

GE Hitachi Nuclear Energy

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Non-Proprietary Information

BWRX-300 Darlington New Nuclear Project (DNNP) Preliminary Fire Hazards Assessment Report

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REVISION SUMMARY

Revision #	Section Modified	Revision Summary
0	All	Originally Issued as Proprietary Version NEDC-33979P Revision 0
1	All	Initial Issue as Non-Proprietary Version

1.0 INTRODUCTION

1.1 Purpose

This document describes the fire hazard analysis for the OPG Darlington New Nuclear Project (DNNP) BWRX-300. This document reviews the applicable codes and standards, defines necessary acceptance criteria, informs the fire protection design, and reviews the preliminary design of other systems as related to the FHA and confirms suitability. This document is currently preliminary and does not include all the analysis that is necessary for a complete fire hazard assessment. The document will be expanded in the future to address the fire hazard assessment in more detail, including a review of the fire hazards for each building in the protected area of the OPG DNNP BWRX-300 facility.

1.2 Scope

This document identifies applicable codes and standards for the fire hazard assessment. In addition, this document reviews the prescriptive and performance-based requirements of the applicable codes and standards and provides acceptance criteria for the DNNP. Expansion to this document will provide further analysis of the OPG DNNP, based on the progression of the design and analyze the fire protection system design against the design criteria. Information directly related to the fire protection system is found in Document [[]]. BWRX-300 Fire Protection CNSC VDR Focus Area 12 Vendor Design Review Information related to Document [[]], BWRX-300 Fire Protection System (FPS). While references to life safety are made in this Fire Hazard Assessment (FHA), the complete Life Safety Egress Assessment is in several separate documents identified in Section 5.

2.0 APPLICABLE DOCUMENTS

The following documents are applicable to the fire hazard assessment for the BWRX-300 facility. These documents are used as the basis for further design.

2.1 Supporting Requirements Documents

- A. [[]], OPG Applicable Codes and Standards Report
- B. [[]], OPG DNNP-1 BWRX-300 Fire Safety Shutdown Analysis Requirements Document
- C. [[]], Plant Level Architectural and Life Safety Design Specification

2.2 Codes and Standards

This FHA, for the OPG DNNP BWRX-300 facility, is performed based on the Canadian Regulatory Document CSA N293-12 (R2017), CSA N293S1:21, and associated references. Additionally, other codes and standards have been referenced for specific areas as the basis for a performance-based analysis. The following codes and standards form the basis of this analysis to the extent specified herein. Reference [[]] OPG Applicable Codes and Standards Report, for applicable editions.

2.2.1 Canadian Regulatory Documents

- A. CSA N293-12 (R2017) Fire Protection for Nuclear Power Plants
- B. CSA N293S1:21 Supplement No.1 to CSA N293-12: Fire protection for nuclear power plants (application to small modular reactors)

2.2.2 Canadian Codes and Standards

- A. National Building Code of Canada (NBCC), where specifically referenced in CSA N293
- B. National Fire Code of Canada (NFCC), where specifically referenced in CSA N293
- C. CSA C22.1-12 Canadian Electrical Code, Part 1

2.2.3 International Codes and Standards

- A. NFPA 10, Standard for Portable Fire Extinguishers
- B. NFPA 11, Standard for Low-, Medium-, and High-Expansion Foam Systems
- C. NFPA 12, Standard for Carbon Dioxide Extinguishing Systems
- D. NFPA 13, Standard for the Installation of Sprinkler Systems
- E. NFPA 14, Standard for the Installation of Standpipe and Hose Systems
- F. NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection
- G. NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection
- H. NFPA 22, Standard for Water Tanks for Private Fire Protection
- I. NFPA 30, Flammable and Combustible Liquids Code
- J. NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines

- K. NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
- L. NFPA 70, National Electrical Code
- M. NFPA 75, Standard for the Protection of Information Technology Equipment
- N. NFPA 80, Standard for Fire Doors and Other Opening Protectives
- O. NFPA 101, Life Safety Code
- P. NFPA 220, Standard on Types of Building Construction
- Q. NFPA 600, Standard on Facility Fire Brigades
- R. NFPA 780, Standard for the Installation of Lightning Protection Systems
- S. NFPA 804, Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants
- T. NFPA 806, Performance-Based Standard for Fire Protection for Advanced Nuclear Reactor Electric Generating Plants Change Process
- U. NFPA 855, Installation of Stationary Energy Storage Systems
- V. NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems
- W. IEEE 383, Standard for the Type Test of Class 1E Electrical Cables, Field Splices and Connections for Nuclear Power Generating Stations

3.0 REQUIREMENTS

CSA N293-12 and CSA N293S1 are the base requirements for fire protection for the BWRX-300 facility. This FHA is required by CSA N293 to ensure an adequate level of fire protection in the plant. The FHA documents are required to be submitted to the AHJ for acceptance (N293, 4.6.1). 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 (N293, 5.1.3).

When specifying requirements, "shall" is used to denote actions that must be performed or requirements that must be met. "Should" is used to indicate recommended practices and guidance. Each requirement and guideline statement are accompanied by a basis which provides the justification for why the requirement or guideline exists, why it is specified in a particular manner, and why it has a particular value.

Exceptions noted in the requirements tables are approved and identified in the referenced code. Any exceptions or deviations from the specific requirements are identified and justified in the specific building assessment.

3.1 General Construction and Other System Requirements

The following general construction features, base requirements of CSA N293 and good engineering practices, are used as the basis for the fire hazard assessment.

The assessment is based on the existing level of design and on the currently planned, but not yet purchased, equipment. The assessment provides a basis for evaluating the fire protection characteristics and features of equipment as it is purchased.

[LATER] The buildings are generally steel frame construction except for the Rad Waste Building which is of reinforced concrete construction and the Reactor Building which is steel composite construction. The walls, floors, and ceilings have 3-hour fire resistance ratings where required based on high combustible loadings (lubrication oil tank, for example) in the room or where an adjacent room contains equipment or systems from a different Safety-Related division. Corridors, stair enclosures and elevator hoistways that do not communicate between areas of different Safety-Related divisions may have walls with a 2-hour minimum fire rating. Non-concrete interior walls are constructed of metal studs and gypsum wallboard to the required fire resistance rating. Additional buildings beyond the power block will be analyzed based on their intended use at as their design is developed.

Basis: N293, 5.7.5.1.2 & NBCC

[LATER] All structures, including buildings, above-ground tanks, stacks, antennas, construction cranes, and meteorological towers, shall be protected by a lightning protection system in accordance with NFPA 780.

Basis: N293, 6.8.9.3

[LATER] Doors penetrating rated fire barriers comply with NBCC or equivalent NFPA ratings for that barrier. There are also doors that provide fire area separation that may not be

labeled fire doors but do provide equivalent protection. Typically, these are the doors for the personnel air lock into the reactor containment and the missile/tornado doors at the equipment access entrance to the Reactor Building (RB). The term "doors," where used in the analysis means doors, frames, and hardware

Basis: NBCC Table 3.1.8.4

[LATER] The fireproofing of structural steel members, where required by calculation based on combustible loading, is accomplished by application of an Underwriters Laboratory of Canada (ULC) or equivalent Underwriters Laboratory (UL) - listed or Factory Mutual (FM)-approved cementitious or ablative material, or by an UL- listed or FM-approved boxing design. The required fire rating determines the fireproofing material thickness. Gypsum board is utilized for protection of fireproofing in high traffic or office areas.

Basis: NBCC

[LATER] Where fire rated construction is provided, all supporting elements shall have the same fireresistance rating as the construction being supported. If used, continuity of fireproofing shall be maintained.

Basis: NBCC

- [LATER] The building arrangement and equipment layout shall be designed with consideration of the need for access for manual firefighting by responders with full turnout gear. Basis: N293, 7.3.8.2
- [LATER] Surface finishes (wall and ceiling) are specified to meet flame spread index of 0-25 and smoke-developed index of 0-100) in accordance with CAN/ULS-S102. Floor finishes have a flame spread rating of 0-300 and a smoke development classification less than 450 when tested in accordance with ASTM E648 and ASTM E662. The epoxy liner on the containment wall has a flame spread rating less than or equal to 40 when tested in accordance with CAN/ULC-S102 or CAN/ULC-S102.2.

Basis: N293, 6.8.1.4

[LATER] Filter media (excluding charcoal filters and high efficiency particulate air (HEPA) filters) used in air handling systems meet the combustibility requirements of Class I in accordance with CAN/ULC-S111

Basis: N293, 6.8.3.2

 [LATER] The use of plastic materials, including electrical cable insulation other than IEEE 383 is minimized in the BWRX design.
 Basis: N293, 5.3.2

[LATER] Electrical cable in open tray raceways is limited to low voltage cable and meets IEEE 383 standards. Vertical cables have a maximum vertical char of 1.5m when tested in accordance with the vertical flame tray test (Method 2-FT4) test in CSA C22.2 No. 2556. Circuitry over 1000 volts is in conduit.

Basis: N293, 6.8.4.4

[LATER] The electrical cable fire-stops are tested to demonstrate a fire rating equal to the rating of the barrier they penetrate. As a minimum the penetrations meet the requirements of NUREG-1552, including Supplement 1/ CSA C22.2 No 0.3. The tests are performed or witnessed by a representative of a qualified, independent testing laboratory. The documented test results for the acceptable fire-stops are made a part of the plant design records.

Basis N293, 6.5.2.1

[LATER] Control, power, or instrument cables and equipment of redundant systems used for achieving and maintaining safe shutdown, are separated from redundant systems by three hour rated fire barriers, except within inerted containment. Where the equipment of more than one division is required to be located within a single fire area (Control Room), cables are within conduit or a floor trench.

Basis: N293 6.3.1.1

[LATER] Certain areas of the plant have cable trays in a stacked array. Where stacking of trays occurs, power cable, which is the most susceptible to internally generated fires, is routed in the uppermost tray to the greatest extent possible to provide isolation from other trays in the stack. A vertical separation of 0.5 m spacing is provided between horizontal cable trays. Groups of stacked tray are separated from each other by 1.8 to 2.5 m horizontally.

Basis: N293 6.5.3

[LATER] Cables for local indication (meters) are included in the safe shutdown analysis where failure of the cable could cause failure of functionally associated circuits or where required to provide either diagnostic or process parameter information for recovery.

Basis: N293 5.4.2.6

[LATER] Electrical and Control Cabinets shall be designed to limit flame spread across cabinets.

Basis: N293, 6.8.4.2

[LATER] Suspended ceilings are used in some areas of the plant. The ceilings, including the lighting fixtures, are of noncombustible construction.

Basis: N293, 5.7.1.1

[LATER] Emergency lighting is provided throughout the protected area in paths of egress, manual firefighting areas, control rooms, areas where field actions are expected, airlocks and transfer chambers. The emergency lights will be a mix of lights with battery packs and lights on the generator buss. Details of the design and installation will be per N293 and the NBCC.

Basis: N293, 5.5.1(f), 6.6.1.2, NBCC

[LATER] Communication systems are provided throughout the protected area. Details of the design and installation will be per N293 and the NBCC.

Basis: N293, 10.6, B.3.5.5.8, NBCC

- [LATER] Total reliance on a single fire suppression method is not used. At least two fire suppression methods are available to suppress a fire in each fire area. The plant design provides the following types of suppression methods and utilizes them in suitable combination for the fire hazard considered:
 - a. Automatic wet pipe sprinkler system.
 - b. Automatic preaction sprinkler system.
 - c. Automatic dry pipe sprinkler system.
 - d. Automatic deluge sprinkler or spray system.
 - e. Manual deluge sprinkler or spray system.
 - f. Standpipe and hose stations.
 - g. Portable fire extinguishers.

Basis: N293 5.7.4

[LATER] Fire response capability commensurate with the fire hazards at the plant is required for the life cycle of the plant (N293-17, Clause 10.1). One component of the fire response capability is the fire brigade. N293-S1 clarifies that the FHA analysis shall determine the need for manual response and the compliment of organizations assumed to respond. A fire brigade, as defined in Clause 10.2, for incipient firefighting, followed by the municipal fire fighters for full attack is required, based on the assessment in this FHA. See Section 4.2.2 of this report for additional detail.

Basis: N293, 10.2

[LATER] Fire protection piping within the Reactor Building is designed to maintain pressure integrity following a Safe Shutdown Earthquake (SSE). The standpipes which supply firewater to hose stations covering safe shutdown equipment are contained within the concrete stairwells or dedicated concrete chases, and thus, are protected from other phenomena of less severity and greater frequency.

Basis: N293 5.7.7.1

[LATER] 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 diked area shall not exceed 25% of the sprinkler design area except where the size of the fire compartment is less than 1000 m² (10,000 ft.²). 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 minute discharge.

Additionally diking, drainage, a combination of both, or other means of containment should be provided to:

- a. Reduce equipment damage
- b. Prevent damage to the environment
- c. Maintain access for firefighters

Basis: N293, 7.3.3.6 / A7.3.3.6

[LATER] Piping cable tray, and other penetrations are provided with fire-stops when penetrating fire rated barriers.

Basis: N293, 6.5.2.1

[LATER] Heating, Ventilation and Air Conditioning (HVAC) penetrations through 2-hour or 3hour rated fire barriers are provided with fire dampers compatible with the rating of the fire barrier.

Basis: NBCC, Division B, Part 3

[LATER] Spill control is provided to contain the contents of any above grade oil-filled vessel or tank larger than 208 liters (55 gallons) and all tanks containing chemicals used in water/wastewater treatment or quality control.

In accordance with NFPA 804 and Regulatory Guide (RG) 1.189, the following design criteria are used for fire containment sizing:

Drainage and any associated drainage facilities for a given area is sized to accommodate the volume of liquid produced by all the following:

- a. The spill of the largest single container of any flammable or combustible liquids in the area.
- b. Where automatic suppression is provided throughout, the credible volume of discharge (as determined by the fire hazard assessment) for the suppression systems operating for a period of 30 minutes.
- c. Where automatic suppression is not provided throughout, the contents of piping systems and containers that are subject to failure in a fire.
- d. Where the installation is outside, credible environmental factors such as rain and snow.
- e. Where automatic suppression is not provided throughout, the volume is based on a manual fire-fighting flow rate of 1900 l/m (500 gal/m) for a duration of 30

minutes, unless the fire hazard assessment demonstrates a different flow rate and duration.

Basis: N293, 7.3.3.6, A.7.3.3.6, 7.3.1.1.3(q) / A7.3.1.1.3(q) NFPA 804, Regulator Guide (RG) 1.189

[LATER] The post-fire safe-shutdown circuit analysis will assume that any spurious actuations associated with a postulated fire occur simultaneously or in rapid succession.

Basis: N293, B.4.5.2

[LATER] Circuit routing will conform to the methodology provided in Revision 1 of NEI 00-01, Guidance for Post-Fire Safe Shutdown Analysis, in accordance with RIS 05-030, NRC Regulatory Issue Summary 05-30, Clarification of Post-Fire Safe Shutdown Circuit Regulatory Requirements.

Basis: NEI 00-01

[LATER] Control Room equipment cabinets shall be designed such that fire cannot spread through openings and along cable traveling between adjacent equipment cabinets.

Basis: N293 A.5.7.8.4

4.0 FIRE HAZARD ASSESSMENT

4.1 Introduction

N293-12 (reaffirmed 2017) Fire protection for Nuclear Power Plants, and Supplement No. 1 (application to small modular reactors) requires and provides guidance in the preparation of the Fire Hazard Assessment (FHA). The standard provides the minimum fire protection requirements for the design, construction, commissioning, operation, and decommissioning of nuclear power plants, including structures, systems, and components (SSCs) that directly support the plant and the protected area. The standard contains prescriptive and performance-based requirements and recommendations for the facility. To ensure an adequate level of fire protection, a fire protection assessment is to be prepared, demonstrating compliance with the applicable requirements of this standard. Documents forming part of the fire protection assessment shall be submitted to the AHJ for acceptance.

The FHA is a living document that informs the design process and construction. The document should be reviewed and updated to include any changes occurring during construction and changes occurring during the life of the plant. The requirements for modifications are included in N293, Article 5.9.

4.1.1 Goals

The fire protection goals for the plant are:

- Minimize the risk of radiological releases to the public that are a result of fire
- Protect plant occupants from death or injury due to fire
- Minimize economic loss resulting from fire damage to structures, equipment and inventories
- Minimize the impact of radioactive and hazardous materials on the environment as a result of fire

4.1.2 Defense-in-Depth Principle

The defense 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 defense in depth principle for the Fire Hazard Assessment and design, are as follows:

- Prevent Fires Design measures shall be put in place to reduce or eliminate, where practical, combustible materials and ignition sources.
- Fire Detection and Suppression Means shall be provided to quickly detect and extinguish or control fires.
- Limit the Effects of Fire Fire separations or other measures shall be provided to limit the spread of fire and its affects, thus minimizing the impact on the plant and its occupants.

4.1.3 Objective

The FHA objective is to identify the specific hazards in fire protection capabilities in each area of the plant to demonstrate the potential damage will be limited by various active and passive fire protection measures, such that the fire protection goals of this standard are achieved.

4.1.4 Scope

This Fire Hazard Assessment (FHA) establishes and evaluates distinct fire areas for the power block (Reactor Building, Rad Waste Building, Turbine Building, Control Building and Plant Services Area) and other standalone buildings, structures or equipment in the protected area for the OPG DNNP BWRX-300 plant. These other buildings, structures or equipment include but are not limited to:

- Fire Pump Enclosure
- Outdoor Transformers

Additionally, equipment or buildings outside the protected area that directly affect the safe operation of the plant, such as the fuel oil storage tank(s), will be in the scope.

4.1.5 Terminology

<u>Fire Area</u> - that portion (aggregate floor area) of a building or plant enclosed and bounded by fire walls, fire barriers, exterior walls, fire-resistance rated horizontal assemblies of a building, or other means in order to contain fire within that area.

<u>Fire Alarm System</u> - a system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal initiating devices and to initiate the appropriate response to those signals.

<u>Fire Barrier</u> - a continuous vertical or horizontal fire-resistance rated construction assembly designed and constructed to limit the spread of heat and fire and to restrict the movement of smoke. Rated fire barriers are those fire barriers (e.g., walls, floors, ceilings, and their supports, including beams, joists, columns, penetration seals, fire doors, fire door closers/hold open devices, and fire dampers) that are rated, or capable of being rated, by proving laboratories in hours of resistance to fire and are used to prevent the spread of potential fire. Fire barriers that define the boundaries of a fire area should have a fire resistance rating of at least three hours. All openings (doors, windows, penetrations, ductwork, etc.) through fire barriers should be properly protected, sealed, and qualified by fire endurance testing to a fire resistance rating as required by the applicable codes, up to the same fire resistance rating of the fire barrier itself.

<u>Fire Extinguishing System</u> - fire extinguishing systems are fixed automatic or manually activated systems with agents including water mist, clean agent, carbon dioxide (CO₂), foam and dry chemicals.

<u>Fire Extinguishers</u> – a portable device carried or on wheels and operated by hand, containing an extinguishing agent that can be expelled under pressure for the purpose of suppressing or extinguishing a fire.

Fire Separation - a construction assembly that acts as a barrier against the spread of fire.

<u>Fire Suppression System</u> – an active water- based system that sharply reduces the heat release rate of a fire and prevents its regrowth by means of direct and sufficient application of water through the fire plume to the burning fuel surface. Manual fire suppression systems include standpipe and hose systems. Automatic fire suppression systems included water sprinkler or spray systems.

<u>Fire Wall</u> - a fire-resistance rated wall having unprotected openings, which restrict the spread of fire and extend continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

<u>Fire Zone</u>- subdivisions of a fire area based on the fire hazard assessment to demonstrate that the fire protection systems and features within the fire zones provide an appropriate level of protection for the associated hazards.

<u>Horizontal Exit</u> - a way of passage from one building to an area of refuge in another building on approximately the same level, or a way of passage through or around a fire barrier to an area of refuge on approximately the same level in the same building that affords safety from fire and smoke originating from the area of incidence and areas communicating therewith.

<u>Interior Exit Stairway</u> - an exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance and provides for a protected path of egress travel to the exit discharge or public way.

<u>Means of Egress</u> - A continuous and unobstructed way of travel from any point in a building or structure to a public way consisting of three separate and distinct parts: (1) the exit access, (2) the exit, and (3) the exit discharge.

<u>Noncombustible Material</u> - material that, in the form of which it is used in under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat.

<u>Performance Barrier</u> – FPA fire zone boundaries within the plant that are credited to mitigate the effects of fire from one fire zone to another

<u>Safety-Related Structures</u>, <u>Systems and Components</u> - those structures, systems and components that are relied upon to remain functional during and following design basis events to assure:

- (1) The integrity of the reactor coolant pressure boundary
- (2) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

(3) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable guideline exposures set forth in 10 CFR 50.34(a)(1) or 10 CFR 50.2, 100.11, and the Canadian equivalent (TBD) as applicable

Spatial Separation – separation by a physical distance sufficient to prevent damage by fire

<u>Sprinkler System</u> - a system, commonly activated by heat, from a fire and discharges water over the fire area, that consists of an integrated network of piping designed in accordance with fire protection engineering standards, that includes a water supply source, a water control valve, a waterflow alarm, and a drain. The portion of the sprinkler system above ground is a network of specifically sized or hydraulically design piping installed in a building, structure, or area, generally overhead, and to which sprinklers are attached in a systematic pattern.

<u>Standpipe and Hose System</u> - an arrangement of piping, valves, hose connections, and associated equipment installed in a building or structure, with the hose connections located in such a manner that water can be discharged in streams or spray patterns through attached hose and nozzles, for the purpose of extinguishing a fire, thereby protecting the building or structure and its contents, in addition to protecting the occupants.

<u>Water Spray System</u> - an automatic or manually actuated fixed pipe system connected to a water supply and equipped with water spray nozzles designed to provide a specific water discharge and distribution over the protected surfaces or area.

4.1.6 Systems Required to Achieve Safe Shutdown in the Event of Fire

See systems noted in the OPG DNNP-1 BWRX-300 Fire Safety Shutdown Analysis Requirements Document (2.1.B).

4.1.7 Redundant Non-Safety-Related Systems and Equipment

The fire protection system relies on the non-safety related power supply system (R30) which is redundant for normal power. There are no redundant non-safety related systems or equipment required to achieve safe shutdown in the event of fire per the Fire Safety Shutdown Analysis Requirements Document.

4.1.8 Fire Safety Shutdown Analysis Approach

The Fire Safety Shutdown Analysis Requirements Document utilizes a deterministic methodology as the primary analysis approach. See reference 2.1.B for further details.

4.1.9 Fire Hazard and Safety Shutdown Analysis Summary

The systems and components affected by the Fire Safe Shutdown Analysis are noted in reference 2.1.B. See the Fire Safety Shutdown Analysis and Requirements Document for more details.

4.2 Fire Response Capability

Fire response capability commensurate with the fire hazards at the plant is required for the life cycle of the plant (CSA N293-17, Clause10.1.1). One component of the fire response capability is the fire brigade (CSA N293-17, Clause 10.1.2). The fire response capability shall be based on the analysis of Clause 10.1.4 (CSA N293-S1, Clause 10.1.2). This analysis, to be referred to as Fire Response Needs Analysis (FRNA), shall determine the need for manual response and the compliment of organizations including brigade make-up, minimum compliment, training (in accordance with N293 and NFPA 600), and equipment capacity. This FHA will provide the analysis of the postulated fires for the FRNA to determine the required fire response needs of the facility (CSA N293-S1, Clause 10.1.4).

As noted below in the FHA, many rooms and/or fire areas have a relatively low fire loading (below 700 MJ/m²), except electrical rooms which are limited to 1400 MJ/m²), and thus a practical design choice was made to rely on manual means (hose streams and fire extinguishers) as the primary and backup fire suppression. Therefore, for the purposes of this FHA, a fire brigade, as defined in Clause 10.2, is assumed to be required for this facility. The fire response capability for this facility will be a combination of both the on-site industrial fire brigade and municipal fire departments. The necessary compliment of on-site industrial fire brigade, as determined by the FRNA, is required to be on site at all times. These members, while forming the minimum compliment, are only permitted to be on dual roles that permit immediate response. It is understood that the licensee will have a mutual aid agreement with the municipality who will provide the external fire fighters to compliment the industrial fire brigade.

For the purpose of this FHA, implementation of the fire attack plan no later than 15 minutes of notification of the fire is assumed (CSA N293, Clause 10.8.3). The on-site fire brigade is to perform incipient stage firefighting as defined in NFPA 600, prior to the arrival of the municipal fire department. Upon arrival of the municipal fire department, the on-site fire brigade will split evenly and integrate with the municipal firefighters to form main and back-up response teams to implement the fire attack plan. On-site industrial fire brigade members will hold the necessary qualifications and training to escort the combined response team into radiological areas (CSA N293-17, Clause 10.4.3).

The required fire brigade training for all fire fighters shall be determined by the FRNA. For the purposes of this FHA, it is assumed that the external responders meet the requirements of NFPA 600 or 1081 as appropriate and the on-site industrial brigade training will meet all requirements in NFPA 600 and CSA N293 including the following additional requirements:

- Radioactivity and health physics considerations, including rad escort qualifications
- Use of protective clothing, respiratory protective equipment, radiation monitoring equipment and personal dosimeters

4.3 Fire Protection Requirements – Site / Protected Area

4.3.1 Water Supply

The protected area for the DNNP site is the area within the security fence. Buildings within the protected area are supplied with fire protection water from the fire pumps and tanks within the area and are addressed in the FHA. The only known structure outside the protected area that is directly related to plant operation is the fuel oil storage tank for the two Turbine Building diesel generators. This is understood to be a $\{40,000 - 50,000 \text{ gallon}\}$ steel, buried tank. Two tanks should be considered if the two diesel generators are required to be completely redundant to meet other non-safety requirements. A fire hydrant and wheeled fire extinguisher should be provided for the fuel unloading station. A fire line and hydrant could be extended from the protected area if fire hydrants are not being provided along the road outside the area.

4.3.2 Water Supply Requirements / Preliminary Calculations

The fire protection water supply for the area within the protected area is regulated by CSA N293. The source (make-up water for tanks) for fire protection water will be a tap to the municipal water main (from Clarington) along the rail right-of-way, north of the plant. This plant feed main (source) is required to be able to supply a minimum 7600 L/min (2000 gpm) at 1.4bar (20 psi) for additional availability of fire fighters.

The fire protection water supply is required to be sized for the largest expected flow rate for a 2hour period. 2 x 100% capacity tanks are required by CSA N293 for redundancy. The tanks are required to be designed per NFPA 22. The feed main size from the municipal supply is driven from the 7600 L/min requirement above and thus tank refill can be accomplished in less than eight hours. The largest flow rate is anticipated to be the simultaneous operation of a turbine underfloor system (both levels) and the turbine bearing system, including hose streams. CSA N293 requires the flow of the highest demand system(s) plus the calculated demand for large hose where required by pre-fire plans, plus 2839 L/min (750 gpm) for attack hose streams. CSA N293S1 allows FHA consideration on the necessity of the large hose demand. Based on the provision of automatic sprinklers for the turbine underfloor / turbine bearing system (largest combined system demand) designed with the robust densities of the Annex (FM Global recommendations) and the smaller size of the building for the small modular reactor, 2839 L/min for inside and outside attack hose streams is considered adequate for simultaneous automatic and manual protection, without the need for additional large hose streams.

The most demanding sprinkler/hose stream flow is estimated as follows:

- Turbine Underfloor Systems (Ground Floor and Mezzanine Floor) {9084L/min (2400gpm)}
- Turbine Bearing System {1362L/min (360gpm)}
- Attack Hose Streams 2839 L/min[.] (750gpm)

Total Flow - {13,285 L/min (3510gpm)}

CSA N293 requires a standpipe minimum 690 kPa (100 psi) residual pressure at 950 L/min (250 gpm) at the most remote outlet, and design in accordance with NFPA 14. Each standpipe will be designed for a flow of 1900 L/min (950 L/min through each of the two most remote 65 mm outlets) with a minimum outlet pressure of 690 kPa (100psi). This flow and pressure will be achieved with the simultaneous flow of 946 L/min (250 gpm) at each of the other outlets in the given building.

The most demanding standpipe flow is the Turbine Building based on the four standpipes serving the building. The flow is 1900 L/min (500 gpm) in the most remote standpipe and 950 L/min (250 gpm) at the other three standpipes (total flow of {4750 L/min (1250 gpm)}. The highest hose station outlet is on the high roof (Stair A or B), Elevation 30.48M.

Demand Summary - The most demanding flow for the site is the Turbine Building sprinkler/hose stream demand of {13,285 L/min (3510 gpm)}. The most demanding standpipe flow is 4750 L/min (1250 gpm) with a minimum hose outlet pressure of 690 kPa (100 psi).

The Minimum Reservoir Capacity (Reservoir Usable Capacity) = 13,285 L/min X 2 hours = $\{1,594,200 \text{ L} (421,200 \text{ gallons})\}$. Freeboard and sump will be determined by the tank design.

For calculation purposes the following component sizes, materials and assumptions were used:

- 3 2500 gpm at 145psi (8949 L/min at 10 bar) horizontal centrifugal fire pumps (2 pumps in service)
- Pump Discharge Piping = Steel Schedule 40, 305 mm (12 inch)
- Loop Piping = 13.7 m (45 feet) out from the power block buildings, HDPE DR9, 406 mm (16 inch), (311 mm, 12.23 inch ID)
- Building Feed Mains = HDPE DR9, 356 mm (14inch), (272 mm, 10.7inch ID)
- TB Interior Loop = Steel Schedule 40, 254 mm (10inch)
- Standpipes = Steel Schedule 40, 152 mm (6 inch)
- Sprinkler System residual pressure (base of riser) = 6.2 bar (90 psi)
- Sprinkler system hose allowance = (950 L/min inside and 1900 L/min outside)
- Shortest leg of the loop (between the pump house and the Turbine Building) was impaired

The most demanding sprinkler/hose stream and the most demanding standpipe (as defined above) were calculated with the following results (at the fire pump discharge flange):

- Turbine Building Sprinkler System {13 514 L/min at 8.76 bar (3570 gpm at 127 psi)}
- Turbine Building Standpipe System {4732 L/min at 10.14 bar (1250 gpm at 147 psi)}

Although the metric units are listed first above, please note that calculations were performed with hard Imperial units and converted to Metric values.

The above values are preliminary and will be refined as the design work progresses.



Figure 4.4.2A – Turbine Building Water Supply and Sprinkler System Demand



Figure 4.4.2B – Turbine Building Water Supply and Standpipe Demand

The systems were also modeled using 2000 gpm at 145 psi pumps (2) and met, however were close to the 120% capacity requirement per CSA N293 (approximately 200 gpm margin with sprinkler demand). As the design of the piping layout is in an early stage, the 2500 gpm pumps are recommended until more detailed calculations can be performed.

Three 60% capacity pumps are recommended. Driver types for each pump are being researched and developed. Pumps shall be separated from each other and unrelated equipment and areas by 3-hour rated fire barriers. A pressure maintenance pump shall be provided. Two 4000 – 5000

gpm pumps is an option but was not selected as not all manufacturers manufacture pumps this size. Additionally, the electrical requirements will likely be greater than 600 volts and thus be more costly for the service and pump controller.

Suction piping shall be arranged so that each fire pump can take suction from either or both tanks. A failure in one tank shall be able to be isolated as to not cause both tanks to drain. Each pump shall have a dedicated supply pipe to the yard loop.

A loop is required around the power block with sectional valves located to prohibit a single impaired section from impacting both the primary and secondary fire suppression for a given fire area. In the case of a sprinklered room or area, a single impairment will not impact the sprinkler system and the associated standpipe.

Fire Hydrants are located along the loop at spacings not exceeding 75 m (250 feet) and located no closer than 12.2 m (40 feet) from the buildings.

4.4 Fire Protection Requirements by Building

4.4.1 Site Buildings / Structures / Equipment

Buildings, Structures and Equipment, other than the power block buildings, within the fence are as follows.

4.4.1.1 Fire Pump Enclosure

The fire pump building and fire water storage tanks are located in the southeast yard area, within the protected area. The building is currently placed over 15.2 m (50 feet) from the southeast corner of the power block building. No other buildings are within 91 m (300 feet) of the pump building at this time. Other external exposures are limited to vegetation in the yard and thus considered light. The fire pump building details are not available at this time, however, the building will be of non-combustible construction and split into four fire areas (one area for each pump and one for switchgear).

4.4.1.2 Transformers

Four single phase GSU Transformers, one Unit Auxiliary Transformer and one Reserve Auxiliary Transformer are located in the yard, within the protected area, to the east of the Plant Services Building. The Generator Bus penetrates the Turbine Building wall and runs above the roof of the Plant Services to the transformer area. The spare GSU and Reserve Auxiliary Transformers are permanently set and wired. Each of the six transformers are oil-insulated and have individual open containment pits.

CSA N293 is silent on fire walls between transformers. NFPA 804 has been used as a basis for the evaluation of passive protection for the transformers. NFPA 804 requires fire walls between adjacent transformers where they are closer than 50 feet, for transformers exceeding 18,925 L (5,000 gallons), and 25 feet for transformers under 18,925 L (5,000 gallons). The oil quantity of the individual transformers is unknown at this time, and the locations of the transformers are preliminary. Evaluation will be performed when the details of the design are known.

4.4.2 Power Block Buildings

The power block includes five major structures. They are as follows:

- Turbine Building (NBCC Occupancy Group F, Division 2) 3 Story
- Reactor Building (NBCC Occupancy Group F, Division 3) 8 story

- Rad Waste Building (NBCC Occupancy Group F, Division 3) 3 Story
- Control Building (NBCC Occupancy Group F, Division 3) 1 Story
- Plant Services Area (NBCC Occupancy Group F, Division 3) 1 Story

4.4.2.1 NBCC Requirements

The structures are understood to have NBCC occupancy classifications as noted above. Although the areas are given the names of the primary function and "Building", the areas are currently identified to be divided by substantial construction identified as 3-hour fire barriers (not fire walls) and thus are defined as fire areas and not buildings by the NBCC. See the Building Architectural and Life Safety documents referenced in Section 5 for the details of building classifications, construction and other NBCC requirements.

4.4.2.2 CSA N293-12 Requirements

As noted above, the fire protection and fire hazard assessment requirements are contained in CSA N293 as modified by CSA N293S1. The requirements will be based on the prescriptive requirements of these standards and the performance-based assessment requirements. Prescriptive requirements regarding separations (passive protection) are as follows.

- Fire separations are required to separate redundant fire safe shutdown systems and separate safe shutdown systems from other hazards. Spatial separation is allowed where separations are impractical due to the design of the space, presence of equipment or the separation would interfere with nuclear operation or pose a risk to nuclear safety. In these instances, spatial separation in combination with additional measures are required. In general, a fire resistance rating of the separation is three hours except where determined to be acceptable with a lower rating based on additional measures.
- The structure housing the turbine generator and associated ancillary process equipment (Turbine Building) shall be designed and separated from other areas of the plant such that a fire involving the turbine generator will not spread to other areas and will not result in progressive structural collapse.
- Areas or rooms used for the storage or handling of combustible materials or ignitable liquids and solids or gasses shall be separated from the remainder of the building by separation having a minimum two-hour resistance rating.
- Spatial separation or fire separations shall be provided between cable trays and risers to reduce the spread of fire and have adequate space for firefighting.
- The control room complex shall be separated from the remainder of the building by a 2hour minimum rated fire separation. Smoke management is required in the control rooms.
- Two travel routes are required between the main and secondary control rooms. The paths are required to be protected as follows:
 - Not subject to a common cause failure
 - Be designed and protected in accordance with the width, height, fire resistance rating, and integrity specified for exits in the NBCC
 - Be designed to minimize smoke infiltration during a fire, such that the routes will not contain more than 1% of contaminated air
 - Be provided with emergency lighting in accordance with NBCC, Division B Article 3.2.7.3

The first path includes the south door of the secondary control room, Room 1501 Boron Injection, Reactor Building Stair B 1191, Room 1660 Services 0 A, Reactor Building Egress Pathway 3195 (in Rad Waste Building) and Control Building Hallway 4181. These components (except rooms 1501 and 1660) will be provided with 2 hour rated barriers and other exit enclosure features, provided with enclosure pressurization and emergency lighting. Protection for rooms 1501 and 1660 have not been finalized.

The second path includes the north secondary control room door, two intervening rooms (1550 and 1560), Reactor Building Stair A 1190, Stair C (1690), Reactor Building Egress Passageway 5186 (Plant Services Area) to the exterior. Interior path continues at any of the four south exterior doors to the Control Building and Corridor 4181 to the Main Control Room (east or west door). Stair A and the egress pathway will be provided with 2 hour rated barriers and other exit enclosure features including pressurization and emergency lighting. The corridors in the Control Building will be provided with 3-hour ratings however not pressurized.

Travel distance to Stair A from the north door of the Secondary Control Room is approximately 30.48 m (100 feet). The path travels through the SDC Piping Room and the Electrical Distribution Room. The SDC piping area has a low combustible loading (piping and valves). The electrical distribution room is a typical electrical/switchgear room, and has a moderate loading. The travel path in these rooms cannot be practically separated. Activation of the smoke detectors in the electrical room will be annunciated in both control rooms, which will warn the operator regarding using the secondary path. The corridors in the Control Building will also have smoke detection, annunciated in the control rooms. While all parts of the path are not protected as an exit, the control room operator will be aware of any issue along its length and thus it is considered an acceptable second path.

• Structure supporting fire separations shall have a fire rating of at least the separation rating.

Prescriptive requirements regarding active fire protection systems are as follows.

- CSA N293 requires a Class I automatic wet standpipe system in accordance with NFPA 14. Additionally, the minimum pressure available at the Class I hose valve shall be 690 kPa (100 psi) at a flow rate of 950 L/min (250 gpm).
- CSA N293 requires automatic suppression throughout the buildings except where it is demonstrated that other measures will meet the goals. The system designs are required to include 2850 L/min (750 gpm) for hose streams. Where automatic fire suppression systems are not provided, the FHA shall demonstrate that adequate manual fire suppression or passive fire mitigation is provided and that all 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 an adequate level of fire protection for the specific fire hazard and an acceptable level of reliability. See the discussion on combustible loading under "Fire Protection Analysis by Room or Fire Area" below regarding criteria for providing sprinkler protection in the individual areas.

Oil filled transformers are prescriptively required to have an automatic water spray system.

The Control Room Complex, outside the control room, control equipment room and control computer room are prescriptively required to be provided with sprinkler protection.

CSA N293 Annex A highly recommends sprinkler protection in the turbine area with design requirements per the FM Global data Sheets (DS7-101). The FHA recommends protection in these areas and incorporates the more conservative FM Global recommendations for sprinkler density.

The assessment will evaluate the combustible loading of each room and its associated fire barriers to determine fire suppression needs. The combustible loading and evaluation of each room, along with its associated suppression requirements, will be documented on the room data sheets.

