbol of Access or the International Symbol of Access for Hearing Loss and appropriate graphical or textual information that clearly indicates the type of facilities available. (See Note A-3.8.3.9.(1).) 3.8.3.10. Drinking Fountains 1) Drinking fountains required by Sentence 3.8.2.8.(9) shall a) be located along a barrier-free path of travel, b) have a minimum clear floor space of 800 mm by 1 350 mm in front of it, c) where it has frontal access, provide a knee clearance in accordance with Clause 3.8.3.15.(1)(d), d) have a spout that i) is located near the front of the unit, at a height between 750 mm and 915 mm above the floor, and ii) directs water flow in a trajectory that is nearly parallel to the front of the unit, at a height not less than 100 mm, and e) be equipped with controls that i) activate automatically, or ii) are located either on the front or on both sides of it and comply with Clause 3.8.3.8.(1)(b) 3.8.3.11. Water Closet Stalls 1) Water closet stalls and enclosures required by Sentence 3.8.2.8.(5) shall a) be not less than 1 500 mm wide by 1 500 mm deep, b) have a clear floor space of 1 500 mm by 1 500 mm in front of the accessible stall, c) be equipped with a door that i) can be latched from the inside with a mechanism conforming to Clause 3.8.3.8.(1)(b), ii) is aligned with either the transfer space adjacent to the water closet or with a clear floor space not less than 1 500 mm by 1 500 mm within the stall, iii) provides a clear opening not less than 850 mm wide when it is open, iv) is self-closing so that, when at rest, the door is ajar by not more than 50 mm beyond the jamb, v) swings outward, unless there is sufficient floor space within the stall for the door to swing inward in addition to a clear floor space of at least 800 mm by 1 350 mm (see Note A-3.8.3.11.(1)(c)(v)), vi) where the door swings outward, is provided with a horizontal, D-shaped, visually contrasting door pull not less than 140 mm long located on the inside such that its midpoint is 200 mm to 300 mm from the hinged side of the door and 800 mm to 1 000 mm above the floor (see Note A-3.8.3.11.(1)(c)(vi)), and vii) is provided with a horizontal, D-shaped, visually contrasting door pull not less than 140 mm long located on the outside such that its midpoint is 120 mm to 220 mm from the latch side and 800 mm to 1 000 mm above the floor, d) have a water closet located so that the distance between the centre line of the fixture and the wall on one side is 460 mm to 480 mm, e) be equipped with an L-shaped grab bar that i) is mounted on the side wall closest to the water closet, ii) has horizontal and vertical components not less than 760 mm long mounted with the horizontal component 750 mm to 850 mm above the floor and the vertical component 150 mm in front of the water closet (see Note A-3.8.3.11.(1)(e)(ii)), and iii) complies with Article 3.7.2.8., f) be equipped with either one grab bar at least 600 mm long and centred over the water closet, or two grab bars at least 300 mm long and located either side of the flush valve, that i) conform to Article 3.7.2.8., ii) are mounted on the rear wall, and iii) are mounted at the same height as the grab bar on the side wall or 100 mm above the top of the attached water tank, if applicable, g) be equipped with a coat hook mounted not more than 1 200 mm above the floor on a side wall and projecting not more than 50 mm from the wall, and h) be equipped with a toilet paper dispenser mounted on the side wall closest to the water closet such that i) the bottom of the dispenser is 600 mm to 800 mm above the floor, and ii) the closest edge of the dispenser is 300 mm from the front of the water closet 3.8.3.12. Universal Washrooms (See Note A-3.8.3.12.) 1) A universal washroom shall a) be served by a barrier-free path of travel, b) have a door complying with Article 3.8.3.6. that i) has a latch-operating mechanism located 900 mm to 1 000 mm above the floor that complies with Clause 3.8.3.8.(1)(b) and is capable of being locked from the inside, and released from the outside in case of emergency, and ii) if it is an outward swinging door that is not self-closing, has a door pull not less than 140 mm long located on the inside so that its midpoint is not less than 200 mm and not more than 300 mm from the hinged side of the door and not less than 900 mm and not more than 1 000 mm above the floor (see Note A-3.8.3.11.(1)(c)(vi)), c) have one lavatory conforming to Article 3.8.3.15., d) have one water closet						

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			conforming to Article 3.8.3.13. and Clause 3.8.3.11.(1)(d), with a clear floor space at least 900 mm wide that is parallel and adjacent to the open side of the water closet, e) have grab bars conforming to Clauses 3.8.3.11.(1)(e) and (f), f) have a coat hook conforming to Clause 3.8.3.11.(1)(g), g) have a toilet paper dispenser conforming to Clause 3.8.3.11.(1)(h), h) unless a counter is provided, have a shelf located not more than 1 200 mm above the floor, and i) be designed to permit a wheelchair to turn in an open space not less than 1 500 mm in diameter. 3.8.3.13. Water Closets 1) A water closet for a person with physical disabilities shall a) be equipped with a seat located 430 mm to 460 mm above the floor, b) flush automatically or be equipped with a flushing control that i) is located 500 mm to 900 mm above the floor, ii) is located no more than 350 mm from the transfer side, and iii) complies with Clause 3.8.3.8.(1)(b), c) be equipped with a seat lid or other back support, and d) where it has a tank, have a securely attached tank top. (See Note A-3.8.3.13.(1).) 3.8.3.14. Urinals 1) Urinals described in Sentence 3.8.2.8.(6) shall a) be wall-mounted, with the rim located not more than 430 mm above the floor, b) be adjacent to an accessible route, c) have a clear width of approach of 800 mm centred on the urinal and unobstructed by privacy screens, d) have no step in front of it, e) have a flush control that i) is automatic, or ii) complies with Clause 3.8.3.8.(1)(b) and is located 900 mm to 1 100 mm above the floor, and f) have a vertically mounted grab bar installed on each side that i) complies with Article 3.7.2.8., ii) is not less than 600 mm long, with its centre line 1 000 mm above the floor, and iii) is located not more than 380 mm from the centre line of the urinal. 3.8.3.15. Lavatories and Mirrors 1) Lavatories required by Sentence 3.8.2.8.(7) shall a) be equipped with faucets complying with Sentence 3.7.2.3.(4), b) be located so that the distance between the centre line of the lavatory and any side wall is not less than 460 mm, c) have a rim height not more than 865 mm above the floor, d) have a clearance beneath the lavatory not less than i) 760 mm wide, ii) 735 mm high at the front edge, iii) 685 mm high at a point 200 mm back from the front edge, and iv) 230 mm high over the distance from a point 280 mm to a point 430 mm back from the front edge, (see Note A-3.8.3.15.(1)(d)) e) have insulated water supply and drain pipes where these pipes are exposed (see Note A-3.8.3.15.(1)(e)), f) have a soap dispenser that i) is automatic, or ii) complies with Clause 3.8.3.8.(1)(b) and is located not more than 1 100 mm above the floor, within 500 mm from the front of the lavatory (see Note A-3.8.3.15.(1)(f)), and g) have a towel dispenser or other hand-drying equipment located close to the lavatory, not more than 1 200 mm above the floor in an area that is accessible to persons in wheelchairs. 2) Mirrors required by Sentence 3.8.2.8.(8) shall be a) mounted with their bottom edge not more than 1 000 mm above the floor, or b) fixed in an inclined position so as to be usable by a person in a wheelchair. 3.8.3.16. Showers 1) Showers required by Sentence 3.8.2.8.(10) shall a) be not less than 1 500 mm wide and 900 mm deep, b) have a clear floor space at the entrance to the shower that is not less than 900 mm deep and the same width as the shower, except that fixtures are permitted to project into that space provided they do not restrict access to the shower (see Note A-3.8.3.16.(1)(b)), c) have no doors or curtains that obstruct the controls or the clear floor space at the entrance to the shower, d) have a slip-resistant floor surface, e) have a threshold not more than 13 mm higher than the finished floor, and where it is higher than 6 mm, bevelled to a slope no steeper than 1 in 2 (50%), f) have 2 grab bars that i) conform to Sentence 3.7.2.8.(1), ii) one of which is not less than 1 000 mm long and located vertically on the side wall 50 mm to 80 mm from the adjacent clear floor						

