



BWXT Nuclear Energy Canada Inc.

Peterborough Nuclear Operations Emergency Plan Summary

The purpose of the plan is to outline the organization and methods to prepare for, respond to, and recover from emergencies at BWXT Nuclear Energy Canada Inc. (BWXT NEC) Operation in Peterborough.

Part I: Facility Description

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 (UO₂) 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 machining of the tubes to produce fuel elements and the 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.



Part II: Preparation

This section describes how BWXT NEC is administratively organized to prepare for, and react to, emergency events including coordination with off-site emergency response organizations and government agencies.

Normal Facility Organization

The BWXT NEC organization is detailed in licensing submissions to the Canadian Nuclear Safety Commission (CNSC). The President, BWXT NEC has overall responsibility for operations and safety. The Director, Fuel Operations reports to the

President, BWXT NEC and has responsibility for operations and safety including emergency response for BWXT NEC Peterborough.

At BWXT NEC Peterborough, operations are led by the Production Manager. The Environmental, Health and Safety (EHS) and Quality departments report to the Director, Fuel Operations. The EHS department is responsible for occupational health and safety, environmental protection, and radiation protection.

During second, third shifts, weekends and holidays, an EHS and Engineering resource remains on-call via pagers for emergency response and support.

The Peterborough nuclear operation may be called upon to support an emergency in Toronto.

Onsite Emergency Organization

Emergency Response Organization (ERO) is activated by the Site Leader or alternate. The ERO and Site Leadership assemble in the Emergency Control Center (ECC) under the direction of the Site Leader and the Emergency Response Team (ERT) deploys for the purpose of controlling and mitigating the emergency.

During first shift on weekdays, excluding holidays and plant shutdown, representatives for the ERO and ERT positions are normally available and are activated by calling the plant extension 7777. The ERT Incident Commander can be reached by radio from the ECC. The ERT Incident Commander can be reached by radio from the ECC.

During all other hours, representatives of the ERO can be summoned through paging the 24 hour EHS pager or by calling the plant extension 7777.

Emergency Response Organization (ERO)

Site Leader (SL): The SL has ultimate responsibility and authority for the conduct of all BWXT NEC response actions to events while the ECC is activated. The SL has the responsibility to declare the ECC active, to classify events, to declare the emergency terminated and deactivate the ERO.

Emergency Response Team (ERT): The ERT is responsible for:

- Interfacing with offsite response agencies;
- Acting as the focal point for communication between the ECC and the scene;
- Controlling on site traffic during the emergency;
- Direct responding agencies to incident;
- When advised by responding agency of all clear, only ERT responders will notify employees to return to work; and,
- Assist medical responders.

Supervisors and Managers: Responsible for performing personnel accounting and reporting results to the ERT.

EHS Specialists and Facility Coordinators: Shall provide the Site Leader with information and advice needed to assess and develop emergency response actions.

Security and Crisis Management Leader (SCML): Responsible to ensure the ECC is in a state of readiness, provide alternate evacuation routes as required, ensure records supporting the Emergency Plan are maintained, ensure fire and evacuation drills are planned, conducted and review the Emergency Plan annually.

Local Off-site Assistance

Through regular consultation and coordination, arrangements for emergency support are maintained with the Peterborough Fire Service (PFS).

Coordination with Government Agencies

During an emergency at the site coordination with the following local, provincial, and federal authorities may be necessary.

- a) The Canadian Nuclear Safety Commission (CNSC):

The CNSC is the federal agency charged with the regulation of nuclear fuel facilities under the Nuclear Safety and Control Act. CNSC regulates BWXT NEC in Toronto and Peterborough through the Fuel Facility Operating Licence. Under the Licence, the licensee is required to notify the CNSC concerning accidents in accordance with the Licence and associated Licence Condition Handbook.

- b) The Ontario Ministry of Environment and Climate Change (MOECC):

The MOECC shall be contacted in the case of unauthorized release of uranium or other hazardous substance into the environment. This includes release of water and releases to the air.