- NFPA 855 requires sprinkler protection in rooms containing lithium-ion batteries with an aggregate capacity exceeding 20 kilowatt-hours (kWh) (NFPA 855 Table 1.3 and Table 4.4.2).
- NFPA 855 requires sprinkler protection in rooms containing lead-acid batteries with an aggregate capacity exceeding 70 kilowatt-hours (kWh) (NFPA 855 Table 1.3 and Table 4.4.2), unless used in UL 1778-listed uninterruptable power supplies occupying an area not exceeding 10 percent of the floor area (4.11.5).
- All areas of the plant to be protected by portable fire extinguishers in accordance with the NFCC and NFPA 10. The extinguishers shall be Listed (ULC) for their intended use.
- CSA N293 requires a fire alarm system throughout the plant. CSA N293 Annex A
 recommends smoke detection throughout all areas except where it is demonstrated that
 other measures will meet the goals. The system is required to include automatic voice for
 occupant notification, inside and outside in the protected area. Main control room staff shall
 be able to deliver manual messages.

Manual pull stations shall be located at all exits required by the NBCC. Additionally, manual pull stations are provided along the exit path so that the maximum travel distance is not more than 30m in areas without sprinklers and not more than 45m in areas with sprinklers.

Fire detection shall include very early warning technology in areas where detection is provided for spatial separation and within the control room complex.

Occupant notification appliances shall be provided in all accessible spaces, with the exception of the main and secondary control rooms.

4.4.2.3 Other Recommendations

Standpipes – CSA N293 requires Class I standpipes as noted above. A Class I standpipe outlet consists of a single 65mm valve/outlet. NFPA 804 requires Class III standpipes. A Class III standpipe outlet includes a 65mm and 40mm outlet. The reasoning behind the Class III outlet is to allow the fire brigade to more easily control or extinguish an incipient stage fire using the smaller hose. The smaller outlet may also be chosen by the offsite fire fighters for incipient stage fires. The Class III capability may be accomplished by two valve/outlet assemblies or by a 65mm valve/outlet with a reducer in the cabinet or attached. The most reliable way to ensure that the small outlet is available is to provide the two valves at each location. Class III standpipes utilizing the two valves are recommended.

4.5 Fire Protection Analysis by Room or Fire Area

4.5.1 Fire Area Drawings

Fire area drawings are provided for each building or structure, illustrating fire protection features such as fire barriers, standpipes, and sprinklers. The standpipes (Class III) are located in the stair enclosures throughout all multiple story buildings in the power block. The standpipes have one 65mm (2-1/2inch) and one 40mm (1-1/2inch) valved hose outlet on every level, including roof levels where served by the stair. The Rad Waste Building has a single stair and uses doors through the wall to the Turbine as the second exit. Class III hose stations (with 65mm and 40mm valves) are

provided at these doors as illustrated on the drawings. The Control Building has Class III hose stations (with 65mm and 40mm valves) at the exterior doors and outside the Control Room Complex as illustrated on the drawings.

Room numbers contain the following information:

хххх Structure: 1 = Reactor Building 2 = Turbine Building 3 = Rad Waste Building Floor Level within Building 4 = Control Building 5 = Plant Services Area Assigned to: 1 = Safety Related Div 1 2 = Safety Related Div 2 3 = Safety Related Div 3 5 = Non-Safety Related Redundant A 6 = Non-Safety Related Redundant B 7 = Areas with multiple divisions or trains 8.0 =Other room types 9 = Non-Safety Related Vertical Chases P = Pool

Fire area numbers correspond to the lowest major room within the fire area.

4.5.2 Room Data Sheets

A room data sheet has been developed for each significant room in the power block identifying information such as the room number, associated fire area, fire barriers, room contents, estimated combustible loading, fire detection, fire suppression and fire impact (with and without fire protection systems). Explanation of the data sheet fields are as follows.

4.5.2.1 Building Construction Type

The building construction type and fire rating of the major elements of construction are noted on the data sheets in a NFPA 220 format structure (Type X(XXX)). Building Type for the plant is required to be noncombustible which limits the construction types to Type I and Type II. Type I and Type II are generally understood to be as follows:

- □ Type I: Noncombustible construction with a high level of fire resistance, typically concrete construction.
- Type II: Noncombustible construction with a lower level of fire resistance than Type I, typically this is steel construction with or without fireproofing.

The fire ratings of major elements within the Construction Types are identified by the three Arabic numbers in the parentheses as follows:

- First Arabic number exterior bearing walls
- Second Arabic number columns, beams, girders, trusses, and arches, supporting bearing walls, columns, or loads from more than one floor
- Third Arabic number floor construction

The specifics of requirements for different minor elements are summarized in Table 4.1.1 of NFPA 220.

The building construction types in the data sheets are for the overall structure (i.e., Reactor Building) and not the barrier ratings associated with the room. Building construction types represent the minimum requirement.

4.5.2.2 Fire Barriers and Fire Areas

Fire barriers are provided as prescriptively required by CSA N293 to separate rooms or areas with safety related division equipment cables or other related components from other divisions and from other hazards in the plant. The data sheets identify the presence of divisional components, the safety related division number and the associated fire barriers. The fire barriers listed on a given data sheet are related to the requirements for that room. The ratings are not duplicated on the adjacent room data sheets unless required for an adjacent room. The overall fire barrier arrangement is illustrated on the Fire Area Drawings.

4.5.2.3 Non-Safety Related Redundant Load Groups (Trains)

Redundant systems (equipment, power, and cabling) are provided to enhance the reliability of the unit. The data sheets identify the presence of major redundant equipment, power sources and related cable systems. A data sheet field identifies the Load Group (A and/or B) feeders passing through a given room or feeding redundant equipment in the room and identifies additional building features (passive or active) where deemed necessary, to maintain the redundancy. Load Group A or B circuitry that dead ends at non-redundant equipment in a given room is not identified on that room's data sheet.

4.5.2.4 Combustible Loading

Most areas of the plant have a low level of combustible loading due to the general nature of a nuclear power plant. A general threshold of combustibility has been determined for this project to invoke sprinkler protection. The combustible loading limit for electrical areas has been preliminarily assumed to be 1400 MJ/m² (123,340 Btu/ft²) and the combustible loading limit for all other indoor areas has been conservatively determined as 700 MJ/m² (61,670 Btu/ft²). This approach conservatively assumes that all combustible material within a fire area instantaneously releases its net heat content upon ignition of the fire. In fire areas where the loading is below these thresholds, except where specifically noted otherwise, the combination of low combustible loading and fire barriers, meets the goals for safe shutdown and life safety, without automatic sprinkler protection. Rooms that exceed these limits, except where specifically noted otherwise, will be provided with automatic fire suppression.

The estimated combustible loading threshold of each room is identified on each room data sheet.

Materials Load

The heat of combustion of various materials found in the power block areas are identified in the table below. The first values shown are directly from referenced sources. The parenthetical value is a conversion.

Material	Heat of Combustion	Source
Mineral Oil	46 MJ/kg (153 MJ/gallon)	SFPE Handbook, Volume 3, Table A.32
Fyrquel EHC	13,459 Btu/lb (31.28 MJ/kg)	Product Data Sheet
Diesel Fuel Oil	39.16 MJ/liter (148 MJ/gallon)	Compilation of data from multiple sources on various grades of diesel fuel
Electrical or optical fiber wires and cables that have complied with the fire tests required for use in risers (vertical runs in a shaft or from floor to floor) or in plenums (ducts, plenums and other spaces used for environmental air) as required by NFPA 70	15 MJ/kg	NFPA 557 Table 7.3.2

Table 4.4.2.4-1 – Heat of Combustion for Materials

Cable Tray Loads

The preliminary cable tray routing is illustrated on preliminary cable tray sketches provided by Black & Veatch on September 2, 2021. Cable tray drawings have not been officially issued. In general, each tray shown on the sheets represents two stacks of three trays (six total) configured as follows:

- Bottom Tray Instrument and Control Cables
- Middle Tray Low Voltage (LV) 120 to 208 volts
- Top Tray Low Voltage (LV) 600 volts

Medium and high voltage cable will be in conduit. Each tray is assumed to be 36 inches (914.4 mm) wide with minimum 6 inch (152.4 mm) sidewalls. The trays are separated from each other (horizontally) by 6 to 8 feet (1828.8 to 2438.4 mm) and 18 inches (457.2 mm) vertically. Cable quantities are based on trays being full per NEC fill limits as follows:

• Low Voltage >4/0 (large cable), the limit is a single layer

- Low Voltage 4/0 or smaller (20% of tray area) 42in² (27,096.72mm²)
- Instrument and Control Cables (50% of tray area) 108in² (69,677.28mm²)

The cable used for the preliminary calculations is based on data from typical IEEE 383 cable data sheets.

The representative large cable is a 3 conductor 500mcm cable with the following characteristics:

- Outer Diameter 3.060 inches (77.724 millimeters)
- Cable weight 7.99lbs/ft (11.890kg/m)
- Copper weight 4.55lbs/ft (6.771kg/m)
- Insulation weight 3.44lbs/ft (5.119kg/m)
- Maximum cables in tray (36/3.060) 11
- Insulation weight (tray 11 X 3.44) 37.84lbs/ft(56.28kg/m)

The representative small cable is a 3 conductor #8 cable with the following characteristics:

- Outer Diameter 0.65 inches (16.51 millimeters)
- Cable weight 0.287lbs/ft (0.427kg/m)
- Copper weight 0.169lbs/ft (0.251kg/m)
- Insulation weight 0.118lbs/ft (0.176kg/m)
- Cross sectional area (cable) 0.33in² (212.902mm²)
- Maximum cables in tray (42/0.33) 127
- Insulation weight (tray 127 X 0.118) 14.99lbs/ft (22.35kg/m)

The representative instrument and control cable is a 12 conductor #12 cable with the following characteristics:

- Outer Diameter 1.01 inches (25.654 millimeters)
- Cable weight 0.69lbs/ft (1.027kg/m)
- Copper weight 0.228lbs/ft (0.339kg/m)
- Insulation weight 0.462lbs/ft (0.688kg/m)
- Cross sectional area (cable) 0.801in² (516.773mm²)
- Maximum cables in tray (108/0.801) 134
- Insulation weight (tray 134 X 0.462) 61.9lbs/ft (92.19kg/m)

Electrical cable insulation in either solid metal enclosed raceways or concrete duct banks does is not considered to contribute to a combustible fire load of an area and is excluded from the combustible loading calculation.

Equipment Loads

The following table contains equipment heat of combustion data from specific equipment from another nuclear power generation plant. The table documents the range of the data collected and the value used for this preliminary evaluation.

Equipment	Heat of Combustion – Range (MJ)	Heat of Combustion Value Used (MJ)
Power Center	7100- 12,800	Varies
Motor Control Center	650-1408	1050
Distribution Panel	332-677	Varies
CVCF Panel (UPS)	2500	2500
Battery (Flooded or VRLA)	-	150
Step–Down Transformer (480/120)	-	650
Service Panel	-	99
Low Voltage Rack	-	500
Pump Controller	90 - 1900	1000
Pump/Motor Assembly	120-250	200
AHU	4980	5000
Exhaust Fan	12.4	15
Fan Coil Unit	50	50

Table 4.4.2.4-2 – Heat of Combustion for Equipment

The quantities of cables and other combustibles in the room, and the fire load of various pieces of equipment are estimates. These will be verified as the design progresses.

Offices (Occupancy of Low Fire Load)

The NFPA Fire Protection Handbook- 20th Edition (Section 18, Table 18.1.2) identifies a mean fire load for a general office area to be 7.7lbs/ft², with a heat of combustion of ordinary combustibles identified as 8000Btu/lb. The fire load of offices in this analysis is considered 61,600Btu/ft² (698.5MJ/m²).

Workshops (Occupancy of Moderate Fire Load)

The NFPA Fire Protection Handbook - 20th Edition (Section 18) identifies fire load for an Occupancy of Moderate Fire Load. Examples are listed as retail shops, factories, and workshops, similar to an Ordinary Hazard Occupancy loading as defined in NFPA 13. The range is from 1134 MJ/m² to 2268 MJ/m² with limited isolated loading of 4540 MJ/m².

Transient Loads

The loading calculations include the introduction of transient combustibles to any area of the plant, subject to administrative controls. With the exception of the control room, storage rooms and office areas, a minimum fire loading of 40 MJ/m² was added to each area as a transient combustible allowance. This approximates one 210 liter (55 gallon) drum of lube oil for every 200 m² of floor space. This allowance conservatively accounts for typical transients and activities that have been identified and observed at other nuclear facilities.

Combustible Load Margin

In addition to the aforementioned transients, loading calculations include a margin for other combustibles. A fire loading of 10 MJ/m^2 was added to each area.

4.5.2.5 Fire Impact

Cumulative damage (property loss) and restoration from fire initiation and suppression activities, but excluding replacement power costs, is subjectively categorized as follows. Goals for loss prevention will be defined at the discretion of the plant licensee. Values are in USD.

- Negligible: Less than \$5000
- Minor: Less than \$50,000
- Moderate: Less than \$2 million
- Significant: Greater than \$2 million

Cumulative plant operational effects from fire initiation and suppression activities are categorized as follows:

- None: No effect to any power production or plant equipment
- Power Reduction: Event could require or cause reduction in turbine output, due to reduced steam flow rate resulting from loss of some equipment
- Reactor Scram: Event could require operators to scram the reactor, achieve hot shutdown or stable shutdown condition, and continue to cold shut down condition if necessary

4.5.2.6 Combustible Load Calculation Assumptions

- The combustible load calculations are based on the room contents illustrated on the background drawings and any additional information provided by the design team. The known contents are identified on the data sheets. An additional 10MJ/m² has been added to the calculations for incidental and unknown contents.
- 2) A value of approximately 10 MJ of combustible loading is a threshold level for considering a piece of equipment as being an "incidental combustible". The 10 MJ combustible loading equates to approximately 1 pound of paper products, ½ pound of a hydrocarbon grease, less than 1 pint of lubricating oil or fuel oil, or ½ pound of a typical plastic material.
- 3) Electrical cable insulation, which is contained in either solid bottom, solid cover cable trays or in conduits is not considered to represent a combustible fire hazard.
- 4) Small motors (below 10 hp) are considered to have an insignificant amount of combustibles (e.g. motors on motor operated valves (MOV's), small fan motors, etc.) and are not individually included in these preliminary calculations.
- 5) All batteries, except large batteries in the Reactor Building, are considered to be Lithiumion per GE direction. The number/size of batteries will need to be revisited as design proceeds.
- 6) Exit stair enclosures and elevator hoistways are constructed and finished in accordance with the NBCC, NFPA 101 and ANSI A17.1 and thus have minimal combustibles. Room data sheets have not been provided except for freight and service elevators which prescriptively require sprinklers due to transient loading.

4.5.3 Analysis

4.5.3.1 Site Buildings, Structures and Equipment

The fire protection requirements for the site structures and buildings will be based on CSA N293 prescriptive requirements, and evaluation of the combustible loading of each room or area and its associated fire separations (barriers) to determine the need for sprinklers and detection.

A. Fire Pump Enclosure

CSA N293 requires the fire pumps to be provided in accordance with CSA N293 and NFPA 20. NFPA 20 requires sprinkler protection for diesel engine driven pumps. Dry pipe sprinkler protection is recommended throughout the fire pump building due to the critical nature of the pumps.

The sprinkler protection will be designed for aa density of 12.2 mm/min (0.30 gpm/ft²) over the diesel pump room area and 6.1 mm/min (0.15 gpm/ft²) over the electric pump room area. The fire areas shall segregate electrical equipment, electrical motor driven fire pump(s), and diesel engine driven fire pump(s). The areas shall be separated using three (3) hour rated fire barriers between the individual pump assemblies as well as the electrical equipment. The diesel engine driven pump room(s) will include the associated engine's diesel fuel day tank.

Room Data Sheets for the Fire Pump Building, detailing the combustibles, room features and level of protection for each room will be provided in Table 4.5.3.1 when details are available.

B. Transformers (GSU and Auxiliary)

CSA N293 requires sprinklers for these transformers.

Room Data Sheets for each transformer, detailing the combustible loading and fire walls, is in Table 4.5.3.1 below. The oil capacity of transformers are unknown at this time and thus will be further evaluated for spacing and fire walls as additional information is available. The nearest transformer is 50 feet back from the Plant Services Area and thus a fire wall protecting the building from the transformers will not be required.

Transformer spray protection is prescriptively required by CSA N293 due to the combustible nature of the transformer oil, proximity to each other, and proximity to the Bus. Automatic deluge spray protection is recommended. Each system will be designed for a density of 10.19 mm/min (0.25 gpm/ft²) over the transformer's surface area. The recommended system density over the open pit is 6.1 mm/min (0.15 gpm/ft²). CSA N293 requires 950 L/min (250 gpm) for hose streams where fire separations are provided and 2850 L/min (750 gpm) where fire separations are not provided.

The Room Data Sheets for the transformers, detailing the preliminary known information regarding combustibles, exposures, fire walls and level of protection for each transformer is in Table 4.5.3.1 below and illustrated on the Site Fire Area Drawing.

Table 4.5.3.1 – Site Building Room Data Sheets

Ro	om	Data Shee	et					
	Fire Area: N/A				Description:	Description: Outdoors - GSU Transformer - Phase A		
	Building: Outdoors			Gross Area (m2			N/A	
				Applicable codes:	CSA N293, NBCC, NFC	C, NFPA 10, NFPA 13, NFPA 15, CSA C22.1, ULC-S524		
	Associated 407081-U72-FG2001K				1		Building Code Occupancy Classification:	N/A
	Drawings or				Electrical C	lassification: Safety-related divisional equipment or cables:	N/A	
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A
					Surrounded	by fire barriers rated at:	2 hours where provided	
						Except:		
Consis	ting of	the following Rooms			Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup
0.0	N/A	Mineral Oil - quar	itity unknowr	n	Heat Detectors	Electric Remote	Automatic Deluge System	Yard Hydrants
			-	-		Release (Plant		Fire Extinguishers
					System Waterflow	Services)	Od P' P (c'	
	-		-		-		Other Fire Protection	
	+						Open pit sized for transformer oil plus 30 minutes of firefi	ghting water discharge
				>700	Antioinatad comhustible	laad MI/m2		
				>/00	La serial dans da seria baset	hla la ad limit MU/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
				IN/A	Unsprinklered combusu	ble load limit, MJ/m2	fire on safe shutdown:	
	Assuming operation of installed fire extinguishing equipment, impact of Plant operation: Transformer isolation / turbine shutdown Radiological release: None, no radiological materials present			er of the upon.		rice statis upon ginition of an off teak of a rupture. The in consumed. Transformers is located greater than 50 feet aw Building and separated from one another by spacial separa Analysis of event will be developed when design has progr safe shutdown.	vay from the Plant Services tion and/or fire walls (TBD). ressed. Fire does not affect	
	Manual firefighting: Yard hydrants for manual attack							
		Property loss:	Moderate					
	Hazardous Substances: None, containment pits provided below transformers							

Ro	om 1	Data Shee	et					
	Fire Area: N/A				Description:	Description: Outdoors - GSU Transformer - Phase B		
		Building:	Outdoors			Gross Area (m2): N/A		
					Applicable codes:	CSA N293, NBCC, NFC	C, NFPA 10, NFPA 13, NFPA 15, CSA C22.1, ULC-S524	
		Associated	407081-U72	2-FG2001K			Building Code Occupancy Classification	: N/A
		Drawings or				Electrical C	lassification: Safety-related divisional equipment or cables	: N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables	: N/A
					Surrounded	by fire barriers rated at:	2 hours where provided	
						Except:		
Consis	ting of t	the following Rooms	3:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Com	nbustibles	Primary	Backup	Primary	Backup
0.0	N/A	Mineral Oil - quar	ntity unknown	1	Heat Detectors	Electric Remote	Automatic Deluge System	Yard Hydrants
						Release (Plant		Fire Extinguishers
					System Waterflow	Services)		
					-		Other Fire Protection	
						Open pit sized for transformer oil plus 30 minutes of firefighting water dis		
				> 700	A - 4 ² - ² - 4 - 4 1 4 ² - 1 -	1 1 MI/ 2		
			ł	>700	Anticipated combustible	ioad, MJ/mz	Assuming automatic & manual FP equipment does not fu	nction, impact of design basis
				N/A	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:	
	Assi	uming operation of i	nstalled fire ex	xtinguishing equipment, impa	et of fire upon:		Fire starts upon ignition of an oil leak or a rupture. The f	re continues until the oil is
		Plant operation:	Transformer	isolation / turbine shutdown		1	consumed. Transformers is located greater than 50 feet a	way from the Plant Services
		T full operation.		isolation / taronic share on			Building and separated from one another by spacial separ	ation and/or fire walls (TBD).
	P	adiological release	None no rad	liological materials present			Analysis of event will be developed when design has pro-	gressed. Fire does not affect
	K	autological release.	rione, no rau	notogical materials present			sale shuldown.	
	Manual firefighting: Yard hydrants for manual attack							
	Property loss: Moderate							
	Hazardous Substances: None, containment pits provided below transformers				transformers			

Ro	om I	Data Shee	et					
	Fire Area: N/A				Description:	Description: Outdoors - GSU Transformer - Phase C		
		Building:	Outdoors			Gross Area (m2): N/A		
					Applicable codes:	CSA N293, NBCC, NFC	C, NFPA 10, NFPA 13, NFPA 15, CSA C22.1, ULC-S524	
		Associated	407081-U72	2-FG2001K			Building Code Occupancy Classification	: N/A
		Drawings or				Electrical C	lassification: Safety-related divisional equipment or cables	: N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables	: N/A
					Surrounded	by fire barriers rated at:	2 hours where provided	
						Except:		
Consis	ting of t	the following Rooms	3:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Con	nbustibles	Primary	Backup	Primary	Backup
0.0	N/A	Mineral Oil - quar	tity unknown	1	Heat Detectors	Electric Remote	Automatic Deluge System	Yard Hydrants
						Release (Plant		Fire Extinguishers
					System Waterflow	Services)		
					-		Other Fire Protection	
						Open pit sized for transformer oil plus 30 minutes of firefighting water		
				> 700	A - 4 ² - ² - 4 - 4 1 4 ² - 1 -	1 1 MI/ 2		
			ł	>700	Anticipated combustible	ioad, MJ/mz	Assuming automatic & manual FP equipment does not fu	nction, impact of design basis
				N/A	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:	
	Assi	uming operation of i	nstalled fire er	xtinguishing equipment, impa	et of fire upon:		Fire starts upon ignition of an oil leak or a rupture. The fi	re continues until the oil is
		Plant operation:	Transformer	isolation / turbine shutdown		1	consumed. Transformers is located greater than 50 feet a	way from the Plant Services
		T failt op tration					Analysis of event will be developed when design has more	ation and/or fire walls (TBD).
	R	adiological release	None no rad	liological materials present			Analysis of event will be developed when design has prog	gressed. File does not affect
	K	autorogical release.	110110, 110 144	norogieur materiais present			sale shuldown.	
	Manual firefighting: Yard hydrants for manual attack							
	Property loss: Moderate							
	Hazardous Substances: None, containment pits provided below transformers				transformers			
1								

Ro	om 1	Data Shee	et						
	Fire Area: N/A				Description:	Description: Outdoors - GSU Transformer - Spare			
		Building:	Outdoors			Gross Area (m2): N/A			
					Applicable codes:	CSA N293, NBCC, NFC	C, NFPA 10, NFPA 13, NFPA 15, CSA C22.1, ULC-8524		
	Associated 407081-U72-FG2001K						Building Code Occupancy Classification	: N/A	
		Drawings or				Electrical C	lassification: Safety-related divisional equipment or cables	: N/A	
		Figures:					Nonsafety - related redundant trains, equipment or cables	: N/A	
					Surrounded	by fire barriers rated at:	2 hours where provided		
						Except:			
Consis	ting of t	the following Rooms	3:		Fire Alarm I	nput Devices	Fire Suppression		
EL	Rm#		Potential Con	nbustibles	Primary	Backup	Primary	Backup	
0.0	N/A	Mineral Oil - quar	tity unknown	1	Heat Detectors	Electric Remote	Automatic Deluge System	Yard Hydrants	
						Release (Plant		Fire Extinguishers	
					System Waterflow	Services)			
					-		Other Fire Protection		
							Open pit sized for transformer oil plus 30 minutes of firefighting water disch		
				> 700	A - 4 ² - ² - 4 - 4 1 4 ² - 1 -	11 MI/2			
			ł	>700	Anticipated combustible	load, MJ/mz	Assuming automatic & manual FP equipment does not fur	nction, impact of design basis	
				N/A	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:		
	Assi	uming operation of i	nstalled fire er	xtinguishing equipment, impa	et of fire upon:		Fire starts upon ignition of an oil leak or a rupture. The fi	re continues until the oil is	
		Plant operation:	Transformer	isolation / turbine shutdown			consumed. Transformers is located greater than 50 feet as	way from the Plant Services	
		T full operation.		isolation / taronic share on			Building and separated from one another by spacial separated and separated from one another by spacial separ	ation and/or fire walls (TBD).	
	P	adiological release	None no rad	liological materials present			Analysis of event will be developed when design has prog	gressed. Fire does not affect	
	K	autorogical release.	110110, 110 144	norogieur materiais present			sale shuldown.		
	Manual firefighting: Yard hydrants for manual attack								
	Property loss: Moderate								
	Hazardous Substances: None, containment pit provided below transformer				ransformer				
						·			
							1		

Ro	om l	Data Shee	et					
		Fire Area:	N/A		Description:	Description: Outdoors - Auxiliary Transformer		
		Building:	Outdoors]	Gross Area (m2): N/A		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 15, CSA C22.1, ULC-S524		
		Associated	407081-U7	2-FG2001K			Building Code Occupancy Classification	: N/A
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables	: N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables	: N/A
					Surrounded	by fire barriers rated at:	2 hours where provided	
						Except:		
							L	
Consis	ting of t	he following Rooms	s:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup
0.0	N/A	Mineral Oil - quar	ntity unknow	n	Heat Detectors	Electric Remote	Automatic Deluge System	Yard Hydrants
					_	Release (Plant		Fire Extinguishers
					System Waterflow	Services)		
							Other Fire Protection	
							Open pit sized for transformer oil plus 30 minutes of firef	ighting water discharge
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	nction, impact of design basis
				N/A	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:	
	Assu	aming operation of i	nstalled fire e	extinguishing equipment, impa	act of fire upon:		Fire starts upon ignition of an oil leak or a rupture. The fi	re continues until the oil is
		Plant operation	Transformer	ricolation / transfer to recerve	auxiliary transformer	1	consumed. Transformers are located 50 feet away from the	e Plant Services Building and
		Fiant operation.	Transformer	isolation / transfer to reserve	auxinary transformer		separated from one another by spacial separation and/or fi	re walls (TBD). Fire spread
	D	adialogical release	None no ra	diological materials present			will be limited to the transformer of fire origin. Analysis	of event will be developed
	K	autological release.	None, no rat	utotogical materials present			when design has progressed. Fire does not affect safe shu	tdown.
	Manual firefighting: Yard hydrants for manual attack							
	Property loss: Moderate							
	Hazardous Substances: None, containment pit provided below transformer			ransformer				
Ro	om]	Data Shee	et					
--------	-----------	----------------------	-----------------	---------------------------------	-------------------------	----------------------------	--	--------------------------------
		Fire Area:	N/A		Description:	Outdoors - Reserve Aux	ciliary Transformer	Const. Type: N/A
		Building:	Outdoors				Gross Area (m2):	N/A
					Applicable codes:	CSA N293, NBCC, NFC	C, NFPA 10, NFPA 13, NFPA 15, CSA C22.1, ULC-S524	
		Associated	407081-U72	2-FG2001K			Building Code Occupancy Classification	N/A
		Drawings or				Electrical C	lassification: Safety-related divisional equipment or cables	N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A
					Surrounded	by fire barriers rated at:	2 hours where provided	
						Except:		
Consis	ting of t	he following Rooms	8:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#	101	Potential Cor	nbustibles	Primary	Backup	Primary	Backup
0.0	N/A	Mineral Oil - quar	itity unknowi	n	Heat Detectors	Electric Remote	Automatic Deluge System	Yard Hydrants
						Release (Plant		Fire Extinguishers
					System Waterflow	Services)	Odere Pier Protection	
					-			tation and the town
							Open pit sized for transformer oli plus 30 minutes of firen	gnting water discharge
				>700	Anticipated combustible	load MI/m2		
				N/A	Uneprinklared combusti	hle lead limit MI/m?	Assuming automatic & manual FP equipment does not fur	iction, impact of design basis
				IN/A		bie load mint, wij/m2	The on safe shutdown:	
	Assi	uming operation of i	nstalled fire e	xtinguishing equipment, impa	act of fire upon:		Fire starts upon ignition of an oil leak or a rupture. The fin	re continues until the oil is
		Plant operation:	Transformer	isolation / transfer to reserve	auxiliary transformer		consumed. Transformers are located 50 feet away from the	e Plant Services Building and
		1					will be limited to the transformer of fire origin. Analysis	of event will be developed
	R	adiological release:	None, no rac	diological materials present			when design has progressed. Fire does not affect safe shu	tdown.
		6		<u> </u>			nien debign nas progresseur i ne dees not anter sale sna	
	Ν	Manual firefighting:	Yard hydran	ts for manual attack				
		Property loss:	Moderate					
	Haz	ardous Substances:	None, conta	inment pit provided below t	ransformer			
			-			•		

4.5.3.2 Reactor Building

The fire protection requirements for the Reactor Building will be based on CSA N293 prescriptive requirements, and evaluation of the combustible loading of each room and its associated fire separations (barriers) to determine the need for sprinklers and detection.

Design of the Reactor Building includes five levels below grade, which are defined as basements by the NBCC. Each level has fire separated areas no greater than 600 square meters (excluding primary containment), as limited by NBCC Article 3.2.1.5(1)(b). No additional fire protection is required by the NBCC.

Pressurized stair enclosures are provided to meet protection of paths between control rooms and also serves as improved access for firefighting. The Secondary Control Room will be pressurized under off normal conditions. Means of activation of the system will include detection of smoke on the -8.5 m Level.

Standpipes (Class I) are required in the two exit enclosures to meet spacing requirements. These are illustrated on the Fire Area Drawings. Firefighting inside Primary Containment can be achieved with 30.48 m (100 feet) of hose from Stair A, via the hatch into Primary Containment. The Reactor Building is supplied with fire protection water from two separate connections from the site loop. The fire loop will feed the Reactor Building on the east side, through the exit passageway extending through the Plant Services Area, and directly into Stair A. The fire loop will feed the Reactor Building, between the two stair enclosures, on the south side, for redundancy of supplies. See the Fire Area drawing ([[]]) for the general routing, and the Piping and Instrument Diagrams (P&ID) for the schematic layout.

The major internal and external fire hazards associated with the Reactor Building are summarized as follows:

- <u>Electrical Rooms</u> The electrical rooms will house switchgear and associated cables. No oil filled electrical equipment will be provided. These rooms are 3-hour rated enclosures. The quantity of cables and thus the fuel load will be quantified and evaluated as the design proceeds. The rooms are provided with smoke detectors for early warning of a fire event. Class C fire extinguishers will be provided outside the door(s) to these rooms for manual firefighting.
- <u>Battery Rooms</u> –Division 1, 2 and 3 Battery Rooms are located on Level -14.5 of the Reactor Building. Each room is separated from the remainder of the building by 3-hour rated barriers. The batteries are understood to be lead-acid type. Hydrogen gasses are liberated from these batteries during normal charging conditions. Hydrogen detection is provided in the room as well as high level exhaust ventilation. Smoke detection is provided for early warning of a fire condition in this room. Sprinkler protection is the NFPA 855 preferred suppression method at this time. Automatic preaction sprinkler protection is provided for this room.

Recommended fire suppression systems are identified on the room data sheets and illustrated on the Fire Area Drawings, however, are summarized as follows:

- Level -34 ERO Storage Room 1102 Wet Pipe Sprinkler
- Level -29 ERO Storage Room 1202 Wet Pipe Sprinkler

- Level -14.5 Division 1 Battery Room 1410 Preaction Sprinkler
- Level -14.5 Division 2 Battery Room 1420 Preaction Sprinkler
- Level -14.5 Division 3 Battery Room 1430 Preaction Sprinkler
- Level -8.5 Corridor -8.5 1502 Preaction Sprinkler*
- Level 0.0 Truck Bay 1600 Wet Pipe Sprinkler
- Level 2.5 Elevator Machine Room A 1680 Wet Pipe Sprinkler
- Level 16 ERO Storage Room 1801 Wet Pipe Sprinkler

* See notes on Room Data Sheet

Primary containment has been provided with nitrogen inerting to maintain the oxygen level below that needed for combustion. This system, unlike fire extinguishing systems, is active (area inerted) at all times, with the exception of plant outages where primary containment area access is needed. At this time, outages are anticipated every one or two years, for an estimated 10-day period. Smoke detection is recommended in primary containment in this report, primarily for the outage time however may be of benefit in detecting a potential off normal electrical condition involving overheating of cables during an operating condition.

A fire alarm system with automatic voice occupant notification is provided throughout the building. Devices and appliances are provided as follows:

- Manual fire alarm boxes (manual pull stations) are provided at each stair door on each level and at each building exit.
- Waterflow alarms and supervision is provided on automatic suppression systems.
- Smoke detection is provided in areas as noted on the room data sheets.
- Smoke and heat detectors are provided for service elevator.
- Occupant notification is provided throughout the building. Strobe only appliances are provided in the Secondary Control Room to avoid interference with operators performance of emergency operations.

Cable tray drawings have not been developed for the Reactor Building. In this preliminary stage, rooms with multiple safety trains are limited to Primary Containment and the Secondary Control Room. Consideration to spatial separation is still necessary in primary containment as overheating of conductors due to an electrical condition such as overcurrent, shorting or ground faults can still occur in the inerted environment and affect adjacent cables. Further evaluation of separation will be needed as the design proceeds.

All cable in the Secondary Control Room is assumed to be in conduit for this preliminary assessment. Cable traveling between adjacent equipment cabinets in the Control Room shall be fire stopped.

Fire areas in the Reactor Building that house redundant safety shutdown systems have fan coil units (FCU's) dedicated to that fire area for room conditioning. As a result, ductwork does not penetrate the fire barriers. Two trains of chilled water are provided in the Reactor Building. The two trains and associated FCU's are provided to critical high heat load rooms. The trains are additionally assigned to the safety shutdown system divisions to maintain the redundancy.

See Reactor Building Fire Area Drawings:

[[]]	EL -34.0m
[[]]	EL -29.0m
[[]]	EL -21.0m
[[]]	EL -14.5m
[[]]	EL -8.5m
[[]]	EL 0.0m
[[]]	EL 4.9m
[[]]	EL 13.0m
[[]]	El 16.0m

The Room Data Sheets for the Reactor Building, detailing the combustibles, room features and level of protection for each room is in Table 4.5.3.2 below. Additional information and analysis is as follows:

 Level -34m – ERO Storage Room 1102 – This room is understood to be used for storage of combustibles (Class III) on shelves. The assumed height is assumed to be less than 12 feet to allow access without ladders. Per NFPA 13, Table 4.3.1.7.1, OH2 - 8.2mm/min (0.20gpm/ft²) over room area.

The room and contents do not affect safe shutdown or generation and thus detection other than the sprinklers is not deemed necessary.

- 2. <u>Level -34m FMCRD Group 1 Controls Room 1110</u> This room has combustibles, and equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- 3. <u>Level -34m FMCRD Group 2 Controls Room 1120</u> This room has combustibles, and equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- 4. <u>Level -34m FMCRD Group 3 Controls Room 1130</u> This room has combustibles, and equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- 5. <u>Level -34m FMCRD Group 4 Controls Room 1140</u> This room has combustibles, and equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- Level -29m ERO Storage Room 1202 This room is understood to be used for storage of combustibles (Class III) on shelves. The assumed height is assumed to be less than 12 feet to allow access without ladders. Per NFPA 13, Table 4.3.1.7.1, OH2 - 8.2mm/min (0.20gpm/ft²) over room area.

The room and contents do not affect safe shutdown or generation and thus detection other than the sprinklers is not deemed necessary.

- 7. <u>Level -29m HCU Group 1 Room 1210</u> This room has combustibles, and equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- 8. <u>Level -29m HCU Group 2 Room 1220</u> This room has combustibles, and equipment is safe shutdown related, although redundant. Smoke detection is warranted.

- 9. <u>Level -29m HCU Group 3 Room 1230</u> This room has combustibles, and equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- 10. <u>Level -29m HCU Group 4 Room 1240</u> This room has combustibles, and equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- 11. <u>Level -21m Div1 DCIS Switchgear Room 1310</u> This room has combustibles, and electrical equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- 12. <u>Level -21m Div2 DCIS Switchgear Room 1320</u> This room has combustibles, and electrical equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- <u>Level -21m Div3 DCIS Switchgear Room 1330</u> This room has combustibles, and electrical equipment is safe shutdown related, although redundant. Smoke detection is warranted.
- 14. <u>Level -21m SDC Pump A Room 1350</u> This room has combustibles, and pump is redundant. Smoke detection is warranted.
- 15. <u>Level -21m SDC Pump B Room 1360</u> This room has combustibles, and pump is redundant. Smoke detection is warranted.
- 16. Level -14.5m Div1 Battery Room 1410 Per GE direction, this room contains lead-acid batteries. NFPA 855 (Stationary Energy Storage Systems) has been recently created to provide guidance and requirements regarding energy storage associated with green generation stations. The committee has determined that automatic sprinklers are appropriate fire protection and has developed a threshold for when they are required. The standard will likely be referenced by NFPA 804 in the near future. The lead-acid batteries in this room exceed the thresholds and thus sprinkler protection is recommended. The sprinkler density recommended is 12.2mm/min (0.30gpm/ft²) over the room area. Clean agent alternates are allowed based on favorable large scale testing results.

The batteries are associated with safe shutdown and are redundant. Smoke and hydrogen detection is warranted. High level exhaust ventilation is recommended as hydrogen gasses are liberated from these batteries during normal charging conditions.

- 17. <u>Level -14.5m Div2 Battery Room 1420</u> See recommendations above.
- 18. <u>Level -14.5m Div3 Battery Room 1430</u> See recommendations above.
- 19. <u>Level -14.5m SDC Evaporator A Room 1451</u> This room has combustibles, and pump is redundant. Smoke detection is warranted where cable tray is located.
- 20. <u>Level -14.5m SDC Evaporator B Room 1461</u> This room has combustibles, and pump is redundant. Smoke detection is warranted where cable tray is located.
- Level -8.5m Secondary Control Room 1570 Current drawings show this room as a single room with exclusively control room equipment (no equipment room, cable room, break room etc.) Based on this drawing, active protection is limited to very early warning smoke detectors.

