Canada's Nuclear Regulator

CNSC COMPLIANCE INSPECTION REPORT

Inspection No.: BWXT-2018-04

Inspection Title: BWXT Emergency Preparedness Inspection

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Nuclear Processing Facilities Division
Directorate of Nuclear Cycle and Facilities Regulation

Report Date: January 25, 2019

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CANADIAN NUCLEAR SAFETY COMMISSION
COMPLIANCE INSPECTION

Inspection No.: BWXT-2018-04

Licensee:	BWXT Nuclear Energy Canada Inc.
Licence No.:	FFOL-3620.01/2020
Facility / Site Inspected:	BWXT - Toronto Facility
Inspection Dates:	September 25, 2018 - September 26, 2018
Inspector:	Julian Amalraj Lead Inspector, NPFD
Approved by:	Caroline Ducros Director, NPFD
Safety and Control Area:	Emergency Management and Fire Protection
Inspector Accompanied by:	Mike Jones, Inspector Graham Smith, Inspector David Wallace, CBRN Officer Laurent Nicolai, Emergency Programs Officer, Inspector Waleed Khan, Observer

EXECUTIVE SUMMARY

Pursuant to subsection 30(1) of the *Nuclear Safety and Control Act* (NSCA), Canadian Nuclear Safety Commission (CNSC) staff conducted a Type II Emergency Preparedness Inspection at the BWXT Toronto Facilities from September 25, 2018 to September 26, 2018. The purpose of this inspection was to provide an overall assessment of compliance with specific clauses of the NSCA and its associated Regulations, the operating licence FFOL-3620.01/2020 and its associated Licence Conditions Handbook (LCH), as well as BWXT's programs and procedures associated with emergency preparedness as necessary. The inspection also reviewed the implementation and effectiveness of corrective actions that arose from enforcement actions from a previous emergency preparedness inspection conducted at the Toronto Facility.

The scope of the inspection focused on selected elements from the emergency preparedness and fire protection safety and control area. The primary purpose of this inspection was to review the effectiveness and implementation of BWXT's new emergency preparedness program to meet the requirements as set in REGDOC 2.10.1. This inspection was scheduled in reaction to three open Directives and five closed action notices related to the effectiveness and implementation of its emergency preparedness program that was raised as a result of an emergency preparedness program inspection conducted at this facility in October 2016.

CNSC inspectors' preliminary inspection facts and findings were discussed with licensee staff. A Preliminary Inspection Facts and Findings Report was tabled during the closing meeting held on September 26, 2018. The licensee has also submitted a self-assessment report details improvements to the emergency preparedness program, as well as an evaluation of performance of the program for the tested measures.

The inspection team found that the implementation of corrective actions due to previous inspection enforcement actions were acceptable. Some minor areas for improvement were identified, and therefore one **(1)** recommendation has been raised. The identified recommendation does not pose an immediate or unreasonable risk to the health and safety of persons or to the environment.

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BWXT Emergency Preparedness Inspection

1. INTRODUCTION

An emergency preparedness inspection at the BWXT Toronto Facility was conducted from September 25, 2018 to September 26, 2018.

The licensee was assessed against provisions of the NSCA and its associated Regulations, the conditions of the licence FFOL-3620.01/2020 [1] and the LCH for BWXT - Toronto Facility [2], as well as applicable facility-specific and programmatic governing documentation.

Criteria for this inspection were derived directly from the set of documents described in the notification letter and compiled into a compliance matrix, which had been provided to licensee staff prior to the inspection [3]. Observations, interviews and a review of records were undertaken to assess compliance with regulatory expectations.

This report documents the findings and conclusions of the inspection, along with any compliance actions and recommendations arising from these findings. The results of this inspection activity will form part of CNSC staff's evaluation of the licensee's performance.

2. PURPOSE AND SCOPE

The purpose of this inspection was to provide an overall assessment of compliance with specific clauses of the NSCA and its associated Regulations, the operating licence FFOL-3620.01/2020 and its associated LCH, as well as BWXT's programs and procedures as necessary. The inspection also reviewed the implementation and effectiveness of corrective actions that arose from enforcement actions from previous inspections as well as past events that have occurred at the Toronto facility.

The scope of the inspection focused on selected elements from the emergency preparedness and fire protection safety and control area.

