Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

UNPROTECTED/NON PROTÉGÉ

SUPPLEMENTAL/COMPLÉMENTAIRE

CMD: 20-H2.B

Date signed/Signé le : FEBRUARY 24, 2020/ 24 FÉVRIER 2020

Reference CMD(s)/CMD(s) de référence : 20-H2

A Licence Renewal

BWXT Nuclear Energy Canada Inc.

Commission Public Hearing

Scheduled for:

March 2 to 6, 2020

Submitted by:

CNSC Staff

Un renouvellement de permis

BWXT Nuclear Energy Canada Inc.

Audience publique de la Commission

Prévue pour :

les 2-6 mars 2020

Soumise par :

Le personnel de la CCSN

e-Doc 6096979 (WORD)
e-Doc 6116003(PDF)

Summary

This supplemental CMD presents CNSC staff's response to key concerns and issues raised in interventions, CMD 20-H2.2 to CMD 20-H2.249 received on the BWXT relicensing application.

CNSC staff continue to conclude that there is no risk to the public or the environment from pelleting conducted at BWXT in Peterborough or Toronto.

Résumé

Le présent CMD supplémentaire présente les réponses du personnel de la CCSN aux interventions fournies dans les CMD 20-H2.2 à CMD 20-H2.249.

Le personnel de la CCSN demeure d'avis que les activités de fabrication de pastille aux installations de BWXT à Peterborough ou Toronto ne posent pas de risque pour la santé du public ou l'environnement.

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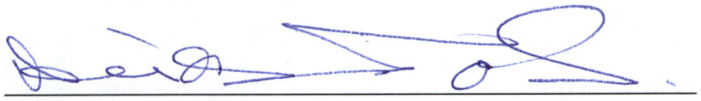
Signed/signé le

February 24, 2020



Haidy Tadros

Director General

Directorate of Nuclear Cycle and Facilities Regulation

Directrice générale de la

Direction de la réglementation du cycle et des installations nucléaires

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EXECUTIVE SUMMARY

The current BWXT Nuclear Energy Canada Inc. (BWXT) licence, FFOL-3620.01/2020 [1], expires on December 31, 2020. BWXT has applied to renew the licence for a period of 10 years, until December 31, 2030. Canadian Nuclear Safety Commission (CNSC) staff assessed and evaluated BWXT's application and performance since 2010. CNSC staff's assessment, as well as staff's conclusions and recommendations to the Commission are found in commission member document (CMD) CMD 20-H2 [2].

The CNSC received 248 interventions with regards to BWXT's application to renew the licence. Annex A contains staff responses to the key issues and concerns raised by intervenors.

Referenced documents in this CMD are available to the public upon request. When available, CNSC staff have included web hyperlinks to facilitate information sharing.

1. OVERVIEW

1.1 Background

BWXT Nuclear Energy Canada Inc. (BWXT) operates two Class IB nuclear facilities to manufacture nuclear reactor fuel bundles under a single nuclear fuel facility operating licence, FFOL-3620.01/2020 [1]. In November 2018, BWXT submitted an application for the renewal of its licence, with a request for authorization to conduct pelleting operations at the Peterborough facility. The proposed pelleting operations at the Peterborough facility are within BWXT's current operating limits for the possession and processing of uranium at the Peterborough facility. Canadian Nuclear Safety Commission (CNSC) staff assessed and evaluated BWXT's application and performance over the licence period from 2010 to 2019. CNSC staff's assessment, conclusions and recommendations to the Commission are found in commission member document (CMD) CMD 20-H2 [2]. CMD 20-H2 [2] was made available for public comments.

1.2 Highlights

Two hundred and forty eight interventions were submitted to the CNSC with regards to BWXT's application. CNSC staff carefully considered each intervention. CNSC staff note that many interventions expressed fear and concern about radiation, its hazards and health impacts on communities. Concerns were also brought forward regarding the regulatory authority of the Commission. CNSC staff have responded to key topics raised using internationally recognized science and accepted information regarding these topics. CNSC staff also noted reoccurring themes regarding the need for better communication with the public on nuclear facilities. We are a learning organization and will continue to work to improve how we communicate and disseminate information with the public. Based on CNSC requirements outlined in REGDOC 3.2.1 *Public Information and Disclosure*, BWXT will be required to take the information contained in these interventions into account when updating their public information and disclosure programs.

2. OVERALL CONCLUSIONS AND RECOMMENDATIONS

After carefully considering every intervention CNSC staff conclusions and recommendations found in CMD 20-H2 [2] remain the same. Based on the scientific data, safety requirements and CNSC staff oversight of BWXT's program there is no risk to the safety or health of the public or the environment from BWXTs operations in Peterborough and Toronto or the proposed pelleting operations in Peterborough.

2.1 Conclusion

As stated in section 5 of CMD 20-H2 [2], CNSC staff's conclusion is that with respect to paragraphs 24(4)(a) and (b) of the Nuclear Safety Control Act (NSCA) that:

1. BWXT is qualified to carry on the activities requested in its renewal application.
2. BWXT's request for authorization to conduct pelleting operations at the Peterborough facility is acceptable, as the requested activities are within this facility's current operating limits. BWXT has the required management system programs and resources in place to implement pelleting operations at the Peterborough facility. The hazards associated with the proposed activities are well characterized and controlled, and BWXT's operations would remain protective of the public and the environment.
3. In carrying on its authorized activities, BWXT has made and will continue to make adequate provision for the protection of the environment, the health and safety of persons, the maintenance of national security and measures required to implement international obligations to which Canada has agreed.
4. BWXT's proposed financial guarantee (FG) of approximately $48.1 million, through two proposed instruments, a letter of credit for $2 million and a surety bond for approximately $46.1 million, is a credible cost estimate and the FG instruments are acceptable.

2.2 Recommendations

CNSC staff have no further recommendations but will continue to work to improve how we communicate and disseminate information to the public.