Table 4.5.3.2 – Reactor Building Room Data Sheets

	<u>, , , , , , , , , , , , , , , , , , , </u>	Data Di						
		Fire Area:	F1100		Description	Room 1100 - Entry -3	34.0 / Room 1100A - Sump 1	Const. Type: II 000
		Building:	Reactor Bui	ilding			Gross Are	ea (m2): 92.9
					Applicable codes:	CSA N293, NBCC, N	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U7	1-FG2101A			Building Code Occupancy Classi	fication: Group F, Division 3
		Drawings or				Electrical Clas	sification: Safety-related divisional equipment or	cables: N/A
		Figures:				N	lonsafety - related redundant trains, equipment or	cables: Load Group A to Sump Pump
					Surrounded	by fire barriers rated at	:	
						Except	:	
Consist	ing of	the following Ro	oms:		Fire Alarm	Input Devices	Fire Suppressi	on
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup
-34.0	1100	Transients			Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-34.0	1100	Cable			Stair Door (Stair	Box		
-34.0	1100A	2 pumps and co	ontrollers		Pressurization)			
				<7	Anticipated combusti	ble load, MJ/m2	Assuming automatic & manual FP equipment of	loes not function, impact of design
				7	00 Unsprinklered combus	stible load limit, MJ/m	² basis fire on safe shutdown:	
	Assum	ing operation of	installed fire e	xtinguishing equipment,	impact of fire upon:		Fire starts in transient combustibles and consur	nes transients and cables in cable
		Distant	News			ר	tray. Fire spread is limited to room by 3-hour	rated barriers to safety shutdown
		Plant operation	n: None				and primary containment fire areas. Fire does	not spread vertically due to limited
	D		U. Di d	1 1 1 1 1 1		-	combustibles in the room and noncombustible	continuous floor construction and
	Rac	hological releas	e: Hose Disch	arge drains to containme	nt	4	hatch above. Rooms 1100 and 1100A are cons	idered a fire zone. Not more than
			A	· · · · · · · · · · · · · · · · · · ·		-	one safety shut down cable train anticipated in	this room. Fire does not affect safe
	Ma	nual firefighting	2: Access via s	stairwell and interior doo	rs	-	snutdown.	
		Fiberty los	S. Minor			-		
	Haza	rdous Substance	s: None					
						1		

Roo	om	Data She	eet						
		Fire Area:	F1101	Description:	Room 1101 - Service	-34 / Room 1101A - Sump 2	Const. Type: II 000		
		Building:	Reactor Building	7		Gross Area (m2):	69.55		
				Applicable codes:	Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U71-FG2101A	Building Code Occupancy Classification: Group F, Divisio					
		Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	N/A		
		Figures:			N	onsafety - related redundant trains, equipment or cables:	Load Group B to Sump Pump		
				Surrounded	by fire barriers rated at:				
					Except:				
						1			
Consist	ting of	the following Roon	ms:	Fire Alarm	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
-34.0	1101	Transients		Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers		
-34.0	1101	Cable		Stair Door (Stair	Box	-			
-34.0	1101A	2 pumps and cor	ntrollers	Pressurization) and					
	<u> </u>			Elevator	-				
	<u> </u>								
			-70	0 Anti-instal	-1-1				
			0</td <td>Anticipated combusti</td> <td>sill l lli is MU/m2</td> <td>Assuming automatic & manual FP equipment does not</td> <td>function, impact of design</td>	Anticipated combusti	sill l lli is MU/m2	Assuming automatic & manual FP equipment does not	function, impact of design		
			70	Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:			
	Assum	ing operation of ir	nstalled fire extinguishing equipment, in	npact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable		
		Plant operation:	None		1	tray. Fire spread is limited to room by 3-hour rated ba	rriers to safety shutdown		
		r fant operation.	TONE			and primary containment fire areas. Fire does not spre	ad vertically due to limited		
	Rad	liological release:	Hose Discharge drains to containment		1	combustibles in the room and noncombustible continue	fire gone Net more then		
	ivat	notogical release.	riose Disenarge arans to containment		{	one safety shut down cable train anticipated in this roo	m. Fire does not affect safe		
	M	nual firefighting	Access via stairwell and interior doors		1	shutdown	III. The does not affect sale		
	1416	Property loss:	Minor		1	Shukuowin			
	Hazardous Substances: None				1				
	Tiazai	dous Substances.	Troite						
			·						
						L			

Roo	om l	Data Shee	et					
		Fire Area:	F1102	Description:	Room 1102 - ERO Stor	rage	Const. Type: II 000	
		Building:	Reactor Building	1		Gross Area (m2):	12.73	
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U71-FG2101A		Building Code Occupancy Classification			
		Drawings or			N/A			
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A	
				Surroundee	d by fire barriers rated at:	2 hour fire barrier to Service Room		
					Except	:		
Consis	ting of t	he following Rooms	S	Fire Alarm	Input Devices	Fire Suppression		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
-34.0	1102	Shelf storage not	exceeding 12 feet in height of ordinary	Sprinkler Waterflow	Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams	
	+	(Class III maximu	im) combustibles	-	Box	-	Fire Extinguishers	
				-				
				-				
			>700	Anticipated combustibl	e load MI/m2	A service set of the service set	ation for a staff dealer have	
			70	Uneprinklered combust	ible load limit MI/m?	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis	
				j onsprinklered combust	ibie ibad mint, wi5/m2		·	
	Asst	iming operation of i	nstalled fire extinguishing equipment, imp	act of fire upon:		Fire starts in storage shelves and consumes all combustible	es in room. Fire spread is	
		Plant operation:	None		ו	and by 2 hour barriers to Service Room 34 and Elevator /	Fire does not spread	
						vertically due to limited combustibles in the room and non	combustible continuous floor	
	Ra	adiological release:	None, no radiological materials present		1	construction above. Room 1102 is considered a fire zone.	Fire does not affect safe	
		0			1	shutdown.	The door not allow bare	
	N	anual firefighting:	Access via stairwell and interior doors		1			
		Property loss:	Minor		1			
	Haz	ardous Substances:	Minimal to None		1			
					-			
						L		

Fire Area: F1110 Reactor Building: Reactor Building Reactor Building Const. Type: II 000 Building: Reactor Building Reactor Building Gross Area (m2): 109.69 Associated 407081-U71-FG2101A Drawings or Figures: Building Code Occupancy Classification: Group F, Division 3 Surrounded by fire barriers rated at: Sureated Group 1 co	Room Data She	eet				
Building: Reactor Building Reactor Building Applicable codes: CSA N293, NBCC, NFCA, NFPA 10, NFPA 14, CSA C22.1, ULC-S524 Building: Associated 407081-U71-FG2101A Building: Group F, Division 3 Building: Figures: Image: Surrounded by fire barriers rated at: Building: R20 Load Group A N/A Nonsafety - related redundant trains, equipment or cables: N/A Surrounded by fire barriers rated at: Bours (Safety Related Equipment) N/A Excerpt: Excerpt: Biolowing Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup Primary Backup -34.0 1110 Cable Tray Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers	Fire Area:	F1110	Description:	Room 1110 - Fine Motion Co	ontrol Rod Drive (FMCRD) Group 1 Control / Room 1110A Sump 3	Const. Type: II 000
Associated Associated Applicable codes: CSA N293, NBCC, NFCA, NFPA 10, NFPA 14, CSA C22.1, ULC-S524 Group F, Division 3 Building Code Occupancy Classification: Figures: 407081-U71-FG2101A Biologian Code Occupancy Classification: R20 Load Group A Nonsafety - related redundant trains, equipment or cables: Nonsafety - related redundant trains, equipment or cables: N/A Surrounded by fire barriers rated at: 3 hours (Safety Related Equipment) N/A Excerpt: Exterior wall not rated. Floor construction above not required to be rated due to related Group 1 equipment in room above. Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup -34.0 1110 Switchgear/Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm -34.0 1110 Cable Tray Box Box	Building:	Reactor Building]		Gross Area (m2):	109.69
Associated Drawings or Figures: 407081-U71-FG2101A Building Code Occupancy Classification: Group F, Division 3 Electrical Classification: Safety-related divisional equipment or cables: R20 Load Group A Nonsafety - related redundant trains, equipment or cables: N/A Surrounded by fire barriers rated at: 3 hours (Safety Related Equipment) Excerpt: Exterior wall not rated. Floor construction above not required to be rated due to related Group 1 equipment in room above. Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup -34.0 1110 Switchgear/Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm -34.0 1110 Cable Tray Box Box			Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	
Figures: Drawings or Figures: Figures: Electrical Classification: Safety-related divisional equipment or cables: R20 Load Group A Nonsafety - related redundant trains, equipment or cables: N/A Surrounded by fire barriers rated at: 3 hours (Safety Related Equipment) Except: Exterior wall not rated. Floor construction above not required to be rated due to related Group 1 equipment in room above. Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup -34.0 1110 Switchgear/ Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm -34.0 1110 Cable Tray Box Fire Extinguishers	Associated	407081-U71-FG2101A]		Building Code Occupancy Classification:	Group F, Division 3
Figures: Nonsafety - related redundant trains, equipment or cables: N/A Surrounded by fire barriers rated at: 3 hours (Safety Related Equipment) Except: Exterior wall not rated. Floor construction above not required to be rated due to related Group 1 equipment in room above. Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup -34.0 1110 Switchgear/ Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm -34.0 1110 Cable Tray Box Fire Extinguishers	Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R20 Load Group A
Surrounded by fire barriers rated at: 3 hours (Safety Related Equipment) Except: Except: Except: Except: Except: Except: Except: Except: Except: Except: Except: Fire Alarm Input Devices EL Rm# Potential Combustibles Primary Backup Primary -34.0 1110 Switchgear/ Motor control/UPS/batteries Smoke Detectors Box Box	Figures:			N	onsafety - related redundant trains, equipment or cables:	N/A
Surrounded by fire barriers rated at: 3 hours (Safety Related Equipment) Except: Exterior wall not rated. Floor construction above not required to be rated due to related Group 1 equipment in room above. Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup -34.0 1110 Switchgear/ Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm -34.0 1110 Cable Tray Box Fire Suppression						
Except: Exterior wall not rated. Floor construction above not required to be rated due to related Group 1 equipment in room above. Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup Primary Backup -34.0 1110 Switchgear/ Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers -34.0 1110 Cable Tray Box Box Fire Extinguishers			Surrounded	by fire barriers rated at:	3 hours (Safety Related Equipment)	
Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup Primary Backup -34.0 1110 Switchgear/ Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers -34.0 1110 Cable Tray Box Box Fire Extinguishers				Except:	Exterior wall not rated. Floor construction above not requirelated Group 1 equipment in room above.	ired to be rated due to
Consisting of the following Rooms: Fire Alarm Fire Alarm Fire Suppression EL Rm# Potential Combustibles Primary Backup Primary Backup -34.0 1110 Switchgear/ Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers -34.0 1110 Cable Tray Box Box Fire Extinguishers						
EL Rm# Potential Combustibles Primary Backup Primary Backup -34.0 1110 Switchgear/Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers -34.0 1110 Cable Tray Box Hose Streams Fire Extinguishers	Consisting of the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression	
-34.0 1110 Switchgear/ Motor control/UPS/batteries Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers -34.0 1110 Cable Tray Box Image: Cable Tray	EL Rm#	Potential Combustibles	Primary	Backup	Primary	Backup
-34.0 1110 Cable Tray Box	-34.0 1110 Switchgear/ Mo	tor control/UPS/batteries	Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers
	-34.0 1110 Cable Tray		-	Box	-	
-34.0 1110 Fan Coil Unit	-34.0 1110 Fan Coil Unit		4			
-34.0 1110 2 sump pumps and controllers	-34.0 1110 2 sump pumps a	nd controllers	4			
<1400 Anticipated combustible load, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of design		<1400	Anticipated combustil	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design
1400 Unsprinklered combustible load limit, MJ/m2 basis fire on safe shutdown:		1400	Unsprinklered combus	stible load limit, MJ/m2	basis fire on safe shutdown:	
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Fire starts within controllers and spreads to all cable and adjacent equipment in	Assuming operation of in	nstalled fire extinguishing equipment, im	pact of fire upon:		Fire starts within controllers and spreads to all cable an	d adjacent equipment in
Plant anomation Dowar Reduction Fire spread is limited to room by 3-hour rated	Plant amonation	Power Paduation		1	room (Complete room burnout). Fire spread is limite	d to room by 3-hour rated
barriers. Fire does not spread vertically due to limited combustibles in the room	Flant operation	I ower Reduction			barriers. Fire does not spread vertically due to limited	combustibles in the room
and noncombustible continuous floor construction above. Room 1110 is	Dedicle signification	Uses Dischause during to containment		1	and noncombustible continuous floor construction abo	ve. Room 1110 is
Radiological release: Hose Discharge drains to containment considered a fire zone. Equipment and cable in room is limited to Group 1	Radiological release	Hose Discharge drains to containment		4	considered a fire zone. Equipment and cable in room i	s limited to Group I
Neural Grafichting Assessment and interim deam	Manual CarCalitian	A		4	controls and thus does not affect safe shutdown.	
Manual intengining: Access via stati wen and intenor doors	Property loss	Access via stairwell and interior doors		1		
I Topety toss, woodcate	Honoradova Sub-trans	News		1		
Hazardous Substances: None	Hazardous Substances	None				
				J		

Roc	om	Data She	eet							
		Fire Area:	F1120		Description	Room 1120 - Fine Mo	otion Control Rod Drive (FMCRD) Group 2 Control	Const. Type: II 000		
		Building:	Reactor Building]		Gross Area (m2):	109.69		
					Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524					
		Associated	407081-U71-FG2101A				Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or				Electrical Classification: Safety-related divisional equipment or cables: R20 Load Gro				
		Figures:				Nonsafety - related redundant trains, equipment or cables: N/A				
					Surrounded	by fire barriers rated at	: 3 hours (Safety Related Equipment)			
						Except	: Exterior wall not rated. Floor construction above not requirelated Group 2 equipment in room above.	ired to be rated due to		
Consist	ing of t	the following Room	ns:		Fire Alarm	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles		Primary	Backup	Primary	Backup		
-34.0	1120	Switchgear/ Mot	or control/UPS/batteries		Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers		
-34.0	1120	Cable Tray				Box	4			
-34.0	1120	Fan Coil Unit								
					-					
				<1.400	A	1.1.1.1.1.1.2				
				<1400	Anticipated combusti	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design		
				1400	Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:			
	Assum	ing operation of ir	stalled fire extinguishing	equipment, imp	pact of fire upon:		Fire starts within controllers and spreads to all cable an	d adjacent equipment in		
		Plant operation:	Power Reduction			1	room (Complete room burnout). Fire spread is limite	d to room by 3-hour rated		
		i fant operation.	I ower reduction				barriers. Fire does not spread vertically due to limited	combustibles in the room		
	Rad	iological releases	Hose Discharge drains to	containment		1	and noncombustible continuous floor construction abo	ve. Room 1120 is		
	Rau	notogical release.	Tiose Disenarge drams o	, containment		4	considered a fire zone. Equipment and cable in room i	s limited to Group 2		
	м	nual firafichting	Access via stairwell and	interior doore		1	controls and thus does not affect safe shutdown.			
	Manual firefighting: Access via stairwell and interior doors Property loss: Moderate			1						
	Hazardous Substances: None			1						
	11az.ai	dous Substances.	. tone							
							L			

Roc	m	Data She	eet							
		Fire Area:	F1130		Description:	Room 1130 - Fine Me	otion Control Rod Drive (FMCRD) Group 3 Control	Const. Type: II 000		
		Building:	Reactor Building]		Gross Area (m2):	109.69		
					Applicable codes:	CSA N293, NBCC, N	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U71-FG2101A				Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or				Electrical Classification: Safety-related divisional equipment or cables: R20 Load C				
		Figures:			Nonsafety - related redundant trains, equipment or cables: N/A					
]					
					Surrounded	by fire barriers rated at	: 3 hours (Safety Related Equipment)			
						Except	Exterior wall not rated. Floor construction above not requirelated Group 3 equipment in room above.	ired to be rated due to		
Consist	ing of t	he following Roon	ns:		Fire Alarm	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles		Primary	Backup	Primary	Backup		
-34.0	1130	Switchgear/ Mot	or control/UPS/batteries		Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers		
-34.0	1130	Cable Tray				Box	_			
-34.0	1130	Fan Coil Unit								
				<1400	1. 6 5 4 1 1	1.1.1.1.1.1.2				
				<1400	Anticipated combusti	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design		
				1400	Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:			
	Assum	ing operation of ir	stalled fire extinguishing e	quipment, imp	pact of fire upon:		Fire starts within controllers and spreads to all cable an	d adjacent equipment in		
		Plant operation:	Power Reduction			ו	room (Complete room burnout). Fire spread is limite	d to room by 3-hour rated		
		T faint operation.	I ower Reduction				barriers. Fire does not spread vertically due to limited	combustibles in the room		
	Rad	iological releases	Hose Discharge drains to	ontainment		1	and noncombustible continuous floor construction abo	ve. Room 1130 is		
	Rau	lological release.	Trose Disenarge drams to	ontaininent		4	considered a fire zone. Equipment and cable in room i	s limited to Group 5		
	Ma	nual firafichting	Access via stairwell and it	terior doore		1	controls and thus does not affect safe shuldown.			
	Ivia	Property loss:	Moderate	iterior doors		1				
	Hazardous Substances: None			1						
	mazai	dous substances.	. tone							
							L			

Roo	om	Data She	eet						
		Fire Area:	F1140	Description	Room 1140 - Fine Mc	otion Control Rod Drive (FMCRD) Group 4 Control	Const. Type: II 000		
		Building:	Reactor Building	7		Gross Area (m2):	109.69		
				Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U71-FG2101A		Building Code Occupancy Classification				
		Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R20 Load Group B		
		Figures:			Ν	lonsafety - related redundant trains, equipment or cables:	N/A		
				Surrounded	by fire barriers rated at:	: 3 hours (Safety Related Equipment)			
					Except	Exterior wall not rated. Floor construction above not r	equired to be rated due to		
						related Group 4 equipment in room above.	•		
Consist	ting of	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
-34.0	1140	Switchgear/ Mo	tor control/UPS/batteries	Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers		
-34.0	1140	Cable Tray			Box				
-34.0	1140	Fan Coil Unit							
			<140	0 Anticipated combustil	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design		
			140	0 Unsprinklered combus	stible load limit, MJ/m2	2 basis fire on safe shutdown:			
	Assum	ing operation of in	stalled fire extinguishing equipment, in	npact of fire upon:		Fire starts within controllers and spreads to all cable an	d adjacent equipment in		
					-	room (Complete room burnout). Fire spread is limite	d to room by 3-hour rated		
		Plant operation:	Power Reduction			barriers. Fire does not spread vertically due to limited	combustibles in the room		
					4	and noncombustible continuous floor construction abor	ve. Room 1140 is		
	Rac	liological release:	Hose Discharge drains to containment			considered a fire zone. Equipment and cable in room i	s limited to Group 4		
					4	controls and thus does not affect safe shutdown.			
	Ma	unual firefighting	Access via stairwell and interior doors		4				
	Property loss: Moderate				-				
	Hazaı	dous Substances	None						
					J				
1									

Roo	om	Data She	eet						
		Fire Area:	F1170	Description:	Room 1170 - Primary	Containment Area - Volume 9208.83m3	Const. Type: II 000		
		Building:	Reactor Building]		Gross Area (m2):	239.15		
				Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U71-FG2101A	7	Building Code Occupancy Classification: Group F, Div				
		Drawings or	Through	Electrical Classification: Safety-related divisional equipment or cables: All divisions					
		Figures:	407081-U71-FG2101F	Nonsafety - related redundant trains, equipment or cables: N/A					
				Surrounded	by fire barriers rated at:	3 hours			
					Except				
						1			
Consist	ting of t	the following Room	ms:	Fire Alarm I	nput Devices	Fire Suppression	1		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
-34				Smoke Detectors may	Manual Fire Alarm	Nitrogen Inerting System - Constant	Hose streams		
thru 0	1170	Cable in cable tr	ays - quantity unknown	be considered to	Box	4	Fire Extinguishers		
				supervise the area					
				during maintenance					
				acuvities					
			Unknowr	Anticipated combustil	l ple load_MI/m2	A construction of the second ED construction of the second	Constitute inconstant de la situa		
			700	Unsprinklered combus	tible load limit MI/m?	Assuming automatic & manual FP equipment does not	function, impact of design		
	A		vetalled first antis suisbing a suismost im	Jonsprinkiered combus	diole load mint, 1415/1112	Dusis me on sale shutdown.			
	Assum	ing operation of it	istaned fire extinguishing equipment, im	pact of fire upon:	_	During normal operation of the plant, primary container pitrogen and thus a fire connot occur. The inerting of t	he space allows the cable		
		Plant operation:	Fire cannot occur with nitrogen inerting i	n place. Heat from]	from all three divisions to be in the same area and not i	mact safe shutdown. The		
			electrical overcurrent, shorts, grounds, etc	c.can occur and cause		assumption of the assessment is that the unit will proce	durally not be allowed to		
			damage limited to a single train with ade	quate spacial separation.		operate without the nitrogen inerting. If the inerting is	not in place and a fire		
	Rad	liological release:	No release during plant operation		1	occurs, safe shutdown will not be impacted as the unit	will not be operating.		
	Ma	nual firefighting:	Area not occupiable during operation, I	but no fire.	1				
						During a maintenance outage, fire occurs in transient n	naterials brought in during		
						reactor shutdown and spreads to cable tray and other co	ombustibles in the room.		
						Fire is limited to primary containment by the surround	ing fire barriers if the		
	Ma	unual firefighting:	Room 1170 is accessed through two ha	tches]	hatches are closed. All safety shut down cable trains a	re routed through this area.		
	Hazar	dous Substances:	None		J	Fire does not affect safe shutdown.			

Ro	om	Data She	eet						
		Fire Area:	F1100	Description	Room 1200 - Entry -2	29.0 / Equipment Hatch to Primary Containment	Const. Type: II 000		
		Building:	Reactor Building	7		Gross Area (m2):	83.87		
				Applicable codes:	Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U71-FG2101B	Building Code Occupancy Classification: Group F, Divi					
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:			N	lonsafety - related redundant trains, equipment or cables:	N/A		
				Surrounded	by fire barriers rated at	:			
					Except	:			
Consis	ting of	the following Room	ms:	Fire Alarm	Input Devices	Fire Suppression			
EL	Rm#	~	Potential Combustibles	Primary	Backup	Primary	Backup		
-29.0	1200	Cable		Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers		
-29.0	1200	Transients		Stair Door (Stair	Box	-			
-29.0	1200	Electrical Panels		Pressurization)	4				
	<u> </u>			4					
	<u> </u>								
			<1400	Anticipated combusti	la load. MI/m2				
			1400	Unaminkland combust	stible lead limit MI/m?	Assuming automatic & manual FP equipment does not	function, impact of design		
			1400	o onsprinkiered combus	suble load limit, MJ/m2	2 basis fire on safe shutdown:			
	Assum	ing operation of it	istalled fire extinguishing equipment, in	pact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable		
		Plant operation:	None		ו	and primary containment fire group. Fire does not one	ad vorticelly due to limited		
						combustibles in the room and noncombustible continue	au ventically due to minicu		
	Rac	liological release:	Hose Discharge drains to containment		1	above and below. Room 1200 is considered a fire zone	Not more than one safety		
		0	Ŭ		1	shut down cable train anticipated in this room. Fire do	es not affect safe shutdown.		
	Ma	anual firefighting:	Access via stairwell and interior doors		1				
		Property loss:	Minor		1				
	Hazardous Substances: None				1				
					-				
						·			

Roo	om 1	Data She	eet						
		Fire Area:	F1101	Description:	Room 1201 - Service	-29	Const. Type: II 000		
		Building:	Reactor Building			Gross Area (m2):	69.56		
				Applicable codes:	Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U71-FG2101B			Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:			N	onsafety - related redundant trains, equipment or cables:	N/A		
				Surrounded	by fire barriers rated at:				
					Except:				
Consist	ing of t	the following Room	ms:	Fire Alarm	nput Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
-29.0	1201	Transients		Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers		
-29.0	1201	Cable		Stair Door (Stair	Box	_			
-29.0	1201	Electrical Panels	3	Pressurization) and					
				Elevator	4				
				700 4 6 5 6 1 6 1 61	1.1.1.1.1.1.2				
				700 Anticipated combusti	ole load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design		
				700 Unsprinklered combus	tible load limit, MJ/m2	² basis fire on safe shutdown:			
	Assum	ing operation of ir	nstalled fire extinguishing equipment,	impact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable		
		Plant operation:	None		1	tray. Fire spread is limited to room by 3-hour rated ba	rriers to safety shutdown		
		i funt operation.	, i tone			and primary containment fire areas. Fire does not spre	ad vertically due to limited		
	Rad	iological releases	Hose Discharge drains to containme	ent	1	combustibles in the room and noncombustible continue	ous floor construction		
	Rau	notogical release.	Trose Disenarge drams to containing	an	{	above and below. Room 1201 is considered a fire zone	 Not more than one safety 		
	Ma	nual firafichting	Access via stairwall and interior do	are	1	shut down cable train anticipated in this room. File do	es not affect sale shutdown.		
	Ivia	Property loss	Minor	515					
	Hazardous Substanassi None								
	mazai	dous Substances.							
			•		,				
						L			

Ro	om	Data She	eet				
		Fire Area:	F1102	Description	Room 1202 - ERO S	torage	Const. Type: II 000
		Building:	Reactor Building			Gross Area (m2):	: 12.73
	Applicable codes:					FCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S5	24
		Associated	407081-U71-FG2101B			Building Code Occupancy Classification	Group F, Division 3
	Drawings or				Electrical Clas	ssification: Safety-related divisional equipment or cables:	N/A
	Figures:				Ν	Nonsafety - related redundant trains, equipment or cables:	N/A
				Surrounded	by fire barriers rated a	t: 2 hour fire barrier to Service Room	
					Excep	tt	
						1	
Consis	ting of t	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression	Т
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
-29.0	1202	Shelf storage no	t exceeding 12 feet in height of	Sprinkler Waterflow	Manual Fire Alarm	Wet Pipe Sprinklers	Hose Stations
	ordinary (Class III maximum) combustibles		_	Box	-	Fire Extinguishers	
			_				
	<u> </u>			_			
			>7	00 Anticipated combusti	he load MI/m2		
				00 Unaprinklarad apphu	tible load limit MI/m	Assuming automatic & manual FP equipment does not	t function, impact of design
			/	oojonsprinkiered combus	suble load mint, wij/m	2 basis nire on sale shutdown:	(11. j
	Assum	ing operation of i	nstalled fire extinguishing equipment,	impact of fire upon:		Fire starts in storage shelves and consumes all combus	tibles in room. Fire spread
		Plant operation	None		ו	is inflited to room by 3-hour fated barriers to safety sh	d Elevator A Fire does not
						spread vertically due to limited combustibles in the roo	and noncombustible
	Rad	liological release	None, no radiological materials press	ent	1	continuous floor construction above and below. Room	1202 is considered a fire
		0			1	zone. Fire does not affect safe shutdown.	r 1202 io considered a me
	Ma	nual firefighting	Access via stairwell and interior door	rs	1		
		Property loss	Minor		1		
	Hazardous Substances: Minimal to None				1		
					-		
						•	

Room Data She	eet				
Fire Area:	F1110	Description:	Room 1210 - HCU G	roup 1	Const. Type: II 000
Building:	Reactor Building]		Gross Area (m2):	107.24
	Applicable codes:	CSA N293, NBCC, NI	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
Associated	407081-U71-FG2101B	1		Building Code Occupancy Classification:	Group F, Division 3
Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R20 Load Group A
Figures:			N	onsafety - related redundant trains, equipment or cables:	N/A
		Surrounded	by fire barriers rated at	3 hours (Safety Related Equipment)	
			Except	: Exterior wall not rated. Floor construction below not requirelated Group 1 equipment in room below.	uired to be rated due to
Consisting of the following Roon	ms:	Fire Alarm I	Input Devices	Fire Suppression	
EL Rm#	Potential Combustibles	Primary	Backup	Primary	Backup
-29.0 1210 HCU Pump		Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-29.0 1210 Pneumatic Valve	25		Box	_	
-29.0 1210 Electrical Panels	•				
-29.0 1210 Cable		-			
-29.0 1210 Fan Coil Unit					
	<1400	Anticipated combustit	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design
	1400	Unsprinklered combus	stible load limit, MJ/m2	2 basis fire on safe shutdown:	
Assuming operation of in	nstalled fire extinguishing equipment, imp	pact of fire upon:		Fire starts within controllers and spreads to all cable an	d adjacent electrical
Blant an antion	Power Poduction		1	equipment in room (Complete room burnout). Fire de	oes not damage pump or
Flant operation.	I ower Reduction			piping. Fire spread is limited to room by 3-hour rated	barriers. Fire does not
De diele sieel erlasses	User Discharge design to containment		1	spread vertically due to limited combustibles in the roo	m and noncombustible
Radiological release:	Hose Discharge drains to containment		4	continuous floor construction below. Room 1210 is co	nsidered a fire zone.
Manual fineficiation	A		4	Equipment and cable in room is limited to Group 1 cor	itrois and thus does not
Property loss:	Access via stairweit and interior doors		1	affect safe shuldown.	
Harandana Substances	None		1		
Hazardous Substances: None					
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Koom Data Sheet	
Fire Area: F1120 Description: Room 1220 - HCU Group 2	Const. Type: II 000
Building: Reactor Building	Gross Area (m2): 107.24
Applicable codes: CSA N293, NBCC, NFCA 10, NFPA 14, CSA C22.1	, ULC-S524
Associated 407081-U71-FG2101B Building Code Occup	pancy Classification: Group F, Division 3
Drawings or Electrical Classification: Safety-related divisional e	equipment or cables: R20 Load Group B
Figures: Nonsafety - related redundant trains, c	equipment or cables: N/A
Surrounded by fire barriers rated at: 3 hours (Safety Related Equipment	t)
Except: Exterior wall not rated. Floor constr related Group 2 equipment in room b	uction below not required to be rated due to below.
Consisting of the following Rooms: Fire Alarm Input Devices F	ire Suppression
EL Rm# Potential Combustibles Primary Backup Primary	Backup
-29.0 1220 HCU Pump Smoke Detectors Manual Fire Alarm Hose Streams	Fire Extinguishers
-29.0 1220 Pneumatic Valves Box	
-29.0 1220 Electrical Panels	
-29.0 1220 Cable	
-29.0 1220 Fan Coil Unit	
<1400 Anticipated combustible load, MJ/m2 Assuming automatic & manual FP	equipment does not function, impact of design
1400 Unsprinklered combustible load limit, MJ/m2 basis fire on safe shutdown:	
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Fire starts within controllers and sp	preads to all cable and adjacent electrical
Plant operation Review Poduction equipment in room (Complete roo	m burnout). Fire does not damage pump or
piping. Fire spread is limited to ro	om by 3-hour rated barriers. Fire does not
Particle indexes drained to contain the containment	mbustibles in the room and noncombustible
Radiological release: Hose Discharge drains to containment containment	w. Room 1220 is considered a fire zone.
Equipment and cable in room is in	nited to Group 2 controls and thus does not
Proneuty long Medeate	
Handam Shatanana Nana	
Hazardous Substances: None	

Room Data Sh	eet				
Fire Area:	F1130	Description:	Room 1230 - HCU Gr	roup 3	Const. Type: II 000
Building:	Reactor Building]		107.24	
		Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	
Associated	407081-U71-FG2101B]		Building Code Occupancy Classification:	Group F, Division 3
Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R20 Load Group A
Figures:			N	onsafety - related redundant trains, equipment or cables:	N/A
		Surrounded	by fire barriers rated at:	3 hours (Safety Related Equipment)	
			Except:	Exterior wall not rated. Floor construction below not requirelated Group 3 equipment in room below.	ired to be rated due to
Consisting of the following Roo	oms:	Fire Alarm I	Input Devices	Fire Suppression	
EL Rm#	Potential Combustibles	Primary	Backup	Primary	Backup
-29.0 1230 HCU Pump		Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-29.0 1230 Pneumatic Valv	res	4	Box	-	
-29.0 1230 Electrical Panel	\$	4			
-29.0 1230 Cable		4			
-29.0 1230 Fan Coil Unit					
	<1400	Anticipated combustit	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design
	1400	Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:	
Assuming operation of i	installed fire extinguishing equipment, im	pact of fire upon:		Fire starts within controllers and spreads to all cable an	d adjacent electrical
Plant operation	Power Reduction		1	equipment in room (Complete room burnout). Fire de	bes not damage pump or
Thank operation	, i ower reduction			piping. Fire spread is limited to room by 3-hour rated	barriers. Fire does not
Radiological release	Hose Discharge drains to containment		1	spread vertically due to limited combustibles in the roo	m and noncombustible
Radiological release	, mose bisenarge drams to containment		4	continuous floor construction below. Room 1230 is co	trols and thus does not
Manual firafighting	Access via stairwell and interior doors		1	affect safe shutdown	and thus does not
Property loss	Moderate		1	arreet sale shutdown.	
Hazardous Substances	None		1		
Hazardous Substances					
	•		,		
				L	

Room Data She	eet				
Fire Area:	F1140	Description:	Room 1240 - HCU Gr	roup 4	Const. Type: II 000
Building:	Reactor Building]		107.24	
	Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
Associated	407081-U71-FG2101B]		Building Code Occupancy Classification:	Group F, Division 3
Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R20 Load Group B
Figures:			N	onsafety - related redundant trains, equipment or cables:	N/A
		Surrounded	by fire barriers rated at:	3 hours (Safety Related Equipment)	
			Except	: Exterior wall not rated. Floor construction below not requirelated Group 4 equipment in room below.	ired to be rated due to
Consisting of the following Roor	ms:	Fire Alarm 1	Input Devices	Fire Suppression	
EL Rm#	Potential Combustibles	Primary	Backup	Primary	Backup
-29.0 1240 HCU Pump		Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-29.0 1240 Pneumatic Valve	25		Box	_	
-29.0 1240 Electrical Panels	•				
-29.0 1240 Cable		-			
-29.0 1240 Fan Coil Unit					
	-1400				
	<1400	Anticipated combustit	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design
	1400	Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:	
Assuming operation of in	nstalled fire extinguishing equipment, imp	pact of fire upon:		Fire starts within controllers and spreads to all cable an	d adjacent electrical
Plant operation:	Power Reduction		ו	equipment in room (Complete room burnout). Fire de	bes not damage pump or
T failt operation.	r ower reduction			piping. Fire spread is limited to room by 3-hour rated	barriers. Fire does not
Radiological release:	Hose Discharge drains to containment		1	spread vertically due to limited combustibles in the roo	m and noncombustible
Radiological release.	nose Disenarge drams to containment		4	continuous floor construction below. Room 1240 is co	trols and thus does not
Manual firafighting:	Access via stairwell and interior doors		1	affect safe shutdown	arois and thus does not
Property loss:	Moderate		1	aneet sale shuldown.	
Hazardous Substances:	None		1		
flazardous Substances.	None				
				L	

Roc	m	Data She	eet					
		Fire Area:	F1100	Description	Room 1300 - Entry -2	Room 1300 - Entry -21.0		
		Building:	Reactor Building	7		Gross Area (m2):	83.87	
	Applicable codes			Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U71-FG2101C	7		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	N/A	
		Figures:			N	lonsafety - related redundant trains, equipment or cables:	N/A	
				Surrounded	by fire barriers rated at:	:		
					Except:	:		
Consisti	ing of t	the following Room	ms:	Fire Alarm	Input Devices	Fire Suppression		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
-21.0	1300	Cable (1 pwr /2	Control trays)	Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers	
-21.0	1.0 1300 Transients			Stair Door (Stair	Box	4		
-21.0	.0 1300 Electrical Panels		Pressurization)	_				
			4					
			<700	Anticipated combusti	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design	
			700	0 Unsprinklered combus	stible load limit, MJ/m2	2 basis fire on safe shutdown:		
1	Assum	ing operation of ir	stalled fire extinguishing equipment, in	pact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable	
		Plant an antianu	Nana		ר	tray. Fire spread is limited to room by 3-hour rated ba	rriers to safety shutdown	
		Fiant operation:	None			and primary containment fire areas. Fire does not spre	ad vertically due to limited	
	D		Name and adding the standard state		-	combustibles in the room and noncombustible continue	ous floor construction	
	Rac	liological release:	None, no radiological materials presen		4	above and below. Room 1300 is considered a fire zone	e. Not more than one safety	
	M		A aris -taimu-11 d interior da-		-	shut down cable train anticipated in this room. Fire do	es not affect safe shutdown.	
	IVI a	Property loss:	Access via stairwell and interior doors		1			
	Property loss: Minor				1			
Hazardous Substances: None								
						L		

Ro	om	Data She	eet				
		Fire Area:	F1101	Description:	Room 1301 - Service	-21.0	Const. Type: II 000
	Building: Reactor Building					Gross Area (m2):	83.8
	Applicable codes:			CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U71-FG2101C			Building Code Occupancy Classification:	Group F, Division 3
		Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	N/A
		Figures:			N	lonsafety - related redundant trains, equipment or cables:	N/A
				Surrounded	by fire barriers rated at	:	
					Except	:	
Consis	ting of	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression	
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
-21.0	1301	Cable (1 pwr /2	Control trays)	Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-21.0	1.0 1301 Transients 1.0 1301 Electrical Panels		Stair Door (Stair	Box	-		
-21.0			Pressurization) and				
			Elevator	4			
	<u> </u>						
			-71	00 Antiginated combustil	la load. MI/m2		
			7	00 Unaminkland annhu	stible lead limit MI/m?	Assuming automatic & manual FP equipment does not	function, impact of design
			//	Unsprinklered combus	stible load limit, MJ/m2	2 basis fire on safe shutdown:	
	Assum	ning operation of i	istalled fire extinguishing equipment, i	mpact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable
		Plant operation:	None		1	tray. Fire spread is limited to room by 3-hour rated ba	rriers to safety shutdown
						combustibles in the room and noncombustible continue	au ventically due to minicu
	Rac	diological release:	None, no radiological materials prese	nt	1	above and below. Room 1301 is considered a fire zone	 Not more than one safety
			, <u> </u>		1	shut down cable train anticipated in this room. Fire do	es not affect safe shutdown
	Ma	anual firefighting	Access via stairwell and interior door	s	1	shar down cubic than anterpated in this room. The do	es not aneet sale shatao whi
		Property loss	Minor		1		
	Hazardous Substances: None				1		
					-		
						L	