3. DESCRIPTION OF INSPECTION METHODS

The NSCA, CNSC regulations, FFOL-3620.01/2020 licence conditions, and governing documents were reviewed as part of the preparation for the inspection. Various items were selected for verification and compiled into a compliance matrix. The inspection also included field observations and information provided by licensee staff.

The following methods of assessment were used during the inspection:

A. Documentation and record review

- Records and documentation including the exercise design package, evaluation criteria and a detailed final report was reviewed by the the inspection team and a review of selected program documents and procedures were performed to ensure their accuracy and completeness.

B. Visual assessment and verification

- Observations based on identified compliance criteria were made for verification purposes.

C. Interviews and discussions with licensee staff

- Interviews and discussions with various licensee staff were conducted during the inspection. Questions were posed based on compliance criteria and responses documented for verification purposes.

Selected documentation and records were reviewed during the field verification component of the inspection. These were reviewed in order to determine whether the various records associated with the areas of the inspection are in compliance with associated regulatory and programmatic requirements.

As per the CNSC process, at the conclusion of the field verification portion of the inspection, a Preliminary Inspection Facts and Findings Report [4] was provided to BWXT staff representatives. This report was provided for purposes of outlining observations made by the inspection team at an overall level, based on a preliminary review of the criteria set identified in the compliance matrix and observations made.

Based on criteria identified in the compliance matrix, regulatory requirements and compliance expectations were determined to be met or not met, and reported as inspection findings. CNSC staff may identify compliance actions and recommendations in relation to an inspection finding. Appendix A outlines definitions of compliance action.

4. INSPECTION RESULTS

The following findings and subsequent compliance actions and recommendations are the result of CNSC staff's inspection at the BWXT - Toronto Facility. This section of the report has been structured to show the link from the initial inspection finding to the resulting compliance actions and recommendations as shown below:

- Compliance verification criteria used to identify the deficiency
- A description of the observed deficiency
- An analysis linking the compliance verification criteria or regulatory requirement to the observed deficiency, and
- Detailed compliance action requiring the licensee to address the deficiency

The order in which findings are presented in the report does not indicate a ranking of their safety significance.

The findings documented in this report were arrived at by assessing the facts and observations, gathered by CNSC staff during the inspection activities, with the related compliance criteria and regulatory requirements, as detailed in the compliance matrix. Where improvements are necessary, compliance actions and recommendations have been issued as detailed in this section of the inspection report.

Compliance criteria that was met during the inspection is also listed in the compliance matrix. Follow up activities were also performed on the implementation and effectiveness of corrective actions issued in previous inspections as well as past events that have occurred at the facility, the results of which are listed in the compliance matrix.

4.1 Review of corrective actions related to enforcement actions from GEHC-2016-03 Inspection

Criteria

- GEHC-2016-03: Emergency Preparedness Inspection report and associated enforcement actions
- FFOL-3620.01/2020 Licence Condition 11.1 "The licensee shall implement and maintain a program for emergency preparedness to address on-site and off-site events which can affect the facilities."
- REGDOC 2.10.1: "Nuclear emergency preparedness and response- Vol 2."

Facts/Observations

Open enforcement actions and status:

GEHC-2016-03-D01: Functioning Incident Command (IC)/ Joint Incident Command (JIC)

- BWXT was able to demonstrate a functioning IC/Emergency Operations Command (EOC)/JIC
- BWXT staff was able to provide adequate support to Toronto Fire Service (TFS) personnel to ensure security and safety of their personnel, the public and the environment during an emergency as tested at the Toronto facility
- BWXT staff self-identified several opportunities for better engagement and coordination with TFS personnel
- Communication and coordination between BWXT staff and TFS to ensure appropriate access control to the hot zones marked at the facility during emergency may be more effective

GEHC-2016-03-D02: Mutual aid agreement

- BWXT was able to demonstrate a functioning mutual aid procedure that was effective during a declared emergency at the Toronto facility

GEHC-2016-03-D03: Holding an emergency exercise under the new program

- BWXT staff over the last 18 months was able to demonstrate clearly in a transparent manner, the development and implementation of the new program including consistent, timely communication on all improvements related to emergency preparedness program. CNSC staff observed the last emergency exercise conducted in June 2018 as observers and inspected this emergency exercise conducted in September 2018 as mandated by this enforcement action