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			space, with its lower end 600 mm to 650 mm above the floor, and, iii) one of which is L-shaped and located on the wall opposite the entrance to the shower, with a horizontal member not less than 1 000 mm long mounted 750 mm to 870 mm above the floor and a vertical member not less than 750 mm long mounted 400 mm to 500 mm from the side wall on which the other vertical grab bar is mounted, (see Note A-3.8.3.16.(1)(f)), g) have a hinged seat that is not spring-loaded or a fixed seat with a smooth, slip-resistant surface and no rough edges, the seat being i) not less than 450 mm wide and 400 mm deep, ii) mounted on the same side wall as the vertical grab bar, at 460 mm to 480 mm above the floor, and iii) designed to carry a minimum load of 1.3 kN, h) have a pressure-equalizing or thermostatic-mixing valve and other controls that i) comply with Clause 3.8.3.8.(1)(b), ii) are mounted on the wall opposite the entrance to the shower at not more than 1 200 mm above the floor and within reach of the seat, i) have a hand-held shower head with not less than 1 800 mm of flexible hose located so that it i) can be reached from a seated position, ii) can be used in a fixed position at a height of 1 200 mm and 2 030 mm, and iii) does not obstruct the use of the grab bars, and j) have recessed soap holders that can be reached from the seated position. 3.8.3.17. Bathtubs 1) Bathtubs required by Sentence 3.8.2.8.(11) shall a) be located in a room with a clear floor space not less than 1 500 mm in diameter, b) be not less than 1 500 mm long, c) have a clear floor space not less than 750 mm wide adjacent to its entire length, d) be capable of being accessed along its full length with no tracks mounted on its rim e) have faucets and other controls that i) conform to Clause 3.8.3.8.(1)(b), and ii) are located on the centre line or between the centre line of the bathtub and the exterior edge of the bathtub rim, at a maximum height of 450 mm above the rim, f) have three grab bars i) that conform to Sentence 3.7.2.8.(1), ii) that are not less than 1 200 mm long, iii) two of which are located vertically at each end of the bathtub, set 80 mm to 120 mm in from the outside edge of the bathtub, with their lower end 180 mm to 280 mm above the bathtub rim, and iv) one of which is located horizontally along the length of the bathtub at 180 mm to 280 mm above the bathtub rim, g) have a slip-resistant bottom surface, and h) be equipped with a hand-held shower head with not less than 1 800 mm of flexible hose that can be used in a fixed position at a height of 1 200 mm and 2 030 mm 3.8.3.18. Assistive Listening Devices (See Note A-3.8.3.18.) 1) Except as provided in Sentence (2), assistive listening systems required by Article 3.8.2.9. shall encompass the entire seating area. 2) If an assistive listening system referred to in Article 3.8.2.9. is an induction loop system, only half the seating area in the room need be encompassed. 3.8.3.19. Counters 1) Counters required by Sentence 3.8.2.11.(1) shall have a) at least one barrier-free section not less than 760 mm long centred over a knee space conforming to Clause (c), b) a surface not more than 865 mm above the floor, and c) except as provided in Sentence (2) and where the counter is intended to be used as a work surface, a knee space underneath it that is i) not less than 760 mm wide, ii) not less than 685 mm high, and iii) not less than 485 mm deep. 2) A counter that is used in a cafeteria, or one that performs a similar function whereat movement takes place parallel to the counter, need not provide a knee space underneath it 3.8.3.20. Shelves or Counters for Telephones (See Note A-3.8.3.20.) 1) Shelves or counters required by Sentence 3.8.2.11.(2) shall a) be level, b) be not less than 305 mm deep, c) have, for each telephone provided, a clear space not less than 250 mm wide having no obstruction within 250 mm above the surface, and d) have a section with a surface not more than 865 mm above the floor serving at least one telephone. 2) Where a wall-hung						

Table 4-3: National Building Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			telephone is provided above the shelf or counter section described in Clause (1)(d), it shall be located so that the receiver and coin slot are not more than 1 200 mm above the floor. 3.8.3.21. Spaces in Seating Area 1) Spaces designated for wheelchair use referred to in Sentence 3.8.2.3.(3) shall be a) clear and level, or level with removable seats b) not less than 900 mm wide and 1 525 mm long to permit a wheelchair to enter from a side approach and 1 220 mm long where the wheelchair enters from the front or rear of the space, c) arranged so that at least 2 designated spaces are side by side, d) located adjoining a barrier-free path of travel without infringing on egress from any row of seating or any aisle requirements, and e) situated, as part of the designated seating plan, to provide a choice of viewing location and a clear view of the event taking place.						