ACRONYMS

Acronym	Definition
ALARA	As Low As Reasonably Achievable
BATEA	Best available technology economically available
BDBA	Beyond Design Basis Accidents
BLEVE	Boiling liquid expanding vapor explosion
BWXT	BWXT Nuclear Energy Canada Inc.
CARN	Citizens Against Radioactive Neighborhoods
CCME	Canadian Council of the Ministers of Environment
CEAA	Canadian Environmental Assessment Act
CLC	Community Liaison Committee
CSA	Canadian Standards Association
CNSC	Canadian Nuclear Safety Commission
CMD	Commission Member Document
DRL	Derived Release Limit
EBRL	Exposure Based Release Limits
EMP	Environmental Monitoring Program
EPP	Environmental Protection Program
EPR	Environmental Protection Reviews
ERA	Environmental Risk Assessment
ERAP	Emergency Response Assistance Plan
EVPCROO	Executive Vice President and Chief Regulatory Operations Officer
FFOL	Fuel Facility Operation Licence
FG	Financial Guarantee
FLOL	Facility licence operating limits
g	gram
HEPA	High Efficiency Particulate Air
IAAC	Impact Assessment Act of Canada
IAEA	International Atomic Energy Agency

Acronym	Definition
IEMP	Independent Environmental Monitoring Program
IRRS	Integrated Regulatory Review Service
KI	Potassium Iodine
kg	Kilograms
Km	Kilometer
L	Liter
LCH	Licence Conditions Handbook
LOW	Lake Ontario Waterkeepers
M^3	Cubic Meter
MECP	Ministry of Environment Conservation and Parks
mg	Micrograms
MSDS	Material Safety Data Sheet
mSv	Millisieverts
NEW	Nuclear Energy Worker
NFPA	National Fire Protection Association
ng	Nanograms
NSCA	Nuclear Safety and Control Act
PDP	Preliminary Decommissioning Plan
PIDP	Public Information and Disclosure Program
POI	Point of Impingement
PTNSR	Packaging and transport of nuclear substances regulations
QRA	Quantitative risk assessment
Ra-226	Radium 226
REGDOC	Regulatory Document
UNDRIP	United Nations Declaration on the rights of Indigenous People
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UO	Uranium Oxide
UO_2	Uranium Dioxide
µg	Microgram

Acronym	Definition
µm	Micrometer
µSv	Microsieverts
WWTP	Waste Water Treatment Plant

REFERENCES

1. BWXT Nuclear Energy Canada Inc: FFOL-3620.01/2020 (e-Doc 5151105)

2. CMD 20-H2 BWXT Nuclear Energy Canada Inc. Application to renew licence for Toronto and Peterborough Facilities (e-Doc 6032464).

3. UNSCEAR (2014), Sources, Effects and Risks of Ionizing Radiation, United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) 2013 Report, Volume II: Scientific Annex B - Effects of Radiation Exposure of Children, UN, New York.

4. Boffetta P, Fryzek JP, Mandel JS. Occupational exposure to beryllium and cancer risk: a review of the epidemiologic evidence. *Critical Reviews in Toxicology*. 2012 Feb; 42(2):107-18.

5. Ministry of the Environment, 2011. Soil , Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act

6. Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on December 9 to 11, 2013 http://www.nuclearsafety.gc.ca/eng/the-commission/pdf/2013-12-09-11-Minutes-e-Edocs4331805.pdf

7. CMD 17-M53 Event Initial Report BWXT Nuclear Energy Canada Inc. – Beryllium Occupational Exposure Level Exceedance for two workers (e-Doc 5354496)

ANNEX A – SUMMARY OF KEY ISSUES RAISED BY INTERVENORS AND RESPONSES FROM CNSC STAFF

THEME: RADIATION

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
1	Concern about radiation exposures to the public, in particular to women and children as the most vulnerable to harm from radiological and chemical hazards.	CMD 20-H2.39, 44, 77, 85, 107, 120, 121, 126, 154, 157, 159, 178, 188, 192, 197, 203, 208, 238	The principles outlined in REGDOC 2.9.1 *Environmental Protection* and CSA Group Standard N288.6-12 *Environmental Risk Assessment at Class 1 nuclear facilities and uranium mines and mills* require that the most vulnerable groups be considered during the Environmental Risk Assessment (ERA). The ERA completed by BWXT is in compliance with CNSC regulatory expectations. The estimated highest public radiation dose from pelleting operations in Peterborough is 0.007 mSv, about 1% of the public 1mSv/year limit. The highest public radiation dose from BWXT Toronto over the licence term was 0.0175 mSv in 2018 which is well below the public 1 mSv/year limit. While it is true that for a given radiation dose, children are generally more at risk of tumor induction than adults (UNSCEAR 2013 Vol. II: Scientific Annex B [3]), no adverse health effects have been found in the scientific literature at these very small doses. CNSC staff are satisfied that the public, including young children are protected and

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			safe from the emissions from pelleting operations. Please also see response 2.
2	Comments to the effect that there is no safe level of radiation	CMD 20-H2.16, 23, 41, 43, 87, 121, 150, 154, 155, 192, 196	This statement is scientifically unfounded. Large amounts of scientific research has gone into understanding radiation. Its effects have been studied for decades to understand how and at what levels radiation doses can cause health effects. Doses above 100 mSv are known to increase the likelihood of cancer depending on the amount and type of radiation, the person's sensitivity to the radiation and other factors. Doses below 100 mSv may increase the likelihood of cancer, but so far, the incidence of radiation-related cancer at doses below 100 mSv cannot be distinguished from that of the general population. Human health studies provide no evidence of cancer at much smaller radiation doses. To protect members of the public and to address any uncertainties in radiation risk, the *Radiation Protection Regulations* stipulate the radiation dose limits at 1 mSv/year for members of the public (for artificial sources over and above natural background and medical radiation). The CNSC also requires licensees to optimize radiation protection measures so that doses are kept As Low As Reasonably Achievable (ALARA). Canadians receive, on average, 1.8 mSv of radiation each year from all sources of background radiation (from sun, rocks, soil, etc.).