Adequate staffing

- BWXT was able to demonstrate appropriate staffing of the emergency operations organization as described in the new emergency preparedness program manual
- BWXT staff were adequately trained and were able to demonstrate proper training in supporting activities like security, air sampling, water sampling and support TFS teams in their functions to address an emergency onsite
- The role of On-Scene Coordinator/IC runner and his/her permanent stationing when the TFS-IC and EOC is merged can be better defined to ensure this role is properly understood and clearly defined in this case

Personnel locations/accountancy

- All personnel were located in a safe environment inside building 9
- BWXT personnel accountancy process did not include a list of current onsite personnel
- Situational awareness and communication of role changes at the personnel accountancy location can be improved

Training

- The EOC director and associated supporting personnel were well trained
- The EOC director had full control of the emergency organization throughout the emergency and demonstrated an excellent understanding of his role and responsibilities
- A heavy workload was observed for the EOC director. This resulted in a few instances of missed information/communication. However, any missed information was later identified in a relatively quick timeframe
- Hydrogen shutoff was not completed in a timely manner

Equipment

- BWXT emergency organization was well equipped with radios, charts, environmental sampling and decontamination equipment with personnel well trained to use them appropriately

Frequency of exercises

- BWXT has demonstrated adequate capabilities for an emergency response and have conducted at least 4 exercises at the Toronto site in the last 18 months to ensure proper training and implementation of the new program

Recovery

BWXT staff should note that the fire impacted areas of the facility may not be released from TFS control for recovery.

Exercise design:

- The exercise was well designed and well executed with BWXT controllers appropriately establishing control of the exercise and ensuring the tested aspects of the program are adequately reviewed
- Use of dedicated radio channels for controllers is a good practice
- Two TFS personnel were actually contaminated during the exercise which was identified and addressed appropriately by the safety officer for the exercise
- Labels for the different roles in the emergency organization can ensure personnel know who is in what role

Analysis/Findings

The primary purpose of this inspection was to review the effectiveness and implementation of BWXT's new emergency preparedness program to meet the requirements of the REGDOC 2.10.1. This inspection was scheduled in reaction to three open Directives and five closed action notices related to the effectiveness and implementation of BWXTs emergency preparedness program raised as a result of a CNSC emergency preparedness program inspection conducted at this facility in October 2016.

Based on observations from this inspection, CNSC staff is satisfied with the progress and effectiveness of the new emergency preparedness program along with associated procedures. All open enforcement actions from GEHC-2016-03 have been closed as a follow up to this inspection.

Several improvements listed above in the facts/observations sections were self-identified by the licensee in their full report [5] submitted to CNSC staff on November 20, 2018. CNSC staff recommend that BWXT implement these recommendations as part of continuous improvements.

Recommendation

BWXT-2018-04-R1: BWXT should review recommendations from its full report and implement self-identified improvements to its emergency preparedness program.

5. SUMMARY OF COMPLIANCE ACTIONS AND RECOMMENDATIONS ISSUED

As an outcome of this compliance inspection, a total of one **(1)** recommendation has been raised.

BWXT-2018-04-R1: BWXT should review recommendations from its full report and implement self-identified improvements to its emergency preparedness program.

6. CONCLUDING STATEMENTS

CNSC staff performed an inspection at the BWXT Toronto facility, in order to verify compliance with the NSCA, its associated Regulations, the conditions of the licence and the LCH.

As a result of these findings, and following further analysis of records provided and inspection facts and findings, one **(1)** recommendation was raised.

CNSC staff would like to recognize BWXT's efforts in developing and implementing this new program as per CNSC requirements. The inspection team wishes to thank all licensee staff who were involved in the preparation and execution of this inspection.

7. REFERENCES

[1] Nuclear Fuel Facility Operating Licence, *BWXT Nuclear Energy Canada Inc. Toronto and Peterborough Facilities*, FFOL-3620.01/2020, December 21, 2016 (e-Doc 5151105).

[2] Licence Conditions Handbook, *BWXT Nuclear Energy Canada Inc. Nuclear Fuel Facility Operating Licence, FFOL-3620.01/2020*, January 17, 2017 (e-Doc 5159117).

[3] *Compliance Matrix*, BWXT-2018-04 (e-Doc 5638993).

[4] Preliminary Inspection Facts and Findings Report, BWXT-2018-04, September 26, 2018 (e-Doc 5646785).