- c) City of Peterborough – Department of Public Works (water/sewer emergency):

The City of Peterborough Department of Public Works shall be contacted in the case of unauthorized release of uranium or other hazardous substance into the sanitary or storm sewer.

- d) Employment and Social Development Canada (ESDC):

ESDC shall be contacted as soon as feasible, but not later than 24 hours, of the events listed in the Canada Occupational Health and Safety Regulations paragraph 15.5.

- e) Canadian Transport Emergency Centre (CANUTEC):

Transportation incidents involving hazardous materials are addressed under ERAP ERP2-0107.

- f) Technical Standards and Safety Authority (TSSA):

A medical emergency related to an elevating device that resulted in the death or serious injury (i.e. requiring the services of a medical practitioner) to any person requires immediate notification. An injury not requiring the services of a medical practitioner require reporting within 24 hours.

Failures of the pressure boundary are described in TSSA's Guideline for Incident Reporting Criteria – Boilers and Pressure Vessels.

Emergency Equipment and Facilities

This section describes the equipment and resources maintained on site to identify, respond to, and manage emergencies.

Control Point

The Emergency Control Centre (ECC) is activated for events at BWXT NEC Peterborough site.

For transportation emergencies, the location of the lead site (Peterborough or Toronto) will be determined based on the location of the transportation accident and proximity to one site or the other. Where applicable, the selection of the lead site and activation of

that site's ECC will be declared as soon as possible.

Communications Equipment

On-site Communications: The primary means of communications on site during an emergency is by using handheld radios. Handheld radios are stored in the ERT cabinets and with the ERT Members.

An alternative means of communication between the ECC and scene, assembly area and others is via the commercial landline and mobile telephone system.

External: Cellular or landline telephones are used for notification to the CNSC and other agencies during emergencies. A commercial telephone system is available in the ECC for making notifications and requests for offsite assistance.

Emergency Response Equipment

BWXT NEC in Peterborough maintains portable fire extinguishers, rescue equipment (such as stretchers, Automatic Defibrillators), Spill Control equipment, CPR and First Aid Kits and Eye Wash stations.

Maintenance of Emergency Preparedness State of Readiness

This section describes actions the BWXT NEC Peterborough ERO shall use to maintain a state of readiness for emergencies.

Training: Training is developed in accordance with the Systematic Approach to Training (SAT) methodology.

Emergency Response Team (ERT): Emergency responders are provided with the level of training necessary to allow them to effectively perform their designated services.

All Employees: All employees are trained on established fire prevention measures, emergency situation response, emergency evacuation routes and their responsibilities.

Local Off-site Support Organizations:

The following off-site response organizations are offered facility familiarization tours and awareness training on facility hazards and radiation awareness on an annual basis:

- Peterborough Fire Service
- Peterborough Police Service

Drills: Emergency drills are conducted at least annually.

Critiques: Emergency response drills and actual emergency responses are regularly critiqued by the Security and Crisis Management Leader to continually improve the effectiveness of the process.

Verification of Telephone Numbers: Emergency phone numbers will be maintained on-site as a Call Tree, which contains off-site response agency and regulatory body notification telephone numbers.

The Emergency Call Tree is updated regularly and distributed upon each revision to all BWXT NEC employees who may need to initiate.

The most recent copy of the Emergency Call Tree is maintained with the individual assigned the EHS 24-hour emergency pager.

Classification System

Alert: An alert, which represents a loss of control but with consequences that are restricted to the site. The ERO is mobilized, either in a standby mode that activates some portions of the ERO or full mobilization. There may be on-site hazard exposure, but no off-site consequences are expected. However, an alert may require off-site organizations to respond to an on-site condition such as fire, law enforcement, or emergency medical services.

Site Area Emergency: A site area emergency is an incident that has led or could lead to a significant release to the environment of radioactive or other hazardous material and that could have off-site consequences requiring response by an off-site organization to protect persons off site.

The CNSC Duty Officer must be notified within 15 minutes of activation of the Emergency Organization and within 15 minutes of categorizing the event.

