



Nuclear Energy Canada Inc.

BWXT Nuclear Energy Canada Inc.

Peterborough Nuclear Operations Fire Protection Program Summary

The primary goals of the fire protection program are to minimize the risk to the environment, members of the public, workers and the facility as a result of fire at BWXT Nuclear Energy Canada Inc. (BWXT NEC) in Peterborough.

The Facility

BWXT NEC's Peterborough operation assembles natural uranium fuel pellets into fuel bundles. The Peterborough operation is licensed to process a maximum of 150 Megagrams (150 tonnes) of uranium monthly under Nuclear Fuel Facility Operating Licence FFOL-3620.01/2020.

The facility can handle both natural and depleted ceramic uranium dioxide (UO_2) fuel pellets for use in CANDU® (Canadian Deuterium Uranium) reactors.

Sintered fuel pellets are received from the BWXT NEC Toronto operation. The fuel bundle manufacturing operations involve the loading of these fuel pellets into zirconium tubes, sealing, welding and assembly of the fuel elements into fuel bundles. Details of fuel bundle design vary by reactor, however, fuel bundles currently manufactured at BWXT NEC in Peterborough generally consist of 28 or 37 fuel elements. This takes

place primarily in Building 21 with storage of completed fuel bundles in Building 24.



BWXT NEC's Peterborough operation is located at 1160 Monaghan Road, Peterborough, Ontario. The Peterborough operation occurs within four buildings on the western side of the plant complex located between Monaghan Road and Park Street North. GE Canada retains ownership of the property and leases the structures to BWXT NEC under a lease agreement.

The main building for the nuclear fuel operations is Building 21, while Building 24 is used for storage. There is also a Fuel Handling and Engineering Solutions business unit operating in Building 26. Building 28 (forming part of Building 26) is the main shipping and receiving area. Building 21 houses one freight elevator.

Emergency Response Plan

The Peterborough facility has an Emergency Response Plan that outlines the organization and methods to prepare for, respond to, and recover from emergencies. Summaries of

the Emergency Response Plan can be found on the BWXT NEC website at www.nec.bwxt.com.

Fire Response

In the event of a fire emergency, employees are to follow these steps:

- Pull the fire alarm and call *7777.
- When the fire alarm sounds, employees must evacuate the building via the nearest safe exit and collect at the assembly point south of Building 21.
- At the assembly area, employees must immediately report to their Supervisor or Manager for personnel accounting.
- The “All Clear” sign, to reoccupy the facility, is issued by Peterborough Fire Services.
- The ERT Incident Commander communicates the ‘All Clear’ to employees.

Equipment and Devices

Specific equipment and devices have been designated for use in responding to a fire or detecting a potential fire hazard, such as:

- Fire detection systems;
- Emergency alarm systems;
- Portable fire extinguishers;
- Fixed fire suppression equipment;
- Fire hydrants;
- Fire standpipe and hose systems;
- Medical response equipment;
- Medical clinic;
- Facility speaker systems;
- Emergency or secondary lighting;
- Personal protective equipment;
- Spill response equipment;
- Emergency eye wash and showers;
- Flammable gas monitoring equipment;

- Cell phones and pagers;
- Specialized fire suppression;
- Material Safety Data Sheets,
- Emergency evacuation route maps; and,
- Assembly areas.

Inspections, Testing and Maintenance

Inspections, testing and maintenance are completed and required by the National Fire Code of Canada (NFCC).

WSC Inspections: Members of the Workplace Safety Committee (WSC) complete monthly inspections throughout the facility which includes review of the fire protection and housekeeping items.

Housekeeping Inspections: All employees are responsible for a daily inspection of their immediate area. Area management inspections are completed bi-monthly.

Fire Protection Assessment

Third party reviews are conducted annually to review compliance with the National Fire Code of Canada and CSA N393-13. The objective of the review is to ensure that all aspects of the NFCC are covered and confirmed by visual inspection as required by CSA N393-13 and that the requirements are met:

- Building and occupant safety;
- Indoor and outdoor storage;
- Flammable and combustible liquids;
- Hazardous process and operations, including hot work; and,
- Fire protection equipment.

The third party review is implemented through an internal compliance tracking tool.

Additionally, a fire hazard analysis (FHA) as outlined in CSA N393-13 has been completed for the BWXT NEC Peterborough facility. The FHA is updated as necessary to reflect facility modifications, changes in fire

hazards, and operating experience. The FHA requires updating or confirmation at least once every five years.

Facility Modifications

If there are changes that affect fire protection, BWXT NEC refers to its Change Notice Procedure which ensures there is an Environmental, Health and Safety review for all new or modified facilities, new processes, and new, modified or relocated equipment. The system provides a mechanism to verify the identification and control of environmental health and safety issues, and ensures compliance with applicable regulations, from the onset to the completion of the activity.

Impairments to Fire Protection System

In the event of a planned impairment, necessary parts and personnel shall be assembled prior to the removal of the fire protection system(s) from service and an attempt to minimize impact of inoperative equipment should be made. In the event of an unplanned impairment or a system discharge, the repair work or fire protection system restoration shall be expedited. Post testing shall be performed by a qualified person to ensure system functionality.

In the event of any shutdown of the fire protection equipment or system the Peterborough Fire Services must be notified.

If there are construction or repairs that impair an emergency exit, temporary emergency evacuation procedures are discussed and implemented. Environmental, Health and Safety (EHS) personnel post temporary exit signs clearly indicating alternative routes and exits. Once the impairment exit is returned to normal, the temporary exit signs are removed.

Hot Work

The hot work permit procedure is followed when a potential ignition source is being used in the facility. The procedure ensures that fire safety is managed during the work activities and provides assurance that all reasonable and appropriate safeguards have been taken to prevent fire or explosion from hot work activities. Any person introducing an ignition source must complete a hot work permit. Hot work is not permitted if the sprinkler system is impaired.

Control of Combustibles

The amount of combustibles allowed to accumulate in any one area is kept to the lowest amount practicable. Transient materials, combustible or non-combustible, are stored/placed in designated areas. Combustible loading is examined through workplace inspections and controlled through an internal compliance system.

Firefighting Water Control

To ensure sprinkler water is safely contained due to a sprinkler activation, a berm has been constructed in the Building 21 fuel loading area where pellets are handled. The purpose of the berm is to contain any water originating in the area, and to exclude flood water from entering the area.

Fire Protection Training

All employees complete fire protection training upon hire and are required to refresh training every two years.

Visitors and contractors are informed of the significance of emergency signals and appropriate response actions by their site sponsor. All visitor and contractor badges include an information card detailing information about emergency evacuation.

Emergency responders are provided with the level of training necessary to allow them to effectively perform their designated services.

Emergency response drills are regularly critiqued to continuously improve the program's effectiveness. Emergency evacuation drills are conducted at least annually and the results of the drill are critiqued and documented. Annually, BWXT NEC meets with Peterborough Fire Services to provide information about the facility and familiarization tours.

Fire Incidents

All fire incidents at the facility will be investigated. This enables BWXT NEC to identify and trend fire incidents and determine corrective actions to be taken. Where deficiencies are identified, action plans are developed and implemented to prevent the occurrence of similar incidents.

All fire incidents are investigated by a qualified person and fire experts are solicited when required.

Program Review

A fire protection program audit is conducted every three years on each program element to confirm compliance with CSA N393 and other applicable codes, standards and industry best practices in fire protection. Quality Assurance programs apply to verify that the fire protection systems are designed, fabricated, implemented, tested, maintained and operated as intended.

Contact Us

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