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
3	Concern that inhalation of uranium dust at low levels causes harm. Concern that the proposed pelleting operations will result in a harmful radiation dose.	CMD 20-H2.85, 102, 145, 155, 184, 192, 205, 206, 240	The annual doses to members of the public resulting from BWXTs Toronto facility between 2011 and 2018 was ~ 0.007 mSv. This is well below the regulatory radiation dose limits at 1 mSv/year for members of the public. About 93% of this dose was due to external exposure from gamma exposure. CNSC staff calculated that in a hypothetical scenario of a toddler located at the fenceline of BWXT's Peterborough facility the inhalation of UO_2 released to the air resulted in an estimated dose of approximately 0.0005 mSv/year to the most exposed members of the public. In these scenarios, very conservative assumptions are, such as a toddler located at the BWXT facility fenceline.
4	Concern related to the inhalation of uranium dust: Each gram (g) of uranium powder contains 3.8 trillion particles and that just one particle, inhaled into the lungs, can cause life-threatening health problems.	CMD 20-H2.114, 116, 126, 133	This statement is scientifically unfounded. The number of particles in one gram of UO_2 depends on the particle size. For a default 1 µm sized particle, there would be about 174 billion particles in 1 g of UO_2. The dose from inhaling a single particle is about one billion times less than the regulatory public dose limit of 1 mSv/year. It's effectively zero dose. Please also see response 1, 2 and 3
5	Concern related to perceived lack of monitoring of alpha radiation at BWXT. Questions related to whether the CNSC considers internal vs external dose? Are the dose limits prescribed by the CNSC and Health	CMD 20-H2.102, 131, 167, 207, 218, 240	The CNSC considers both internal and external dose. Regulatory dose limits prescribed by the CNSC and by Health Canada are protective of the public. The limits for exposures to members of the public are stipulated in the *Radiation Protection Regulations*,

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
	Canada protective of the public?		made under the NSCA and are legally enforceable. CNSC has confirmed that BWXT is in compliance with the requirements of the *Radiation Protection Regulations.* CNSC staff use CSA Group Standard 288.6-12 *Environmental risk assessments at Class I nuclear facilities and uranium mines and mills* in order to determine whether licensees are in compliance with regulatory requirements regarding risk assessment and protection of the environmental and public health. CNSC staff reviewed the BWXT ERA and concluded that risks attributable to emissions of radiological and non-radiological substances from BWXT's current and proposed operations in Peterborough are very low and, therefore, no adverse effects to human health and non-human biota are expected. The ERA for pelleting operations submitted by BWXT has considered the contributions of internal and external doses The internal dose contribution is due to uranium, which is almost entirely due to alpha radiation.
6	Question about the potential for release of radon from yellowcake or UO_2 powder or pellets	CMD 20-H2.102, 176	Only UO_2 is received at BWXT for pelleting operations (not yellowcake). No detectable radon is released from UO_2 powder or pellets. Radon is produced by the decay of Ra-226, which is

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			part of uranium decay series from uranium ore. At the milling stage, all progeny of uranium, including radium, are removed and concentrated in the tailings. Therefore, there is such little radon activity in UO_2 pellets and powder that it is undetectable.
7	Comment that CNSC staff have incorrectly determined that BWXT has applied the ALARA principle to keep doses to persons ALARA over the licence period CNSC staff: i. Failed to consider social and economic factors, ii. Failed to consider the views of the public and iii. Incorrectly restricted their assessment of ALARA to quantitative arguments in judging reasonableness.	CMD 20-H2.242	As required under the *Radiation Protection Regulations* CNSC staff evaluated BWXT's Radiation Protection Program to verify that doses are ALARA. CNSC staff are satisfied that BWXTs application of the ALARA principle is in accordance with regulatory requirements and international best practices. The licensee may consider social and economic factors when establishing ALARA targets. The CNSC's Guidance Document G-129 stipulates that licensees need to not consider any further ALARA assessments if the initial assessment yield doses to the public below 50 uSv/year. BWXT emissions are already below this threshold.
8	Action Levels for the Radiation Protection Program at Toronto Facility are set much higher than for its Peterborough counterpart. Why?	CMD 20-H2.237	Action levels are tools used by licensees in their radiation protection program to alert them to potential loss of control of part of their program. Licensees propose what parameters within their program will be timely indicators of a potential loss of control and then select an action level value that is appropriate for the given parameter. CNSC staff review the action levels to verify they are protective of the workers. If an action level is reached, licensees must report this to the CNSC and follow required actions to investigate and restore control of

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			the program if necessary. It should be noted that exceeding an action level may not represent a loss of control of part of their program. Generally, licensees will complement their set of action levels with lower tier administrative levels that if exceeded, will prompt them to investigate and take action, if needed. In the case of BWXT, the action levels at the two locations differ due to different radiological conditions and potential for exposures. If all licensed activities were to be consolidated at one location, the CNSC would expect the licensee to reassess their action levels

THEME: HEALTH STUDIES OF WORKERS AND POPULATIONS

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
9	Comment that cancer rates in Peterborough are already higher than average.	CMD 20-H2.51, 57, 149, 157, 213	In reviewing the data on cancer rates in Peterborough, CNSC staff determined that incidences from all cancers combined in Peterborough are similar to cancer rates in Canada. Differences in specific cancer rates between Peterborough and Ontario may be explained through other cancer risk factors such as smoking, lung cancer, overweight/obesity etc. CNSC staff assessed that there will not be any increases in cancers within the community as we do not see an increase in the likelihood of adverse health effects at such low doses. The dose to the public from the BWXT Peterborough facility and pelleting operations would not result in any increases in cancer within the community.
10	Are potassium iodine (KI) pills required for Peterborough residents should the pelleting operations be approved by the Commission?	CMD 20-H2.19	No, KI pills are not required for Peterborough residents. There is no risk of criticality at BWXT Peterborough or Toronto. There is no accident scenario where KI pills would be required. KI pills are utilized in an emergency for the purposes of saturating the thyroid to prevent radioactive iodine from accumulating in the thyroid.
11	Have cancer studies on populations living near nuclear processing facilities been conducted?	CMD 20-H2.180	Many health studies have been carried out in Port Hope, Ontario where the radium and uranium processing and fabrication industry existed since 1932. These studies conclude that there are no adverse health effects attributable to the nuclear