Fire Area: Building: F130 Reactor Building Description Reom 1310 - Div 1 DCIS & Switchgear Const. Type: II 000 Gross Area (m2): 109.69 Associated Drawings or Figures: Associated Drawings or Figures: Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22, ULC-SS24 Building Code Occupancy Classification: Gross Area (m2): 109.69 Consisting of the following Rooms: Electrical Classification: Safety-related divisional equipment or cables: N/A N/A Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup 21.0 1310 Electrical Panels Survounded by fire barriers rated at: Electrical Panels Hose Streams Fire Suppression 21.0 1310 Electrical Panels Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers 21.0 1310 Cable (most in conduit) Box Streams Fire Extinguishers 21.0 1310 Far Coil Units Source on the streams Fire Extinguishers 21.0 1310 Far Coil Units Source on the streams Fire Extinguishers Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant ope	Roo	om	Data She	eet					
Building: Reactor Building Associated Drawings or Figures: 407081-U71-FG2101C Consisting of the following Rooms: Electrical Classification: Surrounded by fire barries rated at: 3 hours (Safety Shutdown Div 1 Equipment) Exercise Electrical Classification: Etertical Classification: Group F, Division 3 Surrounded by fire barries rated at: 3 hours (Safety Shutdown Div 1 Equipment) Exercise Exercise Etertical Classification: Fire Suppression Etertion will not rated. Floor construction above not required to be rated due terlated Division 1 equipment) Exercise Exercise End mode primary Backup Primary Backup Primary Box Sinoke Detectors Manual Fire Alarm I 1310 Cable (most in conduit) Box 21.0 1310 Cable (most in conduit) Box I addition of installed fire extinguishing equipment, impact of fire upon: Assuming automatic & manual FP equipment does not function, impact of fire upon: Plant operation: None Interjosted combustible load, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of fire upon: Manual firefightins: Acc			Fire Area:	F1310	Description:	Room 1310 - Div 1 E	DCIS & Switchgear	Const. Type: II 000	
Associated Associated 407081-U71-FG2101C Building Code Occupancy Classification: Group F, Division 1 Building Code Occupancy Classification: Group F, Division 3 Electrical Classification: Safety-related divisional equipment or cables: N/A Surrounded by fire barriers rated at: 3 hours (Safety Shutdown Div 1 Equipment) Exercise of the following Rooms: Fire Alarm Input Devices EL Rmit Potential Combustibles Primary Backup Primary Backup 21.0 1310 Electrical Panels Smoke Detectors Assuming operation of installed fire extinguishing equipment, impact of 1400 Unsprinklered combustible load, M/m2 Assuming automatic & manual FP equipment does not function, impact of Incomost bioles on spreads to all cable in tray to adjacer Plant operation None None Fire start within electrical panels cont spread vertically due to limit of oor onstruction and thus does not affect safe shutdown.			Building:	Reactor Building]		Gross Area (m2): 109.69		
Associated Drawings or Figures: 407081-U71-FG2101C Building Code Occupancy Classification: Regurs or Safety-related divisional equipment or cables: N/A R10 Division 1 Surrounded by fire barriers rated at: Surrounded by fire barriers rated at: 1 hours (Safety Shutdown Div 1 Equipment) N/A EL Rn# Potential Consustibles Primary Backup Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rn# Potential Combustibles Primary Backup 21.0 1310 Electrical Panels Smoke Detectors Manual Fire Alarm 21.0 1310 Cable (most in conduit) Box Fire Extinguishers 21.0 1310 Fan Coil Units Box Fire Extinguishers Consisting operation of installed fire extinguishing equipment, impact of fire upon: Assuming automatic & manual FP equipment does not function, impact of fire upon: Assuming operation of installed fire extinguishing equipment, impact of fire upon: Fire starts within electrical panels and spreads to all cable in tray to adjacer Plant operation: None None Fire starts within electrical and spreads to all cable in roon inroutol). Hazardous Substances: None None None Source and fire zone. Equ		Applicable code			Applicable codes:	CSA N293, NBCC, NE	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
Example of the following Rooms: Fire Alarm Input Devices Surrounded by fire barriers rated at: Exercited at: Surrounded by fire barriers rated at: Exercited at: Exercited at: Consisting of the following Rooms: Surrounded by fire barriers rated at: Exercited at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers rated at: Consistence of the following Rooms: Surrounded by fire barriers fire Alarm Input Devices Surrounded by fire barriers fire Alarm Input Devices Surrounded by fire Alarm Input Devices Surrounded by fire Alarm Input Devices Surrounded by fire Alarm Surrounded by fire Alarm <t< td=""><td></td><td></td><td>Associated</td><td>407081-U71-FG2101C</td><td>]</td><td></td><td>Building Code Occupancy Classification:</td><td>Group F, Division 3</td></t<>			Associated	407081-U71-FG2101C]		Building Code Occupancy Classification:	Group F, Division 3	
Figures: Nonsafety - related redundant trains, equipment or cables: N/A Surrounded by fire barriers rated at: 3 hours (Safety Shutdown Div I Equipment) Exterior wall not rated. Floor construction above not required to be rated due t related Division 1 equipment in room above.			Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R10 Division I	
Surrounded by fire barriers rated at: Surrounded by fire barriers rated at: Surrounded by fire barriers rated at: Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rind Potential Combustibles Primary Backup Primary Backup Primary Box Clospan="2">Clospan="2">Clospan="2">Clospan="2">Clospan="2">Clospan="2" Clospan="2" Clospan="2" <td col<="" td=""><td></td><td></td><td>Figures:</td><td></td><td></td><td>N</td><td>lonsafety - related redundant trains, equipment or cables:</td><td>N/A</td></td>	<td></td> <td></td> <td>Figures:</td> <td></td> <td></td> <td>N</td> <td>lonsafety - related redundant trains, equipment or cables:</td> <td>N/A</td>			Figures:			N	lonsafety - related redundant trains, equipment or cables:	N/A
Surrounded by fire barriers rated at: 3 hours (Safety Shutdown Div 1 Equipment) EL Rm# Potential Combustibles Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup Primary Backup 21.0 1310 Cable (most in conduit) Box Fire Alarm Hose Streams Fire Extinguishers 21.0 1310 Cable (most in conduit) Box Hose Streams Fire Extinguishers 21.0 1310 Fan Coil Units Box Hose Streams Fire Extinguishers 21.0 1310 Fan Coil Units Box Hose Streams Fire Suppression 21.0 1310 Fan Coil Units Box Hose Streams Fire Extinguishers 21.0 1310 Fan Coil Units Box Hose Streams Fire Suppression 21.0 1310 Fan Coil Units Box Hose Streams Fire Starts within electrical panels and spreads to all cable in tray to adjacer 1400 Unsprinklered combustible load, MJ/m2 Assuming automatic & manual FP equipment does not spread vertically due to limite Radiological release: None None									
Except: Exterior wall not rated. Floor construction above not required to be rated due t related Division 1 equipment in room above. Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression Consisting of the following Rooms: Fire Alarm Input Devices Fire Extinguishers 2.10 1310 Calce (most in conduit) 2.10 I310 Calce (most in conduit) Consisting of the following Rooms: Fire Extinguishers Consisting of the following Rooms:<					Surrounded	by fire barriers rated at	3 hours (Safety Shutdown Div 1 Equipment)		
Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup 21.0 1310 Electrical Panels Smoke Detectors Manual Fire Alarm 21.0 1310 Cable (most in conduit) Box Hose Streams Fire Extinguishers 21.0 1310 Cable (most in conduit) Box Hose Streams Fire Suppression 21.0 1310 Fan Coil Units Box Hose Streams Fire Suppression 21.0 1310 Fan Coil Units Box Hose Streams Fire Suppression 21.0 1310 Cable (most in conduit) Box Hose Streams Fire Suppression 21.0 1310 Fan Coil Units Box Hose Streams Fire Starts 21.0 1310 Cable (most in conduit) Fire Starts within electrical panels and spreads to all cable in tray to adjacer 21.0 Plant operation: None None None Fire is limited by manual response - 1 of 3 Divisions Manual firefighting: Access via stairwell and interior doors Fro extret Sonot 130 is considered a fire zone.						Except	: Exterior wall not rated. Floor construction above not requirelated Division 1 equipment in room above.	ired to be rated due to	
Consisting of the following Rooms: Fire Alarm Input Devices Fire Suppression EL Rm# Potential Combustibles Primary Backup Primary Backup 21.0 1310 Electrical Panels Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers -21.0 1310 Cable (most in conduit) Box Box Hose Streams Fire Suppression -21.0 1310 Fan Coil Units Box Hose Streams Fire Suppression -21.0 1310 Fan Coil Units Box Hose Streams Fire Suppression -21.0 1310 Fan Coil Units Box Hose Streams Hose Streams Fire Suppression -21.0 1310 Fan Coil Units Box Hose Streams Hose Streams Hose Streams Fire Suppression -21.0 1310 Fan Coil Units Box Hose Streams Hose Streams Hose Streams Fire Suppression -21.0 1340 Panel Anticipated combustible load, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of 1400 Unsprinklered combustible load MJ/m2 Assuming automatic & manual FP equi									
EL Rm# Potential Combustibles Primary Backup Primary Backup -21.0 1310 Electrical Panels Smoke Detectors Manual Fire Alarm Hose Streams Fire Extinguishers -21.0 1310 Cable (most in conduit) Box Fire Extinguishers Fire Extinguishers -21.0 1310 Fan Coil Units Box Fire Extinguishers Fire Extinguishers -21.0 1310 Fan Coil Units Box Fire Extinguishers Fire Extinguishers -21.0 1310 Fan Coil Units Anticipated combustible load, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of 1400 Assuming operation of installed fire extinguishing equipment, impact of fire upon: None - Fire is limited by manual response - 1 of 3 Divisions Fire starts within electrical panels and spreads to all cable in tray to adjacer electrical equipment in room (Complete room burnout). Fire spread is fir oom by 3-hour rated barriers. Fire does not spread vertically due to limite to om by 3-hour rated barriers. Fire does not affect safe shutdown. Manual firefighting: Access via stairwell and interior doors Moderate Access via stairwell and interior doors Manual firefighting: Access via stairwell and interior doors Moderate Access via stairwell and interior doors Manual firefighting: Access via stairwell and interior doors Moderate	Consist	ting of	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression		
-21.0 1310 Electrical Panels Smoke Detectors Manual Fire Alarm -21.0 1310 Cable (most in conduit) Box -21.0 1310 Fan Coil Units Assuming automatic & manual FP equipment does not function, impact of 1400 Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None - Fire is limited by manual response - 1 of 3 Divisions Fire starts within electrical panels and spreads to all cable in tray to adjacer electrical equipment in room (Complete room burnout). Fire spread is limit operation: Manual firefighting: Access via stairwell and interior doors Fire operation of installed moderate Manual firefighting: Access via stairwell and interior doors Fire operation operation operation: Fire stair with addition operation operation operation: Manual firefighting: Access via stairwell and interior doors Fire operation operation operation: Fire stair with addition operation operation operation operation: Manual firefighting: Access via stairwell and interior doors	EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
-21.0 1310 Cable (most in conduit) Box -21.0 1310 Fan Coil Units Box -21.0 1310 Fan Coil Units Image: Construction of the construction of installed fire extinguishing equipment, impact of fire upon: None - Fire is limited by manual response - 1 of 3 Divisions Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None - Fire is limited by manual response - 1 of 3 Divisions None Fire starts within electrical panels and spreads to all cable in tray to adjacer electrical equipment in room (Complete room burnout). Fire spread is lim room by 3-hour rated barriers. Fire does not spread vertically due to limite combustible in the room and noncombustible continuous floor construction above. Room 1310 is considered a fire zone. Equipment and cable in room limited to Division 1 controls and thus does not affect safe shutdown. Manual firefighting: Access via stairwell and interior doors Moderate Property loss: Moderate None None	-21.0	1310	Electrical Panels	k	Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers	
-21.0 1310 Fan Coil Units Image: Coil Units <	-21.0	1310	Cable (most in c	onduit)		Box			
Image: Construction of installed fire extinguishing equipment, impact of fire upon: Image: Construction of installed fire extinguishing equipment, impact of fire upon: Assuming operation of installed fire extinguishing equipment, impact of fire upon: Assuming operation of installed fire extinguishing equipment, impact of fire upon: Fire starts within electrical panels and spreads to all cable in tray to adjacer electrical equipment in room (Complete room burnout). Fire spread is lire room by 3-hour rated barriers. Fire does not spread vertically due to limite combustibles in the room and noncombustible continuous floor construction above. Room 1310 is considered a fire zone. Equipment and cable in room limited to Division 1 controls and thus does not affect safe shutdown.	-21.0	1310	Fan Coil Units						
<td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>									
<1400									
<1400									
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None - Fire is limited by manual response - 1 of 3 Divisions Plant operation: None - Fire is limited by manual response - 1 of 3 Divisions Fire starts within electrical panels and spreads to all cable in tray to adjacer electrical equipment in room (Complete room burnout). Fire spread is lin room by 3-hour rated barriers. Fire does not spread vertically due to limite combustibles in the room and noncombustible continuous floor construction above. Room 1310 is considered a fire zone. Equipment and cable in room limited to Division 1 controls and thus does not affect safe shutdown. Manual firefighting: Access via stairwell and interior doors Property loss: Moderate Hazardous Substances: None				<1400	Anticipated combustil Unsprinklered combus	ble load, MJ/m2 stible load limit, MJ/m2	Assuming automatic & manual FP equipment does not 2 basis fire on safe shutdown:	function, impact of design	
		Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None - Fire is limited by manual response - 1 of 3 Divisions Radiological release: None Manual firefighting: Access via stairwell and interior doors Property loss: Moderate Hazardous Substances: None					Fire starts within electrical panels and spreads to all ca electrical equipment in room (Complete room burnout room by 3-hour rated barriers. Fire does not spread ve combustibles in the room and noncombustible continu above. Room 1310 is considered a fire zone. Equipme limited to Division 1 controls and thus does not affect s	ble in tray to adjacent). Fire spread is limited to rtically due to limited ous floor construction ent and cable in room is safe shutdown.	

Room Data Sh	leet					
Fire Area:	F1320	Description:	Room 1320 - Div 2 D	OCIS & Switchgear	Const. Type: II 000	
Building:	Reactor Building	7		Gross Area (m2): 109.69		
Applicable codes			CSA N293, NBCC, NI	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
Associated	407081-U71-FG2101C			Building Code Occupancy Classification:	Group F, Division 3	
Drawings or			Electrical Clas	sification: Safety-related divisional equipment or cables:	R10 Division 2	
Figures:			N	Ionsafety - related redundant trains, equipment or cables:	N/A	
		Surrounded	by fire barriers rated at	: 3 hours (Safety Shutdown Div 2 Equipment)		
			Except	: Exterior wall not rated. Floor construction above not requirelated Division 2 equipment in room above.	ired to be rated due to	
Consisting of the following Ro	oms:	Fire Alarm	Input Devices	Fire Suppression		
EL Rm#	Potential Combustibles	Primary	Backup	Primary	Backup	
-21.0 1320 Electrical Pane	els	Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers	
-21.0 1320 Cable (most in	conduit)		Box			
-21.0 1320 Fan Coil Units						
	<140 140	0 Anticipated combustil 0 Unsprinklered combus	ble load, MJ/m2 stible load limit, MJ/m2	Assuming automatic & manual FP equipment does not 2 basis fire on safe shutdown:	function, impact of design	
Assuming operation of Plant operatio Radiological releas Manual firefightin Property los Hazardous Substance	installed fire extinguishing equipment, in None - Fire is limited by manual responses None Access via stairwell and interior doors Moderate None None	npact of fire upon: nnse - 1 of 3 Divisions		Fire starts within electrical panels and spreads to all cal electrical equipment in room (Complete room burnout room by 3-hour rated barriers. Fire does not spread ve combustibles in the room and noncombustible continue above. Room 1320 is considered a fire zone. Equipme limited to Division 2 controls and thus does not affect a	ble in tray to adjacent). Fire spread is limited to rtically due to limited ous floor construction ent and cable in room is safe shutdown.	

Ro	om	Data She	eet				
		Fire Area:	F1330	Description:	Room 1330 - Div 3 D	CIS & Switchgear	Const. Type: II 000
		Building:	Reactor Building	1		Gross Area (m2):	109.69
	Applicable codes			CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U71-FG2101C]		Building Code Occupancy Classification:	Group F, Division 3
		Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R10 Division 3
		Figures:			N	onsafety - related redundant trains, equipment or cables:	N/A
				Surrounded	by fire barriers rated at:	3 hours (Safety Shutdown Div 3 Equipment)	
					Except:	Exterior wall not rated. Floor construction above not requirelated Division 3 equipment in room above.	ired to be rated due to
Consis	ting of t	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression	
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
-21.0	1330	Electrical Panels		Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-21.0	1330	Cable (most in c	onduit)	-	Box	-	
-21.0	.0 1330 Fan Coil Units		4				
				4			
			<1400 1400	O Anticipated combustil Unsprinklered combus	ole load, MJ/m2 stible load limit, MJ/m2	Assuming automatic & manual FP equipment does not basis fire on safe shutdown:	function, impact of design
	Assum Rad Ma Hazar	ing operation of in Plant operation: liological release: nual firefighting: Property loss: rdous Substances:	None - Fire is limited by manual responses of the second s	pact of fire upon: 1se - 1 of 3 Divisions		Fire starts within electrical panels and spreads to all cal electrical equipment in room (Complete room burnout room by 3-hour rated barriers. Fire does not spread ve combustibles in the room and noncombustible continu above. Room 1330 is considered a fire zone. Equipme limited to Division 3 controls and thus does not affect s	ble in tray to adjacent). Fire spread is limited to rtically due to limited ous floor construction ent and cable in room is safe shutdown.

Roo	om	Data She	eet						
		Fire Area:	F1350		Description:	Room 1350 - SDC Pu	imp A	Const. Type: II 000	
		Building:	Reactor Bui	ilding]		Gross Area (m2): 53.65		
	Applicab			Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U7	1-FG2101C]		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or				Electrical Class	sification: Safety-related divisional equipment or cables:	N/A	
		Figures:				N	lonsafety - related redundant trains, equipment or cables:	Load Group A	
					Surrounded	by fire barriers rated at:	: 3 hours (Redundant Pump)		
						Except	: Exterior wall not rated. Floor construction above not requ	uired to be rated due to	
							related Group A equipment in room above.		
Consist	ting of t	the following Room	ms:		Fire Alarm	Input Devices	Fire Suppression		
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup	
-21.0	1350	SDC Pump (Shu	tdown Cooli	ng Pump)	Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers	
-21.0	-21.0 1350 Cable				Box				
				<700	Anticipated combustil	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design	
				700	Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:		
	Assum	ing operation of in	stalled fire e	xtinguishing equipment, im	pact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable	
		Plant anaration	None			1	tray. Fire spread is limited to room by 3-hour rated ba	arriers to adjacent fire areas.	
		Fiant operation:	None				Fire does not spread vertically due to limited combusti	bles in the room and	
	D		None Cont	aminated water in metalic n	ining and tubing not	1	noncombustible continuous floor construction above.	Room 1350 is considered a	
	Kad	nological release:	compromise	ed by fire event. Hose Disch	arge drains to		fire zone. Not more than one safety shut down cable th	rain anticipated in this	
			compromise	ed by me even. nose bisen	ange aranis to	1	room. The pump is redundant. Fire does not affect sat	te shutdown.	
	Ma	nual firefighting:	Access via	stairwell and interior doors		1			
		Property loss:	Moderate			1			
	Hazardous Substances: None					1			
						-			
1									
1									
							L		

Ro	om	Data She	eet						
		Fire Area:	F1360		Description:	Room 1360 - SDC Pu	imp B	Const. Type: II 000	
		Building:	Reactor Bui	ilding]		Gross Area (m2): 53.65		
	Applicable coo			Applicable codes:	CSA N293, NBCC, NI	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U7	1-FG2101C]		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or				Electrical Class	sification: Safety-related divisional equipment or cables:	N/A	
	Figures:				N	lonsafety - related redundant trains, equipment or cables:	Load Group B		
					Surrounded	by fire barriers rated at	: 3 hours (Redundant Pump)		
						Except	Exterior wall not rated. Floor construction above not requirelated Group B equipment in room above.	ired to be rated due to	
Consis	ting of	the following Room	ms:		Fire Alarm	Input Devices	Fire Suppression		
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup	
-21.0	1360	SDC Pump (Shu	tdown Cooli	ng Pump)	Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers	
-21.0	-21.0 1360 Cable				Box				
				4					
				=					
				<700	Anticipated combustil	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design	
				700	Unsprinklered combus	stible load limit, MJ/m2	2 basis fire on safe shutdown:		
	Assum	ing operation of ir	stalled fire e	xtinguishing equipment, im	pact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable	
		Plant anasation	Nona			ו	tray. Fire spread is limited to room by 3-hour rated ba	rriers to adjacent fire areas.	
		Fiant operation.	None				Fire does not spread vertically due to limited combusti	bles in the room and	
	Dag	lialagiaal malagaga	None Cont	aminated water in metalic n	ining and tubing not	1	noncombustible continuous floor construction above.	Room 1360 is considered a	
	Kat	liological release:	compromise	ed by fire event. Hose Disch	arge drains to		fire zone. Not more than one safety shut down cable th	ain anticipated in this	
						1	room. The pump is redundant. Fire does not affect safe	e snutdown.	
	Ma	nual firefighting:	Access via	stairwell and interior doors		1			
		Property loss:	Moderate]			
	Hazardous Substances: None]			

Roo	om l	Data Shee	et						
		Fire Area:	F1100		Description:	Room 1400 - Entry -14.	5	Const. Type: II 000	
	Building: Reactor Building				Gross Area (m2): 83.87				
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U71-FG2101D				Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A	
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A	
					Surrounded	by fire barriers rated at:			
						Except:			
							1		
Consist	ing of tl	ne following Room:			Fire Alarm I	nput Devices	Fire Suppression		
EL	Rm#		Potential Combustibles		Primary	Backup	Primary	Backup	
-14.5	1400	Cable (1 pwr /2 C	ontrol trays)	Smok	ke detector at Stair	Manual Fire Alarm	Hose Streams	Fire Extinguishers	
-14.5	1400	Transients		Door	(Stair	Box	-		
				Press	surization)				
				<700 Antio	instad combustible	load MI/m2			
				~700 Antic	ipated combustible	hla la ad limit MU/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis	
				700 Unsp	orinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:		
	Assu	iming operation of	nstalled fire extinguishing equipment	t, impact of fi	ire upon:		Fire starts in transient combustibles and consumes transien	ts and cables in cable tray.	
		Plant operation:	None			1	Fire spread is limited to room by 3-hour rated barriers to sa	tety shutdown and primary	
							containment fire areas. Fire does not spread vertically due the room and noncombustible continuous floor construction	n above and below. Poom	
	R	diological release	None, no radiological materials pres	sent however	hose discharge		1400 is considered a fire zone. Not more than one safety s	hut down cable train	
		alological felease.	drains to containment.		neee aleenaige		anticipated in this room. Fire does not affect safe shutdow	n	
							anterpated in this room. The does not uncer sure shadow		
	Manual firefighting: Access via stairwell and interior doors		ors						
	Property loss: Minor								
	Haza	ardous Substances:	None						
			L			l			
							•		

Roo	om l	Data Shee	et					
		Fire Area:	F1101		Description:	Room 1401 - Service - I	14.5	Const. Type: II 000
	Building: Reactor Building			Gross Area (m2): 83.8				
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	•
		Associated	407081-U7	1-FG2101D	1		Building Code Occupancy Classification:	Group F, Division 3
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A
					Surrounded	I by fire barriers rated at:	*	<u>.</u>
						Except:	:	
Consist	ing of tl	ne following Rooms			Fire Alarm I	nput Devices	Fire Suppression	. <u>.</u>
EL	Rm#		Potential Co	mbustibles	Primary	Backup	Primary	Backup
-14.5	1401	Cable (1 pwr /2 C	ontrol trays)		Smoke detector at Stair	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-14.5	1401	Transients			Door (Stair	Box	-	
					Pressurization) and			
					Elevator	-		
				<700	Antioinated combustible	a load MI/m2		
				~700	Unaminkland combustion	bla laad limit MI/m?	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
				/00	Unsprinklered combust	ble load limit, MJ/m2	fire on safe shutdown:	
	Assu	iming operation of i	nstalled fire e	extinguishing equipment, impa	ect of fire upon:		Fire starts in transient combustibles and consumes transien	ts and cables in cable tray.
		Plant operation:	None			1	Fire spread is limited to room by 3-hour rated barriers to sa	ifety shutdown and primary
							containment fire areas. Fire does not spread vertically due	to finited combustibles in
	R	diological release:	None, no rae	diological materials present ho	wever hose discharge	1	1401 is considered a fire zone. Not more than one safety s	hut down cable train
		alological felease.	drains to con	ntainment.	ine ter nobe albenaige		anticipated in this room. Fire does not affect safe shutdow	n at uown cable train
						1	anteipatea in ano room. The abes not arteet sale shatao i	
	Manual firefighting: Access via stairwell and interior doors			1				
	Property loss: Minor]				
	Hazardous Substances: None							
						J		
							•	

Roo	om]	Data Shee	et					
		Fire Area:	F1350	Description:	Room 1402 - SDC Entr	y & Room 1451 - SDC Heat Exchanger A	Const. Type: II 000	
		Building:	Reactor Building	1		Gross Area (m2):	48.69	
		-		Applicable codes:	Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U71-FG2101D	1		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A	
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Load Group A	
				Surrounded	d by fire barriers rated at:	3 hours (Redundant Equipment)		
					Except:	Exterior wall not rated. Floor construction above and below related equipment in rooms above and below.	not required to be rated due to	
Consis	ing of t	he following Rooms	8:	Fire Alarm 1	Input Devices	Fire Suppression		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
-14.5	1451	Transients		Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers	
-14.5	1402	Electrical Panels	& Cable Tray	-	Box			
-14.5	1402	Transients		_				
				-				
	<u> </u>							
			-700					
			00</td <td>Anticipated combustible</td> <td>e load, MJ/m2</td> <td>Assuming automatic & manual FP equipment does not fun</td> <td>ction, impact of design basis</td>	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis	
			700	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:		
	Assu	uming operation of i	installed fire extinguishing equipment, impa	act of fire upon:		Fire starts in transient combustibles and consumes transien	ts and cables in cable tray in	
		Plant operation:	None Fire is limited by manual response	1 of 2 Redundant	1	entry. Fire spread is limited to room by 3-hour rated barri	ers to adjacent fire areas.	
		i fain operation.	Pumps	- 1 01 2 Reduitdain		Fire does not spread vertically due to limited combustibles in the room and		
	D	ndialogical release	None Contaminated water in metalic pipi	ng tank and tubing not	1	noncombustible continuous floor construction above and b	elow. Rooms 1402 and 1451	
	Radiological release: None, Contaminated water in metalic pipi compromised by fire event. Hose Discharg		ge drains to containment.		in this room. Fire does not affect safe shutdown.	lown cable train anticipated		
	N	fanual firefighting:	Access via stairwell and interior doors					
	Property loss: Moderate			1				
	Haz	ardous Substances:	None		1			
					J			

Roo	om 1	Data Shee	et					
		Fire Area:	F1360		Description:	Room 1403 - SDC Ent	ry B & Room 1461 - SDC Heat Exchanger B	Const. Type: II 000
		Building:	Reactor Building]		Gross Area (m2):	48.69
	Applica		Applicable codes:	CSA N293, NBCC, NF	CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U71-FG21	01D			Building Code Occupancy Classification:	Group F, Division 3
		Drawings or				Electrical	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group B
					Surroundee	l by fire barriers rated at	t: 3 hours (Redundant Equipment)	
						Except	t: Exterior wall not rated. Floor construction above and below related equipment in rooms above and below.	not required to be rated due to
Consist	ing of t	he following Room	s:		Fire Alarm	Input Devices	Fire Suppression	
EL	Rm#		Potential Combustib	les	Primary	Backup	Primary	Backup
-14.5	1461	Transients			Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-14.5	1403	Electrical Panels	& Cable Tray			Box		
-14.5	1403	Transients			-			
					-			
				-200		1 1 1 1 1 1 1		
				00</td <td>Anticipated combustible</td> <td>e load, MJ/m2</td> <td>Assuming automatic & manual FP equipment does not fun</td> <td>ction, impact of design basis</td>	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
				700	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	
	Assu	uming operation of	installed fire extinguis	shing equipment, impa	ect of fire upon:		Fire starts in transient combustibles and consumes transient	ts and cables in cable tray in
		Plant operation	None - Fire is limite	d by manual reeponce	- 1 of 2 Redundant	1	entry. Fire spread is limited to room by 3-hour rated barri	ers to adjacent fire areas.
		I lant operation	Pumps	d by manual response	- 1 of 2 Reduidant		Fire does not spread vertically due to limited combustibles	in the room and
	P	adiological release	None Contaminate	d water in metalic nini	ng tank and tubing not	1	noncombustible continuous floor construction above and b	down apple train antiainated
	R	autological release	compromised by fir	e event. Hose Dischar	ge drains to containment.		in this room. Fire does not affect safe shutdown	uown cable train anticipateu
							in this room. The does not affect sale shuddown.	
		Innual firafichting	Access via stainvall	and interior doors		4		
	Property loss: Moderate							
	Haz	ardoue Substances	None		-			
	TIdZ	aruous Substances	riolic			1		
1								

Ro	om	Data She	eet				
		Fire Area:	F1310	Description	Room 1410 - Div 1 B	attery	Const. Type: II 000
		Building:	Reactor Building			Gross Area (m2):	109.69
				Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-852	24
		Associated	407081-U71-FG2101D			Building Code Occupancy Classification:	Group F, Division 3
		Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R10 Division 1
		Figures:			Ν	onsafety - related redundant trains, equipment or cables:	N/A
				Surrounded	by fire barriers rated at:	3 hours (Safety Shutdown Div 1 Equipment)	
					Except:	Exterior wall not rated. Floor construction below not requirelated Division 1 equipment in room below.	ired to be rated due to
						-	
Consis	ting of	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression	
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
-14.5	1410	Battery cases		Smoke Detectors &	Manual Fire Alarm	Preaction Sprinklers	Hose Streams
-14.5	1410	Cable		Hydrogen Detectors	Box		Fire Extinguishers
-14.5	1410	Electrical Cabin	et				
				Sprinkler Waterflow		Other Fire Protection	
						High level exhaust	
			>70	0 Anticipated combusti	ole load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design
			70	0 Unsprinklered combus	stible load limit, MJ/m2	basis fire on safe shutdown:	
	Assum	ing operation of in Plant operation	nstalled fire extinguishing equipment, in None - Fire is limited by manual respo	npact of fire upon: onse - 1 of 3 Divisions	ו	Cable fire. Fire spreads to battery cases and transients 3-hour rated barriers. Fire does not spread vertically du in the room and noncombustible continuous floor const	 Fire is limited to room by ue to limited combustibles truction below. Room 1410
					4	is considered a fire zone. Not more than one safety shu	it down cable train
	Rac	liological release	None, no radiological materials preser	nt	4	anticipated in this room. Fire does not affect safe shute	down.
	M	anual firefighting	Access via stairwell and interior doors		1		
		Property loss	Moderate		1		
Hazardous Substances: Battery acid spill		1					
					J		
						L	

Roc	om 1	Data Shee	et					
		Fire Area:	F1320		Description:	Room 1420 - Div 2 Bat	ttery	Const. Type: II 000
		Building:	Reactor Bui	lding	1		Gross Area (m2):	109.69
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U7	1-FG2101D			Building Code Occupancy Classification:	Group F, Division 3
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	R10 Division 2
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A
					Surrounded	d by fire barriers rated at:	3 hours (Safety Shutdown Div 2 Equipment)	
						Except	Exterior wall not rated. Floor construction below not require Division 2 equipment in room below.	d to be rated due to related
Consist	ing of t	he following Rooms	s:		Fire D	etection	Fire Suppression	
EL	Rm#		Potential Con	mbustibles	Primary	Backup	Primary	Backup
-14.5	1420	Battery cases			Smoke Detectors &	Manual Fire Alarm	Preaction Sprinklers	Hose Streams
-14.5	1420	Cable			Hydrogen Detectors	Box	-	Fire Extinguishers
-14.5	1420	Electrical Cabinet	t			-		
	<u> </u>				Sprinkler Waterflow Other Fire Protection			
							High level exhaust	
				>1400	Anti-instal sombootible	a land MI/m2		
				>1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
				1400	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	
	Assi	uming operation of i Plant operation:	None - Fire	extinguishing equipment, impa is limited by sprinklers manua	ut of fire upon: Il response - 1 of 3	ן	Cable fire. Fire spreads to battery cases and transients. Fi hour rated barriers. Fire does not spread vertically due to l room and noncombustible continuous floor construction be	inited to room by 3- imited combustibles in the clow. Room 1420 is
	D	adialogical releases	None no ra	diological materials present		1	considered a fire zone. Not more than one safety shut dow	n cable train anticipated in
	K	Life - fetase.	Trend Lister	nological materials present		4	this room. Fire does not affect safe shutdown.	
		Life safety:	Access via	tairwell and interior doors	quirements	1		
	Property loss: Moderate			1				
	Hazardous Substances: Battery acid spill			1				
	maz	ardous Substances.	Duttery ucit	spin				

Roo	om	Data She	eet				
		Fire Area:	F1330	Description	Room 1430 - Div 3 B	attery	Const. Type: II 000
		Building:	Reactor Building			Gross Area (m2):	109.69
				Applicable codes:	able codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U71-FG2101D			Building Code Occupancy Classification:	Group F, Division 3
		Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	R10 Division 3
		Figures:			N	onsafety - related redundant trains, equipment or cables:	N/A
				Surrounded	by fire barriers rated at	3 hours (Safety Shutdown Div 3 Equipment)	
					Except	: Exterior wall not rated. Floor construction below not requirelated Division 3 equipment in room below.	uired to be rated due to
Consist	ting of	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression	
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
-14.5	1430	Battery cases		Smoke Detectors &	Manual Fire Alarm	Preaction Sprinklers	Hose Streams
-14.5	1430	Cable		Hydrogen Detectors	Box	_	Fire Extinguishers
-14.5	1430	Electrical Cabin	et				
				Sprinkler Waterflow		Other Fire Protection	
						High level exhaust	
			>	700 Anticipated combusti	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design
				700 Unsprinklered combus	stible load limit, MJ/m2	2 basis fire on safe shutdown:	
	Assun	ing operation of in Plant operation	nstalled fire extinguishing equipment	, impact of fire upon: sponse - 1 of 3 Divisions	I	Cable fire. Fire spreads to battery cases and transients 3-hour rated barriers. Fire does not spread vertically d in the room and noncombustible continuous floor cons	 Fire is limited to room by ue to limited combustibles truction below. Room 1430
						is considered a fire zone. Not more than one safety shi	ut down cable train
	Rad	liological release	None, no radiological materials pre	sent	4	anticipated in this room. Fire does not affect safe shut	down.
	M	anual firefighting	Access via stairwell and interior do	ors	1		
	Property loss: Moderate		1				
	Hazardous Substances: Battery acid spill		1				
	1102.0	uous substances	, samely acta opin		J		

Ro	om	Data She	eet						
		Fire Area:	F1100	Description	Room 1500 - Entry -8	8.5 / Service Hatch to Primary Containment	Const. Type: II 000		
	Building: Reactor Building					Gross Area (m2): 66.06			
				Applicable codes:	CSA N293, NBCC, N	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U71-FG2101E			Building Code Occupancy Classification	Group F, Division 3		
		Drawings or			Electrical Clas	sification: Safety-related divisional equipment or cables	N/A		
		Figures:			N	Jonsafety - related redundant trains, equipment or cables	N/A		
				Surrounded	by fire barriers rated at	:			
					Except				
Consis	ting of t	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression	1		
EL	Rm#	<u></u>	Potential Combustibles	Primary	Backup	Primary	Backup		
-8.5	1500	Cable (1 pwr /2	Control trays)	Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers		
-8.5	1500	Transients		Stair Door (Stair	Box	_			
				Pressurization)	-				
	<u> </u>			-					
	L		<70	0 Anticipated combusti	hle load MI/m2				
			70	0 Unsprinklered combus	stible load limit MI/m?	Assuming automatic & manual FP equipment does not	function, impact of design		
			70	o o nsprinkiered combus	stible load mint, 1415/1112		· · · · · · · · · · · · · · · · · · ·		
	Assum	ing operation of it	istalled fire extinguishing equipment, in	npact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable		
		Plant operation:	None		ו	and primary containment fire areas. Fire does not spread	and vertically due to limited		
		-				combustibles in the room and noncombustible continue	ous floor construction		
	Rad	liological release:	Hose Discharge drains to containment		1	above and below. Room 1500 is considered a fire zon	e. Not more than one safety		
		C			1	shut down cable train anticipated in this room. Fire do	es not affect safe shutdown.		
	Ma	nual firefighting:	Access via stairwell and interior doors		1	I			
	Property loss: Minor			1					
Hazardous Substances: None			1						
					-				
						·			

Ro	om	Data She	eet								
		Fire Area:	F1101	Description	Room 1501 - Boron I	njection	Const. Type: II 000				
		Building:	Reactor Building			Gross Area (m2):	76.41				
				Applicable codes	CSA N293, NBCC, NI	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524					
		Associated	407081-U71-FG2101E			Building Code Occupancy Classification:	Group F, Division 3				
		Drawings or			Electrical Clas	sification: Safety-related divisional equipment or cables	N/A				
		Figures:			N	Ionsafety - related redundant trains, equipment or cables	N/A				
				Surrounded	by fire barriers rated at	:					
					Except						
Consis	ting of	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression					
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup				
-8.5	1501	Boron Injection	Skid	Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers				
-8.5	1501	Electrical panels	5	Stair Door (Stair	Box						
-8.5	1501	Cable Tray - 1p	wr / 2 Control	Pressurization) and							
-8.5	1501	Transients		Elevator							
				<700 Anticipated combusti	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	t function, impact of design				
				700 Unsprinklered combu	stible load limit, MJ/m2	2 basis fire on safe shutdown:					
	Assum	ning operation of i	nstalled fire extinguishing equipm	nent, impact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable				
			6		-	tray. Fire spread is limited to room by 3-hour rated ba	arriers to Control Room, FP				
		Plant operation	: None			Equip Rm and primary containment fire areas. Fire de	oes not spread vertically due				
					4	to limited combustibles in the room and noncombustib	le continuous floor				
	Rac	liological release	Hose Discharge drains to contai	inment		construction above and below. Room 1501 is consider	red a fire zone. Not more				
					4	than one safety shut down cable train anticipated in thi	s room. Fire does not affect				
	Ma	anual firefighting	Access via stairwell and interior	r doors	4	safe shutdown.					
	Property loss: Minor			4							
	Hazaı	rdous Substances	None								
					J						
Ro	om	Data She	eet								
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		Fire Area:	F1502		Description:	Room 1502 - Corrido	r -8.5	Const. Type: II 000			
		Building:	Reactor Building				Gross Area (m2)	36.42			
					Applicable codes:	CSA N293, NBCC, NI	FCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S5	24			
		Associated	407081-U71-FG2101	E			Building Code Occupancy Classification	Group F, Division 3			
		Drawings or				Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				N	lonsafety - related redundant trains, equipment or cables	Load Group A or B			
					Surrounded	by fire barriers rated at	:				
						Except	:				
Consis	nsisting of the following Rooms:					Input Devices	Fire Suppression				
EL	Rm#		Potential Combustibles		Primary	Backup	Primary	Backup			
-8.5	1502	Cable Trays			Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers - Provided due to estimated cable	Hose Streams			
-8.5	1502	Transients				Box	tray in relatively small space. Will be re-evaluated	Fire Extinguishers			
							when cable tray details are available	-			
	<u> </u>										
			1	> 700	A	-1-1					
				>/00	Anticipated combustit	sill l l'istration	Assuming automatic & manual FP equipment does no	t function, impact of design			
				700	Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:				
	Assum	ing operation of ir	stalled fire extinguishin	ig equipment, imp	pact of fire upon:		Fire starts in transient combustibles and consumes tran	isients and cables in cable			
		Plant operation:	None - Redundant Tra	in		ו	tray. Minor smoke damage to FP Equip Room. Fire	spread is limited to room by			
		r funt operation.					3-hour rated barriers to adjacent fire areas and substan	tial construction to FP			
	Rad	iological release:	Hose Discharge drains	to containment		1	Equip Room and Mezzanine. Not more than one safet	y shut down cable train			
	ivat	notogical release.	riose Disenarge drams	to containinent		{	anticipated in this room. Fire does not affect safe shut	down.			
	M	nual firefighting	Access via stairwell an	d interior doors	-	1					
	IVIE	Property loss:	Minor	la interior acors		1					
	Hazardous Substances: None				1						
	Hazardous Substances. Pone										
					,						