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
National Fire Building Code of Canada 2015					Information, In Compliance, Potentially In Compliance, Potentially Non-Compliant, Non-Compliant				
NFCC	2.1.5	Portable Extinguishers	Header						
NFCC	2.1.5.1.	Selection and Installation	1) Portable extinguishers shall be installed in all buildings except dwelling units. 2) Except as otherwise required by this Code, portable extinguishers shall be selected and installed in accordance with NFPA 10, “Portable Fire Extinguishers.” 3) Notwithstanding the requirements of Sentence (2), portable extinguishers used to comply with this Code shall conform to the following performance standards as applicable: a) CAN/ULC-S503, “Carbon-Dioxide Fire Extinguishers,” b) CAN/ULC-S504, “Dry Chemical Fire Extinguishers,” c) CAN/ULC-S507, “Water Fire Extinguishers,” d) CAN/ULC-S512-M, “Halogenated Agent Hand and Wheeled Fire Extinguishers,” e) CAN/ULC-S554, “Water Based Agent Fire Extinguishers,” and f) CAN/ULC-S566, “Halocarbon Clean Agent Fire Extinguishers.” 4) Notwithstanding the requirements of Sentence (2), portable extinguishers shall be rated and identified in conformance with CAN/ULC-S508, “Rating and Fire Testing of Fire Extinguishers.” 5) Portable extinguishers in proximity to a fire hazard shall be located so as to be accessible without exposing the operator to undue risk. (See Note A-2.1.5.1.(5).) 6) Portable extinguishers that are subject to corrosion shall not be installed in a corrosive environment unless they are provided with appropriate corrosion protection.	U43 SDD [[ ]]	Referenced clause 4.11 in DNGS CCR Report CCR_D_REP_NK38-REP-78000-10001_003	Potential In Compliance		Referenced clause 4.11 in DNGS CCR Report CCR_D_REP_NK38-REP-78000-10001_003	
NFCC	2.8	Emergency Planning	Heading						
NFCC	3.1.3	Industrial Trucks	Heading						
NFCC	3.1.3.1.	Industrial Trucks	1) Except as provided in Sentences (2) and (3), the designation, use, maintenance and operation of industrial trucks shall conform to NFPA 505, “Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operations.” 2) Fuel-fired industrial trucks shall conform to ULC/ORD-C558, “Guide for the Investigation of Internal Combustion Engine-Powered Industrial Trucks.” 3) Battery-powered industrial trucks shall conform to ULC/ORD-C583, “Guide for the Investigation of Electric Battery-Powered Industrial Trucks.”	FP Program under N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses. The FHA scope is currently for power block buildings only	
NFCC	3.1.3.2	Fuel-Fired Industrial Trucks	1) Fuel-fired industrial trucks shall be stored a) in detached buildings, b) in areas separated from the remainder of the storage area by a fire separation having a fire-resistance rating of not less than 1 h, or c) in areas where the vehicles will not create a fire hazard to the storage area. 2) Except as provided in Sentence (3), fuel-fired industrial trucks shall be refuelled only at designated locations outside buildings. 3) Fuel-fired industrial trucks that are fuelled by replaceable propane cylinders are permitted to have their cylinders replaced indoors provided a) cylinder replacement is done at a safe location that is at least 7.5 m from ignition sources, open pits and underground entrances, b) the cylinders’ valves are closed, c) when an automatic quick-closing coupling that closes in both directions when uncoupled is not provided, the engine is operated until the fuel in the system is consumed, and d) spare propane cylinders are stored in conformance with Subsection 3.3.5. 4) Each fuel-fired industrial truck shall be equipped with at least one portable extinguisher having a minimum rating of 2-A:30-B:C	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses. The FHA scope is currently for power block buildings only	
NFCC	3.1.3.3.	Battery-Powered Industrial Trucks	1) Battery-charging installations for battery-powered industrial trucks shall be located a) at least 1.5 m from combustible materials, b) when serving more than 2 trucks, in well ventilated areas, c) in areas where flammable gases or vapours, combustible dusts or combustible fibres are not present in hazardous quantities, and d) in areas where precautions are taken to prevent ignition sources, such as open flames, sparks or electric	FP Program under OPG N-PROG-RA-0012_013 Fire		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses. The FHA scope is	

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			arcs. 2) Battery-charging installations for battery-powered industrial trucks shall be equipped with at least one portable extinguisher having a minimum rating of 2-A:30-B:C.	Protection ([[ ]])				currently for power block buildings only	
NFCC	3.1.3.4.	Training	1) Only trained and authorized personnel shall be permitted to a) operate industrial trucks, b) replace or refuel propane cylinders for fuel-fired industrial trucks, c) refuel fuel-fired industrial trucks, or d) charge batteries for battery-powered industrial trucks.	FP Program under OPG N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance.		The FHA will be assessed for fire protection equipment and location of hazards as design progresses. The FHA scope is currently for power block buildings only	
NFCC	3.2	Indoor Storage			Referenced clause 4.18 in DNGS CCR Report CCR_D_REP_NK38-REP-78000-10001_003	Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses. The FHA scope is currently for power block buildings only	
NFCC	3.2.8	Indoor Storage of Compressed Gases			Referenced clause 4.20 in DNGS CCR Report CCR_D_REP_NK38-REP-78000-10001_003	Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses. The FHA scope is currently for power block buildings only	
NFCC	3.2.8.1	Application	1) Except as provided in Subsection 3.1.1., this Subsection applies to the indoor storage of dangerous goods classified as compressed gases			Potential In Compliance			
NFCC	3.2.8.2.	Flammable Gases	1) Except as provided in Sentences (2) and (3), cylinders of dangerous goods classified as flammable gases stored indoors shall be located in a room that a) is separated from the remainder of the building in conformance with Sentence 3.3.6.3.(1) of Division B of the NBCC, b) is located on an exterior wall of the building, c) can be entered from the exterior, and whose closures leading to the interior of the building are in conformance with Sentence 3.3.6.3.(1) of Division B of the NBCC, d) is designed to prevent critical structural and mechanical damage from an internal explosion in conformance with good engineering practice such as that described in NFPA 68, “Explosion Protection by Deflagration Venting” (see Note A-3.2.8.2.(1)(d)), e) is provided with natural or mechanical ventilation in conformance with Subsection 4.1.7., f) does not contain fuel-fired appliances or high temperature heating elements, and g) is used for no purpose other than the storage of dangerous goods classified as compressed gases. 2) Cylinders of dangerous goods classified as flammable, lighter than air gases are permitted to be stored outside of a room described in Sentence (1), provided the aggregate capacity per fire compartment of expanded gas outside of the room is not more than a) 60 m3 in an un-sprinklered building of combustible construction, and b) 170 m3 in a sprinklered building or in a building of noncombustible construction. (See Note A-3.2.8.2.(2).) 3) The storage of “single-trip” non-refillable cylinders (i.e. TC-39, TC-2P, and TC-2Q) with water capacities of more than 375 g and less than 1.13 kg located within mercantile occupancies shall conform to the provisions stipulated in CSA B149.2, “Propane Storage and Handling Code.”	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses. The FHA scope is currently for power block buildings only	
NFCC	3.2.8.3.	Indoor Storage of Anhydrous Ammonia and Toxic or Oxidizing Gases	1) Cylinders of anhydrous ammonia or dangerous goods classified as toxic or oxidizing gases stored indoors shall be located in a room that a) is separated from the remainder of the building in conformance with Sentence 3.3.6.3.(2) of Division B of the NBCC, b) is located on an exterior wall, c) can be entered from the exterior, and whose closures leading to the interior of the building are in conformance with Sentence 3.3.6.3.(2) of Division B of the NBCC, and d) is provided with ventilation to the outdoors. 2) Cylinders of gases described in Sentence (1) shall not be stored in a room containing combustible materials.	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses. The FHA scope is currently for power block buildings only	