Part III: Activation

This section outlines the steps that the site EO shall use to respond to emergencies

Emergency Measures

Activation of Emergency Organization

The ERO is activated by the Site Leader or designated alternate by phoning the in plant extension 7777 and/or by phoning the 24-hour Emergency EHS Pager (which notifies key personnel on and off-site).

The ERO is activated in the event of a significant fire, explosion, or other significant event.

Emergency pagers and cellular telephones are assigned to be worn by personnel representing EHS and Engineering for response after hours. The personnel wearing the devices shall respond when pagers are activated.

After hours, the pager responders determine if activation of the EO is required and if so, implement notification using telephone and the Call Tree.

Protective Actions

Based on an assessment of the emergency event, the Site Leader shall determine the risks posed to personnel located on site, the environment and neighbouring population.

On-site: If building evacuation has not already been initiated, the Site Leader can initiate evacuation of Building 21, 24 and/or Building 26 by activation of the fire alarm system through a pull station.

Off-site: Notification shall be made to the Peterborough Fire Service Incident Commander should the Site Leader determine that personnel located off site are at risk as a result of an emergency at the site.

Exposure Control

The Peterborough Fire Service is offered annual facility familiarization sessions. Health effects and control principles for radiation and beryllium exposure is included in these sessions.

Because only non-dispersible uranium is handled, the potential for significant accidental releases is very low. For fuel element and fuel bundle areas, accidental air releases are highly unlikely.

External Radiation Exposure Control - There is no risk of acute external radiation exposure at BWXT NEC Peterborough and no risk of exceeding a public dose limit by an emergency responder due to external radiation as uranium has a low specific activity.

Internal Radiation Exposure Control - For major fires in areas where uranium pellets are exposed in the manufacturing area, the potential for significant releases of airborne radioactivity is possible. Therefore, emergency responders reporting to such areas should wear respiratory protection.

Radiological Decontamination - Capability for uranium decontamination of personnel (including injured personnel and first responders) and equipment are maintained.

Medical Treatment

The procedure for obtaining immediate medical treatment is to call in plant extension 7777. Medical/first aid is administered until off-site services arrive (if necessary).

Coordination with Off-site Response Organizations

Off-site responders access the site during an emergency through the main vehicle gate accessed from Monaghan Road. The security guard will open the gate to admit the off-site responders. At the incident scene, the Emergency Response Team (ERT) Incident Commander will coordinate with the off-site responders.

Off-site responders shall be permitted site access when responding to an emergency or as part of an emergency exercise.

Notification of Government Agencies

Notifications to government agencies begin immediately following the declaration of an Alert or Site Area Emergency. Updates shall be provided on an as-needed basis or on an agreed upon frequency.

Canadian Nuclear Safety Commission: Notification of an emergency event to the CNSC is required upon activation of the ERO and upon classification of a Site Alert or Site Area Emergency. The appropriate information shall be reported to the CNSC Duty Officer within 15 minutes.

The CNSC Duty Officer must be notified within 15 minutes of activation of the Emergency Organization and within 15 minutes of categorizing the event.

Other Government Agencies: Notification of an emergency event to other regulatory agencies, i.e., Ontario Ministry of the Environment and Climate Change, City of Peterborough, ESDC, etc., shall be based on the particular nature of the event. The appropriate information shall be reported to

the various regulatory agencies within the required time period as dictated by those agencies' requirements.

Part IV: Recovery

Recovery Operations

After an emergency response phase has ended, a recovery is instituted to restore the facility to safe operation. Included in the scope of recovery operations is a root cause evaluation and corrective actions to prevent recurrence of the event. Support for the recovery is provided by various site staff as well as corporate staff. A detailed recovery plan would consider damage assessments, responsibilities, resources, facilities, equipment, environmental health and safety, regulatory requirements and hazardous waste disposal.

Post Incident Review

Upon the completion of the incident response, a post-incident review is conducted. This review includes a critique of the response time, and the quality of the response. It also includes a review of this procedure, and all other procedures related to the response.

Contact Us

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