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			industry in Port Hope. Studies carried out over several decades have repeatedly demonstrated that people who live near nuclear processing facilities are as healthy as the rest of the general population. Peterborough Public Health also does ongoing disease surveillance of the community, like other communities in Ontario. Evidence from these studies help to inform the health of populations living near nuclear processing and fabrication facilities.
12	Have there been epidemiological studies on the effects of Beryllium on children?	CMD 20-H2.121	CNSC staff are not aware of any epidemiological studies on children exposed to beryllium. The current beryllium levels found in air and soil are well below safety regulations and are protective of human health including children as such. We would not expect any health outcomes as a result of beryllium at these levels. Beryllium is only a concern for the worker not for the public or children. It is unknown if there is a difference between children and adults in terms of beryllium susceptibility. Animal studies on developmental effects associated with beryllium are not conclusive.
13	Does CNSC staff assess mental health in its assessments?	CMD 20-H2.6, 30, 94	Currently CNSC staff do not conduct mental health assessment of communities surrounding nuclear

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			facilities. However, we acknowledge the concerns related to radiation and nuclear facilities. CNSC staff conduct educational outreach activities and post educational material on our website.
14	Workers are at risk for beryllosis and chronic beryllium disease	CMD 20-H2.76, 102, 184, 237	CNSC's regulatory framework and oversight activities verify that workers are protected from both chemical and radiological hazards. CNSC staff verify that BWXT is keeping exposures to beryllium at safe levels and that the necessary personal protective equipment is available to workers. Many epidemiologic studies have been performed on cohorts of workers exposed to various forms of beryllium in different industries. Evidence of the health effects of beryllium exposure have informed the tolerable concentration for non-cancer health effects of beryllium and informed the limits that are set for workers today. Overall, the available evidence does not support a conclusion that a causal association has been established between occupational exposure to beryllium and the risk of cancer (Boffeta et al 2012 [4]).
15	Concern that children could be at risk for beryllosis and chronic beryllium disease due to the stack location in Peterborough	CMD 20-H2.9, 83, 102, 121, 138	Given the low levels of beryllium emitted from the BWXT Peterborough facility it is impossible for a member of the public to exceed any guidelines for beryllium, The CNSC's regulatory framework and oversight activities confirm BWXT has the necessary engineering controls in place to prevent beryllium exposure to the public. CNSC staff verify that BWXT

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			monitors beryllium at the stack at the Peterborough facility. The measurements at the stack are below the Ontario Ministry of the Environment and Climate Change air quality standard for beryllium. The current provincial beryllium levels are protective of human health including children.
16	Comment that there is no safe exposure of beryllium	CMD 20-H2.121	Beryllium is a mineral found in nature. It is extracted from mineral deposits and used for many commercial purposes. The general population is exposed to normally low levels of beryllium in air, food, and water during daily activities. Beryllium is used in small amounts at the BWXT Peterborough facility. CNSC staff verify that strict monitoring and engineering controls are in place to protect workers and the public from beryllium exposure and that additional personal protective equipment and clothing are administered to workers who may be exposed to beryllium. Given the low levels of beryllium emitted from the BWXT Peterborough facility it is impossible for a member of the public to exceed any provincial guidelines for beryllium. In a hypothetical example CNSC staff have calculated that if an individual was breathing directly from the stack all day they would have an intake of 20, 000 times less than the tolerable intake for health effects.
17	Comment that there is a need for a health	CMD 20-H2.121	CNSC staff do not recommend a health study on

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
	study on previous workers, community and students regarding beryllium		beryllium on previous BWXT workers and community. Epidemiologic studies have been performed on cohorts of workers exposed to various forms of beryllium in different industries. Evidence of the health effects of beryllium exposure have informed the tolerable concentration for non-cancer health effects of beryllium and informed the limits that are set for workers today. Overall, the available evidence does not support a conclusion that a causal association has been established between occupational exposure to beryllium and the risk of cancer (Boffeta et al 2012 [4]). The CNSC verifies that BWXT has controls in place (i.e. engineering controls, personal protective equipment) which minimizes exposure of workers to beryllium and therefore risks are negligible. As per regulatory requirements BWXT must report any occupational exposure above the occupational exposure limit. Workers who have experienced exposures to beryllium over the occupational exposure limit are monitored by the licensee and the licensee is required to report findings to the CNSC. The CNSC in collaboration with other federal and provincial governments and industry (BWXT, Orano, and Cameco) will be conducting a large cohort study

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			which will study cancer incidence and major causes of mortality in uranium workers including workers at BWXT Toronto and Peterborough.
18	The US Occupational Safety and Health Administration has designated a permissible exposure limit in the workplace at a time-weighted average of 2 µg/m^3 and a constant exposure limit of 5 µg/m^3 over 30 minutes, with a maximum peak limit of 25 µg/m^3. The National Institute for Occupational Safety and Health has set a recommended exposure limit of constant 500 ng/m^3. The immediately dangerous to life and health value is 4 mg/m^3. What are the comparable values in Canada?	CMD 20-H2.218	The values used in Canada are comparable and are protective of worker health. The Ontario Ministry of Labour, Training, and Skills Development current Occupational Exposure Limits time-weighted average for beryllium is 0.05 ug/m^3. The *Canada Labour Cod*e uses the same number. CNSC staff confirm that BWXT uses this value as a limit and in areas that exceed this value, workers must wear respirators.

THEME: ENVIRONMENTAL MONITORING AND ENVIRONMENTAL ASSESSMENT

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
19	What happens to uranium that is released? Where does it end up? If released into a sewer system, does it settle downstream?	CMD 20-H2.161	At the BWXT facilities, uranium air emissions from the stacks are released into the atmosphere and uranium liquid effluent from wastewater is released into the municipal sewer systems. Uranium air emissions from the facilities disperse into the atmosphere leading to deposition on the ground. Since air emissions are low at both facilities, the concentration of uranium emissions entering the environment is extremely low and does not impact the health and safety of people and the environment. Wastewater generated from BWXT's operations is treated, discharged to the municipal sewers, and directed to the municipal wastewater treatment plants. The treated wastewater is then discharged to the receiving environment (Lake Ontario for Toronto and the Otonabee River for Peterborough).
20	BWXT's Toronto released 46.2 g of uranium into the air, and 3.62 kg of uranium in the water over the past five years. This is compared with less than one gram into the air and sewer in Peterborough over the same time period.	CMD 20-H2.98, 100, 126, 128, 154, 157, 200	The data provided by the intervenor is correct and CNSC staff note that these releases are well below current facility operating limits and the new exposure based release limits (EBRL). The public and the environment remain protected at these levels. Releases at the two facilities will vary as BWXT Toronto produces UO pellets, whereas BWXT Peterborough manufactures and assembles fuel bundles.
21	Concern that action levels are too high at both	CMD 20-H2.154,	Action levels are tools used by licensees in their