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NFCC	4	Flammable and Combustible Liquids	Header					Referenced clause 4.19 in DNGS CCR Report CCR_D_REP_NK38-REP-78000-10001_003	
NFCC	4.1	General	Header						
NFCC	4.1.1	Scope	Header						
NFCC	4.1.1.1	Application	1) Except as provided in Sentences (2) and (3), this Part applies to the storage, handling, use and processing of a) flammable liquids and combustible liquids in buildings, structures and open areas, and b) dangerous goods classified as flammable gases at fuel-dispensing stations. (See Note A-4.1.1.1.(1).) 2) Areas in process plants, where conditions must be addressed by design and operational details specific to the hazard, need not conform to this Part, where alternative protection is provided in conformance with Article 1.2.1.1. of Division A. (See Note A-4.1.1.1.(2).) 3) This Part shall not apply to a) the transportation of flammable liquids or combustible liquids under TC SOR/2016-95, “Transportation of Dangerous Goods Regulations (TDGR),” b) appliances and their ancillary equipment within the scope of CSA B139, “Installation Code for Oil-Burning Equipment” (see Note A-4.1.1.1.(3)(b)), c) the storage of flammable liquids or combustible liquids on farms for individual farm use and on isolated construction projects, or d) the storage of aerosol products covered under Subsection 3.2.5. 4) In addition to the requirements in this Part, the storage, handling and use of flammable liquids and combustible liquids in laboratories shall be in conformance with Section 5.5. 5) Unless otherwise specified, this Section shall apply to all areas involved in the storage, handling or use of flammable liquids and combustible liquids covered in this Par.	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses	
NFCC	4.1.2.1	Classification	4.1.2.1. Classification (See Note A-4.1.2.1.) 1) For the purposes of this Part, flammable liquids and combustible liquids shall be classified in conformance with Sentences (2) and (3). 2) Flammable liquids shall be Class I liquids, and shall be subdivided into: a) Class IA liquids, which shall include those having a flash point below 22.8°C and a boiling point below 37.8°C, b) Class IB liquids, which shall include those having a flash point below 22.8°C and a boiling point at or above 37.8°C, and c) Class IC liquids, which shall include those having a flash point at or above 22.8°C and below 37.8°C.	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses	
NFCC	4.1.3	Flash Point	Header						
NFCC	4.1.3.1	Determination of Flash Point	(See Note A-4.1.3.1.) 1) Except as provided in Sentences (3) and (4), the flash point of liquids having a kinematic viscosity less than 6 cSt at 37.8°C and a flash point below 93.3°C shall be determined in conformance with ASTM D 56, “Flash Point by Tag Closed Cup Tester.” 2) Except as provided in Sentences (3) and (4), the flash point of liquids having a kinematic viscosity of 6 cSt or more at 37.8°C or a flash point of 93.3°C or higher shall be determined in conformance with ASTM D 93, “Flash Point by Pensky-Martens Closed Cup Tester.” 3) ASTM D 3828, “Flash Point by Small Scale Closed Cup Tester,” is permitted to be used for testing aviation turbine fuels within the scope of this procedure. 4) ASTM D 3278, “Flash Point of Liquids by Small Scale Closed-Cup Apparatus,” is permitted to be used for paints, enamels, lacquers, varnishes and related products and their components having flash points between 0°C and 110°C, and having a kinematic viscosity less than 150 St at 25°C.	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses	
NFCC	4.1.4	Electrical Installations	Header						
NFCC	4.1.4.1.	Hazardous Locations	1) Where flammable liquids or combustible liquids are present, electrical equipment shall conform to CSA C22.1, “Canadian Electrical Code, Part I,” for hazardous locations. (See Notes A-4.1.4.1.(1) and A-5.1.2.1.(1).)2) Where refrigerators are used to store Class I liquids, they shall be designed so that a) electrical equipment located within the storage compartment, within the outer shell, on the door and on the door frame of the refrigerator is inconformance with CSA C22.1, “Canadian Electrical Code, Part I,” for Class I, Zone 0	FHA [[ ]]		Potential In Compliance		It is the intent of BWRX 300 to comply with this requirement in areas such as standby diesel rooms.	