[5] Emergency exercise report – BWXT, (e-Doc 5716918)

APPENDIX A: **Definitions**

Compliance Action Categories:

Directive

A written request that the licensee or a person subject to enforcement action take action to correct:

- a non-compliance with the NSCA, the applicable Regulations, licence conditions, codes, standards, or
- a general or sustained failure to adhere to approved documents, policies, procedures, instructions, programs, or processes that the licensee has established to meet licensing requirements.

Action Notice

A written request that the licensee or a person subject to enforcement action take action to correct a non-compliance that is not a direct contravention of the NSCA, the applicable Regulations, licence conditions, codes or standards, but that can compromise safety, security, or the environment and that may lead to a direct non-compliance if not corrected.

Such non-compliances include:

- a failure to satisfy one of the compliance criteria if the criteria are not directly referenced in the applicable regulations or licence conditions.
- a significant but non-systemic failure to comply with the licensee’s own policies, procedures, or instructions that have been established to meet licensing requirements (including programs and internal processes submitted in support of a licence application)

Recommendation

A written suggestion to effect an improvement based on good industry practice.

A recommendation is not:

- an indication of non-compliance with regulatory requirements,
- subject to enforcement action,
- to be issued as a means of suggesting improvements to the licensee’s programs outside the mandate of the CNSC.

Recommendations are not required to be implemented.

APPENDIX B: **Acronyms and Abbreviations**

BWXT	BWXT Nuclear Energy Canada Inc.
CNSC	Canadian Nuclear Safety Commission
TFS	Toronto Fire Service
IC/JIC	Incident Command/Joint Incident Command
EOC	Emergency Operations Centre
LCH	Licence Conditions Handbook
GNSCR	*General Nuclear Safety and Control Regulations*
NPFD	Nuclear Processing Facilities Division
NSCA	*Nuclear Safety and Control Act*
UO_2	Uranium Dioxide

APPENDIX C: **Attendance Record(s)**

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CNSC CCSN

Inspection Closing Meeting Attendance Record

Division	NPFD
Title of Inspection	BWXT-2018-04: Emergency Preparedness Inspection
Inspection Identification Number	BWXT-2018-04

Name of Licensee	BWXT Nuclear Energy Canada Inc.
Location/Site	Toronto Facility
Licence Number	FFOL-3620.01/2020

Lead Inspector	Julian Amalraj
Date of Inspection	September 25, 2018 to September 26, 2018
Date of Meeting	September 26, 2018

Instructions: Complete the top section of this form prior to the formal Closing Meeting. Have all attendees at the formal Inspection Closing Meeting sign this form, indicating their presence. Use multiple sheets if needed.

Name	Organization / Role	Signature
Julian Amalraj	CNSC / Inspector	A. Julian Jayce
Amoi Leavene	BWXT Maintenance	[signature]
Michael Rhatigan	BWXT MFG ENG	M. Rhatigan
Jack Chaney	Production Supervisor	[signature]
Sulini Bhattacharya	Lead Scientist, BWXT	[signature]
Daniel Ashworth	BWXT	D.S. Ashworth
Henry Hann	BWXT	[signature]
Mark Beaudon	BWXT / MSO	[signature]
Scott Hentig	BWXT / EHS	[signature]
David Snopek	BWXT EHS & Regulatory	[signature]
Sarah Duffy	BWXT / EHS	S. Duffy
Waleed Khan	CNSC	[signature]
Laurent Nicolas	CNSC	[signature]
David Wallace	CNSC	[signature]
Graham Smith	CNSC	[signature]
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Name	Organization / Role	Signature
on the phone.		
→ Ted Richardson		
→ John MacQuarrie	BWXT.	
→ Sandy Rheubottom		
→ Sara Forsey.		