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
	facilities	237	environmental protection program (EPP) to alert them to potential loss of control of part of their program. Licensees propose what parameters within their program will be timely indicators of a potential loss of control and then select an action level value that is appropriate for the given parameter. CNSC staff review the action levels to verify they are protective of the environment. If an action level is reached, licensees must report this to the CNSC and follow required actions to investigate and restore control of the program if necessary. It should be noted that exceeding an action level may not represent a loss of control of part of their program. Generally, licensees will complement their set of action levels with lower tier administrative levels that if exceeded, will prompt them to investigate and take action, if needed. The action levels are protective of the health and safety of the public and the environment. The CNSC has standardized the methodology for calculating and establishing action levels at nuclear facilities. The action levels are based on predicted performance (new facilities) or on actual operating performance (existing facilities). BWXT is currently revising their action levels against CSA standard N288.8 *Establishing and implementing action levels for releases to the environment from nuclear facilities.*
22	Concern regarding the absence of a beryllium monitoring program	CMD 20-H2.104	BWXT has implemented an Effluent Monitoring Program for its beryllium air emissions and liquid

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			effluent. The program is in compliance with CSA Standard N288.5 *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*. As part of BWXT's Effluent Monitoring Program, beryllium air emissions and liquid effluent are sampled and analyzed routinely. BWXT performs continuous in-stack monitoring for beryllium emissions and samples treated beryllium effluent prior to discharging to the municipal sewers. BWXT's Effluent Monitoring Program results are presented in its annual compliance monitoring reports which are publically accessible on BWXT's webpage.
23	Concern that citizens are being asked to conserve water yet the pelleting process will require using additional water.	CMD 20-H2.60	If pelleting operations are authorized at the Peterborough facility the amount of water required for the pelleting process would be equivalent to the volume currently being used by the pelleting operations in Toronto. The CNSC licensing basis requires that BWXT abide by all necessary municipal and provincial requirements, which would include permits for water use.
24	Concern that BWXT does not monitor groundwater.	CMD 20-H2.51, 79, 108 (Lake Ontario Waterkeepers (LOW) Recommendation 3)	CNSC staff use the CSA standards N288.6 and N288.7 to assess potential impacts of BWXT's operations and concluded that the operations would not pose any risk to the environment and human health. No source was identified on the BWXT property that would result in the contamination of stormwater. The IEMP soil sample results in the vicinity of the Peterborough facility are below the upper range of Ontario's typical

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			background concentrations for uranium and beryllium, indicating that contaminated stormwater from run-off is unlikely. Due to the high impervious coverage around BWXT facilities (i.e. parking lots, buildings and roads), stormwater runoff can flow to underground stormwater drains. BWXT does have control measures in place to mitigate any potential off-site contamination of stormwater, All facility generated wastewater on site (including stormwater from the building catchment systems) is directed to BWXT's effluent filter system prior to a single point discharge to the municipal sewers. Based on the control measures implemented by BWXT and in the absence of a point source contamination on site, CNSC staff has concluded that storm water from BWXT Peterborough does not pose a risk to the health and safety of people and the environment
25	If BWXT is bring pelleting operations to Peterborough, should the environmental emissions and monitoring practices be equal to or better than those in place in Toronto?	CMD 20-H2.47	BWXT's EPP at the Toronto facility ensures that the health and safety of people and the environment remains protected. If pelleting operations are consolidated in Peterborough, BWXT is required to revise its EPP for the Peterborough facility prior to the commencement of pelleting. CNSC staff have included a proposed licence condition (15.1), which is a hold point that requires BWXT to implement an environmental monitoring program (EMP) similar to

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			the one currently in place at the Toronto facility prior to starting any pelleting operations at the Peterborough facility.
26	When will BWXT or Independent Environmental Monitoring Program (IEMP) submit an updated EMP and who will oversee the program? Has baseline data been collected in Peterborough and if not how can BWXT predict the effects when they may or may not make pellets?	CMD 20-H2.24, 39	Should the Commission authorize pelleting operations at the Peterborough facility, prior to conducting pelleting operations, BWXT would be required to submit an updated EMP for CNSC acceptance. This is outlined in proposed licence condition 15.1. CNSC staff are proposing to the Commission that staff would review the program and determine the necessary time frame for baseline data to be collected. This requires compliance with the relevant CSA Standards including N288.4. These standards include expectations for obtaining baseline data. The EMP must be implemented prior to commencement of pelleting operations in Peterborough with the baseline environmental data submitted to CNSC staff for review and acceptance.
27	Have BWXT allowed for development of and increased groundwater monitoring program if pelleting is allowed?	CMD 20-H2.24, 51, 79, 216	CNSC staff verified that BWXT applied the guidance and criteria in CSA N288.7 and N288.6 to assess potential impacts of its operations and CNSC staff concluded that the operations would not pose any risk of groundwater contamination. Licence condition 15.1 requires that the BWXT submit and implement an updated EMP at the Peterborough facility prior to the commencement of production of fuel pellets. This would include an updated assessment

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			using N288.4 and N288.7 to determine whether groundwater monitoring would be required. CNSC staff would review the submission to verify that all regulatory requirements have been met.
28	Comment that contaminants should be monitored on more than a 5 year cycle.	CMD 20-H2.24	The CNSC verifies that contaminants are monitored frequently. Releases from nuclear facilities are monitored in real-time. The frequency (hourly, daily, weekly, monthly, quarterly and annually, etc.) of sample collection and reporting is dependent on the EMP for the facility. BWXT provides Annual Compliance Monitoring Reports which include the data collected. These reports are provided on its website. The CNSC post IEMP results as soon as the data has become available. The CNSC IEMP dashboard contains data in a format that can be downloaded and used. In addition, CNSC staff report on these results annually through the *Regulatory Oversight Report for Uranium and Nuclear Processing Facilities in Canada.*
29	Concern that the ERA have not been made available to the public.	CMD 20-H2.45	Licence applications are available upon request through the CNSC website and BWXT posted it on its website. REGDOC 3.2.1 *Public Information and Disclosure* instructs licensees to post ERAs on its website. BWXT has complied with this requirement and the ERA can be found on its website. https://www.bwxt.com/bwxt-nec/safety/licensing/environmental-risk-assessment
30	Comment that an ERA or Impact Assessment	CMD 20-H2.24, 30, 45, 50, 57, 11, 136,	The CNSC required BWXT to conduct ERAs for its relicensing application. The results can be found in