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			or 1 hazardous locations based on the frequency of occurrence and duration of an explosive gaseous atmosphere, and b) electrical equipment mounted on the outside surface of the refrigerator isi) in conformance with CSA C22.1, “Canadian Electrical Code,Part I,” for Class I, Zone 2 hazardous locations, orii) located above the top of the storage compartment.						
NFCC	4.1.5	Fire Prevention and Protection	Header						
NFCC	4.1.5.1	Additional Fire Protection Equipment	1) Fire protection equipment shall be provided where there are special hazards of operation, dispensing or storage	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses	
NFCC	4.1.5.2	4.1.5.2. Ignition Sources	1) Unless controlled in a manner that will not create a fire or explosion hazard, a device, operation or activity that produces open flames, sparks or heat shall not be permitted in an area described in Article 4.1.1.1. (See Note A-4.1.5.2.(1).)	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses	
NFCC	4.1.5.3	Smoking	1) Except for designated safe smoking areas conforming to Subsection 2.4.2., smoking shall not be permitted in areas described in Article 4.1.1.1	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses	
NFCC	4.1.5.4	Removal of Combustibles	1) Areas described in Article 4.1.1.1. shall be kept clean and free of ground vegetation and accumulations of combustible materials not essential to operations. 2) Used rags and similar materials contaminated with flammable liquids or combustible liquids shall be stored in receptacles conforming to Article 2.4.1.3	FHA [[ ]]		Potential In Compliance		The FHA will be assessed for fire protection equipment and location of hazards as design progresses	
NFCC	4.1.5.5	Emergency Planning	1) Except as provided in Sentence (2), emergency planning measures conforming to Section 2.8. shall be provided for all buildings, parts of buildings and open areas described in Article 4.1.1.1. 2) The fire safety plan required as part of the emergency planning measures in Sentence (1) shall be retained on site for reference by the authority having jurisdiction and personnel	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]]		Potential In Compliance		The intent is to cover programmatic requirement for DNNP under existing procedure OPG N-PROG-RA-0012_013 Fire Protection. This plan includes emergency planning	
NFCC	4.1.5.6	Access for Firefighting	1) Required aisles and other access paths shall be maintained to permit the unobstructed movement of personnel and fire department apparatus so that firefighting operations can be carried out in any part of an area used for the storage, use or handling of flammable liquids or combustible liquids	FHA [[ ]]		Potential In Compliance			
NFCC	4.1.5.7	Hot Works	1) Hot works shall be performed in conformance with Section 5.2	FHA [[ ]]		Potential In Compliance			
NFCC	4.1.5.8	Basement Storage	(See Note A-4.1.5.8.) 1) Except as permitted in Sentence (2) and in dwelling units as described in Article 4.2.4.5., and in mercantile occupancies as described in Sentence 4.2.5.3.(3), Class I liquids shall not be stored, handled or used in basements or pits. 2) Up to 10 L of Class I liquid is permitted to be stored in basements, provided it is stored in safety containers conforming to ULC/ORD-C30, “Safety Containers.”	FHA [[ ]]		Potential In Compliance		It is not expected that 10 L of Class I liquid or more will be stored in building basements, in safety containers conforming to ULC/ORD-C30, “Safety Containers”	
NFCC	4.1.6	Spill Control and Drainage Systems	Header						
NFCC	4.1.6.1	Spill Control and Drainage Systems	1) Except as permitted in Sentence (3), a spill of flammable liquids or combustible liquids shall be prevented from flowing outside the spill area and from reaching waterways, sewer systems and potable water sources by a) constructing a	U50 SDD [[ ]]		Potential In Compliance	Action	Add NFCC clause requirement to U50 SDD [[ ]]	

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			noncombustible barrier capable of containing the spill, or b) grading the site or sloping the floor to divert the spill to a drainage system conforming to Article 4.1.6.2. (See Note A-4.1.6.1.(1).) 2) When barriers required in Sentence (1) are provided to contain accidental spillage from aboveground storage tanks, they shall conform to the requirements for secondary containment in Subsection 4.3.7. 3) Water-miscible effluent from spills and firefighting operations is permitted to be directed into a sewer system provided it does not create a fire hazard or any risk to public health or safety. 4) The fire safety plan required by Article 4.1.5.5. shall include measures to be taken to direct the overflow of spilled liquids and firefighting water away from a) buildings, b) adjoining properties, c) means of egress, d) air intakes or openings that could permit vapour entry into the building, e) fire alarm control panels, f) fire department access routes, g) valves controlling the water supply for firefighting, or fire protection systems, h) fire department pumper connections or wall hydrants, i) isolation valves controlling processes, and j) valves controlling the flow of flammable liquids or combustible liquids.						
NFCC	4.1.6.2	Drainage Systems	1) A drainage system referred to in Clause 4.1.6.1.(1)(b) shall a) terminate at a location where such spill will not create a fire hazard or any risk to public health or safety, and b) direct the spill away from the areas identified in Sentence 4.1.6.1.(4). 2) Closed drainage systems shall be equipped with a trap. (See Note A-4.1.6.2.(2).)	U50 SDD [[ ]]		Potential In Compliance	Action	Add NFCC clause requirement to U50 SDD [[ ]]	
NFCC	4.1.6.3	Spills and Leaks	1) Maintenance and operating procedures shall be established to prevent the escape of flammable liquids or combustible liquids to areas where they could create a fire or explosion hazard. 2) Except as provided in Sentence (3), all reasonable steps shall be taken to recover escaped liquid and to remove or treat contaminated soil. 3) Spilled or leaked flammable liquids or combustible liquids shall be a) flushed to a location where they will not create a fire or explosion hazard, or any risk to public health or safety, or b) neutralized or absorbed and cleaned up with the aid of a product that is compatible and non-reactive with the liquid being cleaned up (see Note A-4.1.6.3.(3)(b)), and i) deposited in a receptacle conforming to Article 2.4.1.3., or ii) disposed of in a manner that does not create a fire or explosion hazard.	FHA [[ ]]		Potential In Compliance			
NFCC	4.1.7	Ventilation	Header						
NFCC	4.1.7.1	Rooms or Enclosed Spaces	1) Where flammable liquids and combustible liquids are processed, handled, stored, dispensed or used within rooms or enclosed spaces, ventilation shall conform to the appropriate provincial or territorial regulations or municipal bylaws, or in the absence of such legislation, to this Part and the NBCC. (See Note A-4.1.7.1.(1).)	U41 SDD [[ ]]		Potential In Compliance		Currently, only power block buildings, that meet federal requirements, have been assessed under preliminary design. Additional areas will be included, as required, under detailed design.	
NFCC	4.1.7.2.	Ventilation Measures	1) Except as permitted in Sentence (2), a room or enclosed space referred to in Article 4.1.7.1. shall be provided with one of the following ventilation systems: a) continuous mechanical ventilation where Class I liquids are processed, dispensed or used in a manner that releases flammable vapours into the room or enclosed space, b) either natural or continuous mechanical ventilation where i) Class I liquids are stored, processed, dispensed or used in a manner that does not release flammable vapours into the room or enclosed space, or ii) Class II liquids are processed, dispensed or used. 2) Ventilation referred to in Clause (1)(b) need not be provided for the storage of Class I liquids if a) storage consists of only closed containers, and b) no dispensing operations are performed. 3) Ventilation required in Sentence (1) shall be sufficient to ensure that flammable vapour concentrations outside the zone identified as Class I, Zone 0 or 1 in conformance with Article 4.1.4.1., do not exceed 25% of the lower explosive limit of the flammable vapour. (See Note A-4.1.7.2.(3).) 4) A mechanical ventilation system is deemed to comply with Sentence (3) if it is capable of exhausting at least 18 m3/h/m^2 of room area, but not less than 250 m3/h. 5) Where continuous mechanical ventilation is installed in order to meet the conditions of Sentence (1), it shall a) be provided with automatic interlocks so that the activity generating flammable vapours cannot be performed when the ventilation system is not in operation, b) sound an audible alarm in	U41 SDD [[ ]]		Potential In Compliance		Currently, only power block buildings, that meet federal requirements, have been assessed under preliminary design. Additional areas will be included, as required, under detailed design. Detailed design will assess ventilation requirements based on all applicable codes and standards.	