APPENDIX D: **Compliance Matrix**

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Safety and Control Area: Management System			
Source: Other Details: CSA N286-12, Clause 4.4 Management shall clearly define to workers the following: 1. Organizational structure 2. Authorities, accountabilities, and responsibilities of positions 3. Internal and external interfaces 4. How and by whom decisions are made	Verify that roles and responsibilities are well defined in all procedures for members of the Emergency Response Organization (ERO).	Demonstrated. ERO structured as reviewed in Emergency Preparedness Program Manual submitted to CNSC	Met
Source: Other Details: CSA N286-12, Clause 4.7.3 Documents shall be controlled consistent with intended use. Control shall include: 1. Unique identification 2. Defined format and presentation 3. Identification of status	Using a sample of procedures used during the inspection, verify the following: • uniquely identified • document status is identified • was it distributed by controlled method (sign offs) • documents are reviewed according to procedure • is the version being used obsolete	Demonstrated. BWXT submitted a dedicated exercise package reviewed as part of this inspection. All visual aids, tools and maps were available at the new EOC trailer and used during the exercise	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
4. Review for adequacy and approval 5. Availability for use at the location where the work is to be performed or where the document is required for reference 6. Prompt removal of obsolete documents from use	Check available procedures at Emergency Response Facility (ERF) work stations to check that the procedure is the most current version Record the version number of procedures located at the ERFs and verify that they are the current version.		
Source: Other Details: CSA N286-12, Clause 4.9.6 'Procedure use and adherence' Work activities are carried out using approved procedures.	Document the title and version of procedures being used. Once back in the office verify that the version used is the most current version. During the emergency exercise bring a copy of the required documents being used (procedure) by ERO Exercise Players that are being evaluated, observe the staff and verify that the required steps in the procedure are performed as specified in the process. Verify if the worker was using the proper human performance tools, for example: • place keeping, • procedures in-hand when required. • touch and speak • three-way communication • job aids	BWXT submitted a dedicated exercise package reviewed as part of this inspection. Overall job aids as used by BWXT personnel were acceptable.	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Safety and Control Area: Emergency Management and Fire Protection			
Source: Other Details: REGDOC-2.10.1, section 2.1 **Planning basis** 1. A planning basis for the EP Program is established 2. Planning basis considers hazards that could have an adverse impact on the environment, health and safety of onsite personnel or the public 3. Results from the planning basis are used to determine the scope and depth of EP program requirements	Review planning basis and verify the following information is included in the basis of the EP program: • there is a defined planning basis that is based on a full range of postulated scenarios • all accidents and internal or external events that have been analyzed as having an unacceptable impact on their facilities • extended loss of power • scope and depth of EP program are commensurate with the planning basis	Demonstrated. Selected Scenario meets criteria as a design basis accident.	Met
Source: Other Details: REGDOC-2.10.1, section 2.2 **Emergency Response Plan and Procedures** Emergency Response (ER) Plan and procedures are developed and maintained. The ER plan shall be based on the planning basis and shall identify and describe the methods used to respond to emergencies. This includes, but is not limited to, the following areas:	Verify the following: ERP identifies and describes the methods that will be used to respond to emergencies ERO is identified and defined. Emergency categorization, activation and notification are clearly defined. There is a procedure on: Emergency assessment, interfacing and supporting offsite response and organizations, emergency personnel protection, emergency information and public communications and recovery.	See Preliminary Summary of Finding for observations related to this section	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
1. emergency response organization and staffing 2. emergency categorization, activation and notification 3. emergency assessment 4. offsite response organizations interface and support 5. emergency personnel protection 6. emergency response facilities and equipment 7. emergency information and public communications 8. recovery 9. validation of the ER plan and procedures	ERFs and equipment are identified. ER plans and procedures are validated.		
Source: Other Details: REGDOC-2.10.1, section 2.2.1 **Emergency Response Organization and Staffing** In accordance with ER plan and procedures: 1. An emergency response organization (ERO) with a command structure is clearly defined and integrated	Verify that the ERO has a clearly defined command structure, positions, roles and responsibilities, and a minimum complement staffing level. Verify that all records are kept and given to the controller/evaluator at the end of the exercise. Electronic documents can be saved or printed out. Verify that the ERO has a procedure in place to ensure that an extended response can be affected as required.	Demonstrated. Several opportunities for improvement were identified, such as: 1. Formal position identification of EOC responders should be considered (vests, hats, etc.)	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
2. The minimum number of staff required to maintain the ERO and their qualifications is clearly defined and documented 3. The expected reporting times for the ERO to report to the emergency response facility or designated area are clearly defined 4. The requirement to maintain and retain logs of all actions, orders, and track and update actions throughout the emergency is clearly defined and documented			
Source: Other Details: REGDOC-2.10.1, section 2.2.2 **Emergency Categorization, Activation and Notification** The ERP plan and procedures: 1. Describe the complete set of conditions that would require activation of the ERO are clearly defined and documented 2. Describe how unusual events, incidents and emergencies are to be determined and classified to initiate onsite response; the same notification categories and standard definitions used by offsite authorities shall be used and/or cross-referenced	Verify by reviewing procedures that the categorization, activation and notification requirements are documented. Verify that classification procedures exist and that there is consistent terminology. Verify that the notification procedure address assembly and accounting of onsite staff, alerting all personnel, activation of the ERO and associated ERFs and support facilities. Verify the procedures to define organizational methods, processes, timelines and emergency levels to notify the appropriate personnel and authorities. Verify the procedures for offsite notifications and that CNSC are notified 15 minutes of the activation of the ERO.	Demonstrated	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
3. Describe the immediate notification process and secondary communication methods to alert all onsite personnel, to initiate personnel assembly and accounting, and to activate the ERO and associated emergency response and support facilities 4. Define organizational methods, processes, timelines and emergency levels to notify the appropriate personnel and authorities 5. Describe all offsite notification requirements and any time requirements that apply, ensuring that: a) the description includes identification of the appropriate positions, by title and agency, of the provincial, territorial and local government agencies and offsite authorities are notified within 15 minutes of categorizing the event b) offsite authorities are notified within 15 minutes of categorizing the event	Licensees use the following list of categories in increasing significance; 1. Reportable Event 2. Abnormal Incident 3. Site Area Emergency 4. General Emergency. Licensees should follow provincial requirements, or when none exist, use the following categories, listed in order of increasing significance, to categorize various events: • **reportable event:** an event affecting the nuclear facility that would be of concern to the offsite authorities responsible for public safety • **abnormal incident:** an abnormal occurrence at the nuclear facility that may have a significant cause and/or may lead to more serious consequences • **site area emergency:** a serious malfunction that results or may result in an emission at a later time • **general emergency:** an ongoing atmospheric emission of radioactive material, or one likely within a short time frame, as a result of a more severe accident		