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	should be provided for the protection of the environment, and the health and safety of all persons.	141, 157, 160, 178, 197	CNSC staffs detailed Environmental Protection Review (EPR) and licensing technical assessment (CMD20-H2 [2]). The public and the environment surrounding both the Peterborough and Toronto facilities are protected. CNSC staff conclude that emissions from these facilities do not pose a risk. For additional information please see response 33.
31	Comment that an independent third party should be hired test the air, soil and water being discharged from the Peterborough site. The results should be shared in an accessible and open location.	CMD 20-H2.138, 139	The CNSC has implemented its IEMP to verify that the public and the environment around licensed nuclear facilities are protected. CNSC staff collect the samples and send them to the CNSC's independent laboratory for testing and analysis. Since the implementation of the IEMP, the area outside of the BWXT Toronto site perimeter was sampled in 2014, 2016, 2018 and 2019. The IEMP results coupled with the Ministry of Environment Conservation and Parks (MECP) data confirm that the public and the environment are protected and that there are no expected health impacts. IEMP results are shared with the public through the CNSC website.
32	Based on the IEMP data: (a) it is extremely likely beryllium concentrations in soils have significantly ($p<0.05$) increased in response to emissions, (b) BWXT is very likely the source of the beryllium emissions, and; (c) beryllium air concentrations during 2014	CMD 20-H2. 152, 242, 245 (CARN Recommendation 8 & 10)	a) All soil concentrations of beryllium measured near the BWXT Peterborough facility are within the range of natural background for Ontario (2.5 mg/kg). In addition, CNSC staff sampled soil at a reference location in 2019 (GP11) located approximately 18 km from the Peterborough facility. The measured concentration was 1.25 mg/kg which is within the range of natural background for beryllium in Ontario and not significantly different from the average and

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	to 2019 were likely above the ambient air quality limits.		median results measured near the facility in 2019 (1.42 mg/kg and 1.33 mg/kg, respectively). This means that routine releases of beryllium due to BWXT operations are very low and have not contributed significantly to existing levels in surrounding soil. It is CNSC staff's position that the IEMP soil data demonstrates variations of background with no accumulation of beryllium in soil due to current operations of the BWXT facility in Peterborough. b) BWXT performs continuous in-stack monitoring for beryllium emissions at the direct point of discharge. Throughout the current licensing period, total beryllium discharge to air has been negligible. Total beryllium discharges are not reported since beryllium emissions from the stacks have consistently remain low (0.000-0.009 µg/m^3). This indicates that it is highly unlikely that beryllium concentrations in the receiving environment are attributable to BWXT's operations. c) Sampling data have confirmed that beryllium concentrations in air remained below 0.003 µg/m^3 between 2014 and 2019. This value is well below Ontario's MECP air quality standard for beryllium of 0.01 µg/m^3.
33	**CARN Recommendation 7:** Given the significant changes proposed, the ERA should be updated with data from 2017 and 2018,	CMD 20-H2.245	To ensure the environment remains protected, BWXT is required to submit an ERA on an iterative basis, as outlined in REGDOC 2.9.1. ERAs, assess the potential

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	and, if possible, with data from 2019, before the Commission makes any decision regarding the requested licence renewal. **CARN Recommendation 13:** The licensing materials should explicitly address the potential impact on children at the school in particular.		risks to the environment and human health by looking at the specific hazards from a facility or project, and the potential pathways of exposure to receptors. This in turn informs the licensee or applicant's EMP. BWXT submitted three ERAs to the CNSC in support of its licence renewal application, one for the Peterborough facility, one for the Toronto facility, and a third for the Peterborough facility with the pelleting operations from the Toronto facility. If pelleting operations are conducted at the Peterborough facility, BWXT is expected to implement an EPP equal to or better than what is currently in place at the Toronto facility. BWXT's EPP for the Toronto facility ensures that the health and safety of people and the environment remains protected. If pelleting operations are conducted at the Peterborough facility BWXT would be required to submit an updated EMP for CNSC acceptance. This is outlined in proposed licence condition 15.1. CNSC staff are proposing to the Commission that staff would review the program and determine the necessary time frame for baseline data to be collected. This requires compliance with the relevant CSA Group Standards including N288.4. These standards include expectations for obtaining baseline data.
34	Concern pelleting operations could contaminate residential yards, school	CMD 20-H2.73, 77, 82, 112, 132, 159	CNSC staff assessed and concluded that proposed pelleting operations in Peterborough would not pose

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	vegetable garden and drinking water.		any additional risk of groundwater or soil contamination at the Peterborough facility. BWXT applied the guidance and criteria in CSA N288.6 and N288.7 on groundwater protection and groundwater monitoring to assess potential impact of the proposed operation on groundwater for both facilities. CNSC concluded that the operations would not pose any risk to the environmental and human health.
35	Comment that uranium concentrations are above background concentrations in air and soil. Uranium in soil is as high as 13 µg of uranium/g of soil, which is close to the Canadian Council of the Ministers of Environment (CCME) guideline of 23 µg/g.	CMD 20-H2. 73, 91, 121, 131, 139, 152, 157, 242, 245 (CARN Recommendation 8)	CNSC staff reviewed the soil monitoring data for BWXTs Toronto facility measured in 2014-2018 (including maximum concentrations). The data are below the provincial range of natural background (0 to 2.5 mg/kg) and essentially below the concentrations detected previously. Therefore, there is no evidence of accumulation of uranium in surface soil near BWXT facility in Toronto. Uranium in soils at the BWXT Toronto facility is discussed in CMD 20-H2 [2] section 3.9 and also at the Commission Meeting held December 9-11, 2013 in Toronto. Paragraphs 93 to 98 of the Minutes of the CNSC Meeting [6] outline the soil sampling conducted at the BWXT Toronto facility. The MECP undertook independent soil sampling in 24 public areas around the BWXT facility in Toronto. All soil concentrations of uranium were in the range of natural background for Ontario (up to 2.5 mg/kg) except for two sampling locations in close vicinity to the facility (i.e. 2.56 mg/kg and 2.93 mg/kg). All the soil