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			an attended area upon shut down of the ventilation system, and c) conform to NFPA 91, “Exhaust Systems for Air Conveying of Vapours, Gases, Mists, and Noncombustible Particulate Solids.”						
NFCC	4.1.7.3.	Location of Air Inlets and Outlets	1) Ventilation air inlets and outlets within a room or enclosed space referred to in Article 4.1.7.1. shall be arranged so as to provide air movement in all portions of the room to prevent the accumulation of flammable vapours in conformance with Sentence 4.1.7.2.(3). 2) Inlets and outlets conforming to Sentence (3) or (4) shall be deemed to have met the requirements of Sentence (1). 3) Where the flammable vapour being removed is heavier than air, a) at least one air inlet shall be located at a point near a wall, and no higher than 300 mm from the floor, and b) at least one air outlet shall be located near the opposite wall, no higher than 300 mm from the floor. 4) Where the flammable vapour being removed is lighter than air, a) at least one air inlet shall be located at a point near a wall, and no lower than 300 mm from the ceiling, and b) at least one air outlet shall be located near the opposite wall, no lower than 300 mm from the ceiling.	U41 SDD [[ ]]		Potential In Compliance		Currently, only power block buildings, that meet federal requirements, have been assessed under preliminary design. Additional areas will be included, as required, under detailed design. Detailed design will assess ventilation requirements based on all applicable codes and standards.	
NFCC	4.1.7.4	4.1.7.4. Location of Mechanical Ventilation Exhaust Air Outlets	1) Except as provided in Article 4.1.7.6., the exhaust air outlet from a mechanical ventilation system required in Article 4.1.7.2. shall be a) located outdoors, not less than 3 m from any building opening, and b) arranged so that the exhaust air does not discharge toward any unprotected opening within 7.5 m of the discharge point	U41 SDD [[ ]]		Potential In Compliance		Currently, only power block buildings, that meet federal requirements, have been assessed under preliminary design. Additional areas will be included, as required, under detailed design. Detailed design will assess ventilation requirements based on all applicable codes and standards.	
NFCC	4.1.7.5.	Make-up Air	1) Make-up air for a natural or mechanical ventilation system shall be taken from a point remote from any exhaust air discharge described in Article 4.1.7.4. 2) Make-up air for a natural ventilation system shall be taken from a point outside the building. 3) Subject to the provisions in Clause 3.2.8.2.(1)(c), where make-up air for a mechanical ventilation system is taken from within the building, the opening into the room or enclosed space shall be provided with a fire damper.	U41 SDD [[ ]]		Potential In Compliance		Currently, only power block buildings, that meet federal requirements, have been assessed under preliminary design. Additional areas will be included, as required, under detailed design. Detailed design will assess ventilation requirements based on all applicable codes and standards.	
NFCC	4.1.7.6	Recirculating Ventilation Systems	1) Where a mechanical ventilation system is installed in conformance with Article 4.1.7.2., and where exhaust air is recirculated, a fail-safe vapour detection and alarm system shall be provided a) to continuously monitor the flammable vapour concentration in the exhaust air, and b) if the vapour concentration in Clause (a) exceeds 25% of the lower explosive limit of the vapour, to i) sound an alarm in an attended area, ii) stop the recirculation of air, and iii) redirect the exhaust air to an outdoor location	U41 SDD [[ ]]		Potential In Compliance		Currently, only power block buildings, that meet federal requirements, have been assessed under preliminary design. Additional areas will be included, as required, under detailed design. Detailed design will assess ventilation requirements based on all applicable codes and standards.	
NFCC	4.1.7.7	Exclusive Use of Ducts	1) Ducts used in a ventilation system conforming to Article 4.1.7.2. shall not be used for any other ventilation or exhaust system	U41 SDD [[ ]]		Potential In Compliance		Currently, only power block buildings, that meet federal requirements, have been assessed under preliminary design. Additional areas will be included, as required, under	