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
	• While item 5b above requires licensees to notify the offsite authorities within 15 minutes of event categorization, ideally such notification should be done as soon as possible. It is critical that the CNSC and offsite authorities be advised within the identified timeframes. The only acceptable exception to the requirement would be when immediate action was required to prevent a catastrophic incident from occurring.		
Source: Other Details: REGDOC-2.10.1, section 2.2.3 **Emergency Assessment** 1. Methods and procedures to continually assess the emergency and predict both onsite and offsite conditions and parameters are developed and documented 2. Appropriate measures to protect onsite personnel are continuously taken 3. Continual characterization of the magnitude of the offsite risk to the public and the environment is performed 4. Continual updates to offsite authorities and the CNSC are provided	Verify all plant conditions and meteorological conditions are continuously updated Verify that measures are taken to ensure that on-site staff are aware of any changing conditions that may affect their health and safety and that measures are implemented to ensure their health and safety Verify thru faxes/emails that CNSC and other offsite authorities are continually updated on the status of the emergency	Demonstrated – BWXT information transmittal to CNSC Duty Officer observed	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Source: Other Details: REGDOC-2.10.1, section 2.2.4 **Interface and Support for Offsite Response Agencies** 1. Plans and procedures established to coordinate response activities with appropriate offsite organizations, in the event of an emergency with offsite implications 2. Formal documentation of any arrangements or agreements with other organizations or personnel and ensure that agreed-upon resources are available 3. The quantity of these resources required to respond to offsite conditions, are available when needed 4. Cooperate with and assist offsite organizations with their response activities to address offsite impacts; provide expertise and resources (personnel, emergency response equipment, and material) in support of offsite authorities during an emergency; and define the quantity of available resources within their ER plan	Verify procedures exist and are available to provide necessary coordination and information with off-site agencies. Verify that recommendations are being sent to offsite authorities by obtaining copies of the correspondence. Verify that pertinent information is being sent to offsite authorities and CNSC by obtaining copies of the correspondence. Check that an authorized person to categorize event and allow venting is on present. Check that offsite authorities and CNSC were notified prior to venting (unless an emergency situation). Check that outgoing transmissions contain required data	BWXT staff was able to provide appropriate support to TFS personnel during emergency drill. CNSC staff observed a functioning BWXT Mutual Aid procedure. Several opportunities for improvement were identified, such as: 1. Enhancing communication/coordination with TFS personnel to ensure appropriate access control to radiological zones (hot/warm/cold zones). 2. Enhancing first contact between BWXT staff and TFS personnel to ensure speedy and accurate information transmission. 3. Enhancing use of 3-ways communications	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
5. Promptly and regularly provide recommendations to offsite authorities when protective action is required and inform the CNSC 6. Establish what data is required and at what frequency, and make provisions to have nuclear facility data, and any other pertinent information that is determined as relevant to the emergency response, regularly transmitted to offsite authorities and the CNSC			
Source: Other Details: REGDOC-2.10.1, section 2.2.5 **Emergency Personnel Protection** 1. Develop and document emergency radiation protection measures that align with their radiation protection program	Verify training records of Emergency Personnel are up to date. Ensure all instrumentation is functional and calibrated.	Demonstrated	Met
Source: Other Details: REGDOC-2.10.1, section 2.2.6 ERFs and Equipment 1. An onsite emergency response facility or designated area to be used as a response location is identified	Confirm through maintenance records that all equipment and ERF are being maintained Validate locations of ERFs against location requirements in the standard Verify as appropriate to the licenced facility • administration facilities • technical support centres	Demonstrated	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
2. Essential emergency response equipment is identified and available. Essential emergency response equipment includes equipment required to detect and assess hazards, and communicate response activities 3. Emergency response equipment and materials that are operational and available in sufficient quantities for an extended multi-shift response; are readily accessible during emergency conditions	• control facilities • personnel and public assembly areas • emergency operations coordination centre • centre to integrate onsite activities with offsite programs • first aid and/or medical facilities • laboratory services (fixed or mobile) • decontamination facility • backup power capable of sustaining emergency power to emergency response facilities for a minimum of 72 hours • reference materials, such as current and approved versions of charts, maps, plans, drawings, diagrams, specifications and procedures • essential safety equipment, PPE and other appropriate supplies, such as food and water for a minimum of 72 hours • administrative aids, such as status boards and reference materials • fixed or portable instruments or equipment, as required, to detect, measure, monitor, survey, analyze, record, process, treat, transport, warn, announce, communicate, or assess		