Ro	om	Data She	eet							
		Fire Area:	F1350	Description	Room 1550 - SDC Pij	ping	Const. Type: II 000			
		Building:	Reactor Building]		Gross Area (m2):	95.84			
				Applicable codes:	CSA N293, NBCC, NE	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U71-FG2101E]		Building Code Occupancy Classification:	Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:			Nonsafety - related redundant trains, equipment or cables: TBD					
				Surrounded	by fire barriers rated at	: 3 hours				
					Except: Exterior wall not rated. Floor construction above not required related equipment in room above.					
Consis	ting of	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression				
EL	Rm# Potential Combustibles 1550 Cable 2pwr/2 control			Primary	Backup	Primary	Backup			
-8.5	1550	Cable 2pwr/2 cc	ontrol	Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers			
-8.5	1550	Electrical equip	ment	-	Box	4				
				-						
				-						
			<700	Anticipated combusti	ble load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design				
			700	Unsprinklered combus	stible load limit, MJ/m2	2 basis fire on safe shutdown:				
	Assum	ing operation of i	nstalled fire extinguishing equipment, im	pact of fire upon:		Fire starts in transient combustibles and consumes tran	sients. Fire spread is			
		Plant an aration	Impact on plant operation under avalua	tion	ר	limited to room due to minimal combustible loading, l	ack of continuity of			
		Fiant operation	impact on plant operation under evalua	000		combustibles and substantial walls and doors to adjace	ent rooms. Vertical fire			
	D		Uses Dischause during to containment		-	spread is limited by noncombustible continuous floor c	onstruction above and			
	Rac	nological release	Hose Discharge drains to containment		4	below. Room 1550 is considered a fire zone. Damage	to piping not expected.			
			A		4	Fire does not affect safe shutdown.				
	Ma	nual firefighting	Access via stairwell and interior doors		-					
	Property loss: Minor				-					
	Hazardous Substances: None									
					1					
1										

Ro	om	Data She	eet								
		Fire Area:	F1502		Description:	Room 1553 - Fuel Poo	ol (FP) Equip & Room 1556 FP Equip Mezz	Const. Type: II 000			
		Building:	Reactor Bui	ilding]		Gross Area (m2):	48.87			
					Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U7	71-FG2101E			Building Code Occupancy Classification:	Group F, Division 3			
		Drawings or				Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				Nonsafety - related redundant trains, equipment or cables: Likely A & B					
					Surrounded	by fire barriers rated at:					
						Except:					
Consis	ting of	the following Roo	ms:		Fire Alarm	Input Devices	Fire Suppression				
EL	Rm# Potential Combustibles 1553 Filters			Primary	Backup	Primary	Backup				
-8.5	5 1553 Filters			Smoke Detectors for	Manual Fire Alarm	Hose Streams	Fire Extinguishers				
-8.4	4 1553 Transients			redundant pumps in	Box	-					
-8.4	1556	Pumps and conti	rollers		one room	-					
	<u> </u>				-						
				<700	Anticipated combustil	l ale load_MI/m2					
				700	Unsprinklared combus	Assuming automatic & manual FP equipment does not fun					
			11.1.6	/00	Jonsprinkiered combus	suble load mint, MJ/112	basis fire on safe shutdown:	· · · · · · · · · · · · · · · · · · ·			
	Assum	ing operation of it	istalled fire e	xtinguishing equipment, imj	pact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable			
		Plant operation:	None]	by 3 hour rated barriers to adjacent fire areas and subst	antial construction to			
							Corridor 1502 Fire does not spread vertically due to li	imited combustibles in the			
	Rac	liological release:	Hose Disch	arge drains to containment		1	room and noncombustible continuous floor construction	n above. Rooms 1553 and			
		-				1	1556 are considered a fire zone. Not more than one sat	fety shut down cable train			
	Ma	nual firefighting:	Early warni	ng and access via stairs and	corridor	1	anticipated in this area. Fire does not affect safe shutd	own.			
	Property loss: Moderate				1						
	Hazardous Substances: None]						
						-					
							•				

Roc	om	Data She	eet							
		Fire Area:	F1560	Description:	Room 1560 - Electric	al Distribution	Const. Type: II 000			
		Building:	Reactor Building]		Gross Area (m2):	95.84			
				Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U71-FG2101E]		Building Code Occupancy Classification:	Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:			Nonsafety - related redundant trains, equipment or cables: TBD					
				Surrounded	by fire barriers rated at:	3 hours				
					Except: Exterior wall not rated. Floor construction above not required to related equipment in room above.					
Consist	ing of t	the following Roo	ms:	Fire Alarm I	Input Devices	Fire Suppression				
EL	Rm# Potential Combustibles 1560 Cable 2pwr/2 control			Primary	Backup	Primary	Backup			
-8.5	1560 Cable 2pwr/2 control			Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers			
-8.5	1560	Electrical equipr	nent		Box					
				1						
			<1400	Anticipated combustit	ole load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design			
			1400	Unsprinklered combus	stible load limit, MJ/m2	basis fire on safe shutdown:				
	Assum	ing operation of it	istalled fire extinguishing equipment, im	pact of fire upon:		Fire starts within electrical panels and spreads to all ca	ble in tray to adjacent			
		Plant operation:	Impact on plant operation under evalua	tion	1	electrical equipment in room (Complete room burnout). Fire spread is limited to			
		r min operation				room by 3-hour rated barriers. Fire does not spread ve	rtically due to limited			
	Rad	liological release	None		1	combustibles in the room and noncombustible continue	s not affect safe shutdown			
	itut	notogical release.			{	above. Room 1150 is considered a me zone. The doe	s not affect sale shutdown.			
	Ma	nual firefighting	Access via stairwell and interior doors		1					
	Manual firefighting: Access via stairwell and interior doors Property loss: Moderate				1					
	Hazardous Substances: None				1					
	Tazardous Substances. None									
						L				

Ro	om	Data She	eet					
		Fire Area:	F1570		Description:	Room 1570 - Second	ary Control Room	Const. Type: II 000
		Building:	Reactor Building		1		Gross Area (m2)	: 95.84
					Applicable codes:	CSA N293, NBCC, N	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U71-FG21	01E]		Building Code Occupancy Classification	: Group F, Division 3
		Drawings or				Electrical Clas	sification: Safety-related divisional equipment or cables	: Division 1, 2 &3
		Figures:				N	Jonsafety - related redundant trains, equipment or cables	: Load Group A & B
					Surrounded	by fire barriers rated at	: 3 hours	
						Except	: Exterior wall not rated	
Consis	Insisting of the following Rooms:				Fire Alarm	nput Devices	Fire Suppression	1
EL	Rm# Potential Combustibles 1570 Cable - In Conduit			es	Primary	Backup	Primary	Backup
-8.5	1570	Cable - In Cond	uit		Very early smoke	Manual Fire Alarm	Hose Streams	Fire Extinguishers
-8.5	1570	Electrical Equip	ment		detection	Box	_	
					-			
	<u> </u>				-		Other Active Fire Protectio	n 1
	<u> </u>						Control Room Pressurization - Activated by any smok	e detector on Level -8.0
<u> </u>				>700	Anticipated combustible load, MJ/m2			
				700	Unerrinklared combus	tible load limit MI/m	Assuming automatic & manual FP equipment does no	t function, impact of design
					Jonsprinkiered combus	suble load limit, MJ/m	2 basis fire on safe shutdown:	1.4 . 11 . 1.1
	Assum	ing operation of i	istalled fire extinguisi	ning equipment, imp	pact of fire upon:		For the purpose of this preliminary assessment, it is as	sumed that all cable outside
		Plant operation	None - Use main co	ntrol room]	function (no break room office, etc.) Fire starts in the	n to the control room
							consumes transients. Fire spread is limited to room b	v 3-hour rated barriers to
	Rac	liological release	None, no radiologica	al materials present		1	adjacent fire areas. Three safety shut down cable train	s anticinated in this room
		0				1	however in conduit and isolated from main control roc	om. Safe shutdown would be
	Ma	anual firefighting	Access via exterior	doors and corridor		1	achieved and maintained from the Main Control Roon	1. The operators are already
		Property loss	Moderate			1	at the Main Control Room.	
	Hazardous Substances: None			1				
	nazardous substances. None							
						•		
							L	

Roo	om	Data She	eet							
		Fire Area:	F1600	Description	Room 1600 - Truck B	lay	Const. Type: II 000			
		Building:	Reactor Building	7		Gross Area (m2):	56.7			
				Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S52	24			
		Associated	407081-U71-FG2101F	7		Building Code Occupancy Classification:	Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:			Nonsafety - related redundant trains, equipment or cables: N/A					
				Surrounded	Surrounded by fire barriers rated at:					
					Except:	:				
Consist	ting of	the following Room	ms:	Fire Alarm	Input Devices	Fire Suppression				
EL	Rm# Potential Combustibles			Primary	Backup	Primary	Backup			
0.0	1600	Fork Lift		Sprinkler Waterflow	Manual Fire Alarm	Wet Pipe Sprinklers for anticipated uncontrolled	Hose Streams			
0.0	1600	Other Transients	3		Box	materials moving in and out of the Reactor Building	Fire Extinguishers			
0.0	1600	Cable Tray								
			>700	0 Anticipated combusti	ble load, MJ/m2	Assuming automatic & manual FP equipment does not	function, impact of design			
			700	Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:				
	Assum	ing operation of ir	nstalled fire extinguishing equipment, in	pact of fire upon:		Fire starts in Fork Lift /Cargo, spreads to cable and oth	er transients and burns until			
		Plant operation	None		ר	consumed. Fire spread is limited to room due to 3 hou	ir barriers to adjacent			
		Fiant operation.	None			rooms. Fire does not spread vertically due to limited of	combustibles in the room			
	Dad	lialacies] molecces	None, no redialogical materials process		1	and noncombustible continuous floor construction abo	ve and below. Room 1600			
	Kat	nological release.	None, no radiological materials presen		4	is considered a fire zone. Fire does not affect safe shut	down.			
	M	nual firefighting	Access via exterior doors		1					
	Manual firefighting: Access via exterior doors Property loss: Moderate			1						
	Hazardous Substances: None			1						
	Hazardous Substances. None									
						L				

Roo	om	Data Sh	eet							
		Fire Area:	F1502	Description:	Room 1602 - Hallway	ý	Const. Type: II 000			
		Building:	Reactor Building			Gross Area (m2)	: 39.77			
				Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S5	24			
		Associated	407081-U71-FG2101F			Building Code Occupancy Classification	: Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:			N	lonsafety - related redundant trains, equipment or cables	: Load Group A or B			
				Surrounded I	by fire barriers rated at	:				
					Except	:				
Consist	ting of	the following Roo	oms:	Fire Alarm I	nput Devices	Fire Suppression				
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup			
0.0	1602	Cable Tray 1 pv	vr & 1 control	Manual Fire Alarm		Wet Pipe Sprinklers	Hose Streams			
0.0	1602	Transients		Box			Fire Extinguishers			
			I							
				00 Anticipated combustit</td <td>ble load, MJ/m2</td> <td>Assuming automatic & manual FP equipment does no</td> <td>t function, impact of design</td>	ble load, MJ/m2	Assuming automatic & manual FP equipment does no	t function, impact of design			
				700 Unsprinklered combus	tible load limit, MJ/m2	² basis fire on safe shutdown:				
	Assum	ing operation of i	nstalled fire extinguishing equipr	nent, impact of fire upon:		Fire starts in transient combustibles and consumes cab	les and transients. Fire			
		Plant operation	None		1	spread is limited to hallway due to fire rated and subs	stantial walls and doors to			
		I failt operation	, i vone			adjacent rooms. Fire does not spread vertically due to	limited combustibles in the			
	Rad	liological release	Hose Discharge drains to conta	inment	1	room and noncombustible continuous floor construction	on above and below. Room			
	Kat	noiogical release	Tiose Discharge drams to conta	annient	{	1602 is considered a fire zone. Fire does not affect sat	te shutdown.			
	м	unual firafichting	Access via stairwell and interio	ar doore	1					
	IVIZ	Property loss	Minor	1 40013						
	Property loss: Minor				1					
	Hazardous Substances: None									
			L		,					
						L				

Ro	om	Data She	eet							
		Fire Area:	F1350		Description:	Room 1650 - ICC Coo	oling, Room 1601 - Labyrinth A	Const. Type: II 000		
		Building:	Reactor Bui	lding]		Gross Area (m2)	: 100.22		
					Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U7	1-FG2101F			Building Code Occupancy Classification	Group F, Division 3		
		Drawings or				Electrical Class	sification: Safety-related divisional equipment or cables	N/A		
		Figures:				N	onsafety - related redundant trains, equipment or cables	Load Group A & B to pumps		
					Load Group A or B					
					Surrounded	by fire barriers rated at:				
						Except:	:			
							1			
Consis	onsisting of the following Rooms:					nput Devices	Fire Suppression	1		
EL	Rm# Potential Combustibles 1650 Pumps & Contollers			Primary	Backup	Primary	Backup			
0.0	1650 Pumps & Contollers				Smoke Detectors for	Manual Fire Alarm	Hose Streams	Fire Extinguishers		
0.0	1650	Cable Tray			redundant pumps in	Box	-			
0.0	1650	Transients			one room	-				
					-					
	<u> </u>									
				<700	Anticipated combustible load, MJ/m2					
				~700	Unsprinklarad apphus	tible load limit MI/m?	Assuming automatic & manual FP equipment does not function, impact of design m2 basis fire on safe shutdown:			
				/00	JOnsprinkiered combus	uble load mint, MJ/m2	basis fire on safe shutdown:			
	Assum	ing operation of ir	istalled fire er	xtinguishing equipment, imp	pact of fire upon:		Fire starts in transient combustibles and consumes tran	isients and cables in trays.		
		Plant operation:	None]	continuity of compustibles fire partier to Truck Pay a	nd substantial walls and		
							doors to MS / FW Pining Room Vertical fire spread i	s limited due to		
	Rac	liological release:	Hose Discha	arge drains to containment		1	noncombustible continuous floor construction above a	nd below. Rooms 1650 and		
		0				1	1601 are considered a fire zone. Minor damage to pur	nns. Piping damage not		
	Ma	anual firefighting:	Early warning	ng and access via stairs and	interior doors	1	expected. Fire does not affect safe shutdown.	1		
		Property loss:	Minor			1	· ·			
	Hazardous Substances: None				1					
	Tazardous Substances. None									
				•						
							·			

Roo	om	Data She	eet							
		Fire Area:	F1350	Description:	Room 1660 Services	0 A	Const. Type: II 000			
		Building:	Reactor Building			Gross Area (m2)	75.41			
				Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U71-FG2101F			Building Code Occupancy Classification	Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:			Nonsafety - related redundant trains, equipment or cables: Load Group A or B					
				Surrounded	by fire barriers rated at	:				
					Except	:				
Consist	ting of	the following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression				
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup			
0.0	1660	Cable Tray 1 pw	r & 1 Control	Smoke detector at	Manual Fire Alarm	Hose Streams	Fire Extinguishers			
0.0	1660	Transients		Stair Door (Stair	Box	-				
	<u> </u>			Pressurization) and						
	<u> </u>			Elevator	4					
	-									
				700 Antigingted combustil	ala laad. MI/m2					
				700 Anticipated combusti	villa har his is Mar	Assuming automatic & manual FP equipment does not	t function, impact of design			
				700 Unsprinklered combus	stible load limit, MJ/m2	² basis fire on safe shutdown:				
	Assum	ing operation of in	nstalled fire extinguishing equipment,	, impact of fire upon:		Fire starts in transient combustibles and consumes tran	isients and cables in cable			
		Plant operation	None		1	tray. Fire spread is limited to room due to minimal c	ombustible loading, lack of			
		r min operation				continuity of combustibles and substantial walls and c	oors to adjacent rooms.			
	Rad	liological release	Hose Discharge drains to containme	ent	1	vertical fire spread is limited due to noncombustible c	ontinuous floor construction			
	reac	notogical release.	These Blackings and to containing		{	shut down cable train anticipated in this room. Fire do	es not affect safe shutdown			
	M	nual firefighting	Access via stairwell and interior doe	ors	1	shut down cable train anticipated in this room. The de	es not affect sale shutdown.			
		Property loss:	Minor	010	1					
	Hazardous Substances: None				1					
	Hazardous Substances. Frome									
						L				

Roo	om	Data She	eet						
		Fire Area:	F1350	Description:	Room 1661 - Services	s 0 B, Room 1603 Labyrinth B	Const. Type: II 000		
		Building:	Reactor Building			Gross Area (m2):	100.22		
				Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U71-FG2101F			Building Code Occupancy Classification	Group F, Division 3		
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:			N	onsafety - related redundant trains, equipment or cables	Load Group A or B		
				Surrounded 1	by fire barriers rated at:				
					Except:				
Consist	ting of t	the following Roo	ms:	Fire Alarm I	nput Devices	Fire Suppression	1		
EL	Rm# Potential Combustibles 1661 Cable Tray 1 pwr & 1 Control			Primary	Backup	Primary	Backup		
0.0	1661	Cable Tray 1 pw	r & 1 Control	Manual Fire Alarm		Hose Streams	Fire Extinguishers		
0.0	1661	Transients		Box					
				_					
				_					
				700 Antiginated combustik	la laad MI/m2				
				700 Anticipated combusit		Assuming automatic & manual FP equipment does not	function, impact of design		
				700 Unsprinklered combus	tible load limit, MJ/m2	basis fire on safe shutdown:			
	Assum	ing operation of in	nstalled fire extinguishing equipment,	, impact of fire upon:		Fire starts in transient combustibles and consumes tran	sients and cables in cable		
		Plant operation	None		1	tray. Fire spread is limited to room due to minimal co	ombustible loading, lack of		
		r funt operation				continuity of combustibles and substantial walls and d	loors to adjacent rooms.		
	Rad	liological release	Hose Discharge drains to containme	ent	1	above and below. Rooms 1661 and 1603 are consider	ad a fire zone. Not more		
	ituu	notogical release.	These Blackings and to containing		{	than one safety shut down cable train anticipated in thi	s room Fire does not affect		
	Ma	nual firefighting	Access via stairwell and interior doe	ors		safe shutdown	s toom. The does not affect		
	1410	Property loss:	Minor		1				
	Hazardous Substances: None				1				
	Hazardous Substances. Hone								
			•		,				
						L			

Ro	om	Data She	eet					
		Fire Area:	F1350		Description:	Room 1670 - MS/FW	Piping	Const. Type: II 000
		Building:	Reactor Buil	ding]		Gross Area (m2):	109.69
					Applicable codes:	CSA N293, NBCC, NF	FCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U71	-FG2101F			Building Code Occupancy Classification:	Group F, Division 3
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A			
		Figures:				N	lonsafety - related redundant trains, equipment or cables:	N/A
					Surrounded b	by fire barriers rated at:	Deluge water spray in Turbine Buidling at pipe opening	
						Except	:	
							1	
Consis	Rm# Potential Combustibles				Fire Alarm I	nput Devices	Fire Suppression	r
EL	Rm#		Potential Com	ibustibles	Primary	Backup	Primary	Backup
0.0	1670	Transients			Manual Fire Alarm		Hose Streams	Fire Extinguishers
			Box					
					-			
					-			
				<700	Antiginated combustib	la laad MI/m?		
			ŀ	~700	Anticipated combusite	tible less d lissit MU/m2	Assuming automatic & manual FP equipment does not	function, impact of design
			L	/00	Unsprinklered combus	tible load limit, MJ/m2	2 basis fire on safe shutdown:	
	Assum	ing operation of it	nstalled fire ex	tinguishing equipment, im	pact of fire upon:		Fire starts in transient combustibles and consumes tran	sients. Fire spread is
		Plant operation	Reactor Scra	m		1	limited to room due to minimal combustible loading, I	ack of continuity of
		r iant operation					combustibles and substantial walls and doors to adjace	ent rooms. Vertical fire
	Rad	liological release	Hose Discha	rge drains to containment		1	balow Room 1670 is considered a fire zone. Damage	to piping not expected
	Ttut	notogical release		ige atams to containing the		{	Fire does not affect safe shutdown	to piping not expected.
	Ma	nual firefighting	Access via st	airwell and interior doors			The does not affect safe shuldown.	
	1410	Property loss	Minor			1		
	Hazardous Substances: None			1				
	Hazardous Substances: None							
					,			
							L	

Ro	om	Data She	eet				
		Fire Area:	F1192	Description:	Room 1680 - Elev Me	ech Room A & Room 1192 Hoistway	Const. Type: II 000
		Building:	Reactor Building]		Gross Area (m2):	10.9
				Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-852	24, CSA B44
		Associated	407081-U71-FG2101G			Building Code Occupancy Classification:	Group F, Division 3
		Drawings or			N/A		
		Figures:			N	onsafety - related redundant trains, equipment or cables:	Elev on Load Group A
				Surrounded 1	by fire barriers rated at:	2 hour hoistway and machine room	
					Except:		
Consis	ting of t	he following Roo	ms:	Fire Alarm I	nput Devices	Fire Suppression	1
EL	L Rm# Potential Combustibles			Primary	Backup	Primary	Backup
	1.000			Smoke & Heat	Manual Fire Alarm	Wet Pipe Sprinklers (per CSA B44) - Machine room	Hose Streams
2.5	1680	Service Elevator	. Equipment. Materials per CSA B44	Detectors	Box	and hoistway	Fire Extinguishers
				Sprinkler Waterflow	-		
				-			
<u> </u>			>700	Anticipated combustik	le load MI/m2		
			700	Unsprinklarad combus	tible load limit MI/m?	Assuming automatic & manual FP equipment does not	function, impact of design
			700	Jonsprinkiered combus	uble load mint, MJ/m2	basis fire on safe shutdown:	771 1
	Assum	ing operation of it	istalled fire extinguishing equipment, im	pact of fire upon:		Fire starts in elevator equipment and spreads to cables.	Fire burns until
		Plant operation:	None		1	combustibles consumed. Fire spread is limited to root	n due to 2 nour barriers to
						adjacent room. Fire does not affect safe shutdown.	
	Rad	iological release:	None, no radiological materials present		1		
	ituu	iological release.	· · · · · · · · · · · · · · · · · · ·		{		
	Ma	nual firefighting	Access via Stair B				
		Property loss:	Minor				
	Hazardous Substances: None			1			
		doub buobulieto.					
				•			
						L	

Ro	om	Data She	eet							
		Fire Area:	F1800	Description:	Room 1800 - Operatin	ng Deck (Not Including Pools)	Const. Type: II 000			
		Building:	Reactor Building			Gross Area (m2):	727.1			
				Applicable codes:	Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524					
		Associated	407081-U71-FG2101J		Building Code Occupancy Classification: Group F, Division 3					
		Drawings or			Electrical Class	sification: Safety-related divisional equipment or cables:	N/A			
		Figures:			N	onsafety - related redundant trains, equipment or cables:	Load Group A			
				Surrounded b	by fire barriers rated at:					
					Except	:				
						1				
Consis	ting of	the following Roon	ms:	Fire Alarm I	nput Devices	Fire Suppression	1			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup			
13.0	1800	Transients		Manual Fire Alarm		Hose Streams	Fire Extinguishers			
13.0	1800	Cable Tray		Box	-					
				-						
				-						
<u> </u>			<700	Anticipated combustik	la load MI/m2					
			~/00	Anticipated combusite		Assuming automatic & manual FP equipment does not	function, impact of design			
			700	Unsprinklered combus	tible load limit, MJ/m2	² basis fire on safe shutdown:				
	Assum	ing operation of ir	stalled fire extinguishing equipment, im	pact of fire upon:		Fire starts in transient combustibles and consumes tran	sients. No other known			
		Plant operation:	None		1	combustibles in the room. Fire does not affect safe sh	utdown.			
		r fant operation.	T COLO							
	Pad	lialogical releases	Hose Discharge drains to containment		1					
	Rat	notogical release.	nose Disenarge drams to containment		ł					
	м	unal finafishting	Association and stairs							
	IVI	Property loss:	Minor							
	Hozardows Substances: None									
	mazai	uous substances.	None							
			L		,					

Ro	om	Data She	eet						
		Fire Area:	F1800	Description:	Room 1801 - ERO St	orage 16	Const. Type: II 000		
		Building:	Reactor Building			Gross Area (m2):	4.32		
				Applicable codes:	Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U71-FG2101K		Building Code Occupancy Classification:				
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:			N	onsafety - related redundant trains, equipment or cables:	N/A		
				Surrounded	by fire barriers rated at	Assumed to be completely separate fromm Stair B - 2h	r construction		
					Except	:			
						1			
Consis	ting of t	he following Roo	ms:	Fire Alarm	Input Devices	Fire Suppression	1		
EL	Rm#	~ 10	Potential Combustibles	Primary	Backup	Primary	Backup		
16.0	1801	Shelf storage no	t exceeding 12 feet in height of	Sprinkler Waterflow	Manual Fire Alarm	Wet Pipe Sprinklers for room and top of stair	Hose Stations		
		ordinary (Class	III maximum) combustibles	-	Box	-	Fire Extinguishers		
				-					
				-					
			>70	0 Anticipated combustil	l ple load_MI/m2	A	Constitution inconstant of Academ		
			70	0 Unsprinklered combus	tible load limit MI/m?	Assuming automatic & manual FP equipment does not	function, impact of design		
	A		70	of Chispinikiered Combus	stible 10au mint, 1413/1112		dillar in an an Time data		
	Assum	ing operation of i	nstalled fire extinguishing equipment, in	npact of fire upon:		Fire starts in storage shelves and consumes all combus	tibles in room. Fire does		
		Plant operation	None]	safe shutdown	enning. Fire does not affect		
						sale shuuown.			
	Rad	iological release	None, no radiological materials preser	nt	1				
		0			1				
	Ma	nual firefighting	Access via stairwell and interior doors	1	1				
	Property loss: Minor				1				
	Hazar	dous Substances	Minimal to None		1				
					-				
									

4.5.3.3 Turbine Building

The fire protection requirements for the Turbine Building will be based on CSA N293 prescriptive requirements, and evaluation of the combustible loading of each room and its associated fire separations (barriers) to determine the need for sprinklers and detection.

CSA N293 requires sprinklers in the turbine generator underfloor area. This area is generally the entire area of the turbine building on the two levels below the operating floor. In the nuclear plant the steam turbine is within a radiation shield which forms a boundary for the lube and control oil piping within the shield. All areas within the shield, below the operating floor are provided with complete sprinkler protection. The lube oil system continues out of the shielded area to the bearings associated with the generator. The mezzanine floor area under and within 6.1M (20 feet) (of the lube oil lines is grated flooring and thus oil spread across this level does not occur. The Electro-hydraulic Control Unit (EHC) unit is within a three-hour rated enclosure on the mezzanine level and thus does not add to the combustible loading of the larger fire area on this level. The generator is air /water cooled. The sprinklered area on the mezzanine level has been extended beyond the 20 feet minimum distance to the north wall, Column Row TBB to the east and Column Row TBE to the west. On the ground floor (without considering the lube oil) exceeds the 700MJ/m2 loading, mostly due to the cable loading. The general loading and consideration to redundant load groups and cable within this space lead to providing sprinkler protection throughout the ground floor area.

Standpipes (Class I) are required in the four exit enclosures to meet spacing requirements. These are illustrated on the Fire Area Drawings. The Turbine Building is supplied with fire protection water from three separate connections from the site loop. They feed into Stair C, B and A. An interior supply main, inside the building, connects the stair risers for redundancy to the four standpipes and suppression system risers. See the Fire Area drawing ([[]]) for the general routing, and the P&ID for the schematic layout.

The major internal and external fire hazards associated with the Turbine Building are summarized as follows:

- Lube oil system for the steam turbine/generator bearings The lube oil system includes the
 reservoir, pumps, filters, and piping to the bearings. The reservoir, pumps and filters are
 located on the ground floor of the building within a 3-hour rated room. Automatic sprinkler
 protection is provided in the room. Spill control is under design for the room to contain a
 complete spill and fire protection discharge. The lube oil piping system incorporates a guarded
 piping system (double wall pipe) to contain and direct spilled oil back to the reservoir. The
 area below the piping and postulated spill on the Ground Floor and Mezzanine Floor is
 protected by an automatic sprinkler system. Additionally, an automatic preaction spray system
 is provided for protection at the bearings.
- <u>Control Oil System</u> The control oil system includes a reservoir, pumps, filters, and piping. Fyrquel EHC fluid is provided for the control oil system. The oil, while combustible, has a higher flash point to reduce the chance of a fire associated with a piping failure. The reservoir pumps and filters are located on the mezzanine floor of the building within a 3- hour rated room. Automatic sprinkler protection is provided in the room. Spill control is under design for the room to contain a complete spill and fire protection discharge. The piping layout will be reviewed when available, however is likely within the currently proposed sprinklered areas of the building.

- <u>Diesel Fuel Oil (Generators)</u> The Load Group A and B standby generators are located in the Turbine Building. Each generator is located in a 3-hour rated enclosure on the ground floor. Each generator has a large belly tank, as a part of the skid. The design for the generators is underway however the exact size of the generators and the tank has not been determined. The tank is understood to contain approximately 10,000 gallons. The tank is a double wall tank to minimize the chance of a fuel spill in the room. While not shown on the current drawings, it is anticipated that each room's door will be to the outside, and thus any spill will naturally drain outside the building. Additionally automatic sprinkler protection will be provided in each room, designed to control a fuel oil spill.
- <u>Electrical Rooms</u> The electrical rooms will house switchgear and associated cables. No oil filled electrical equipment will be provided. The Turbine Building has two major switchgear room for the two generators. These rooms are 3-hour rated enclosures and located on the mezzanine level. The quantity of cables and thus the fuel load will be quantified and evaluated as the design proceeds. The rooms are provided with smoke detectors for early warning of a fire event. Class C fire extinguishers will be provided outside the door(s) to these rooms for manual firefighting.
- <u>Hydrogen Gas</u> The generator is air cooled and thus the hydrogen in the building is limited to two 2.5lb cylinders located in the sprinklered ground floor area.
- <u>Battery Room</u> The Division C Battery Room is located on the ground floor of the Turbine Building. The room is separated from the remainder of the building by 3-hour rated barriers. The batteries are understood to be lithium-ion type. Flammable gasses are liberated from these batteries in a thermal runaway condition. Hydrogen detection is provided in the room as well as high level exhaust ventilation. Smoke detection is provided for early warning of a fire condition in this room. Sprinkler protection is the NFPA 855 preferred suppression method at this time. Automatic preaction sprinkler protection is provided for this room. The need for explosion relief will be evaluated as the design proceeds.

Recommended fire suppression systems are identified on the room data sheets and illustrated on the Fire Area Drawings, however, are summarized as follows:

- Ground Floor Open Ground Floor Area Room 2170 Wet Pipe Sprinkler
- Ground Floor Steam Tunnel Deluge Sprinkler
- Ground Floor Turbine Lube Oil Module Room 2181 Wet Pipe Sprinkler
- Ground Floor Diesel Generator A Room 2150 Dry Pipe Sprinkler
- Ground Floor Diesel Generator B Room 2160 Dry Pipe Sprinkler
- Ground Floor Division C Batteries Room 2182 Preaction Sprinkler
- Mezzanine Floor Open Mezzanine Floor Area (Under Operating Floor) Room 2270 Wet Pipe Sprinkler
- Mezzanine Floor EHC Unit Room 2280 Wet Pipe Sprinkler
- Freight Elevator Hoistway and Machine Room Wet Pipe Sprinklers
- Operating Floor Turbine/Generator Bearings Preaction Spray

A fire alarm system with automatic voice occupant notification is provided throughout the building. Devices and appliances are provided as follows:

- Manual fire alarm boxes (manual pull stations) are provided at each stair door on each level and at building exits.
- Waterflow alarms and supervision is provided on automatic suppression systems.
- Smoke detection is provided in areas as noted on the room data sheets.
- Smoke and heat detectors are provided for freight elevator.
- Occupant notification is provided throughout the building.

Preliminary cable tray layout drawings have been developed for the Turbine Building. In this preliminary stage, the routing of the individual load groups within the trays has not been developed. Further evaluation of separation will be needed as the design proceeds.

See Turbine Building Fire Area Drawings:

[[]]	Ground Floor
[[]]	Mezzanine Floor El. 6.1M
[[]]	Operating Floor EL. 12.2M
[[]]	Room Levels EL 24.38 and 30.5M

The Room Data Sheets for the Turbine Building, detailing the combustibles, room features and level of protection for each room is in Table 4.5.3.3 below. Additional information and analysis is as follows:

- <u>Ground Floor Turbine Underfloor System</u> N293 prescriptively requires this system and references the FM Global data Sheets for sprinkler densities. The building is heated and makeup air to the area will be tempered. The area of coverage of the sprinkler system is the area of the floor of the mezzanine floor above (solid surface and grated steel), as floor drains are not provided to limit the spill area and a significant amount of cable trays and other combustibles are in the area. A Wet Pipe sprinkler system is recommended. Per FM DS7-101, Figure 9c, the sprinkler density of this system is 16mm/min (0.40gpm/ft²) over the hydraulically most remote 232m² (2500ft²) area.
- <u>Ground Floor Steam Tunnel Deluge System</u> The steam tunnel connects the Turbine Building and Rad Waste Building. A deluge system is recommended with a density of 37L/min per lineal meter (3gpm/ft² per lineal foot) and a spacing of 1.83m (6ft).
- <u>Ground Floor Standby Diesel Generators</u> Each generator has 45,425L of diesel fuel in its belly tank and thus presents a significant hazard and requires sprinkler protection and a manual foam hose rack. Secondary containment is provided by a double wall tank. Dry pipe sprinklers are recommended due to the louvers to the outside for combustion air.
- 4. <u>Ground Floor Division C Batteries Room 2182</u> NFPA 855 (Stationary Energy Storage Systems) has been recently created to address current lithium-ion battery concerns as well as review energy storage associated with green generation stations. The committeehas determined that automatic sprinklers are appropriate fire protection and

has developed a threshold for when they are required. The standard will likely be referenced by NFPA 804 in the near future. The batteries in this room exceed the thresholds and thus sprinkler protection is recommended. The sprinkler density recommended is 12.2mm/min (0.30gpm/ft²) over the room area. Clean agent alternates are allowed based on favorable large scale testing results.

The batteries are associated with safe shutdown and are redundant. Smoke and hydrogen detection is warranted as well as high level exhaust.

- 5. <u>Ground Floor Lube Oil Equipment Room 2181</u> The Lube Oil Reservoir has 47,356L of lube oil and thus presents a significant hazard and requires automatic sprinkler protection. Secondary containment is provided by concrete diking around the equipment.
- Mezzanine Floor Mezzanine Underfloor System N293 prescriptively requires this system and references the FM Global Data Sheets for sprinkler densities. A Wet Pipe sprinkler system is recommended. Per FM DS7-101, Figure 9c and Table 1, the sprinkler density of this system is 16mm/min (0.4gpm/ft²) over the hydraulically most remote 232m2 (2500ft²) area.
- Mezzanine Floor Room 2250 Switchgear A This room has significant combustible loading and electrical arcing potential for an ignition source. Although the electrical is a redundant train, smoke detectors are warranted for early notification.
- 8. <u>Mezzanine Floor Room 2260 Switchgear B</u> See recommendations for item 10 Room 2250 Switchgear A, above.
- Mezzanine Floor EHC Unit Room 2280 This room contains control oil and other combustibles. A Wet Pipe sprinkler system is recommended with a density of 12.2mm/min (0.3gpm/ft²) over the room area, which is approximately 25.9m2 (85ft²). Secondary containment is provided by concrete diking around the equipment.
- Freight Elevator Hoistway and Machine Room System These areas contain combustibles associated with elevators per CSA B44. A Wet Pipe system is recommended. The recommended density in the machine room is 6.1mm/min (0.15gpm/ft²) over the room area, which is approximately 25.6m² (84ft²).
- 11. Operating Floor Turbine/Generator Bearing Preaction System The bearings present an oil spray fire hazard. A preaction system is recommended with heads over the bearings and in the generator skirt. Heat detection is recommended for system activation. Sprinklers are not recommended at the ceiling. The ceiling is approximately 18.29m (60ft) above the Operating Floor and is of noncombustible construction. FM 7-101 Section 2.4.3.4.1 and Figure 9e indicate omission of sprinkler coverage at ceilings greater than 9.14m (30ft).