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
								detailed design. Detailed design will assess ventilation requirements based on all applicable codes and standards.	
NFCC	4.1.7.8	Maintenance	1) All components of the ventilation system shall be kept free of obstructions that may interfere with its operation	FHA [[ ]]		Potential In Compliance		Currently, only power block buildings, that meet federal requirements, have been assessed under preliminary design. Additional areas will be included, as required, under detailed design. Detailed design will assess ventilation requirements based on all applicable codes and standards.	
NFCC	4.1.8	Handling and Flammable and Combustible Liquids	Header						
NFCC	4.1.8.1.	Containers and Storage Tanks	1) Except as provided in Sentence 4.1.8.4.(1), flammable liquids and combustible liquids shall be kept in containers conforming to Subsection 4.2.3. or in storage tanks conforming to Subsection 4.3.1. 2) Containers and storage tanks for flammable liquids or combustible liquids shall be kept closed when not in use. 3) Containers and storage tanks shall not be filled beyond their safe filling level.	FHA [[ ]]		Potential In Compliance			
NFCC	4.1.8.2.	Control of Static Electric Charge	1) When Class I liquids are dispensed from or into a container or a storage tank, a) all metallic or electrically conducting material in the transfer system shall be electrically bonded and grounded, or b) if the container or tank is made of non-electrically conducting material, measures shall be taken to minimize the potential for static electric charge to develop (see Note A-4.1.8.2.(1)(b)).2) Except as provided in Sentence (3), when Class I liquids are transferred into astorage tank through the top of the tank, the fill pipe shall terminate within 150 mm ofthe bottom of the tank.3) Sentence (2) shall not apply whena) the storage tank vapour space cannot exceed 25% of the lower explosive limit oris filled with an inert gas that prevents the ignition of the vapour mixture, orb) the liquid being transferred has a minimum conductivity that prevents theaccumulation of static electricity (see Note A-4.1.8.2.(3)(b)).4) Fill pipes referred to in Sentence (2) shall be installed in such a way as tominimize vibration of the pipe.	FHA [[ ]]		Potential In Compliance			
NFCC	4.1.8.3.	Transfer	1) Class I liquids shall be drawn from or transferred into containers or storage tanks within a building a) through a piping or transfer system conforming to Section 4.5., b) by means of a pump designed in conformance with good engineering practice on top of the container or storage tank, or c) by gravity through a self-closing valve designed in conformance with good engineering practice. (See Note A-4.1.8.3.(1).) 2) Except as provided in Subsection 4.5.9., the transfer of flammable liquids or combustible liquids by means of pressure applied to a container or storage tank shall not be permitted.	FHA [[ ]]		Potential In Compliance			
NFCC	4.1.8.4.	Fuel Tanks of Vehicles	1) It is permitted to use movable tanks for dispensing flammable liquids or combustible liquids into the fuel tanks of vehicles or other motorized equipment provided such movable tanks are used in conformance with the requirements of this Part for storage tanks. 2) Only enclosed pumping equipment designed in conformance with good engineering practice shall be used to transfer Class I liquids to or from the fuel tanks of vehicles inside buildings. (See Note A-4.1.8.3.(1).)	FHA [[ ]]		Potential In Compliance			
NFCC	5.2	Hot Works	Header						

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NFCC	5.2.1	General	Header						
NFCC	5.2.1.1.	Application	1) This Section applies to hot works involving open flames or producing heat or sparks, including but not limited to, cutting, welding, soldering, brazing, grinding, adhesive bonding, roofing operations, thermal spraying and thawing pipes. 2) Except as provided in this Section, hot works described in Sentence (1) shall conform to CSA W117.2, “Safety in Welding, Cutting and Allied Processes.”	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.1.2	Training	1) Hot works shall be performed only by personnel trained in the safe use of equipment in conformance with this Section	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.2	Hot Woks Equipment	Header						
NFCC	5.2.2.1	Maintenance	1) Hot work equipment shall be maintained in good operating condition	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.2.2	Inspection	1) Hot work equipment shall be examined for leakage or defects prior to each use. 2) Leaks or defects found in hot work equipment shall be repaired prior to use	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.2.3	Equipment Not in Use	1) All valves shall be closed and gas lines bled when hot work equipment using dangerous goods classified as compressed gases is not in use. 2) Electric hot work equipment shall be de-energized when not in use	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.2.4.	Compressed Gas Equipment	1) The design and installation of oxygen-fuel gas equipment shall conform to NFPA 51, “Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes.” 2) Unalloyed copper piping shall not be used for acetylene gas. 3) Oil or grease shall not be used with equipment for oxygen.	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.3	Prevention of Fires	Header						

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
NFCC	5.2.3.1.	Location of Operations	1) Except as provided in Sentence (2), hot work shall be carried out in an area free of combustible and flammable contents, with walls, ceilings and floors of noncombustible construction or lined with noncombustible materials. 2) When it is not practicable to undertake hot work in an area described in Sentence (1), a) combustible and flammable materials within a 15 m distance from the hot work shall be protected against ignition in conformance with Article 5.2.3.2., b) a continuous fire watch shall be provided during the hot work and for a period of not less than 60 min after its completion in conformance with Article 5.2.3.3., and c) a final inspection of the hot work area and adjacent exposed areas shall be conducted i) 4 h after completion of the work, or ii) after completion of the fire watch required in Clause (b), in which case, a more comprehensive inspection shall be conducted (see Note A-5.2.3.1.(2)(c)(ii)). 3) When there is a possibility of sparks or open flames reaching combustible materials in areas adjacent to the area where hot work is carried out, a) openings in walls, floors or ceilings shall be covered or closed to prevent the passage of sparks or open flames to such adjacent areas, or b) Sentence (2) shall apply to such adjacent areas.	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.3.2.	Protection of Combustible and Flammable Materials	1) Any combustible and flammable material, dust or residue shall be a) removed from the area where hot work is carried out, or b) except as provided in Sentence (2), protected against ignition by the use of noncombustible materials. 2) Combustible materials or building surfaces that cannot be removed or protected against ignition as required in Clause (1)(b) shall be thoroughly wetted where hot work is carried out. 3) The fire watch described in Clauses 5.2.3.1.(2)(b) and (c) shall be carried out by more than one person if combustible materials are exposed to the hot work operations but cannot be directly observed by the initial person performing the fire watch. 4) Any process or activity that produces flammable gases or vapours, combustible dusts or combustible fibres in quantities sufficient to create a fire or explosion hazard shall be interrupted and the hazardous conditions shall be removed before any hot work is carried out.	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.3.3	Fire Watch	1) The exposed areas described in Sentences 5.2.3.1.(2) and (3) shall be continuously examined for ignition of combustible materials by personnel equipped with and trained in the use of fire extinguishing equipment. (See Note A-5.2.3.3.(1).)	FHA [[ ]] N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.3.4	Work on Containers, Equipment or Piping	1) Hot work shall not be performed on containers, equipment, or piping containing flammable liquids, combustible liquids or dangerous goods classified as flammable gases unless a) they have been cleaned and tested with a gas detector to ascertain that they are free of explosive vapours, or b) safety measures are taken in conformance with good engineering practice (see Note A-5.2.3.4.(1)(b))	N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.3.5	Work Adjacent to Piping	1) When hot work is to be carried out near piping containing dangerous goods classified as flammable gases, the piping shall a) conform to Sentence 5.2.3.4.(1), or b) be protected by a thermal barrier against the passage of heat.	N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.3.6	Fire Extinguishing Equipment	1) At least one portable fire extinguisher shall be provided in the hot work area.	N-PROG-RA-0012_013 Fire Protection ([[ ]])		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire protection plan N-PROG-RA-0012_013 Fire Protection.	
NFCC	5.2.3.7	Fire Safety Plan	1) In buildings or areas described in Article 2.8.1.1., the required fire safety plan shall include the safety measures described in this Subsection for the safe conducting	N-PROG-RA-0012_013 Fire		Potential In Compliance		The intent is to include DNNP program aspects such as hot work in existing OPG fire	

Table 4-4: National Fire Code of Canada Compliance Table

Standard	Clause	Category	Code Requirements	Captured in GEH Document	Compliance	Compliance Statement	Gap	Notes	Gap Analysis
			of hot works.	Protection ([[ ]])				protection plan N-PROG-RA-0012_013 Fire Protection.	