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
Source: Other Details: REGDOC-2.10.1, section 2.2.7 **Public Emergency Information** 1. Provide information about the emergency to offsite authorities during the emergency response and recovery phases 2. Coordinate with offsite authorities when communicating emergency information to the public	Confirm that ERF has the ability to transmit information to offsite authorities and CNSC.	Demonstrated	Met
Source: Other Details: REGDOC-2.10.1, section 2.2.8 **Recovery** 1. The process to transition from emergency response to recovery after the termination of an emergency is documented, including the requirements to establish a recovery organization and to develop a recovery plan. 2. The recovery plan identifies the positions/titles, authorities and responsibilities of the individuals who will fill key positions in the recovery organization; this organization shall also include technical personnel with responsibilities to develop, evaluate and direct recovery and re-entry operations.	Verify that a recovery organization has been developed and positions identified have roles and responsibilities well defined in procedures A conceptual and strategic recovery plan should be prepared in advance. This can act as the basis for developing the recovery plan after the event has occurred and the emergency phase is complete. The recovery plan should: • identify and describe the resources (personnel, facilities and emergency response equipment) that are to be available for recovery purposes • describe how personnel will be protected when assessing or implementing the recovery program (e.g., personnel protection measures for entry into hazardous areas)	N/A	N/A

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
	• provide for post-accident assessments of the causes, details, impacts and/or consequences of the events • ensure all recovery efforts operate in accordance with the licensee's operating licence requirements Once the emergency phase of an emergency response has ended, workers undertaking recovery operations (such as repairs to plant and buildings, waste disposal or decontamination of the site and surrounding area) are subject to the occupational dose limits listed in the CNSC's *Radiation Protection Regulations*.		
Source: Other Details: REGDOC-2.10.1, section 2.2.9 **Validation of the Emergency Response Plan and Procedures** 1. ER plans and procedures are validated to demonstrate that systems as designed (equipment, procedures and personnel elements) meets performance requirements and support safe operation 2. Any changes to ER plans or procedures are validated before implementing them, to ensure continued effectiveness	Verify that the recovery plan is up to date and that plans and procedures are developed and available For the purpose of this section, "change" means an action that result in modification to, addition to, or removal from a licensee's ER plan. All changes should be validated to demonstrate that performance requirements are met and to determine if there has been a reduction in effectiveness (i.e., decreased capability to respond to an emergency). A licensee may make changes to its ER plan(s) and procedures without CNSC approval, but only if it performs and retains an analysis that demonstrates that the changes have not reduced the ER plan's effectiveness.	N/A	N/A