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			concentrations were well below the most restrictive CCME soil quality guideline for residential/parkland land use (23 mg/kg) and therefore did not pose any risk to humans and the environment.
36	Over five years, three sampling periods (2014, 2018 and 2019) took place and the average concentration of beryllium over the 8 sites monitored increased with each sampling period. The result was a total increase of 49% since 2014 (from an average of 0.95 mg/kg dry weight to 1.42 mg/kg dry weight). The highest concentration reported (2.34 mg/kg dry weight, 83% higher than the average of the other sites that year) was in 2019 from the Prince of Wales Public School playground If the small sample size from the playground site were found to be truly representative, and concentrations were to continue to rise at this rate (134% increase over 5 years), the CCME guideline would easily be surpassed at the school during the 10 year proposed licensing period.	CMD 20-H2. 152, 209, 245 (CARN Recommendation 8, 12 & 14)	CNSC staff conducted IEMP sampling of soils in Peterborough in 2014, 2018 and 2019. Over the three years, 25 samples were collected from 9 locations. All results are within the upper range of typical background concentrations for beryllium in Ontario soils of 2.5 mg/kg (MOE 2011[5]) and below the CCME soil quality guidelines for the protection of environmental health (4 mg/kg) and human health (75 mg/kg). Therefore, according to the soil standards, there is no indication that emissions of beryllium due to BWXT operations have affected Peterborough soils and there is no risk to the public from current concentrations of beryllium in soil. The ranges of measured concentrations likely reflects short-term variations that are within the background range. These variations are typical and cannot be used to characterize the long-term trends of beryllium behavior in the environment. The CNSC's next steps will be to conduct follow up soil sampling in the summer of 2020 in Peterborough. These results will be posted on the CNSC website and CNSC staff will provide an update to the public and the Commission in December 2020 during the Regulatory Oversight Report on Uranium Processing and Nuclear Substances Facilities in Canada: 2019.

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			CNSC staff have planned to conduct a full IEMP sampling program in 2022. Furthermore, CNSC's IEMP air sampling results have consistently remained low and below minimum detection limits (<0.0003 µg/m^3), indicating that air deposition into soil is negligible from BWXT's operations.
37	Comment that uranium discharges to the Toronto sewer were greater than that released to the Peterborough sewer.	CMD 20-H2.76, 136, 154	This comment is correct. BWXT Toronto releases larger amounts of water to the sewer as the pelleting operation requires larger amounts of water. The releases for both facilities are well below levels that may cause a concern for the health of the environment or the public. BWXT's licensing basis requires that it complies with the applicable municipal and provincial regulations, including municipal sewer by-laws.
38	Atmospheric uranium emissions could extend 2 km or further from the BWXT Peterborough facility if pelleting operations were conducted. Is there a 2 km buffer zone around nuclear facilities?	CMD 20-H2.16, 17, 109, 159	There is no need for a 2 km buffer around nuclear processing facilities in Peterborough or Toronto. Uranium emissions from the Toronto facility currently meet the MECP air quality standard for uranium (0.03 µg/m^3) in the environment, indicating the health and safety of people and the environment is protected. The MECP standard applies at the point of impingement (POI). BWXT Toronto is required to control its uranium stack emissions to ensure they meet the POI in the environment. This is the location in the environment where air emissions from the stack plume intersect with the ground. Based on dispersion modeling, this is a set distance away from the point of

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			release at the stacks. At the Toronto facility, uranium emissions from the facility enter the atmosphere at concentrations below the POI standard, indicating the health and safety of people and the environment remains protected. Since production levels will remain the same if operations are consolidated in Peterborough, the atmospheric uranium emissions in Peterborough would be similar to the current operations in Toronto.
39	Concern that ERA was inadequate and lacking of required details. The monitoring program samples only one point for Uranium air emissions (ventilation stack). To adequately sample for air emission BWXT should be required to; Use Meteorological data, presented but not used in the ERA and conduct Plume Dispersion Modelling for the Plant area and properly design a community monitoring program. This would require air monitoring within the plant area and around the community. Beryllium is monitored at three locations. BWXT provides no supporting data to show how these sampling points and times where developed.	CMD 20-H2.79	CNSC staff use CSA Group Standard 288.6-12 *Environmental risk assessments at Class I nuclear facilities and uranium mines and mills* in order to determine whether licensees are in compliance with regulatory requirements for risk assessment, protection of the environment and public health. CSA N288.6-12 indicates that nature and complexity of ERA will vary according to the nature and complexity of the subject (site, scenario, magnitude, facility, etc.). CNSC staff reviewed the BWXT ERA and concluded that risks attributable to emissions of radiological and non-radiological substances from BWXT current and consolidated operations in Peterborough are very low and, therefore, no adverse effects to human health and non-human biota are expected
40	What constitutes unreasonable risk?	CMD 20-H2.87	The NSCA and its regulations do not define "unreasonable risk". Parliament has given

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			the Commission the authority to be able to judge and consider what is an unreasonable risk. The objects of the Commission include regulating in order to prevent unreasonable risk to the environment, health and safety and national security and to ensure Canada complies with its international obligations. Subsection 24(4) of the NSCA requires the Commission to make a determination – to form an opinion – respecting whether an applicant is qualified to carry on an activity and whether the applicant will, in carrying on the activity, adequately provide for protection of health, safety security and international obligations. This determination requires the Commission to exercise its judgment and use its expertise to determine whether an applicant satisfies the requirements under the NSCA. In making a licensing decision, the Commission is guided by the purpose of the NSCA found in section 3 of the NSCA and the objects of the NSCA found in section 9 of the NSCA. The Commission balances risks and benefits when making a licensing decision. In order to make a licensing decision, the Commission considers recommendations put forth by CNSC staff. As Parliament has given the authority to the Commission to decide whether it will issue, renew, amend or replace a licence, this includes the Commission considering all the recommendations put forth by the CNSC staff and deciding what is an unreasonable risk.
41	Can you please clarify the difference between	CMD 20-H2.2, 87,	EA is a legislated process under the *Canadian*