Table 4.5.3.3 – Turbine Building Room Data Sheets

Roo	om l	Data Shee	et							
		Fire Area:	F2100		Description:	Room 2100 - Freight El	evator Hoistway & 2101 Machine Room	Const. Type: II 000		
		Building:	Turbine Buil	lding			Gross Area (m2):	25.6		
					Applicable codes:	Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524, CSA B44				
1		Associated	407081-U72	2-FG2001A & B	1	Building Code Occupancy Classification: Grou				
		Drawings or				Electrical C	lassification: Safety-related divisional equipment or cables:	N/A		
		Figures:				Load Group A to Elevator				
					Surrounded by fire barriers rated at: 2 hours - Hoistway and equipment room					
						Except:				
Consist	ting of tl	he following Rooms	3:		Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Cor	nbustibles	Primary	Backup	Primary	Backup		
0.0	2100	Transients & Car	Materials per	CSA B44	Smoke & Heat	Manual Fire Alarm	Wet Pipe Sprinklers (per CSA B44) - Machine Room and	Hose Streams		
6.1	2101	Materials per CSA	A B44		Detectors	Box	hoistway	Fire Extinguishers		
					Sprinkler Waterflow					
				<700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis		
				700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	, , ,		
	Assu	ming operation of i	nstalled fire e	xtinguishing equipment, impa	act of fire upon:		Fire starts in elevator equipment and spreads to cables. Fir	e burns until combustibles		
		Plant operation:	None]	consumed. Fire spread is limited to room and hoistway du does not affect safe shutdown.	te to 2 hour barriers. Fire		
	Ra	diological release:	None, no rad	diological materials present						
	М	lanual firefighting:	Class I hose	stations in the exit enclosure	for manual attack.					
		Property loss:	Minor							
	Hazardous Substances: None									
					J					
							•			

Roo	om 1	Data She	eet				
		Fire Area:	F2150	Description:	Room 2150 - Diesel Ge	enerator Room A	Const. Type: II 000
		Building:	Turbine Building			Gross Area (m2):	84.7
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U72-FG2001A			Building Code Occupancy Classification:	Group F, Division 2
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Load Group A
				Surrounded	d by fire barriers rated at	: 3 hours	
					Except	: Exterior wall not rated	
Consist	ing of t	he following Roo	ms:	Fire Alarm I	Input Devices	Fire Suppression	
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
0.0	2150	Diesel generator	r has a 45,425 liter belly tank.		Manual Fire Alarm	Dry Pipe Sprinklers	Hose Streams
				Sprinkler Waterflow	Box		Fire Extinguishers
						Other Fire Protection	
						Double wall tank at generator	
			>7	00 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis
			7	00 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	
	Assu	aming operation o	f installed fire extinguishing equipment, in	npact of fire upon:		Room 2150 houses the diesel generator for Electrical Trai	n A (Nonsafety). An
				· ·	•	unchecked fuel oil fire (ruptured inner and outer shell of b	elly tank) is expected to
		Plant operatio	n: None			engulf and burn out the room. The fire damage outside the	rated room is anticipated to
						be minor due to wall rating and liquid containment. No dat	mage is anticipated on Train
	Ra	adiological releas	e: None, no radiological materials present			B. Fire does not affect safe shutdown.	
	N	fanual firefightin	e. Access via exterior and interior doors		1		
		Property los	s: Moderate		1		
	Haz	ardous Substance	s: Fuel oil is contained in outer shell of	belly tank	1		
	ma	ardous substance	s. I der om is contained in odder silen of	seny tunit			
1							

Roo	om 1	Data She	et					
		Fire Area:	F2160		Description:	Room 2160 - Diesel G	enerator Room B	Const. Type: II 000
		Building:	Turbine Building				Gross Area (m2)	: 66.6
					Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	•
		Associated	407081-U72-FG2001A				Building Code Occupancy Classification	: Group F, Division 2
		Drawings or				Electrical	Classification: Safety-related divisional equipment or cables	: N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables	: Load Group B
					Surrounded	l by fire barriers rated a	t: 3 hours	
						Excep	t: Exterior wall not rated	
Consist	ing of t	he following Roor	ns:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Combustibles		Primary	Backup	Primary	Backup
0.0	2160	Diesel generator	has a 45,425 liter belly tank.			Manual Fire Alarm	Dry Pipe Sprinklers (required by CSA N293)	Hose Streams
					Sprinkler Waterflow	Box		Fire Extinguishers
							Other Fire Protection	
							Double wall tank at generator	
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fu	nction, impact of design basis
				700	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:	
	Assu	ming operation of	installed fire extinguishing equi	pment, imp	act of fire upon:		Room 2160 houses the diesel generator for Electrical Tra	in B (Nonsafety Shutdown).
						1	An unchecked fuel oil fire (ruptured inner and outer shell	of belly tank) is expected to
		Plant operation	n: None				engulf and burn out the room. The fire damage outside the	e rated room is anticipated to
							be minor due to wall ratings and liquid containment. No	damage is anticipated on Train
	Ra	adiological releas	e: None, no radiological material	s present			 Fire does not affect safe shutdown. 	
	N	fanual firefightin	. Access via exterior and interio	or doors				
		Property los	S: Moderate			1		
	Haz	ardous Substance	: Fuel oil is contained in outer	shell of be	lly tank			
						-		
							L	

Ro	om]	Data Shee	et						
		Fire Area:	F2170	Description:	Room 2170 - Turbine E	Building, Ground Floor	Const. Type: II 000		
		Building:	Turbine Building			Gross Area (m2):	2547.5		
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524					
		Associated	407081-U72-FG2001A			Building Code Occupancy Classification:	Group F, Division 2		
		Drawings or			Electrical Classification: Safety-related divisional equipment or cable				
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Load Group A & B		
				Surrounded	l by fire barriers rated at:	:	-		
					Except:				
Consi	ting of t	he following Room	DS'	Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
0.0	2170	Turbine Bearings	57-9 - 47,318 L of ISO 32 lube oil		Manual Fire Alarm		Hose Streams		
0.0	2170	Hydrogen Gas in	two "K" cylinders (2.5 lbs.)	Sprinkler Waterflow	Box	Wet Pipe Sprinklers (required by CSA N293) covering	Fire Extinguishers		
0.0	2170	9 pump assemblie	es & controllers			anticipated spill area from overhead lube oil pipes and			
0.0	2170	2 MCCs, 5 FCUs	s, 3 AHUs			general high combustible loading in the space			
0.0	2170	Various electrical	l cabinets & enclosures			Other Fire Protection	-		
						Floor drains			
			>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis		
			700	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:			
	Assu	uming operation of	installed fire extinguishing equipment, impa	act of fire upon:		The postulated fire occurs due to a turbine vibration causin	ng a complete break of a lube		
					1	oil line. the lube oil is ignited by residual heat on the gene	rator casing, lighting or other		
		Plant operation:	: Reactor Scram			hot equipment in the area. If lube oil pumps remain on (as	expected for rundown time at		
						a minimum), up to 47,318 liters (12,500 gallons) of minera	al oil could spill out on the		
	Ra	adiological release:	None, no radiological materials present			floor. With a flat floor and no drains (worst case), the poo	l of oil on the floor will be		
						approximately 18mm (3/4inch) thick, throughout the room	area. Burning oil will ignite		
	N	fanual firefighting:	Class I hose stations in the four enclosed	exit enclosures for		cable, in tray, in the general area below the generator and the	worst case, could spread as		
	manual attack.					har as the perimeter of the room (life area). As cooling of the	ne on will occur upon contact		
	Property loss: Significant					anticipated. Fire will not spread beyond the room due to t	he fire barriers Fire damage		
	Haz	ardous Substances:	: On Spin			will include equipment below the generator and cable/tray	in the room. Unit will		
			L		,	require shutdown. Fire does not affect safe shutdown.			
1									

Ro	om	Data Shee	et				
		Fire Area:	F2170	Description:	Room 2171 - Turbine B	Building, Ground Floor Condenser Area	Const. Type: II 000
		Building:	Turbine Building	]		1052.5	
				Applicable codes: CSA N293, NBCC, NFCC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U72-FG2001A	1		Building Code Occupancy Classification:	Group F, Division 2
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A
1							
				Surrounded	l by fire barriers rated at:		
					Except:	:	
Consis	ting of t	the following Poor		Fire Alarm I	neut Devices	Fire Suppression	
FI	Bm#	Inc following Rooms	s. Potential Combustibles	Primary	Backup	Primary	Backup
LL	Kill77	Evrouel EHC But	ness actuators and accumulators - 757 I	Sprinkler Waterflow	Manual Fire Alarm	Wet Pipe Sprinklers (required by CSA N293)	Hose Streams
0.0	2171	ryiquei Eric By	pass actuators and accumulators = 757 E	Sprinkler waternow	Box	(required by contractory)	Fire Extinguishers
0.0	2171	Turbine Bearings	1-6 - 47,318 L of ISO 32 lube oil			-	
0.0	2171	3 pump assemblie	s & controllers	]			
0.0	2171	7 fan coil units					
			>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
			700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	
	Ass	uming operation of i	nstalled fire extinguishing equipment, impa	act of fire upon:		The postulated fire occurs due to a turbine vibration causin	ig a complete break of a lube
		Plant operation	Peactor Scram		1	oil line. The lube oil is ignited by the turbine casing and/o	r steam piping in the area. If
		r fant operation.	Iteactor Sciani			lube oil pumps remain on (as expected for rundown time a	t a minimum), up to 47,318
	D	adialogical releases	Water / steep in alocal system			liters (12,500 gallons) of mineral oil could spill out on the	floor. The oil will pool
	K	autological release.	water / steam in closed system			throughout the room area. with fire protection out of servi	ce, the spill area (and area of
	,	1 6 6 1 4	Class L base stations in two englosed exit	analoguras for manual		spread into the surrounding room (2170). The fire will be	limited to room 2171 and
	N	anual irrefighting:	attack.	enclosures for manual		2170 due to fire rated barriers separating Room 2170 from	all adjacent rooms. Unit
	Property loss: Significant					will require shutdown. Fire does not affect safe shutdown	
	Hazardous Substances: Lube oil spill						
			Luce on opin				
1							
1							
1							

Roo	om 1	Data She	et				
		Fire Area:	F2170	Description:	Room 2180 - RWCU H	X Room (Shielded)	Const. Type: II 000
		Building:	Turbine Building			Gross Area (m2):	21
				Applicable codes:	: CSA N293, NBCC, NFCC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
1		Associated	407081-U72-FG2001A			Group F, Division 2	
		Drawings or		Electrical Classification: Safety-related divisional equipment or cables: N/A			
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A
1							
				Surrounded	l by fire barriers rated at:		
					Except:		
Consis	ting of t	he following Room	15:	Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
0.0	2180	Transients		Manual Fire Alarm		Hose Streams	Fire Extinguishers
				Box			
			<700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
			700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	
	Assu	ming operation of	installed fire extinguishing equipment, impa	act of fire upon:		Fire starts in transients and consumes any combustibles. N	ot expected to spread to the
		Distant	News		ı	surrounding Room 2171as fire load is minimal. Fire does	not affect safe shutdown.
		Plant operation	: None				
			C1				
	Ra	idiological release	: Closed piping system				
	N	lanual firefighting	: Access via stairwell and interior doors				
		Property loss	Moderate				
	Haz	ardous Substances	: None				
			L		J		
1							

Roo	om	Data She	et					
		Fire Area:	F2181		Description:	Room 2181 - Lube Oil	Equipment Room	Const. Type: II 000
1		Building:	Turbine Building				Gross Area (m2)	: 74.5
					Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U72-FG	2001A	1		Building Code Occupancy Classification	Group F, Division 2
		Drawings or				Electrical (	Classification: Safety-related divisional equipment or cables	: N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables	: Load Group B
					Surrounded	l by fire barriers rated at	t: 3 hours	
						Except	t:	
Consist	ing of	the following Rooi	ns:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Combust	tibles	Primary	Backup	Primary	Backup
0.0	2101	47,356 L of ISO	32 Lube Oil in Lub	be oil system		Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams
0.0	2181	equipment.			Sprinkler Waterflow	Box		Fire Extinguishers
0.0	2181	Cable						
							Other Fire Protection	
							Concrete diking around equipment	
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	action, impact of design basis
				700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	
	Ass	uming operation of	installed fire exting	guishing equipment, impa	act of fire upon:		Room 2181 houses the lube oil tank, pumps and associate	d equipment. An unchecked
			<b>D</b>			1	oil fire is expected to engulf and burn out the room. The	eservoir is required to be
		Plant operation	: Reactor Scram				diked. The fire damage outside the rated room is anticipat	ted to be minor due to the
							rated enclosure and diking of the fuel oil. Fire does not af	fect safe shutdown.
	R	adiological releas	e: None, no radiolog	gical materials present				
	N	Aanual firefighting	g: Access via exterio	or and interior doors				
	Property loss: Moderate							
	Haz	ardous Substance	s: None - lube oil ta	ank diked				
			L			J		
1								

Ro	om	Data She	et						
		Fire Area:	F2182		Description:	Room 2182 - Div C Ba	atteries	Const. Type: II 000	
		Building:	Turbine Building		1		Gross Area (m2):	103.2	
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U72-FG200	01A	1		Group F, Division 2		
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/			N/A	
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group A & B	
					Surrounded				
						Except	Exterior walls not rated		
							1		
Consis	ting of	the following Room	s:		Fire Alarm I	nput Devices	Fire Suppression		
EL	Rm#		Potential Combustibl	es	Primary	Backup	Primary	Backup	
0.0	2182	Cable			Smoke Detectors &	Manual Fire Alarm	Preaction Sprinklers	Hose Streams	
0.0	2182	Batteries			Hydrogen Detectors	Box	_	Fire Extinguishers	
0.0	2182	Chargers			-				
					Sprinkler Waterflow		Other Fire Protection		
							High level exhaust		
				>1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis	
				1400	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:		
	Ass	uming operation of	installed fire extinguis	hing equipment, impa	act of fire upon:		Room 2182 houses batteries, chargers and cable for Div C	, any of which may be the	
		Plant operation	None - Redundant eo	quipment		]	starting point for a fire. A fire in this room would consume spread is limited by the 3-hour barriers surrounding the root	all combustibles. Fire om. Fire does not affect safe	
	R	adiological release	None, no radiologica	al materials present			snutdown.		
		Annual finaficiations	A again trip stairwall	and interior dears					
	1	Property loss	Minor	and interior doors					
	Haz	ardous Substances	None						
	паz	ardous Substances	INDIC			J			
							L		

Roo	om 1	Data Shee	et						
		Fire Area:	F2250		Description:	Room 2250 - Switchge	ar A	Const. Type: II 000	
		Building:	Turbine Bui	lding	]		Gross Area (m2):	81.5	
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U7	2-FG2001B	Building Code Occupancy Classification: Group F, I				
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group A	
					Surrounded	by fire barriers rated at:	3 hours (Group A electrical equipment)		
						Except	:		
Consist	ting of t	he following Rooms	:		Fire Alarm I	nput Devices	Fire Suppression		
EL	Rm#		Potential Con	mbustibles	Primary	Backup	Primary	Backup	
6.1	2250	Exposed electrical	l cable		Smoke Detection	Manual Fire Alarm	Hose Streams	Fire Extinguishers	
6.1	2250	Switchgear & tran	sformers			Box			
					]				
				<1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis	
				1400	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	· 1 · 0	
	Assu	ming operation of i	nstalled fire e	xtinguishing equipment, impa	et of fire upon:		Room 2250 houses switchgear and transformers for Electr	ical Train A (Nonsafety).	
					-	1	The Electrical Train B switchgear room is immediately we	est. As the equipment is	
		Plant operation:	Power Redu	ction			redundant, a fire separation is warranted to maintain the re-	dundant systems. A fire in	
							Room 2250 will consume combustibles in the room. Fire l	barriers surrounding the room	
	Ra	adiological release:	None, no rae	diological materials present			limit fire spread. Fire does not affect safe shutdown.		
	N	fanual firefighting:	Access via s	tairwell and interior doors					
	Property loss: Minor			-					
	Haz	ardous Substances:	None						
						J			
1									

Roo	om l	Data Shee	t					
	Fire Area: F2260			Description:	Room 2260 - Switchge	ar B	Const. Type: II 000	
		Building:	Turbine Bui	lding	]		Gross Area (m2):	81.5
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U72	2-FG2001B	1		Building Code Occupancy Classification:	Group F, Division 2
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group B
					Surrounded	d by fire barriers rated at:	3 hours (Group B electrical equipment)	
						Except	:	
Consist	ting of th	he following Rooms	:		Fire Alarm I	nput Devices	Fire Suppression	1
EL	Rm#		Potential Con	mbustibles	Primary	Backup	Primary	Backup
6.1	2250	Exposed electrical	cable		Smoke Detection	Manual Fire Alarm	Hose Streams	Fire Extinguishers
6.1	2250	Switchgear & tran	sformers		-	Box	_	
	-				-			
					-			
-				<1400	A	- 1 1 MI/ 2		
				<1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
				1400	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	
	Assu	ming operation of i	nstalled fire e	extinguishing equipment, impa	et of fire upon:		Room 2260 houses switchgear and transformers for Electr	ical Train B (Nonsafety).
		Plant operation:	Power Redu	etion		1	The Electrical Train A switchgear room is immediately ea	st. As the equipment is
		r fant operation.	I Ower Redu	ction			redundant, a fire separation is warranted to maintain the re-	dundant systems. A fire in
	D.	بمعمداهم الممتحما	Nono no ro	dialogical materials present		4	Room 2260 will consume combustibles in the room. Fire I	barriers surrounding the room
	K	diological release.	None, no rac	ulological materials present		4	limit fire spread. Fire does not affect safe shutdown.	
	Menuel Grefickting, Access via stairwall and interior doors							
	Property loss: Minor			1				
	Hazardous Substances: None			1				
	runa cous ouosunoos. runo							
							L	

Ro	om 1	Data Shee	et				
	Fire Area: F2170			Description:	Room 2270 - Turbine E	Const. Type: II 000	
		Building: Turbine Building				Gross Area (m2): 2751.1	
		-	¥	Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U72-FG2001B			Building Code Occupancy Classification:	Group F, Division 2
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Load Group A & B
				Surrounded	1 by fire barriers rated at:	:	
					Except:	:	
Consis	ing of t	he following Room	ç.	Fire Alarm I	nput Devices	Fire Suppression	
FI	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
6.1	2270	Turbine Bearings	7-9 - 47.318 L of ISO 32 lube oil	Tinnary	Manual Fire Alarm	Wet Pipe Sprinklers (required by CSA N293)	Hose Streams
6.1	2270	4 MCCs, 1 fan co	il unit. 3 AHUs	Sprinkler Waterflow	Box		Fire Extinguishers
6.1	2270	1 generator circuit	t breaker			1	
6.1	2270	Cable Trav		-			
				-			
			>70	Anticipated combustibl	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
			70	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	
	Assi	uming operation of i	nstalled fire extinguishing equipment, imr	act of fire upon:		The postulated fire occurs due to a turbine vibration causir	g a complete break of a lube
		0 1			•	oil line. The lube oil is ignited by residual heat on the gen	erator casing, lighting or
		Plant operation:	Turbine shutdown			other hot equipment in the area. If lube oil pumps remain of	on (as expected for rundown
						time at a minimum), up to 47,318 liters (12,500 gallons) of	f mineral oil could spill out.
	Ra	adiological release:	None, no radiological materials present			The spill area (and area of the fire) will be limited by floor	openings to the ground
					1	floor. Fire will not spread horizontally beyond fire barrier	s. Unit will require shutdown.
	Ν	fanual firefighting:	Class I hose stations in the four enclosed	exit enclosures for		Fire does not affect safe shutdown.	
	manual attack.				1		
	Property loss: Moderate						
	Hazardous Substances: Lube oil spill						
					J		

Ro	om	Data Shee	et					
	Fire Area: F2170			Description:	Room 2271 - Turbine B	uilding, Mezzanine Floor Condenser Area	Const. Type: II 000	
	Building: Turbine Building				Gross Area (m2): 10'			
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U72-FG2001B	]		Building Code Occupancy Classification:	Group F, Division 2	
		Drawings or			Electrical C	lassification: Safety-related divisional equipment or cables:	N/A	
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A	
				Surrounded	d by fire barriers rated at:			
					Except:			
Consis	ting of	the following Room	s:	Fire Alarm I	Input Devices	Fire Suppression		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
6.1	2271	Evenual EUC Du	pass actuators and accumulators 200 gal		Manual Fire Alarm	Wet Pipe Sprinklers (required by CSA N293)	Hose Streams	
0.1	2271	Fyrquei EHC By	pass actuators and accumulators - 200gar	Sprinkler Waterflow	Box		Fire Extinguishers	
6.1	2271	Turbine Bearings	1-6 - 47,318 L of ISO 32 lube oil					
6.1	2271	9 fan coil units						
			>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis	
			700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:		
	Ass	uming operation of i	installed fire extinguishing equipment, impa	act of fire upon:		The postulated fire occurs due to a turbine vibration causin	g a complete break of a lube	
				-	1	oil line. The lube oil is ignited by the turbine casing and/o	r steam piping in the area. If	
		Plant operation:	Reactor Scram			lube oil pumps remain on (as expected for rundown time a	t a minimum), up to 47,318	
						liters (12,500 gallons) of mineral oil could spill out. The s	pill area (and area of fire)	
	R	adiological release:	None, closed piping system			will be limited by openings to the ground floor and enclosu	re walls. Unit will require	
						shutdown. Fire does not affect safe shutdown.		
	Manual firefighting: Class I hose stations in the enclosed exit e		enclosure for manual					
	attack.				1			
	Property loss: Moderate				1			
	Hazardous Substances: Lube oil spill							
					J			
1								

Roo	om 1	Data She	et					
	Fire Area: F2280		Description:	Room 2280 - EHC Uni	t Room	Const. Type: II 000		
	Building: Turbine Building				Gross Area (m2):	25.9		
		-		Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U72-FG2001B			Building Code Occupancy Classification:	Group F, Division 2	
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A	
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Load Group A & B	
				Surrounded	d by fire barriers rated at	: 3 hours		
					Except	:		
Consist	ing of t	he following Roon	ns:	Fire Alarm I	Input Devices	Fire Suppression		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
6.1	2280	1,514 L of Fryqu	uel (high Flashpoint) Control Oil in EHC	Sprinkler Waterflow	Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams	
0.1	2280	Unit		<u>^</u>	Box		Fire Extinguishers	
6.1	2280	Control Oil pum	p assembly					
6.1	2280	Cable				Other Fire Protection		
						Concrete diking around equipment		
			>700	Anticipated combustible	load, MJ/m2 Assuming automatic & manual FP equipment does not function, impact of desig			
			700	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:		
	Assu	uning operation of	f installed fire extinguishing equipment, imp	act of fire upon:		Room 2280 houses the EHC reservior, pumps and associa	ted equipment. An	
		Direct and section	Pagatar Saram		ו	unchecked oil fire, if started (sustained electrical arcing)	is expected to engulf and	
		Fiant operation	I. Reactor Scham			burn out the room. The reservoir will be diked and/or drai	ned. The fire damage outside	
	D		Name and selected metalish and set	-	-	the rated room is anticipated to be minor based on the fire	rated enclosure. Unit will	
	R	iutotogical release	e: rione, no radiological materials present		-	require snutdown. Fire does not affect safe shutdown.		
		anual firafiahtin	Access via stainwell and interior doors		-			
	Manual Interighting: Access via stairwell and interior doors Property loss: Minor				1			
	Hazardous Substances: Minimal oil - Reservoir in dike				1			
	mazardous Substances. Infinination - Reservoir in dike							
					-			
						L		

Roo	om I	Data She	et					
	Fire Area: F2290			Description:	Room 2290 - Breaker S	Shop	Const. Type: II 000	
	Building: Turbine Building				Gross Area (m2):	75.5		
					Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U7	2-FG2001B	]		Building Code Occupancy Classification:	Group F, Division 2
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group A & B
					Surrounded	d by fire barriers rated at	: 3 hours (Group A & B electrical equipment)	
						Except		
Consist	ting of t	he following Room	IS:		Fire Alarm I	Input Devices	Fire Suppression	
EL	Rm#		Potential Con	mbustibles	Primary	Backup	Primary	Backup
6.1	2290	Exposed electrica	cal cable		Smoke Detection	Manual Fire Alarm	Hose Streams	Fire Extinguishers
						Box		
				-				
				<1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
				1400	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	
	Assu	iming operation of	installed fire e	extinguishing equipment, impa	ict of fire upon:		Room 2290 houses equipment to service switchgear and the	ransformers for Electrical
						<b>1</b>	Trains A & B (Nonsafety). It is anticipated that only one	Frain will be serviced at a
		Plant operation	: None, antici	pated that only one Group will	I be serviced at a time		time for redundancy. The Electrical Trains A & B switchg	ear rooms are immediately
						-	north. A fire separation is warranted to maintain the system	ms. A fire in Room 2290
	Ra	idiological release	: None, no rae	diological materials present		-	will consume combustibles in the room. Fire barriers surro	ounding the room limit fire
						-	spread. Fire does not affect safe shutdown.	
	Manual firefighting: Access via stairwell and interior doors				-			
	Harandana Subatanaan Nana				-			
	Hazardous Substances: None							
						J		

Ro	om 1	Data Shee	et					
	Fire Area: F2170		Description:	Room 2370 - Turbine B	Building, Operating Floor	Const. Type: II 000		
	Building: Turbine Building		1		Gross Area (m2):	959.7		
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, NFPA 15, CSA C22.1, UL	.C-S524
1		Associated	407081-U72-	-FG2001C	1		Building Code Occupancy Classification:	Group F, Division 2
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A
1								
					Surrounded	by fire barriers rated at:		
						Except:		
Consis	ting of t	he following Room	s:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Com	bustibles	Primary	Backup	Primary	Backup
12.2	2370	Turbine Bearings	7-9 - 47,318 I	L of ISO 32 lube oil	Heat Detectors on	Manual Fire Alarm	Preaction Spray on Bearings & Sprinklers in turbine skirt	Hose Streams
					bearings	Box	& exposed lube oil piping	Fire Extinguishers
					Sprinkler Waterflow			
			L	>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
				700	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:	
	Assu	uming operation of i	installed fire ex	tinguishing equipment, impa	act of fire upon:		The postulated fire occurs due to a turbine vibration causin	ig a complete break of a lube
		-		,		1	oil line. The lube oil is ignited by resudial heat from the ste	eam turbine on the generator
		Plant operation:	Turbine shute	lown			shell, lighting or other hot equipment in the area. If lube of	l pumps remain on (as
							expected for rundown time at a minimum), up to 47,318 lit	ters (12,500 gallons) of
	Ra	adiological release:	None, no radi	ological materials present			mineral oil could spill out. The spill area (and area of fire)	will be limited by floor
							openings. Oil drainage to lower floors and fire barriers will	Il limit the fire to the fire
	Manual firefighting: Class III hose stations in the two enclosed		exit enclosures for		area. Unit will require shutdown. Fire does not affect safe	snutdown.		
	manual attack.							
	Property loss: Moderate							
	Hazardous Substances: Lube oil spill							
						,		
1								

Ro	om	Data She	et				
		Fire Area: F2170		Description:	Room 2371 - Turbine B	Building, Operating Floor Generator Area	Const. Type: II 000
		Building: Turbine Building				Gross Area (m2):	1122
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, NFPA 15, CSA C22.1, UL	C-S524
		Associated	407081-U72-FG2001C			Building Code Occupancy Classification:	Group F, Division 2
1		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A
1							
				Surrounded	l by fire barriers rated at:		
					Except:	:	
Consis	ting of t	the following Roon	18:	Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#	1	Potential Combustibles	Primary	Backup	Primary	Backup
		E 1516.0	10 · 1000 · · · · 100 100	Heat Detectors on	Manual Fire Alarm	Preaction Spray on Bearings & Sprinklers in turbine skirt	Hose Streams
12.2	2371	Fyrquel EHC St	op/Control/CIV actuators - 100galOil	bearings	Box	& exposed lube oil piping	Fire Extinguishers
12.2	2371	Turbine Bearings	s 1-6 - 47,318 L of ISO 32 lube oil				1
				Sprinkler Waterflow			
					1		
			>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis
			700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	
	Ass	uming operation of	installed fire extinguishing equipment, imp	act of fire upon:		The postulated fire occurs due to a turbine vibration causir	g a complete break of a lube
				-		oil line. The lube oil is ignited by the turbine casing and/o	r steam piping in the area. If
		Plant operation	: Turbine shutdown			lube oil pumps remain on (as expected for rundown time a	t a minimum), up to 47,318
						liters (12,500 gallons) of mineral oil could spill out. Spill	area (and area of fire) will be
	R	adiological release	None, water in closed system			limited by floor openings. Fire will be limited to shielded	area due to drainage of oil to
						areas below. Unit will require shutdown. Fire does not af	fect safe shutdown.
	Manual firefighting: Class III hose stations in the enclosed exit		it enclosure for manual				
	attack.						
	Property loss: Moderate						
	Hazardous Substances: Lube off spill						
			L		,		
1							

#### 4.5.3.4 Plant Services Area

The fire protection requirements for the Plant Services Area will be based on CSA N293 prescriptive requirements, and evaluation of the combustible loading of each room and its associated fire barriers to determine the need for sprinklers and detection.

Standpipes (Class I) are prescriptively required in the power block building. In the one-story buildings such as the Plant Services Area, this means hose outlets at the building exit doors, supplied by the horizontal standpipe. The locations of the outlets and the connection to the standpipe are illustrated on the Fire Area Drawing.

The Plant Services Area occupancy is understood to be typical to a facility maintenance shop area for an industrial facility except the equipment may be contaminated. This area would typically be a sprinklered area due to a variety of maintenance operations utilizing ignitable parts cleaners, lubricating oils, finishes and generally involving grinding and welding. A workshop, as identified above, has a combustible load range from 1134 MJ/m² to 2268 MJ/m² with limited isolated loading of 4540 MJ/m². As these operations and materials are expected to exceed the combustible loading limit of 700 MJ/m² (61,660 Btu/ft²), wet pipe sprinklers are being provided throughout. The sprinkler system design density for this building will be in accordance with the requirements for an Ordinary Hazard, Group 2 Occupancy (8.2 mm/min (0.20gpm/ft²) over the most remote 140m² (1500ft²) area).

A fire alarm system with automatic voice occupant notification is provided throughout the building. Devices and appliances are provided as follows:

- Manual fire alarm boxes (manual pull stations) are provided at each building exit.
- Waterflow alarms and supervision is provided on the automatic suppression system.
- Occupant notification is provided throughout the building.

11

Internal and external fire hazards associated with the Plant Services Area are under evaluation.

Preliminary cable tray layout drawings have been developed for the Plant Services Area. In this preliminary stage, the routing of the individual trains within the trays has not been developed. Further evaluation of separation will be needed as the design proceeds.

See Plant Services Area Fire Area Drawing:

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The Room Data Sheets for the Plant Services Area, detailing the fire hazard assessment and level of protection for each room (Table 4.5.3.4) follows.

#### Table 4.5.3.4 – Plant Services Area Room Data Sheets

Ro	om l	Data Shee	et							
		Fire Area:	F5180		Description:	Room 5180 - Office Sp	ace	Const. Type: II 000		
	Building: Plant Services Area			1		Gross Area (m2)	65.4			
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U72	2-FG2001G			Building Code Occupancy Classification	Group F, Division 3		
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables	N/A		
		Figures:					Nonsafety - related redundant trains, equipment or cables	N/A		
				-						
					Surrounded	l by fire barriers rated at:				
						Except:				
Consis	ting of t	ne following Room	s:		Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup		
0.0	5180	Typical Office Ar	ea			Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams		
					Sprinkler Waterflow	Box	_	Fire Extinguishers		
				700		1 1 1 1 1 2				
				/00	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ection, impact of design basis		
				700	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:			
	Assu	ming operation of i	nstalled fire e	extinguishing equipment, impa	ect of fire upon:		Fire starts in office and consumes all combustibles in room	<ol> <li>Fire spread beyond office</li> </ol>		
		Plant operation:	None			1	is limited due to low combustible loading in the hallway.	Smoke is anticipated to		
		r fant operation.	. tone				spread to suite of rooms. Fire does not affect safe shutdo	wn.		
	Pa	diological release:	None no rac	diological materials present						
	Ra	unological release.	140110, 110 140	alological materials present						
	1.4	anual firefighting	Access via s	tairwell and cabinets at exteri	or doors					
	IVI	Property loss:	Minor	an wen and cabillets at extern	01 40013					
	Hazardous Substances: None									
	The and the state of the state									
				,						
Roc	m ]	Data She	et							
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		Fire Area:	F5180		Description:	Room 5181 - I&C Calil	bration Area	Const. Type: II 000		
		Building:	Plant Servic	es Area	1		Gross Area (m2):	: 22.4		
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U7	2-FG2001G		Building Code Occupancy Classification: Group F, Division 3				
		Drawings or				Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A		
	Surro					by fire barriers rated at:				
						Except:				
Consisti	ing of t	he following Room	15:		Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Con	mbustibles	Primary	Backup	Primary	Backup		
0.0	5181	Typical Shop Are	ea			Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams		
					Sprinkler Waterflow	Box		Fire Extinguishers		
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ection, impact of design basis		
				700	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:			
	Assu	ming operation of	installed fire e	extinguishing equipment, impa	ect of fire upon:		Fire starts in shop and consumes all combustibles in room	. Fire spread beyond shop is		
		DI 4	Num			ı	limited due to low combustible loading in the hallway. Sn	noke is anticipated to spread		
		Plant operation	None				to suite of rooms. Fire does not affect safe shutdown.			
			N. 1.	C						
	Ra	diological release	: None, drain:	age of sprinkler discharge to c	ontainment					
	M	anual firefighting	Access via s	tairwell and cabinets at exteri	or doors					
	Property loss: Minor			1 24 2 2 1 1						
	Hazardous Substances: May release hazardous materials associated with typical shop area									
				J						

Ro	om 1	Data She	et							
		Fire Area:	F5180		Description:	Room 5182 - Contamir	ated Part/Tool Storage	Const. Type: II 000		
		Building:	Plant Servic	es Area			Gross Area (m2)	: 64		
					Applicable codes:	CSA N293, NBCC, NFO	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U7	2-FG2001G			Group F, Division 3			
1		Drawings or				Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:			Nonsafety - related redundant trains, equipment or cables: N/A					
					Surrounded	d by fire barriers rated at	:			
						Except	:			
						-				
							-			
Consis	ing of t	he following Roor	ns:		Fire Alarm I	Input Devices	Fire Suppression			
EL	Rm#		Potential Co	mbustibles	Primary	Backup	Primary	Backup		
0.0	5182	Typical Shop Ar	ea			Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams		
					Sprinkler Waterflow	Box		Fire Extinguishers		
					1					
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis		
				700	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	,		
1	Assu	iming operation of	installed fire of	extinguishing equipment, impa	act of fire upon:		Fire starts at storage (shelves, etc.) and consumes all comb	oustibles in room. Fire spread		
		• •				•	beyond storage room is limited due to low combustible los	ading in the hallway. Smoke		
		Plant operation	n: None				is anticipated to spread to suite of rooms. Fire does not a	ffect safe shutdown.		
						4				
	Ra	adiological release	e: None, drain	age of sprinkler discharge to c	ontainment					
	Ν	lanual firefighting	g: Access via s	stairwell and cabinets at exteri	or doors					
	Property loss: Minor									
	Hazardous Substances: May release hazardous materials associated with typical shop areas									
						J				
1										

Roc	oom Data Sheet										
		Fire Area:	F5180		Description:	Room 5183 - Decontam	nination Area	Const. Type: II 000			
		Building:	Plant Service	es Area	]		Gross Area (m2):	64.9			
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U72	2-FG2001G		Building Code Occupancy Classificat					
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A			
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A			
					Surrounded	l by fire barriers rated at:					
						Except:					
Consist	ing of th	e following Room	s:		Fire Alarm I	nput Devices	Fire Suppression				
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup			
0.0	5183	Typical Shop Are	a			Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams			
					Sprinkler Waterflow	Box		Fire Extinguishers			
							-				
					]						
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis			
				700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:				
	Assu	ming operation of i	nstalled fire e	xtinguishing equipment, impa	act of fire upon:		Fire starts at storage (shelves, etc.) and consumes all comb	ustibles in room. Fire spread			
						n	beyond this room is limited due to low combustible loadin	g in the hallway. Smoke is			
		Plant operation:	None				anticipated to spread to suite of rooms. Fire does not affe	ct safe shutdown.			
	Ra	diological release:	None, draina	age of sprinkler discharge to c	ontainment						
	М	anual firefighting:	Access via s	tairwell and cabinets at exteri	or doors	{					
	Property loss: Moderate										
	Hazardous Substances: None										
				J							

	Fire Area: Building:	F5180	Description:					
	Building:			Room 5185 - Hot Mac	hine Shop	Const. Type: II 000		
		Plant Services Area			Gross Area (m2)	: 546.7		
			Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
	Associated	407081-U72-FG2001G		Building Code Occupancy Classification: Group F, Division				
	Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A				
	Figures:				Nonsafety - related redundant trains, equipment or cables	Load Group A or B		
			Surroundad	have fire horriors roted at				
			Surfounded	T by fire barriers rated at	Li			
				Except				
Consisting of	of the following Roo	ms:	Fire Alarm I	nput Devices	Fire Suppression			
EL Rn	m#	Potential Combustibles	Primary	Backup	Primary Wet Bing Socielation	Backup		
0.0 518	85 Typical Shop A	rea, Cable Trays	Consideration Western Constraints	Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams		
			Sprinkler waterflow	Box	_	Fire Extinguishers		
			>700 Anticipated combustible	e load MI/m2	A construction of a construction of the construction of the	and a family of the last hards		
			700 Unsprinklered combusti	ible load limit MI/m?	Assuming automatic & manual FP equipment does not tu	nction, impact of design basis		
		Circle 11 of Gran antiperiodic a continue	700 Onsprinklered combust	iote toad mint, wij/m2	Fire starts at a house and a survey all southerstilles in the	in a line of Einstein		
A	ssuming operation o	i instaned fire extinguishing equipine	ent, impact of fife upon.		to adjacent henches will be limited due to general lack of	continuity of combustibles		
	Plant operatio	n: None			between benches. Fire does not affect safe shutdown	continuity of combustibles		
	Radiological releas	e: None, drainage of sprinkler discha	arge to containment					
				1				
	Manual firefightin	g: Access via stairwell and cabinets	at exterior doors	]				
	Property los	s: Moderate		]				
Н	Hazardous Substances: May release hazardous materials associated with typical shop areas							

Roo	om 1	Data She	et						
		Fire Area:	F5180	Description:	Room 5187 - RCA Acc	cess Control Room	Const. Type: II 000		
		Building:	Plant Services Area			Gross Area (m2):	6.4		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U72-FG2001G			Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A		
		Figures:		Nonsafety - related redundant trains, equipment or cables: N/A					
				Surrounded	d by fire barriers rated at:	:			
					Except	:			
Consist	ting of t	he following Roon	15:	Fire Alarm	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
0.0	5187	Typical Office A	rea		Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams		
				Sprinkler Waterflow	Box		Fire Extinguishers		
			>70	0 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis		
			70	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:			
	Assu	uning operation of	installed fire extinguishing equipment, im	pact of fire upon:		Fire starts in control office and consumes all combustibles	in room. Fire does not		
					•	spread out the door due to fire door to exit passageway. Fin	re is stopped from spreading		
		Plant operation	: None			to Turbine, Reactor, Rad Waste, and Control Buildings by	3-hour fire barriers. Fire		
						does not affect safe shutdown.			
	Ra	adiological release	: None, no radiological materials present						
					]				
	Ν	lanual firefighting	: Access via stairwell and cabinets at exter	rior doors					
	Property loss: Minor								
	Hazardous Substances: None								
						•			

: II 000
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ishers
of design basis
not spread,
shutdown.
•

Ro	om 1	Data She	et							
		Fire Area:	F5187	Description:	Room 5189 - Storage A	area (New Fuel, FMCRD, B25 Box)	Const. Type: II 000			
		Building:	Plant Services Area			Gross Area (m2):	234.4			
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U72-FG2001G		Building Code Occupancy Classification: Group F, Division 3					
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:			Nonsafety - related redundant trains, equipment or cables: N/A					
				Surroundee	d by fire barriers rated at:					
					Except:	:				
Consis	ting of t	he following Room	15:	Fire Alarm	Input Devices	Fire Suppression				
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup			
0.0	5189	Transients			Manual Fire Alarm	Wet Pipe Sprinklers	Hose Streams			
				Sprinkler Waterflow	Box		Fire Extinguishers			
			<70	0 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis			
			70	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:				
	Assu	iming operation of	installed fire extinguishing equipment, imp	pact of fire upon:		Fire starts at transients and consumes all combustibles in re-	oom. Fire spreads to adjacent			
					<b>1</b>	room Truck Space (Cask Removal) but is stopped from spi	reading to Turbine, Reactor,			
		Plant operation	None			Rad Waste, and Control Buildings by a 3-hour fire barrier.	A 2-hour fire barrier stops			
					4	fire from spreading north of Truck Space (Cask Removal).	Fire does not affect safe			
	Ra	idiological release	: None, drainage of sprinkler discharge to	containment		shutdown.				
	Ν	Ianual firefighting	: Access via cabinets at exterior doors		4					
		Property loss	Moderate		4					
	Hazardous Substances: May release hazardous substances									
					J					
1										

#### 4.5.3.5 Control Building

The fire protection requirements for the Control Building will be based on CSA N293 prescriptive requirements, and evaluation of the combustible loading and critical nature of each room and its associated fire barriers, to determine the need for sprinklers and detection.

The Control Room Complex, defined as the Main Control Room, Shift Supervisor Room, Shift Technical Assistant Desk, Toilet and Panel Room will be pressurized under off normal conditions. Means of activation of the system will include detection of smoke in the Control Building, outside the Control Complex.

Standpipes (Class I) are prescriptively required in the power block building. In the one story buildings such as the Control Building, this means hose outlets at the building exit doors, supplied by the horizontal standpipe. The locations of the outlets and the connection to the standpipe are illustrated on the Fire Area Drawings. The Control Building standpipe and sprinkler riser are supplied with fire protection water from two directions, one through the Rad Waste Building and one from the site loop on the south side of the building. See the Fire Area drawing ([[ ]]) for the general routing, and the P&ID for the schematic layout.