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
3. Notify the CNSC of changes to ER plans and procedures, and submit the results of the validation to the CNSC as per the terms and conditions of the CNSC licence	This analysis must also demonstrate that plans continue to meet operating licence requirements as well as regulatory requirements. Minor or administrative modifications to programs or procedures can be reported to the CNSC through established channels such as the Quarterly Operations Report or through formal correspondence.		
Source: Other Details: REGDOC-2.10.1, section 2.3.1 **Training and Qualification** 1. Collaboration with responding offsite agencies to educate them on radiation protection	Verify that persons involved in drill/exercise have training records up to date Verify as appropriate to the licenced facility: • initial and continuing training programs for EROs • ERO staff qualifications • ERO positions for which incumbents will be required to undertake periodic or on-going training • training requirements for contractors and offsite organizations (e.g., firefighters, police personnel, ambulance drivers, hospital staff) that support or participate in onsite activities – insofar as these requirements relate to training that is outside their typical professional duties, but that is required for responding to onsite emergencies; such training could address subjects like access requirements or radiation protection	EOC director position was under heavy workload and EOC director position, resulting in some miscommunications.	Partially Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
	• schedules, procedures and assessment criteria for the conduct of emergency drills and exercises • positions responsible for managing, planning, controlling and evaluating drills		
Source: Other Details: REGDOC-2.10.1, section 2.3.2 **Maintenance of ERFs and equipment** Identify and implement requirements and provisions to assure that the necessary emergency response facilities, equipment, and materials are maintained and in working condition at all times. However, facilities and equipment may be taken out of service for required maintenance if alternate provisions are put in place during these periods.	Confirm that ERFs and their equipment are being maintained by requesting the maintenance records for review Emergency response facilities, equipment and materials must be in a state of readiness at all times. Accordingly, licensees should implement provisions to ensure that such equipment, facilities and materials are always in working condition. These provisions are to include regular inspection, calibration, testing, and maintenance, or replacement as required, within formal systems of quality control and inventory control and accounting. This criterion includes all required PPE.	Demonstrated within BWXT EOC.	Met
Source: Other Details: REGDOC-2.10.1, section 2.3.3 **Testing the Implementation of Emergency Measures** Perform exercises to test the effectiveness of their EP program	During the Pre-Job Brief licensees discuss the following: • Emphasis on Safety during the exercise for all participants as well as those not involved in the drill • Ensure exercise pre-brief has a “NO DUFF” clause in it for communicating the presence of a real emergency and stopping the exercise play.	Demonstrated	Met

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
	• Rules of engagement have been clearly defined and the limitations of response of participants during the exercise are clearly understood		
Source: Other Details: REGDOC-2.10.1, section 2.3.4 **Public Preparedness Requirements** Incorporate information on public emergency preparedness into their public information program (established as per RD/GD-99.3, Public Information and Disclosure) to ensure information on emergency preparedness and response is communicated to surrounding communities and stakeholders.	Verify through discussions with licensee and offsite authorities and by review of documentation the extent to which offsite authorities were involved in the process	Demonstrated through discussion with Toronto Fire Service personnel.	Met
Source: Other Details: REGDOC-2.10.1, section 2.4 **Program Management** Include at a minimum, the following elements in management systems: 1. A written policy statement issued by licensee senior management, committing all units of the organization to the system and its effective implementation	Verify through a sample of applicable supporting paperwork to ensure that the program is being sustained and maintained Verify that OPEX is being incorporated • manage their EP programs in accordance with management system requirements • detect and report deficiencies, and ensure all corrective actions are tracked and implemented as per management system requirements	N/A	N/A

Criteria	Compliance Expectation / Inspection Methods	Comments	Met / Not Met
2. A program owner identified with the authority to ensure that resources are given to all aspects of the EP program 3. Procedures describing the planned and systematic actions necessary to provide adequate confidence that all specified requirements are satisfied 4. Procedures that specify who (position or unit) is to review and update the program on an ongoing basis, and how this is to be done 5. Review and update EP program and associated documentation (e.g., response plan, training material, procedures, etc.) at defined intervals to take into account relevant factors, such as operating experience, changing needs or circumstances, and lessons learned from real events			