5.0 CONCLUSION

It is a general conclusion of this CCR that, with the resolution of the outstanding deviations, the DNNP-1 is in compliance with the requirements of CSA N293-12 (Reference 7-1), NBCC (Reference 7-4), and NFCC (Reference 7-5).

The deviations are summarized in Table 4-1, Table 4-2, Table 4-3, and Table 4-4.

6.0 ACRONYMS, DEFINITIONS, AND SYMBOLS

6.1 Acronyms

Acronym	Explanation
BWR	Boiling Water Reactor
C&S	Codes and Standards
CANDU	Canada Deuterium Uranium
CNSC	Canadian Nuclear Safety Commission
CSA	CSA Group
DNNP	Darlington New Nuclear Project
DNNP-1	Darlington New Nuclear Project, Unit 1
FHA	Fire Hazards Assessment
FP	Fire Protection
FPA	Fire Protection Assessment
FPS	Fire Protection System
HEPA	High Efficiency Particulate Air
IAEA	International Atomic Energy Agency
IEC	International Electrotechnical Commission
LWR	Light Water Reactor
NBCC	National Building Code of Canada
NFCC	National Fire Code of Canada
NFPA	National Fire Protection Association
NRC	National Research Council
OPG	Ontario Power Generation
PRA	Probabilistic Risk Assessment
SSC	Structures, Systems, and Components
SDD	System Design Description
USNRC	U.S. Nuclear Regulatory Commission

6.2 Definitions

None

6.3 Symbols

Symbol	Definition
°C	Degrees Celsius
°F	Degrees Fahrenheit
cSt	Centistoke
ft	Foot
gpm	Gallons per Minute
h	Hour
in	Inch
km	Kilometre
kN	Kilonewton
lx	Lux
m	Metre
mm	Millimetre

7.0 REFERENCES

7-1 CSA N293-12, Fire Protection for Nuclear Power Plants, CSA Group, R2017.

7-2 CSA N293S1:21, *Supplement #1 to N293-12, Fire Protection for Nuclear Power Plants (Application to Small Modular Reactors),* CSA Group, 2021.

7-3 REGDOC-2.5.2, Version 1, *Design of Reactor Facilities: Nuclear Power Plants*, Canadian Nuclear Safety Commission, May 2014.

7-4 NRC NBCC 2015, *National Building Code of Canada 2015*, National Research Council of Canada, 2015.

7-5 NRC NFCC 2015, *National Fire Code of Canada ~~2020~~ 2015*, National Research Council of Canada, 2015.

7-6 [[ ]], *BWRX-300 Plant Level Architectural and Life Safety Design Specification*, GE-Hitachi Nuclear Energy Americas, LLC.

7-7 [[ ]], *OPG DNNP BWRX-300 Life Safety and Fire Hazard Assessment Requirements Document,* GE-Hitachi Nuclear Energy Americas, LLC.

7-8 NFPA 10-2007, *Standard for Portable Fire Extinguishers*, National Fire Protection Association, 2007.

7-9 [[ ]], *BWRX-300 Reactor Building Architectural and Life Safety Assessment*, GE-Hitachi Nuclear Energy Americas, LLC.

7-10 [[ ]], *BWRX-300 Turbine Building Architectural and Life Safety Assessment*, GE-Hitachi Nuclear Energy Americas, LLC.

7-11 [[ ]], *BWRX-300 Control Building Architectural and Life Safety Assessment*, GE-Hitachi Nuclear Energy Americas, LLC.

7-12 [[ ]], *BWRX-300 Radwaste Building Architectural and Life Safety Assessment*, GE-Hitachi Nuclear Energy Americas, LLC.

7-13 CSA C22.1-09, *Canadian Electrical Code, Part 1*, CSA Group, 2009.

7-14 NFPA 780-2004, *Standard for the Installation of Lightning Protection Systems*, National Fire Protection Association, 2004.

7-15 ANSI/UL 586-04, *UL Standard for Safety: High-Efficiency, Particulate, Air Filter Units*, Underwriters Laboratories Inc., 2004.

7-16 ANSI/UL 900-04, *UL Standard for Safety Air Filter Units*, Underwriters Laboratories Inc., 2004.

7-17 CAN/ULC-S109-03, *Flame Tests of Flame-Resistant Fabrics and Films*, Standards Council of Canada, 2003.

7-18 NFPA 101-2012, *Life Safety Code*, National Fire Protection Association, 2012.

8.0 APPENDIX A: ADDITIONAL BACKUP INFORMATION

DNNP-1 is a new planned unit, close to north shore of Lake Ontario in Bowmanville, Ontario. It is close to a large nuclear facility comprising four existing CANDU nuclear reactors. This CANDU nuclear reactor facility was constructed in stages between 1981–1993. Unit 2 was brought online in 1990, Unit 1 in 1992, and Units 3 and 4 in 1993.

The Darlington Nuclear site, which is owned and operated by OPG, is approximately 1,200 acres in size and is located within the Municipality of Clarington, Regional Municipality of Durham, Province of Ontario, Canada. OPG also owns and operates the six-unit Pickering Nuclear Generating Station within the City of Pickering, which is located approximately 30 km to the west of the Darlington Nuclear site. The Darlington Nuclear site is bounded by Crago Road to the west, Energy Drive to the north, St. Mary's Cement to the east, and Lake Ontario to the south. The existing DNGS is located west of Holt Road on the western portion of the site, whereas the lands for the DNNP are located east of Holt Road. The allocation of lands within the Darlington Nuclear site for the DNNP is approximately 430 acres.