The major internal and external fire hazards associated with the Control Building are summarized as follows:

- <u>Electrical Rooms</u> The electrical rooms will house switchgear and associated cables. No oil filled electrical equipment will be provided. These rooms are 3-hour rated enclosures. The quantity of cables and thus the fuel load will be quantified and evaluated as the design proceeds. The rooms are provided with smoke detectors for early warning of a fire event. Class C fire extinguishers will be provided outside the door(s) to these rooms for manual firefighting.
- <u>Battery Rooms</u> Battery rooms 4152 and 4162 are located in the Control Building. The rooms are separated from the remainder of the building by 3-hour rated barriers. The batteries are understood to be Lithium-ion type. Flammable gasses are liberated from these batteries in a thermal runaway condition. Hydrogen detection is provided in the room as well as high level exhaust ventilation. Smoke detection is provided for early warning of a fire condition in this room. Sprinkler protection is the NFPA 855 preferred suppression method at this time. Automatic preaction sprinkler protection is provided for this room. The need for explosion relief will be evaluated as the design proceeds.

Sprinklers are recommended throughout the building (Control Complex) (with exception of the Control Room) based on the general combustible loading, proximity of the different safety related and redundant electrical load groups, critical equipment, and the main control room. A double interlock preaction sprinkler system is recommended. This system under standby conditions has only low pressure air in the piping system (approximately 1 bar). Loss of system air pressure (due to an open sprinkler) and smoke detector activation is required for actuation of the preaction valve. This system will be used to further minimize the potential for inadvertent operation of the fire suppression system. If additional protection is desired, a clean agent system would activate earlier, and if successful would not allow temperatures in the room that would fuse (open) a sprinkler. The clean agent system is generally not considered an equal (or substitute) to the sprinkler system as it has a limited supply of agent and relies on a maintained tight room).

A fire alarm system with automatic voice occupant notification is provided throughout the building. Devices and appliances are provided as follows:

- Manual fire alarm boxes (manual pull stations) are provided at each building exit.
- Waterflow alarms and supervision is provided on the automatic suppression system.
- Smoke detection is provided throughout the building (every room).
- Occupant notification is provided throughout the building.

Preliminary cable tray layout drawings have been developed for the Control Building. The general configuration of tray within a given room has been considered on the room data sheets, however the trunk routing of the load groups within the building will require further evaluation as the design proceeds.

It is recommended that spaces with cable trays above the ceiling be provided with smoke detection and sprinklers both above and below the ceiling. It is understood the following spaces have ceilings:

Room 4101 Conference Room

Room 4102 Women's Room

Room 4103 Men's Room

- Room 4105 HP and RCA Access Area
- Room 4107 Break Room Kitchenette
- Room 4171 Shift Technical Assistant Desk
- Room 4172 Shift Supervisor Room
- Room 4173 Toilet
- Room 4174 DCIS Maintenance and Cyber Security Room
- Room 4180 Operations and Technical Support Centers (OSC & TSC)

Lithium-ion Batteries are being provided for the uninterruptible power supply (UPS) systems. Refer to NFPA 855 for additional safety requirements, including explosion control.

See Control Building Fire Area Drawing:

[[ ]] Level 0.0

The Room Data Sheets for the Control Building, detailing the combustibles, room features and level of protection for each room is in Table 4.5.3.5 below. Additional information and analysis is as follows:

- 1. <u>Conference Room 4101</u> This area is considered a typical conference room. The sprinkler system density within this room will be in accordance with requirements for a light hazard Occupancy (4.1 mm/min (0.10gpm/ft²) over the room area).
- Main Control Room 4170 N293 Elimination of the sprinkler system in the control room is specifically addressed in N293, based on the understanding that the room is constantly occupied, and thus incipient manual response to a fire, by fire brigade and/or trained operators, will be immediate with handheld fire extinguishers. N293 additionally requires very early warning technology smoke detection in this room.

Cable serving controls in the Control Room are routed in the enclosed floor trenches. Electrical cable in the space above the Control Room ceiling will be limited to lighting power in conduit. Cable running between adjacent cabinets in the Control Room will have blocking provided in the cable openings.

Smoke management is also required in this room as detailed in N293.

- 3. <u>Panel Room 4178</u> This area is located immediately north of the Control Room and houses numerous cable trays and cabinets serving the Control Room. The high density of exposed cable in this space and exposure to the control room warrants sprinkler protection. This area will be designed for a density of 12.2mm/min (0.3gpm/ft²) over the room area. A area of the very early warning smoke detection system will serve this room. At least two smoke obscuration levels shall be provided. One equal to the control room and one at an obscuration for a standard smoke detector. The higher level shall activate the building preaction sprinkler system.
- 4. <u>HP and RCA Access Area Room 4105</u> This area is the primary personnel entrance to the radiologically controlled area. It is understood to be typical office spaces, turnstiles, pickup location for radiation detection equipment and a gathering area for briefs. The sprinkler system design density for this area will be in accordance with the requirements for light hazard Occupancy (4.1 mm/min (0.10gpm/ft²) over the room area).
- <u>Access Room 4106</u> This room is understood to be accommodations personnel office and security equipment for the plant. The sprinkler system design density for this room will be in accordance with the requirements for light hazard Occupancy (4.1 mm/min (0.10gpm/ft²) over the room area).
- Break Room 4107 This room is a typical break room. The sprinkler system design density for this room will be in accordance with the requirements for light hazard Occupancy (4.1 mm/min (0.10gpm/ft²) over the room area).
- <u>LG Electrical Equipment Rooms and Motor Control Center (MCC) Rooms 4150/4160 and 4151/4161</u> These rooms are considered a typical electrical room with a reasonably high density of exposed cables. The sprinkler system design density for these rooms will be in accordance with the requirements for an Ordinary Hazard, Group 2 Occupancy (8.2 mm/min (0.20gpm/ft²) over the room area).
- 8. <u>Battery Rooms 4152/4162</u> NFPA 855 (Stationary Energy Storage Systems) has been recently created to address current lithium-ion battery concerns as well as review energy storage associated with green generation stations. The committee has determined that automatic sprinklers are appropriate fire protection and has developed a threshold for when they are required. The standard will likely be referenced by NFPA 804 in the near future. The batteries in this room exceed the thresholds and thus sprinkler protection is recommended. The sprinkler density recommended is 12.2mm/min (0.30gpm/ft²) over the room area.
- <u>DL Rooms, Communications Room C30 Room 4153/4163, 4175 and 4176</u> These rooms are understood to be low-voltage electrical rooms with a reasonably high loading of exposed electrical cables. The sprinkler system design density for these rooms will be inaccordance with the requirements for an Ordinary Hazard, Group 2 Occupancy (8.2 mm/min (0.20gpm/ft²) over the room area).

10. DCIS Maintenance and Cyber Security Room 4174 – This room is understood to be a low-voltage electrical equipment maintenance shop. A reasonable amount of storage of replacement electronic boards etc, as well as bench areas is anticipated in this room. The sprinkler system design density for these rooms will be in accordance with the requirements for an Ordinary Hazard, Group 2 Occupancy (8.2 mm/min (0.20gpm/ft²) over the room area).

#### Table 4.5.3.5 – Control Building Room Data Sheets

Roo	om I	Data Shee	et							
		Fire Area:	F4100		Description:	Room 4100 - Janitors C	Closet	Const. Type: II 000		
		Building:	Control Buil	lding			Gross Area (m2):	2.8		
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U73	3-FG2301	Building Code Occupancy Classification: Group F, Divisior					
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				Nonsafety - related redundant trains, equipment or cables: N/A				
					Surrounded	l by fire barriers rated at:				
						Except:				
Consist	ing of th	ne following Rooms	5:		Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Con	mbustibles	Primary	Backup	Primary	Backup		
0.0	4100	Typical cleaning s	supplies		Smoke Detectors	Manual Fire Alarm	Preaction Sprinkler System	Hose Streams		
						Box		Fire Extinguishers		
					Sprinkler Waterflow					
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basi fire on safe shutdown:			
				700	Unsprinklered combusti	ible load limit, MJ/m2				
	Assu	ming operation of i	nstalled fire e	extinguishing equipment, impa	act of fire upon:		Fire starts in stored combustibles and consumes combustib	oles in the room. Fire spread		
		Direct and the second second	Nega			1	may spread to corridor but not beyond. Fire does not affect	ct safe shutdown.		
		Plant operation:	None							
	P		N	P. 1. 1. 1						
	Ka	diological release:	None, no rac	diological materials present						
		1 C C . L	A			1				
	м	anual firefighting: Property loss:	Access via e	exterior doors and corridor		1				
	Here	rioperty loss:	Negrigible			1				
	Hazardous Substances: None									
						J				

Ro	om I	Data She	et						
		Fire Area:	F4100	Description:	Room 4101 - Conference	ce Room	Const. Type: II 000		
		Building:	Control Building			Gross Area (m2):	56		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
1		Associated	407081-U73-FG2301			Building Code Occupancy Classification:	Group F, Division 3		
1		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A		
		Figures:		Nonsafety - related redundant trains, equipment or cables: N/A					
I				Surroundee	d by fire barriers rated at:				
					Except:				
Consis	ting of th	he following Roor	ns:	Fire Alarm I	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
0.0	4101	Typical Confere	nce Room	Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers above and below ceilings	Hose Streams		
				Above & Below	Box		Fire Extinguishers		
				Ceiling					
				Sprinkler Waterflow					
			70	0 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis		
			70	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:			
	Assu	ming operation of	f installed fire extinguishing equipment, imp	pact of fire upon:		Fire starts in transient combustibles and consumes combus	tibles in the room. Fire		
					1	spread to corridor is not expected due to low combustible	loading. Fire does not affect		
		Plant operation	n: None			safe shutdown.			
	-				4				
	Ra	idiological release	e: None, no radiological materials present						
	М	lanual firefighting	g: Class I hose stations for manual attack		4				
	Property loss: Minor								
	Haza	ardous Substance:	s: None						
					J				
					J				

Ro	om I	Data She	et					
		Fire Area:	F4100	Description:	Rooms 4102 & 4103 - I	Restrooms	Const. Type: II 000	
		Building:	Control Building			Gross Area (m2):	82.6	
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
1		Associated	407081-U73-FG2301		Building Code Occupancy Classification: Group			
		Drawings or		Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A	
				Surroundee	d by fire barriers rated at:			
					Except:			
Consis	ting of th	he following Roon	ns:	Fire Alarm I	nput Devices	Fire Suppression		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
0.0	4102	Typical Restroor	n	Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers above and below ceilings	Hose Streams	
0.0	4103	Typical Restroor	n	Above & Below	Box		Fire Extinguishers	
				Ceiling	-			
				Sprinkler Waterflow				
			<70	0 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis	
			70	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:		
	Assu	ming operation of	installed fire extinguishing equipment, im	pact of fire upon:		Fire starts in transient combustibles and consumes combus	tibles in the room. Fire	
		Plant anaration	None		ו	spread to corridor is not expected due to low combustible l	oading. Fire does not affect	
		Plant operation	E. None			safe shutdown.		
	D.	ممامر المتحمل	None, no radialogical materials present		1			
	Ka	ulological release	e. None, no radiological materials present		4			
	м	anual firafichting	Class I have stations for manual attack		1			
	IVI	Property loss	2. Minor		1			
	Harandaya Substanaasa Nana				1			
	TTaza	iruous substances	s. None					
					,			
						L		

Ro	om I	Data She	et						
		Fire Area:	F4100	Description	Room 4105 - HP and R	CA Access Area	Const. Type: II 000		
		Building:	Control Building			Gross Area (m2):	293		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U73-FG2301		Building Code Occupancy Classification: Group F,				
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Load Group A or B		
				Surrounde	d by fire barriers rated at:				
					Except				
Consis	ting of t	he following Roor	ns:	Fire Alarm	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
0.0	4105	Ordinary Office	Type Area Loading	Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers above and below ceiling	Hose Streams		
0.0	4105	Cable		Above & Below	Box		Fire Extinguishers		
				Ceiling					
					]				
				Sprinkler Waterflow					
			>7	00 Anticipated combustibl	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis		
			7	00 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	· 1 · 0		
	Assu	uning operation of	installed fire extinguishing equipment, in	npact of fire upon:		Fire starts in general or transient combustibles, or exposed	cable and consumes		
					•	combustibles in the room. Fire spread is limited due to ful	I height walls to other control		
		Plant operation	n: None			building areas and by 3-hour rated barriers to the Rad Was	te Building. Fire does not		
					4	affect safe shutdown.			
	Ra	diological releas	e: None expected						
	N	lanual firefighting	z: Class I hose stations for manual attack		4				
		Property los	s: Minor		-				
	Hazardous Substances: None								
					J				
1									

Roc	m l	Data Shee	et					
		Fire Area:	F4100	Description:	Room 4106 - Access R	oom - Security Personnel & Equipment	Const. Type: II 000	
		Building:	Control Building	]		Gross Area (m2):	26	
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U73-FG2301	Building Code Occupancy Classification: Group F, Division 3				
	Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A	
	Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group A or B	
				Surroundee	d by fire barriers rated at:			
					Except	:		
Consist	ing of tl	ne following Room	5:	Fire Alarm	Input Devices	Fire Suppression		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
0.0	4106	Security Equipme	nt	Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams	
0.0	4106	Cable			Box	_	Fire Extinguishers	
0.0	4106	Office Equipment		Sprinkler Waterflow	-			
				-				
			. 500	A	- 1			
			>/00	Anticipated combustibi	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis	
			700	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:		
	Assu	ming operation of i	nstalled fire extinguishing equipment, imp	act of fire upon:		Fire starts in security equipment, transient combustibles or	cable and consumes	
		Plant operation:	None		1	combustibles in the room. Fire may spread beyond room t	o corridor, breakroom or	
		i funt operation.				support center but not to control room due to 2-hour rated	barrier. Fire does not affect	
	Pa	diological release:	None, no radiological materials present		1	sare shutdown.		
	Ka	diological release.	ivone, no radiological materials present		-			
	м	anual firefighting:	Class I have stations for manual attack		1			
	101	Property loss:	Moderate		1			
	Haza	rdoue Substances:	None		1			
	Hazardous Substances. None							

Roc	m	Data She	et							
		Fire Area:	F4100	Description	Room 4107 - Break Ro	om	Const. Type: II 000			
		Building:	Control Building			Gross Area (m2)	40.6			
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U73-FG2301		Building Code Occupancy Classification: Group F, Division 3					
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				Nonsafety - related redundant trains, equipment or cables	Load Group B			
				Surroundee	d by fire barriers rated at:					
					Except:					
Consist	ing of	he following Room	15:	Fire Alarm	Input Devices	Fire Suppression				
EL	L Rm# Potential Combustibles Prim 4107 Typical Break Area				Backup	Primary	Backup			
0.0	4107	Typical Break A	rea	Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers above and below ceiling	Hose Streams			
0.0	4107 Cable		Above & Below	Box		Fire Extinguishers				
				Ceiling						
				Sprinkler Waterflow						
			>70	0 Anticipated combustibl	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis			
			70	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	· 1 · 0			
	Ass	uming operation of	installed fire extinguishing equipment, im	pact of fire upon:		Fire starts in furnishings, transient combustibles or cable a	nd consumes combustibles in			
					<b>,</b>	the room. If fire starts in cable tray, spread outside the roo	om area is likely, but not into			
		Plant operation	None			control room. Minimal fire spread if fire starts below ceil	ing. Fire does not affect safe			
					4	shutdown.				
	R	adiological release	: None, no radiological materials present							
					1					
	Ν	Ianual firefighting	: Class I hose stations for manual attack		4					
		Property loss	Minor		4					
	Hazardous Substances: None									
					J					
1										

Roo	om 1	Data She	et							
		Fire Area:	F4150	Description:	Room 4150 - LG A Ele	ectrical Equipment Room - UPS	Const. Type: II 000			
		Building:	Control Building			Gross Area (m2):	41.1			
		-	_	Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U73-FG2301			Building Code Occupancy Classification:	Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Group A			
			L	Surrounded	l by fire barriers rated at	t: 3 hours				
					Except	t:				
Consist	ing of t	he following Room	s:	Fire Alarm I	nput Devices	Fire Suppression				
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup			
0.0	4160	Battery Chargers	UPS	Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams			
0.0	4160 Transformer				Box	-	Fire Extinguishers			
0.0	4160 Cable		Sprinkler Waterflow							
				· ·	1					
				>1400 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis			
				1400 Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:				
	Assi	uning operation of	installed fire extinguishing equipme	ent, impact of fire upon:		Fire starts in electrical equipment and spreads to adjacent	equipment and cables. All			
					•	combustibles in the room burn until consumed. Fire does	not spread beyond room due			
		Plant operation	None - Redundant Train			to 3-hour rated fire barriers. Fire affects one of two groups	s. Fire does not affect safe			
						shutdown.				
	Ra	adiological release	None, no radiological materials p	resent						
	Ν	lanual firefighting	Access via exterior doors and cor	ridor						
		Property loss	Moderate							
	Hazardous Substances: None									
					J					
1										

Roo	om 1	Data She	et						
		Fire Area:	F4151	Description:	Room 4151 - MCC A		Const. Type: II 000		
		Building:	Control Building			Gross Area (m2):	50.8		
		-	_	Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U73-FG2301	7		Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A		
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Group A		
				Surrounded	Surrounded by fire barriers rated at: 3 hours				
					Except:	Exterior wall not rated			
Consis	ting of t	he following Room	15:	Fire Alarm	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
0.0	4161	Switchgear		Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams		
0.0	4161 Cables			Box		Fire Extinguishers			
0.0	4161 Transformer		Sprinkler Waterflow		-	-			
					1				
				7					
			>140	0 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis			
			140	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:			
	Assi	uning operation of	installed fire extinguishing equipment, im	pact of fire upon:		Fire starts in switchgear and spreads to adjacent equipment	and cables. All		
		ning optimion of			-	combustibles in the room burn until consumed. Fire does	not spread beyond room due		
		Plant operation	: None - Redundant Train			to 3-hour rated fire barriers. Fire affects one of two groups	s. Fire does not affect safe		
					-	shutdown.			
	Ra	adiological release	: None, no radiological materials present						
	,	(	A		-				
	N	Property loss	Mederate		-				
	Here	r toperty toss	None						
	Hazardous Substances: None								
					J				
1									

Roo	m	Data She	et							
		Fire Area:	F4152		Description:	Room 4152 - Battery R	oom Group A	Const. Type: II 000		
		Building:	Control Buil	ding	1		Gross Area (m2)	: 91.3		
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U73	3-FG2301	1		Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:					Nonsafety - related redundant trains, equipment or cables	Group A		
					Surrounded	Surrounded by fire barriers rated at: 3 hours				
						Except:	Exterior wall not rated			
Consist	ing of t	he following Roon	15:		Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Cor	nbustibles	Primary	Backup	Primary	Backup		
0.0	4152	Lithium-ion batte	eries		í í	Manual Fire Alarm	Preaction Sprinklers	Hose Streams		
0.0	4152 Cable		Smoke Detectors &	Box		Fire Extinguishers				
			Hydrogen Detectors		-					
						]				
					Sprinkler Waterflow					
				>1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	nction, impact of design basis		
				1400	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:			
	Ass	uming operation of	installed fire e	xtinguishing equipment, impa	act of fire upon:		Fire starts in batteries and spreads to adjacent batteries and	d cables. All combustibles in		
					-	1	the room burn until consumed. Fire does not spread beyon	nd room due to 3-hour rated		
		Plant operation	: None				fire barriers. Fire affects one of two groups. Fire does no	t affect safe shutdown.		
	R	adiological release	: None, no rac	liological materials present						
	Ν	Ianual firefighting	: Access via e	xterior doors and corridor		-				
		Property loss	: Moderate							
	Hazardous Substances: Batteries - lithium-ion									
						J				

Roo	om 1	Data She	et						
		Fire Area:	F4153		Description:	Room 4153 C20 DL 2 -	- Room A - DCS Equipment Room	Const. Type: II 000	
		Building:	Control Buil	lding	1		Gross Area (m2):	67.7	
		-		-	Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U73	3-FG2301	1 1		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A	
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Group A	
					Surrounded	by fire barriers rated at:	3 hours		
						Except:	Exterior wall not rated		
	_								
Consist	ing of t	he following Room	15:		Fire Alarm I	nput Devices	Fire Suppression		
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup	
0.0	4163	DCS Equipment			Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams	
0.0	4163 Cables			Box		Fire Extinguishers			
			Sprinkler Waterflow	-					
				>1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis		
				1400	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:		
	Assu	aming operation of	installed fire e	extinguishing equipment, impa	act of fire upon:		Fire starts in an equipment rack and spreads to cables and	other equipment racks. All	
			D D I			1	combustibles in the room burn until consumed. Fire does	not spread beyond room due	
		Plant operation	Power Redu	iction			to 3-hour rated fire barriers. Fire affects one of two groups shutdown.	s. Fire does not affect safe	
	Ra	adiological release	None, no rac	diological materials present					
	Ν	anual firefighting	: Access via e	exterior doors and corridor		]			
		Property loss	Moderate						
	Hazardous Substances: None								
	Hazardous Substances. None				J				

		Fire Area:	F4160		Description:	Room 4160 - LG B Ele	ctrical Equipment Room - UPS	Const. Type: II 000	
		Building:	Control Build	ling			Gross Area (m2	: 41.1	
		e e			Applicable codes:	CSA N293, NBCC, NFC	C, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U73-	-FG2301		, , , ,	Building Code Occupancy Classification	: Group F, Division 3	
		Drawings or				Electrical C	lassification: Safety-related divisional equipment or cables	N/A	
		Figures:					Nonsafety - related redundant trains, equipment or cables	Group B	
					Surrounded	l by fire barriers rated at:	3 hours		
						Except			
nsis	ting of t	he following Roon	15:		Fire Alarm I	nput Devices	Fire Suppression	-	
EL	Rm#         Potential Combustibles           4160         Battery Chargers, UPS				Primary	Backup	Primary	Backup	
)	4160	Battery Chargers	, UPS		Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams	
)	4160	Transformer				Box		Fire Extinguishers	
)	4160	Cable			Sprinkler Waterflow	-			
					_				
				>140	0 Antioinstad combustibl	a load MI/m2			
			-	/140	O Unsprinklared combustion	ible load limit MI/m?	Assuming automatic & manual FP equipment does not function, impact of design bas		
			L	140	Onsprinkiered combust	ibie ioau minit, MJ/m2	fire on safe shutdown:		
	Assu	iming operation of	installed fire ex	tinguisning equipment, im	pact of fire upon:		Fire starts in electrical equipment and spreads to adjacent	equipment and cables. Al	
		Plant operation	: None - Redur	ndant Train			to 3-hour rated fire barriers. Fire affects one of two group	s. Fire does not affect saf	
	Ra	idiological release	: None, no radi	iological materials present		]	Shutuown.		
	М	lanual firefighting	: Access via ex	terior doors and corridor					
		Property loss	: Moderate						
	Hazardous Substances: None								
						J			

Roo	om 1	Data She	et							
		Fire Area:	F4161	Description:	Room 4161 - MCC B		Const. Type: II 000			
		Building:	Control Building			Gross Area (m2):	50.8			
			_	Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U73-FG2301			Building Code Occupancy Classification:	Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Group B			
				Surrounded	d by fire barriers rated at:	3 hours				
					Except:	Exterior wall not rated				
Consis	ting of t	he following Room	15:	Fire Alarm	Input Devices	Fire Suppression				
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup			
0.0	4161	Switchgear		Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams			
0.0	4161 Cables			Box		Fire Extinguishers				
0.0	4161 Transformer		Sprinkler Waterflow							
			>140	0 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis			
			140	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:				
	Assu	aming operation of	installed fire extinguishing equipment, imp	pact of fire upon:		Fire starts in switchgear and spreads to adjacent equipment	and cables. All			
			N. B. L. L. (B. )		1	combustibles in the room burn until consumed. Fire does	not spread beyond room due			
		Plant operation	: None - Redundant Train			to 3-hour rated fire barriers. Fire affects one of two groups	5. Fire does not affect safe			
	Ra	adiological release	None, no radiological materials present		]	Shudown.				
		(	A							
	N	Property loss	Moderate		1					
	Here	r toperty toss	None							
	Hazardous Substances: None									
					•					

Roo	m	Data She	et							
		Fire Area:	F4162		Description:	Room 4162 - Battery R	oom Group B	Const. Type: II 000		
		Building:	Control Buil	ding	1		Gross Area (m2)	: 91.3		
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U73	3-FG2301	1		Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:					Nonsafety - related redundant trains, equipment or cables	Group B		
					Surrounded	Surrounded by fire barriers rated at: 3 hours				
						Except:	Exterior wall not rated			
Consist	ing of t	he following Roon	15:		Fire Alarm I	Input Devices	Fire Suppression			
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup		
0.0	4162	Batteries - lithiu	n-ion			Manual Fire Alarm	Preaction Sprinklers	Hose Streams		
0.0	4162 Cable		Smoke Detectors &	Box		Fire Extinguishers				
			Hydrogen Detectors							
					Sprinkler Waterflow					
				>1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	nction, impact of design basis		
				1400	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:			
	Ass	uming operation of	installed fire e	xtinguishing equipment, impa	act of fire upon:		Fire starts in batteries and spreads to adjacent batteries and	d cables. All combustibles in		
					<u>^</u>	•	the room burn until consumed. Fire does not spread beyo	nd room due to 3-hour rated		
		Plant operation	: None				fire barriers. Fire affects one of two groups. Fire does no	t affect safe shutdown.		
	R	adiological release	: None, no rac	diological materials present						
	Ν	Ianual firefighting	: Access via e	xterior doors and corridor		4				
		Property loss	: Moderate			-				
	Hazardous Substances: Batteries - lithium-ion									
						J				
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Ro	om 1	Data She	et							
		Fire Area:	F4163		Description:	Room 4163 C20 DL 2 -	- Room B - DCS Equipment Room	Const. Type: II 000		
		Building:	Control Bui	ding			Gross Area (m2):	67.7		
		-		-	Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U7	3-FG2301	1 1		Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A		
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Group B		
					Surrounded	Surrounded by fire barriers rated at: 3 hours				
						Except:	Exterior wall not rated			
Consis	ing of t	he following Room	15:		Fire Alarm I	Input Devices	Fire Suppression			
EL	Rm#		Potential Cor	mbustibles	Primary	Backup	Primary	Backup		
0.0	4163	DCS Equipment			Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams		
0.0	4163 Cables				Box		Fire Extinguishers			
			Sprinkler Waterflow							
						]				
				>1400	Anticipated combustible	nticipated combustible load, MJ/m2 Assuming automatic & manual FP equipment does not func				
				1400	Unsprinklered combusti	ible load limit, MJ/m2	· 1 · 0			
	Assu	uming operation of	installed fire e	extinguishing equipment, impa	act of fire upon:		Fire starts in an equipment rack and spreads to cables and	other equipment racks. All		
					-	•	combustibles in the room burn until consumed. Fire does	not spread beyond room due		
		Plant operation	: Power Redu	ction			to 3-hour rated fire barriers. Fire affects one of two groups	s. Fire does not affect safe		
	в	مراما مرامعا مرامع	None no re-	dialogical materials present		-	shutdown.			
	K	autological release	, Ivone, no rav	nological materials present		-				
		formal finaficiations	A agaza via a	starior doors and corridor		-				
	IV	Property loss	Moderate	sterior doors and corridor						
	Har	andous Substances	None							
	Hazardous Substances: None									
					J					
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Roo	m	Data Shee	et							
		Fire Area:	F4170	Description:	Room 4170 - Main Con	ntrol Room	Const. Type: II 000			
		Building:	Control Building			Gross Area (m2):	99.7			
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U73-FG2301		Building Code Occupancy Classification: Group F, Division 3					
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	Div 1, 2 & 3			
		Figures:			Nonsafety - related redundant trains, equipment or cables: Trains A & B					
				Surrounded	d by fire barriers rated at: 2 hours					
					Except:	South wall (shared with other Conrol Room Complex areas)				
				1						
Consist	ing of t	he following Room	8:	Fire Alarm I	Input Devices	Fire Suppression				
EL	Rm#	mi et im to	Potential Combustibles	Primary	Backup	Primary	Backup			
0.0	4170 Electrical Equipment			Smoke Detectors	Manual Fire Alarm	Hose Streams	Fire Extinguishers			
0.0	4170 Cable			Above & Below	Box	Other Fire Protection				
0.0	41/0	Fan Coil Units		Ceiling	-	Other File Protection				
				-		Control Room Complex Pressurization - Activated by any	smoke detector in the			
						Control Building, outside the Control Room Complex				
			>700	Antioingtod combustible	a load MI/m2					
			2700	Unaminkland combustion	ible lead limit MI/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis			
			///	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:				
	Assu	uming operation of	installed fire extinguishing equipment, imp	act of fire upon:		Fire starts in transient combustibles and consumes transien	its and cables above and			
		Plant operation:	None		1	below ceiling. Fire spread is limited by 2-hour rated barri	ers to adjacent fire areas.			
						has redundent isolated circuitry. Safe shutdown can be as	hieved and maintained from			
	R	adiological release:	None, no radiological materials present		1	the alternate control room	meyeu anu maintaineu nom			
	10	aarorogrear rerease.			1	the anemate control room.				
	N	Annual firefighting	Class III hose stations for manual attack							
	1.	Property loss:	Moderate		1					
	Haz	ardous Substances	None		1					
	Hazardous Substances: None									
					,					
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Roo	m	Data She	et						
		Fire Area:	F4170	Description:	Room 4171 - Technical	Assistant Desk, 4172 - Shift Supv, 4173 - Toilet	Const. Type: II 000		
		Building:	Control Building			Gross Area (m2):	47.6		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U73-FG2301			Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or		Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A		
				Surroundee	Surrounded by fire barriers rated at: 2 hours (part of Control Room Complex)				
					Except:	North wall (shared with Room 4170 - Main Control Room)			
Consist	ing of t	the following Room	is:	Fire Alarm I	Input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
0.0	4173	Typical Restroon	1 - Negligible combustibles	Smoke Detectors	Manual Fire Alarm	Preaction Sprinkler above and below ceiling if cable tray	Hose Streams		
				Above & Below	Box	above Other Fire Partection	Fire Extinguishers		
				Ceiling	4	Other Fire Protection			
				Sprinkler Waterflow         Control Room Complex Pressurization - Activated by any s		smoke detector in the			
			<700	O Anticipated combustible O Unsprinklered combust	e load, MJ/m2 ible load limit, MJ/m2	Assuming automatic & manual FP equipment does not fun fire on safe shutdown:	ction, impact of design basis		
	Assu	uming operation of	installed fire extinguishing equipment, imp	act of fire upon:	_	Fire starts in transient combustibles and consumes combus spread is limited by 2-hour rated barriers to adjacent fire at	tibles in the room. Fire		
		Plant operation	None			control room. Operators will perform incipient attack or n	nove to secondary control		
	Ra	adiological release	None, no radiological materials present			safe shutdown.	orroom. The does not uncer		
	N	fanual firefighting	Class III hose stations for manual attack						
	1.	Property loss	Moderate		1				
	Haz	ardous Substances	None		1				
	Hazardous Substances: None			J					
						L			

Roo	om I	Data She	et				
		Fire Area:	F4100	Description:	Room 4174 - DCIS Ma	intenance & Cyber Security Room	Const. Type: II 000
		Building:	Control Building			Gross Area (m2):	81
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U73-FG2301			Building Code Occupancy Classification:	Group F, Division 3
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A
				Surroundee	d by fire barriers rated at:		
					Except:	:	
Consist	ing of th	e following Roor	35'	Fire Alarm	Input Devices	Fire Suppression	
EL	Rm#	ie foliowing recoil	Potential Combustibles	Primary	Backup	Primary	Backup
0.0	4174	Electrical Equip	nent	Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers above and below ceilings if cable	Hose Streams
				Above & Below	Box	tray present	Fire Extinguishers
				Ceiling			
				0	1		
				Sprinkler Waterflow			
			<70	0 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis
			70	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	anon, input of utoign outor
	Assu	ming operation of	installed fire extinguishing equipment, im	pact of fire upon:		Fire starts at electrical equipment and consumes combustil	ples in the room. Fire spread
					•	is limited by 2-hour rated barriers to control room complex	<ol> <li>Minor fire and smoke</li> </ol>
		Plant operatior	1: None			spread to adjacent corridors. Fire does not affect safe shut	down.
					1		
	Ra	diological release	: None, no radiological materials present				
					]		
	M	anual firefighting	: Class I hose stations for manual attack				
		Property loss	: Moderate		1		
	Hazardous Substances: None						
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Roo	Room Data Sheet							
	Fire Area: F4175		Description:	on: Room 4175 - C30 Room		Const. Type: II 000		
	Building: Control Building				Gross Area (m2):	95.7		
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U73	3-FG2301	]		Building Code Occupancy Classification:	Group F, Division 3
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group A & B
					Surrounded	by fire barriers rated at:	3 hours	
						Except:	Exterior wall not rated	
						·		
Consist	ing of t	he following Room	15:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Cor	nbustibles	Primary	Backup	Primary	Backup
0.0	4175	Electrical Equipr	Electrical Equipment		Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams
0.0	4175	Cables			Box		Fire Extinguishers	
					Sprinkler Waterflow			
				>1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis
				1400	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	
	Ass	aming operation of	installed fire e	xtinguishing equipment, impa	act of fire upon:		Fire starts at electrical equipment and consumes combustil	bles in the room. Fire spread
						n	is limited by 3-hour rated barriers to adjacent fire areas. F	ire does not affect safe
		Plant operation	Power Redu	ction			shutdown.	
	R	adiological release	: None, no rad	liological materials present				
	Ν	Ianual firefighting	Class III hos	e stations for manual attack		4		
		Property loss	Moderate					
	Hazardous Substances: None							
						J		
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ROC	. 111			Durit	D 4176 DI 41 D		C . T H 000	
	Fire Area: F4176		F4176	Description:	Room 4176 - DL 4A Room - Combined DCS Equipment		Const. Type: II 000	
	Building: Control Building		A	COLVING NECC NE	Gross Area (m2	): 52		
		A	405001 US2 EC2201	Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	Course E. Division 2	
		Associated	40/081-0/3-FG2301		Electrical (	Classification: Sofety related divisional equipment or apple	Group F, Division 3	
		Figures:			Eleculcal	Nonsefaty related redundant trains, equipment or cable	N/A	
		Figures.				Nonsarety - related redundant trains, equipment of cable	s. Load Group A and B	
				Surrounder	I by fire barriers rated at	3 hours		
				Surfounded	Fxcent			
					Except			
a		1 CH : D		T: 41 - 1		<b>D</b> ' 0		
Consist	ng of t	he following Koo	ms: Petertial Combratibles	Fire Alarm I	nput Devices	Fire Suppression	Dealaura	
0.0	4176	Electrical Equir	ment	Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers	Hose Streams	
0.0	4176	Cables	ment	Shioke Detectors	Box	Treation Spinikleis	Fire Extinguishers	
0.0	1170	Cubics	· · · ·	Sprinkler Waterflow	DUA	-	The Excligationers	
				opinikier waternow	-			
				-				
			>140	00 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fi	nction impact of design basis	
			140	00 Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:		
	Assu	uming operation o	of installed fire extinguishing equipment, im	pact of fire upon:		Fire starts in an equipment rack and spreads to cables and	other equipment racks. All	
		0 1		1	•	combustibles in the room burn until consumed. Fire does not spread beyond room due		
		Plant operatio	on: Reactor Scram			to 3-hour rated fire barriers. Fire affects two groups. Fir	e does not affect safe	
						shutdown.		
	Ra	adiological releas	se: None, no radiological materials present					
	Ν	Ianual firefightin	g: Access via exterior doors and corridor		4			
		Property los	ss: Moderate					
	Hazardous Substances: None							
					J			

Roo	m	Data She	et					
	Fire Area: F4177		Description:	Room 4177 - Communi	ications Room	Const. Type: II 000		
	Building: Control Building		1		Gross Area (m2)	45.5		
			Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U73-FG2301			Building Code Occupancy Classification	Group F, Division 3	
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables	N/A	
		Figures:				Nonsafety - related redundant trains, equipment or cables	N/A	
				Surroundee	d by fire barriers rated at:	3 hours		
					Except:	Exterior wall not rated		
Consist	ing of t	he following Room	15:	Fire Alarm I	Input Devices	Fire Suppression		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup	
0.0	4177	Electrical Equipr	Electrical Equipment		Manual Fire Alarm	Preaction Sprinklers	Hose Streams	
0.0	4177	Cables			Box		Fire Extinguishers	
				Sprinkler Waterflow				
			<1400	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis		
			1400	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:		
	Ass	uming operation of	installed fire extinguishing equipment, imp	act of fire upon:		Fire starts at electrical equipment and consumes combusti	bles in the room. Fire spread	
					1 I	is limited by 3-hour rated barriers to adjacent fire areas. F	ire does not affect safe	
		Plant operation	None			shutdown.		
					-			
	R	adiological release	: None, no radiological materials present					
	Ν	Ianual firefighting	: Access via exterior doors		{			
		Property loss	: Moderate		4			
	Hazardous Substances: None							
					J			
1								

Ro	Room Data Sheet							
	Fire Area: F4170		Description:	Room 4178 - Panel Roo	om	Const. Type: II 000		
	Building: Control Building		]		Gross Area (m2):	19.6		
			Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U73-FG23	301	1		Building Code Occupancy Classification:	Group F, Division 3
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	Div 1, 2 & 3
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Trains A & B
					Surrounded	d by fire barriers rated at:	2-hours	
						Except	3-hour to Reactor Building	
Consis	ting of t	the following Roon	IS:		Fire Alarm I	nput Devices	Fire Suppression	
EL	Rm#		Potential Combustib	oles	Primary	Backup	Primary	Backup
0.0	4178	Cable			Very Early warning	Manual Fire Alarm	Preaction Sprinklers	Fire Extinguishers
					Smoke Detectors	Box	Hose Streams	
							Other Fire Protection	
					Sprinkler Waterflow	_	Control Room Complex Pressurization - Activated by any	smoke detector in the
							Control Building, outside the Control Room Complex	1
				. 500		1 1 1 1 1 1 1		
				>/00	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis
				700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:	
	Ass	uming operation of	installed fire extingui	shing equipment, impa	act of fire upon:		Fire starts in cables, which are consumed. Fire spread is l	imited by 2 and 3-hour rated
		Plant operation	None			1	barriers to adjacent fire areas. Three safety shut down cab	le trains anticipated in this
		Fiant operation	ivone				room. Alternate control room has redundant, isolated circu	uitry. Safe shutdown can be
	р	a diala ainal malanga	Nono no radialagio	al motorials prosent		1	achieved and maintained from the alternate control room.	
	K	autological release	, Ivone, no radiologic	ai materiais present		4		
	,	famoul finafiabilita	Class Lhose station	a for manual attack				
	Manual firefighting: Class I hose stations for manual attack				1			
	Froperty loss: Moderate				1			
	Hazardous Substances: None							
			L			1		
1								

Roc	om .	Data She	et							
	Fire Area: F4100			Description:	Room 4180 Technical Support Center - Offices		Const. Type: II 000			
	Building: Control Building				Gross Area (m2):					
			Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-8524					
		Associated	407081-U73	3-FG2301			Building Code Occupancy Classification	Group F, Division 3		
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:					Nonsafety - related redundant trains, equipment or cables	N/A		
					]					
					Surrounded	l by fire barriers rated at:				
						Except:				
Consist	ting of t	he following Roon	15:		Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Cor	nbustibles	Primary	Backup	Primary	Backup		
0.0	4180	Office Loading	ffice Loading		Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers above and below ceiling	Hose Streams		
0.0	4180	Cable			Above & Below	Box		Fire Extinguishers		
					Ceiling					
					Sprinkler Waterflow					
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	action, impact of design basis		
				700	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:			
	Assuming operation of installed fire extinguishing equipment, impact of fire upon:						Fire starts at power panels and consumes combustibles in the room. Fire spread is			
						n	limited by 3-hour rated barriers to adjacent buildings on tw	vo sides. Other two sides		
		Plant operation	: None				have non rated walls to corridor and Break Room, however	r fire spread is limited due to		
							limited combustibles. Fire does not affect safe shutdown.			
	R	adiological release	: None, no rac	liological materials present						
	Ν	Ianual firefighting	: Class I hose	stations for manual attack						
		Property loss	: Minor							
	Hazardous Substances: None									
						J				
1										

Roo	Room Data Sheet								
	Fire Area: F4100		Description	Room 4181 - Hallway	and 4104 Vestibule	Const. Type: II 000			
		Building:	Control Building			Gross Area (m2)	: 373.8		
				Applicable codes	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-8524			
		Associated	407081-U73-FG2301			Building Code Occupancy Classification	Group F, Division 3		
		Drawings or			Electrical (	Classification: Safety-related divisional equipment or cables	: N/A		
		Figures:				Nonsafety - related redundant trains, equipment or cables	: N/A		
				Surrounde	d by fire barriers rated at	N/A - Not required for hallway/vestibule			
					Except	2-hr barrier for hallway directly west of control room (pathw	vay to secondary control room)		
						1			
Consis	ting of t	he following Room	s:	Fire Alarm	Input Devices	Fire Suppression	1		
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
0.0	4181	Transients		Smoke Detectors	Manual Fire Alarm	Preaction Sprinklers above and below ceilings	Hose Streams		
	_			Above & Below	Box	-	Fire Extinguishers		
	_			Ceiling	4				
				Sprinkler Waterflow					
			<	700 Anticipated combustibl	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	nction, impact of design basis		
				700 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:			
	Assuming operation of installed fire extinguishing equipment, impact of fire upon:					Fire starts in transient combustibles Fire spread is not exp	ected due to low combustible		
		Plant operation	: None		]	loading. Fire does not affect safe shutdown.			
	Radiological release: None, no radiological materials present			t	1				
	N	Ianual firefighting	Class I hose stations for manual attack						
	Property loss: Minor								
	Hazardous Substances: None								
					J				
1									

#### 4.5.3.6 Rad Waste Building

The fire protection requirements for the Rad Waste Building will be based on CSA N293 prescriptive requirements, and evaluation of the combustible loading of each room and its associated fire barriers to determine the need for sprinklers and detection.

The majority of the building is considered one fire area due to the tank rooms that span several floor levels and other ventilation needs. The majority of the building, outside the individual tank rooms is sprinklered to mitigate potential fire spread from floor to floor and in anticipation of the high level of transients during maintenance activities.

Standpipes (Class I) are required in the exit enclosure and the adjacent Turbine Building stair enclosure to meet spacing requirements. These are illustrated on the Fire Area Drawings. The Rad Waste Building standpipe and sprinkler riser is supplied with fire protection water from two directions, one through the Reactor Building and one through the Control Building. See the Fire Area drawing ([[ ]]) for the general routing, and the P&ID for the schematic layout.

The major internal and external fire hazards associated with the Rad Waste Building are summarized as follows:

 <u>Charcoal Absorber Vessels</u> – The charcoal absorber vessels for the Turbine Building are located in the Rad Waste Building on an enclosed platform on Level 3M. As the charcoal is subject to fire, the room is enclosed by 3-hour rated construction. Heat detectors are located in each vessel to alert personnel of a fire condition. The fire is most commonly deep seated and thus provided with a deluge suppression system (manually actuated). A drainage system is required to avoid vessel collapse.

Recommended fire suppression systems are identified on the room data sheets and illustrated on the Fire Area Drawings, however, are summarized as follows:

- Level 0 Dress Out Room 3100– Wet Pipe Sprinkler
- Level 0 Filtering Skid Area 3173 Wet Pipe Sprinkler
- Charcoal Absorber Vessels Manual Deluge System
- Level 6.1 Second Floor Area 3280 Wet Pipe Sprinkler
- Level 6.1 Laboratory Room 3200– Wet Pipe Sprinkler
- Level 13.0 Chiller Equipment / Piping Area– Wet Pipe Sprinkler
- Level 13.0 Elevator Machine Room & Hoistway Wet Pipe Sprinklers

A fire alarm system with automatic voice occupant notification is provided throughout the building. Devices and appliances are provided as follows:

- Manual fire alarm boxes (manual pull stations) are provided at each stair door on each level and at building exits.
- Waterflow alarms and supervision is provided on automatic suppression systems.
- Smoke detection is provided in areas as noted on the room data sheets.
- Smoke and heat detectors are provided for the service elevator.

• Occupant notification is provided throughout the building.

Sprinklers are needed for the Dress Out Room due to combustible loading, potentially hazardous materials (above the Maximum Exempt Amount) in the filtering skids on Level 0, the Lab on Level 6.1, outage activities and combustible loading of the cable trays and electrical equipment on Level, 13.0, and separation of the redundant electrical trains on Level 0 and 13. Wet pipe automatic sprinklers are being provided in most Rad Waste areas except the wet vessel rooms as illustrated on the fire area drawings.

Sprinklers and spatial separation are considered acceptable protection for the redundant cable trays in room 3370 on Level 13. Heavy combustible loading is not anticipated in this room except during maintenance outages, when the unit is down. Vertical routing of the trays between Level 13 and 0, along the south wall is through Room 3280 which has a relatively low combustible loading and is sprinklered. Additionally, the tray is sprinklered per NFPA 804 requirements for vertical tray. Sprinkler protection and a 3-hour rated fire barrier is provided on Level 0 where the trains turn horizontal and extend into the Control Building.

Preliminary cable tray layout drawings have been developed for the Rad Waste Building. In this preliminary stage, the routing of the individual trains within the trays has not been developed. Further evaluation of separation in the chases and across Level 13M will be needed as the design proceeds.

See Rad Waste Building Fire Area Drawings:

[[	]] Level 0.0
[[	]] Level 6.1
[[	]] Level 13.0
[[	]] Level 24.38 (Roof)

The Room Data Sheets for the Rad Waste Building, detailing the combustibles, room features and level of protection for each room is in Table 4.5.3.6 below. Additional information and analysis is as follows:

 Level 0M – Dress Out Room 3100 – The room has a supply of EME and Personal Protective Equipment (PPE) for workers. Additionally, one load group of tray comes into this room from Level 13 along the south wall, and turns into the Control Building. - The EME/PPE and personnel functions present a fire exposure to the cable tray and the filtering Skid Area. Wet Pipe Sprinklers are warranted in this space. The Occupancy Classification is considered Ordinary Hazard, Group 1 (6.1mm/min (0.15gpm/ft²) over the room area). The sprinklers in conjunction with the non-rated wall to the filtering Skid Area mitigates damage to process equipment.

With sprinkler protection in this area, there is no compelling need for smoke detection.

2. <u>Level 0M – Tanks and Pumps (Rooms 3171, 3172 & 3174 -79)</u> – This area has numerous metallic tanks and pumps for mostly wet processes. As the area has little to no combustible loading in relatively small spaces, there is no need for sprinklers.

As combustible loading is very low, there is no need for detection.

3. <u>Level 0M – Filtering Skid Area 3173</u> – This area has a moderate combustible loading of equipment, skids and transients. Sprinklers in the area will control any anticipated fire that could occur as well as provide flexibility with the open space during outages. A wet pipe
sprinkler system is recommended. The Occupancy Classification is considered Ordinary Hazard, Group 1 (6.1mm/min (0.15gpm/ft²) over the most remote 140m² (1500ft²) area).

With sprinkler protection in this area, there is no compelling need for smoke detection.

4. <u>Level 0M – Sample Collection Tanks (Rooms 3181 -3189)</u> – This area has numerous metallic tanks and pumps for mostly wet processes. As the area has little to no combustible loading in relatively small spaces, there is no need for sprinklers.

As combustible loading is very low, there is no need for detection.

 Level 3M – Charcoal Absorber Vessels – Room 3102 – This room has four vessels with charcoal filters (>100 lbs each). A manual wet spray system is recommended for the vessels. A manual valve is located on Level 0 in the adjacent Room 3101.

Heat detectors are located in the top of the vessels to alert personnel of a fire condition.

 Level 6.1M – Rad Waste Building 2nd Floor Area 3280 and Laboratory 3200 – This area has a moderate combustible loading of equipment, lab furnishings and transients. Sprinklers in the area will control any anticipated fire that could occur as well as provide flexibility with the open space during outages. A wet pipe sprinkler system is recommended. The Occupancy Classification is considered Ordinary Hazard, Group 1 (6.1mm/min (0.15gpm/ft²) over the most remote 140m² (1500ft²) area).

With sprinkler protection in this area, there is no compelling need for smoke detection.

 Level 13M – Chiller Equipment / Piping Area 3173 – This area has a moderate combustible loading of equipment, switchgear, cable tray (Load Group A & B) and transients. Sprinklers in the area will control any anticipated fire that could occur as well as provide flexibility with the open space during outages. A wet pipe sprinkler system is recommended. The Occupancy Classification is considered Ordinary Hazard, Group 1 (6.1mm/min (0.15gpm/ft²) over the most remote 140m² (1500ft²) area).

With sprinkler protection in this area, there is no compelling need for smoke detection.

## Table 4.5.3.6 – Rad Waste Building Room Data Sheets

Ro	om l	Data Shee	et							
		Fire Area:	F3100		Description:	Room 3100 Dress Out		Const. Type: II 000		
		Building:	Rad Waste B	Building	]		Gross Area (m2):	93.6		
1					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
1		Associated	407081-U74	4-FG2201A	Building Code Occupancy Classification: Group F, Division 3					
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
1		Figures:			Nonsafety - related redundant trains, equipment or cables: Load Group A or B					
					Surrounded by fire barriers rated at:					
						Except:	:			
Consis	ting of tl	ne following Rooms			Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm# Potential Combustibles   3100 EME Equipment			mbustibles	Primary	Backup	Primary	Backup		
0.0	3100	EME Equipment				Manual Fire Alarm	Wet pipe sprinklers	Hose Streams		
0.0	3100 Other Clothing & PPE		Sprinkler Waterflow	Box	-	Fire Extinguishers				
0.0	3100	Exposed cables in	tray							
				>700	Antioinstad combustible	a load MI/m2				
				>/00	Anticipated combustible load, MJ/m2 Assuming automatic & manual FP equipment does not fun			ction, impact of design basis		
				/00	Unsprinklered combusti	ible load limit, MJ/m2	tire on sate shutdown:			
	Assu	ming operation of it	nstalled fire e	extinguishing equipment, impa	act of fire upon:		Fire starts in EME equipment and spreads throughout room	n with minor spread to		
		Plant operation:	None			ו	Filtering Skid Area. Significant spread beyond the Dress	Jut Area is not anticipated		
		r faint operation.					due to the wall, although non-rated and lack of combustion	es in the adjacent space. One		
	Ra	diological release:	None draina	age of sprinkler discharge to c	ontainment		affected. The fire does not affect safe shutdown	i this room, so both are not		
	100	anonogrean renease.	r conto, urunn	Be of oprimiter allocatinge to e	cintaininent.		anected. The fire does not anect sale shuddown.			
	м	anual firefighting:	Access via s	tairwell and interior doors						
		Property loss:	Minor	un wen und interior doors		1				
	Hazardous Substances: None			1						
	nazardous Substances: None									
					•					
							L			

Roo	om D	Data Sheet	ţ						
		Fire Area:	F3100		Description:	Rooms 3171, 3172 & 3	174 -79 Tanks & Pumps	Const. Type: II 000	
		Building:	Rad Waste H	Building	]		Gross Area Each (m2):	Varies	
					Applicable codes:	CSA N293, NBCC, NFC	C, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U7	4-FG2201A	1		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A				
		Figures:					Nonsafety - related redundant trains, equipment or cables:	N/A	
					Surrounded	by fire barriers rated at:			
						Except:			
Consist	ting of the	following Rooms:			Fire Alarm I	nput Devices	Fire Suppression	-	
EL	L Rm# Potential Combustibles			mbustibles	Primary	Backup	Primary	Backup	
0.0	3171/2	Sludge Tanks & F	Pumps - Wet	Process	Manual Fire Alarm		Hose Streams	Fire Extinguishers	
0.0	3174/6 Rad Waste Dewatering - Wet Process		Box						
0.0	3177	Sump & Pump - 7	ransients						
0.0	3178	Drum Evaporator	- Wet Proce	\$\$					
0.0	3179	Spent Resin Tank	& Pump - V	Vet Process					
				<700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis		
				700	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:		
	Assu	ming operation of ir	stalled fire ex	xtinguishing equipment, impa	ct of fire upon:		Wet processes in tanks. Combustibles are limited to pump	os and transients. Spent resin	
		DI	N			1	is considered combustible when dry although in a tank. F	ire starts in transients in	
		Plant operation:	None				dewatering pump room. Fire is limited to room due to la	ck of combustibles. Minor	
	-					4	smoke damage to remaining rooms. No redundant trains	in the area. The fire does	
	Ra	diological release:	None, draina	age of hose stream discharge t	to containment		not affect safe shutdown.		
	М	anual firefighting:	Access via c	other buildings and exterior do	oors				
		Property loss:	Minor						
	Hazardous Substances: None								
					J				
1									

Roo	m	Data She	et							
		Fire Area:	F3100		Description:	Room 3173 Filtering S	škid Area	Const. Type: II 000		
		Building:	Rad Waste Building		]		Gross Area Each (m2)	: 329.4		
					Applicable codes:	CSA N293, NBCC, NF	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U74-FG22	01A	]		Building Code Occupancy Classification	: Group F, Division 3		
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:					Nonsafety - related redundant trains, equipment or cables	: N/A		
					Surrounded by fire barriers rated at:					
						Except	t:			
Consist	ing of t	he following Roor	18:		Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Combustib	les	Primary	Backup	Primary	Backup		
0.0	3173	General & Trans	ient combustibles		, , , , , , , , , , , , , , , , , , ,	Manual Fire Alarm	Wet pipe sprinklers	Hose Streams		
0.0	3173	Filtering skids			Sprinkler Waterflow	Box		Fire Extinguishers		
					1					
				>700	Anticipated combustible load, MJ/m2 Assuming automatic & manual FP equipment do			not function, impact of design basis		
				700	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:			
	Assu	uning operation of	installed fire extinguis	shing equipment, impa	act of fire upon:		Fire starts in filtering skids and spreads throughout skids a	and transients. Minor smoke		
			-			1	and fire damage to remaining areas. Fire is stopped from	spreading to other buildings		
		Plant operation	: None				by 3-hour fire barriers. No redundant load group feeders	pass through this room. The		
							fire does not affect safe shutdown.			
	R	adiological release	None, drainage of sp	prinkler discharge to c	ontainment					
						1				
	Ν	fanual firefighting	: Access via other bui	ldings and exterior do	oors	{				
	Property loss: Moderate		-							
	Haz	ardous Substance:	Water Treatment C	hemicals - drain to c	ontainment					
			L			J				
1										

Roo	om l	Data Shee	et							
		Fire Area:	F3100	Description:	Rooms 3180 & 3192 Ei	ntry Rooms to Off Gas Charcoal Absorber Vessels	Const. Type: II 000			
		Building:	Rad Waste Building	]		Gross Area (m2):	63			
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524				
		Associated	407081-U74-FG2201A	]		Building Code Occupancy Classification:	Group F, Division 3			
		Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A			
				Surrounded	by fire barriers rated at:	3 hours	•			
					Except:	-				
Consist	ting of t	he following Rooms	8:	Fire Alarm I	nput Devices	Fire Suppression				
EL	Rm#	m 1 .	Potential Combustibles	Primary	Backup	Primary	Backup			
0.0	3180	Transients		Manual Fire Alarm		Hose Streams	Fire Extimguishers			
0.0	3192	Transients		Box						
				-						
			-700	A - 1 - 1 - 1 1 1	lest Miler2					
			00</td <td>Anticipated combustible</td> <td>e load, MJ/m2</td> <td>Assuming automatic &amp; manual FP equipment does not fun</td> <td>ction, impact of design basis</td>	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis			
			700	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:				
	Assu	uning operation of i	installed fire extinguishing equipment, impa	ect of fire upon:		Fire starts in transients in either room. Minor smoke and f	ire damage to adjacent			
		Plant operation:	None		1	rooms. Fire is stopped from spreading to other buildings b	y 3-hour fire barriers. No			
		r fant operation.	Ivone			redundant load group feeder trays pass through this area.	The fire does not affect safe			
	D	dialogical valassas	Nana			shutdown.				
	K	autological release:	None							
		(	A at interval and interview down							
	IV	Broworty logg	Access via stairweit and interior doors							
	Property loss: Moderate									
	Hazardous Substances: None									
					l i					
1										

Roo	om D	ata Sheet	t					
		Fire Area:	F3100	Description:	Rooms 3181, 3182 & 3	183, Sample Tanks 3181 - 3189	Const. Type: II 000	
		Building:	Rad Waste Building			Gross Area (m2):	97.5	
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U74-FG2201A	1		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or			Electrical C	lassification: Safety-related divisional equipment or cables:	N/A	
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A	
				Surrounded	by fire barriers rated at:			
					Except:			
Consist	ting of the	following Rooms:		Fire Alarm I	nput Devices	Fire Suppression		
EL	Rm#	-	Potential Combustibles	Primary	Backup	Primary	Backup	
0.0	3181	Entry - Transients	\$ 	Manual Fire Alarm		Hose Streams	Fire Extinguishers	
0.0	3182/3	Sample Tanks - M	fetalic Tank & Pump	Box				
0.0	3184/5	Collection Tanks	- Metalic Tank & Pump					
0.0	3186/9	Refueling Water 1	Fanks - Metalic Tank & Pump					
			<700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	nction, impact of design basis	
			700	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:		
	Assur	ning operation of in	stalled fire extinguishing equipment, impa	ct of fire upon:		Fire starts in transients in entry room 3181. Minor smoke	and fire damage to	
			<b>N</b> 1		1	remaining rooms. Fire is stopped from spreading to other	buildings by 3-hour fire	
		Plant operation:	None			barriers. No redundant load group feeder trays pass throug	gh this area. The fire does	
	-					not affect safe shutdown.		
	Ra	diological release:	None, drainage of hose stream discharge	to containment				
	М	anual firefighting:	Access via other buildings and exterior de	DOLE				
	Property loss: Moderate							
	Haza	rdous Substances:	None					
		I			ļ			
1								

Roc	om l	Data Shee	et						
		Fire Area:	F3193	Description:	Room 3193 Off Gas C	harcoal Absorber Vessels	Const. Type: II 000		
		Building:	Rad Waste Building	1		Gross Area (m2):	48.3		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	•		
		Associated	407081-U74-FG2201B	1		Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A		
		Figures:		Nonsafety - related redundant trains, equipment or cables: N/A					
				Surrounded	I by fire barriers rated at:	3 hours	•		
					Except	:			
Consist	ing of t	he following Room	8:	Fire Alarm I	input Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
3.0	3102	4 Charcoal Absor	rber vessels (>100 lbs)	Heat Detectors in	Manual Fire Alarm	Manual Water Spray (in Vessels)	Hose Streams		
				Charcoal Vessels	Box		Fire Extinguishers		
			>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis		
			700	Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:			
	Assu	iming operation of	installed fire extinguishing equipment, impa	ect of fire upon:		Fire in a vessel is anticipated to destroy the vessel and pote	entially cause damage to the		
					1	supports and walls of the other vessels. Fire will not sprea	d beyond the rated walls of		
		Plant operation	: None - Damage limited to one vessel			the room. Plant shutdown may be required. No other utili	ties passing through room.		
	D	مريحا معامير مراجع	Nona drainage of vessels to containment		1	Fire does not affect safe shutdown.			
	K	autological release	None, dramage of vessels to containment		{				
	N	fanual firafichting	Access via stairwall and interior doors						
	14	Property loss	Moderate		1				
	Haz	ardous Substances	None		1				
	TTaz	aruous buostanees	. I tone						
			•						
						L			

Roo	om I	Data Shee	et						
		Fire Area:	F3195		Description:	Room 3195 Reactor Bu	ilding Egress Pathway	Const. Type: II 000	
		Building:	Rad Waste B	Building	1		Gross Area (m2):	35	
		-			Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U74	4-FG2201A	1		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A	
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group A or B	
					Surrounded by fire barriers rated at: 3 hours - Separation from other buildings & redundant train to west				
						Except	2- hour shaft/hoistway barriers		
Coneie	ing of th	e following Poom	2 -		Eire Alarm I	Innut Devices	Fire Summersion		
FI	Rm# Potential Combustibles			mbustibles	Primary	Backun	Primary	Backup	
0.0	3195	Circulation space	- Transients	libustiones	Timary	Manual Fire Alarm	Wet pipe sprinklers	Hose Streams	
					Sprinkler Waterflow	Box		Fire Extinguishers	
					oprimiter traternow	Don	-	The Extinguishers	
					1				
					1				
				<700	Anticipated combustible load, MJ/m2 Assuming aut		Assuming automatic & manual EP equipment does not fur	oction impact of design basis	
				700	Unsprinklered combust	ible load limit. MJ/m2	fire on safe shutdown:	ipment does not function, impact of design basis	
	Acen	ming operation of i	nstalled fire e	vtinguishing equipment impo	oct of fire upon:	,	Combustibles are limited to transients. Fire starts in transi	ente Fire limited to room	
	Assu	ining operation of i		Annguishing equipment, impa	let of the upon.	_	due to lack of combustibles and barriers. Redundant elect	trical tray Load Group (A or	
		Plant operation:	None				B) feeders passes through this area. Fire does not affect sa	ife shutdown	
							b) redets publeb unough unb urea. The does not unteer st	ile bliatao trin	
	Ra	diological release:	None, draina	age of sprinkler discharge to c	ontainment	]			
		-				1			
	М	anual firefighting:	Access via o	other buildings and interior do	ors	1			
		Property loss:	Minor			1			
	Hazardous Substances: None			1					
				-					

Roc	om l	Data Shee	et						
		Fire Area:	F3100	Description:	Rooms 3270, 3271 & 32	272 Condensate Pre-filters	Const. Type: II 000		
		Building:	Rad Waste Building			Gross Area (m2):	99.2		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524	•		
		Associated	407081-U74-FG2201B	1		Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or		Electrical Classification: Safety-related divisional equipment or cables: N/A					
		Figures:				Nonsafety - related redundant trains, equipment or cables:	N/A		
				Surrounded	by fire barriers rated at:				
					Except:				
Consist	ing of t	ne following Rooms	\$1 \$1	Fire Alarm I	nput Devices	Fire Suppression			
EL	EL Rm# Potential Combustibles			Primary	Backup	Primary	Backup		
6.1	3270	Wet process in tar	nks - Transients	Manual Fire Alarm		Hose Streams	Fire Extinguishers		
6.1	3271	Wet process in tar	nks - Transients	Box					
6.1	3272	Wet process in tar	nks - Transients		1				
				1					
				1					
		*	<700	Anticipated combustible	load, MJ/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis		
			700	Unsprinklered combusti	ble load limit, MJ/m2	fire on safe shutdown:			
	Asst	ming operation of i	installed fire extinguishing equipment, imp	act of fire upon:		Fire starts in transients in any of three rooms. Fire burns u	ntil transients consumed. No		
		8 .1				redundant load group feeder travs in area. Fire spread to ad	liacent room unlikely due to		
		Plant operation:	None - Fire spread beyond tank room of	origin unlikely		lack of continuity of combustibles and low loading. Fire d	oes not affect safe shutdown.		
	Ra	diological release:	None, drainage of hose stream discharge	to containment					
	Ν	fanual firefighting:	Access via other buildings and stair enclo	sure					
		Property loss:	Moderate						
	Hazardous Substances: None								
					•				

Roc	om l	Data Shee	et						
		Fire Area:	F3100	Description:	Rooms 3273, 3274 & 32	275 Condensate Polishers	Const. Type: II 000		
		Building:	Rad Waste Building			Gross Area (m2):	145.6		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U74-FG2201B			Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A		
		Figures:		Nonsafety - related redundant trains, equipment or cables: N/A					
				Surrounded	Surrounded by fire barriers rated at:				
					Except:				
Consist	ingofi	a fallowing Poom	a.	Eiro Alarma I	neut Devices	Eire Summassion			
FI	EL Rm# Potential Combustibles F				Backup	Drimany	Backup		
6.1	3273	Wet process in ta	nks - Transients	Manual Fire Alarm	Баскир	Hose Streams	Fire Extinguishers		
6.1	3274	Wet process in ta	nks - Transients	Box		Those orientia	The Exanguishers		
6.1	3275	Wet process in ta	nks - Transients	DOX					
0.1	5215	wet process in ta	ing - Transients	-					
	-			-					
		I	<70	0 Anticipated combustible	load, MJ/m2	A symplex systematic & manual ED againment does not for	ation immed of design basis		
			70	0 Unsprinklered combusti	ble load limit MI/m2	Assuming automatic & manual FP equipment does not fun	ction, impact of design basis		
	A		installed fire antipensishing conjugate inter	o chisprinklered combust	ole load mint, Mishing	Fire starte in terms in the income of these startes in the second			
	Asst	iming operation of	instaned fire extinguishing equipment, imp	bact of fire upon:		Fire starts in transients in any of three rooms. Fire burns u	htil transfents consumed. No		
		Plant operation	None - Fire spread beyond tank room of	origin unlikely		does not affect safe shutdown	ijacent toom unitkely. File		
						does not affect safe shuddown.			
	Ra	ndiological release	None, drainage of hose stream discharge	to containment					
		8							
	Ν	fanual firefighting	Access via other buildings and stair enclo	osure					
		Property loss	Moderate	obur e					
	Hazardous Substances: None								
			•		,				
						L			

Roo	m ]	Data Shee	et						
		Fire Area:	F3100	Description:	Rooms 3280 Rad Waste	e Second Floor Area & 3200 Laboratory	Const. Type: II 000		
1		Building:	Rad Waste Building			Gross Area (m2):	441		
1				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
1		Associated	407081-U74-FG2201B	7		Building Code Occupancy Classification:	Group F, Division 3		
1		Drawings or			Electrical C	lassification: Safety-related divisional equipment or cables:	N/A		
1		Figures:				Nonsafety - related redundant trains, equipment or cables:	Load Group A or B		
1									
1				Surrounded	Surrounded by fire barriers rated at:				
					Except:				
Consist	ing of t	he following Room	s:	Fire Alarm I	nput Devices	Fire Suppression			
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup		
6.1	3280	Recycle Pump Sk	id (2 pumps)	4	Manual Fire Alarm	Wet pipe sprinklers	Hose Streams		
6.1	3200 Misc Laboratory chemicals / fixtures		Sprinkler Waterflow	Box	-	Fire Extinguishers			
6.1	3280 Vertical Cable Tray		4						
				4					
			-70		1				
1			0</td <td>Anticipated combustible</td> <td>e load, MJ/m2</td> <td colspan="3">Assuming automatic &amp; manual FP equipment does not function, impact of design basis</td>	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis			
1			70	Unsprinklered combusti	ible load limit, MJ/m2	fire on safe shutdown:			
1	Assu	uning operation of i	installed fire extinguishing equipment, imp	act of fire upon:		Fire starts in vertical cable tray and spreads to transients.	smoke and minimal fire		
1		Plant anomation	None		1 I	damage to remaining areas of room. Fire is stopped from	spreading to other buildings		
1		riant operation.	reone			by 3-hour fire barriers. One load group feeder tray (A or	<li>B) riser in room. Fire does</li>		
1	D	dialogical estacou	Nana designees of engighter discharge to	containment	1	not affect safe shutdown.			
1	Ri	idioiogicai reiease:	None, drainage of sprinkler discharge to	containment					
1			Assess sis other buildings and interior d						
1	N	Property loss:	Access via other buildings and interior de	2018	1				
1		Froperty loss.	Moderate		1				
1	Hazardous Substances: Laboratory Chemicals - drain to containm		iment						
					1				
1									

Roo	om I	Data Shee	et						
		Fire Area:	F3290		Description:	Room 3290 Egress Patl	hway	Const. Type: II 000	
		Building:	Rad Waste B	Building	1		Gross Area (m2):	27.5	
		-			Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524		
		Associated	407081-U74	4-FG2201B	1		Building Code Occupancy Classification:	Group F, Division 3	
		Drawings or				Electrical C	Classification: Safety-related divisional equipment or cables:	N/A	
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group A or B	
					Surrounded	to west			
					Except: 2- hour shaft/hoistway barriers within the room area				
Coneie	ing of t	e following Poom	2 -		Fire Alarm I	nnut Devices	Fire Suppression	1	
FI	Rm#	ic following Room	Potential Cor	mbustibles	Primary	Backup	Primary	Backup	
6.1	3290	Circulation space	- Transients	libustiones	Timary	Manual Fire Alarm	Wet pipe sprinklers	Hose Streams	
~~~		·			Sprinkler Waterflow	Box		Fire Extinguishers	
							1	The Estinguistiers	
					1				
					1				
				>700	0 Anticipated combustible load, MJ/m2 Assuming automatic & manual FP equipment does r			ection impact of design basis	
				700	Unsprinklered combust	ible load limit, MJ/m2	Assuming automatic & manual FF equipment does not function, impact of design basis fire on safe shutdown:		
	Assu	ming operation of i	nstalled fire e	extinguishing equipment impo	act of fire upon:	,	Combustibles are limited to transients and vertical cable tr	av Fire starts incables and	
	21350	ining operation of i		anng equipment, impo	aet of the upon.		spreads to transients. Fire limited to room due to barriers	One load group feeder tray	
		Plant operation:	None				(A or B) riser in room. Fire does not affect safe shutdown	i interiora group recaer rauj	
	Ra	diological release:	None, draina	age of sprinkler discharge to c	ontainment	1			
		-			-	1			
	Μ	anual firefighting:	Access via o	other buildings and interior do	ors	1			
		Property loss:	Minor			1			
	Hazardous Substances: None			1					
				-					

Roo	om	Data She	et						
		Fire Area:	F3100	Description:	Room 3370 Chiller Equ	uipment & Piping	Const. Type: II 000		
		Building:	Rad Waste Building			Gross Area (m2):	890.4		
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524			
		Associated	407081-U74-FG2201C	7		Building Code Occupancy Classification:	Group F, Division 3		
		Drawings or			Electrical C	Classification: Safety-related divisional equipment or cables:	N/A		
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Load Group A&B		
				Surrounded	d by fire barriers rated at:	:			
					Except:				
						K			
Consist	ing of t	the following Roon	38:	Fire Alarm I	Input Devices	Fire Suppression			
EL	Rm#	1	Potential Combustibles	Primary	Backup	Primary	Backup		
13.0	3370	Sluice Water Pur	mps (2)		Manual Fire Alarm	Wet pipe sprinklers	Hose Streams		
13.0	3370	Blowers (2)		Sprinkler Waterflow	Box		Fire Extinguishers		
13.0	3370 Fresh Resin Tank		1.		1				
				1					
				-					
			>70	0 Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction_impact of design basis		
			70	0 Unsprinklered combust	ible load limit, MJ/m2	fire on safe shutdown:	enon, impact of design basis		
	Ass	uming operation of	installed fire extinguishing equipment, im	pact of fire upon:		During Re-Fuel Outage: Fire starts in refuel laydown area	and spreads to east and west		
					•	cable travs (potentially Load Groups A&B) and switchge	ir. Fire damage to entire		
		Plant operation	: Power Reduction			room. Load Group A & B feeders, if in this room are des	roved. Fire does not affect		
						safe shutdown.			
	R	adiological release	: None, drainage of sprinkler discharge to	containment					
]	During Operation: Fire starts in transients and spreads to	west cable tray (assumed to		
	Ν	anual firefighting	Access via other buildings and interior d	loors		be one Load Group). Smoke damage to electrical switchg	ar and remainder of room.		
		Property loss	Moderate			East cable tray is expected to survive fire due to spatial sep	paration from fire on west		
	Hazardous Substances: Chemicals - drain to containment					side of room and minimal combustibles. Trays have an ap	proximately 20 meter		
					J	spacing. Fire does not affect safe shutdown.			

Roo	om i	Data She	et					
	Fire Area: F3390			Description: Room 3390 Egress Pathway		hway	Const. Type: II 000	
		Building:	Rad Waste I	Building			Gross Area (m2):	25.8
					Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524	
		Associated	407081-U7	4-FG2201C			Building Code Occupancy Classification:	Group F, Division 3
	Drawings or			Electrical Classification: Safety-related divisional equipment or cables		N/A		
		Figures:					Nonsafety - related redundant trains, equipment or cables:	Load Group A or B
					Surrounded	d by fire barriers rated at:	: 3-hour rated barriers to Reactor Building and remainder of R	ad Waste Building
						Except	2-hour rated barriers to elevator and stairs	
Consist	ing of t	he following Room	s:		Fire Alarm Input Devices		Fire Suppression	
EL	Rm#		Potential Co	mbustibles	Primary	Backup	Primary	Backup
13.0	3390	Circulation space	- Transients			Manual Fire Alarm	Wet pipe sprinklers	Hose Streams
					Sprinkler Waterflow	Box		Fire Extinguishers
				>700	Anticipated combustible	e load, MJ/m2	Assuming automatic & manual FP equipment does not fur	ction, impact of design basis
	700 Uns			Unsprinklered combust	nbustible load limit, MJ/m2 fire on safe shutdown:			
	Assuming operation of installed fire extinguishing equipment, impact of fire upon:				Combustibles are limited to transients and vertical cable tray (assumed to be Load			
					1	Group A or B). Fire starts in transients and spreads to cab	le tray. Fire limited to room	
	Plant operation: None				due to fire barriers. Fire does not affect safe shutdown.			
						-		
	Radiological release: None, drainage of sprinkler discharge to c		ontainment					
				1				
	Manual firefighting: Access via other buildings and interior do		ors	-				
	Property loss: Moderate			-				
	Hazardous Substances: None							
						J		

Roo	Room Data Sheet						
		Fire Area:	F3190	Description:	Room 3391 -Service El	evator Machine Room and Room 3190 Hoistway	Const. Type: II 000
		Building: Rad Waste Building				Gross Area (m2):	5.6
				Applicable codes:	CSA N293, NBCC, NFC	CC, NFPA 10, NFPA 13, NFPA 14, CSA C22.1, ULC-S524, C	SA B44
		Associated	407081-U74-FG2201C		Building Code Occupancy Classification: Group F, Division 3		
	Drawings or			Electrical Classification: Safety-related divisional equipment or cables: N/A			
		Figures:				Nonsafety - related redundant trains, equipment or cables:	Single load group to Elev
				Surrounded	d by fire barriers rated at:	2 hours	
					Except		
Consis	ing of t	he following Rooms	5.	Fire Alarm	Input Devices	Fire Suppression	
EL	Rm#		Potential Combustibles	Primary	Backup	Primary	Backup
13.0	3391	Materials per CSA	A B44	Smoke & Heat	Manual Fire Alarm	Wet Pipe Sprinklers (per CSA B44) - Machine room and	Hose Streams
0.0	3190	Materials per CS/	A B44	Detectors	Box	hoistway	Fire Extinguishers
			· · · · · · · · · · · · · · · · · · ·	Sprinkler Waterflow	-		
			<7(00 Anticipated combustibl 00 Unsprinklered combust	e load, MJ/m2 ible load limit, MJ/m2	Assuming automatic & manual FP equipment does not fun fire on safe shutdown:	ction, impact of design basis
	Assuming operation of installed fire extinguishing equipment, impact of fire upon:			,	Combustible loading, hoistway and car finishes limited by	CSA B44. Fire starts in	
					1	transient materials in car with at least smoke damage to elevator machine room	
	Plant operation: None				equipment. Fire is stopped from spreading to other areas of Fire does not affect safe shutdown	f building by fire barriers.	
	Radiological release: None, no radiological materials present				1		
	Manual firefighting: Class I hose stations in the exit enclosure		e for manual attack.	-			
	Property loss: Minor			1			
	Hazardous Substances: None			1			
					J		
						L	

5.0 LIFE SAFETY EGRESS ASSESSMENT BUILDING CODE ANALYSS

Life safety egress conceptual assessment as well as occupancy classification and travel distance content are provided under building analyses documentation:

Plant level specification

• [[]] Plant Level Architectural and Life Safety

Building level reports:

- [[]] Reactor Building Architectural and Life Safety
- [[]] Turbine Building Architectural and Life Safety
- [[]] Control Building Architectural and Life Safety
- [[]] Waste Building Architectural and Life Safety

6.0 ACRONYMS AND SYMBOLS

6.1 Acronyms

Acronyms	Explanation	
AHJ	Authority Having Jurisdiction	
CSA	Canadian Standards Association	
FHA	Fire Hazard Assessment	
LS	Life Safety	
NBCC	National Building Code of Canada	
NFCC	National Fire Code of Canada	
NFPA	National Fire Protection Association	

6.2 Symbols

Symbols	Definition
ft	Feet
ft²	Square Feet
gpm	Gallons per Minute
kPa	Kilopascal
m	Meters
mm	Millimeter
m ²	Square Meters
L	Liter
lbs	Pounds
psi	Pounds per Square Inch

7.0 APPENDIX A – LIST OF FIRE PROTECTION DRAWINGS

Sheet Number	Sheet Name
[[]] FIRE PROTECTION REACTOR BUILDING FLOOR EL34.0M
[[]] FIRE PROTECTION REACTOR BUILDING FLOOR EL29.0m
[[]] FIRE PROTECTION REACTOR BUILDING FLOOR EL21.0M
[[]] FIRE PROTECTION REACTOR BUILDING FLOOR EL14.5M
[[MEZZANINE EL4.8]] FIRE PROTECTION REACTOR BUILDING FLOOR EL8.5M AND M
[[]] FIRE PROTECTION REACTOR BUILDING FLOOR EL0.0M
[[]] FIRE PROTECTION REACTOR BUILDING FLOOR EL4.9M
[[]] FIRE PROTECTION REACTOR BUILDING FLOOR EL13.0M
[[]] FIRE PROTECTION REACTOR BUILDING FLOOR EL16.0M
[[]] FIRE PROTECTION TURBINE BUILDING GROUND FLOOR EL. 0.0M
[[]] FIRE PROTECTION TURBINE BUILDING MEZZANINE FLOOR EL. 6.1M
[[EL.12.2M]] FIRE PROTECTION TURBINE BUILDING OPERATING FLOOR
[[]] FIRE PROTECTION TURBINE BUILDING ROOF EL. 30.5M
[[0.0M]] FIRE PROTECTION PLANT SERVICES AREA GROUND FLOOR EL.
[[]] FIRE PROTECTION TURBINE BUILDING TRANSFORMER AREA
[[]] FIRE PROTECTION CONTROL BUILDING GROUND FLOOR EL. 0.0M
[[]] FIRE PROTECTION CONTROL BUILDING ROOF EL. 10.0M
[[]] FIRE PROTECTION RAD WASTE BUILDING GROUND FLOOR EL. 0.0M
[[]] FIRE PROTECTION RAD WASTE BUILDING FLOOR EL. 6.1M
[[]] FIRE RPROTECTION RAD WASTE BUILDING FLOOR EL. 13.0M
[[]] FIRE PROTECTION RAD WASTE BUILDING ROOF EL. 24.38M