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	an ERA and an EA or Environmental Impact study? Which applies to BWXT Peterborough?	245 (CARN Recommendation 13)	*Environmental Assessment Act, 2012* (CEAA 2012), now replaced by the *Impact Assessment Act of Canada, 2019* (IAAC, 2019), which came into force in August 2019. The EA process is a planning tool for decision makers to evaluate the potential environmental effects of a project and to determine adequate mitigation measures. As outlined in CMD 20-H2 [2] section 2.1, the BWXT licence renewal application was reviewed by CNSC staff against CEAA 2012's *Regulations Designating Physical Activities*, or the "project list". CNSC staff determined that the licence renewal did not trigger any sections of the project list and so an EA under CEAA 2012 was not required. However, to fulfill the Commission's mandate for the protection of the environment an environmental assessment under the NSCA was performed and BWXT was required to submit an ERA on an iterative basis, as outlined in REGDOC 2.9.1. ERAs, assess the potential risks to the environment and human health from an application by looking at the specific hazards from a facility or project, and the potential pathways of exposure to receptors. This in turn informs the licensee or applicant's environmental monitoring program. BWXT submitted three ERAs to the CNSC in support of its licence renewal application, one for Peterborough, one for Toronto, and a third for

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			Peterborough with the proposed pelleting operations from the Toronto facility.
42	Concern that BWXT reported increases in beryllium concentrations in water in 2016.	CMD 20-H2.243	There was an increasing trend in beryllium concentrations in water from 2013-2015, with 2015 being representative of the highest concentration. However, the beryllium concentrations in 2015 were well below Ontario's Provincial Water Quality Objective indicating no impact to the health and safety of people and the environment. In 2015, BWXT's internal control level was exceeded which prompted BWXT to initiate an investigation and implement corrective actions. As a result, BWXT replaced part of its treatment system in 2015, resulting in a downward trend of beryllium liquid effluent concentrations in the following years.
43	According to BWXT's record, uranium in boundary air sampling shot up in 2016. What happened?	CMD 20-H2.243	BWXT Toronto reports the average and maximum uranium concentrations from its boundary air quality monitoring program. The maximum concentration reported in 2016 was higher when compared to previous years. The maximum value reported in 2016 was attributed to maintenance work as BWXT was implementing improvements to sampling of the furnace stacks at that time. The remainder of the samples collected before 2016 and after 2016 remained low and well below BWXT's action level.
44	Comment that discharging effluent into a smaller water system would result in a large impact (compared to discharging into Lake Ontario).	CMD 20-H2.90, 190	If pelleting was conducted in Peterborough, it is expected that Peterborough would process the same volume of water that's currently being used at Toronto. This would increase the volume of liquid effluent

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			discharged to the Peterborough municipal sewers so a larger volume of treated wastewater would be introduced into the receiving environment (Otonabee River). BWXT's EBRLs take this into consideration. Since the receiving water body is smaller in the Peterborough area (compared to Lake Ontario), the liquid effluent EBRLs developed for Peterborough (including pelleting operations) are lower than Toronto to ensure that the health and safety of people and the environment remains protected.
45	**CARN Recommendation 9:** The CNSC should have proactively communicated the findings of the IEMP data to the public. In light of the IEMP's findings, the Commission should have deferred the hearing until such a time that there was sufficient time for public review. **CARN Recommendation 11:** A press release should be issued, bringing attention to the new IEMP data, prior to the public hearing. This press release should describe the increases in beryllium levels and explain what the reference level is.	CMD 20-H2.245	CNSC staff post IEMP results on the CNSC website once the data has become available. The CNSC then promotes these posts using social media. The IEMP dashboard http://nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/index-iemp.cfm contains all data in a format that can be downloaded and used for analysis. If CNSC staff identified a concern regarding IEMP results information would be posted on the CNSC website. CNSC staff inform the Commission using an Early Initial Report, which are presented at public Commission meetings.
46	Do discharge limits consider the facilities proximity to schools and residences?	CMD 20-H2.90	Yes. The new EBRLs, which are concentration based release limits, respect the regulatory dose limit of 1 mSv/year and pose no unreasonable risk to humans or the environment in the proximity of the facilities. The new EBRLs consider radiotoxicity, chemical toxicity,

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			and protection of aquatic life. The liquid discharge EBRLS take into consideration the annual flows from the Toronto and Peterborough municipal Waste Water Treatment Plants, as well as the annual amount of liquid discharged from the Toronto and Peterborough facilities.
47	**LOW Recommendation 8:** that proposed EBRLs for both Toronto and Peterborough facilities be further lowered to reduce reliance on downstream dilution and assumed average flows compared to real measured discharges.	CMD 20-H2.108	CNSC staff concluded that the appropriate methodology was used by BWXT when calculating the liquid EBRLs. The EBRLS for BWXT were established by taking into consideration radiotoxicity, chemical toxicity, and protection of aquatic life. The liquid EBRL calculations also consider the municipal WWTP flows and the amount of treated effluent discharged from the BWXT into the municipal sewers. This is the current approach being used by licensees when establishing or revising releases limits. CNSC staff are drafting REGDOC 2.9.2 *Controlling Releases to the Environment*, which provides a new approach to establishing release limits for controlling releases to the environment. The REGDOC outlines the process for establishing technology based release limits, which are based on the maximum predicted design release concentrations from a facility during normal operations. These types of licence limits are performance based, not exposure based. With the implementation of REGDOC 2.9.2 in the near future, all licensees will be required to adhere to the requirements outlined in the document. This will likely

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			lower licence limits in keeping with the ALARA and Best Available Technology Economically Available (BATEA) principles. Please also see response 49.
48	**LOW Recommendation 9:** that proposed action levels for both Toronto and Peterborough facilities be further lowered to reduce reliance on downstream dilution and assumed average flows compared to real measured discharges.	CMD 20-H2.108	The CNSC has clarified and standardized the role and methodology for deriving action levels with the publication of CSA N288.8. Licensees propose the action levels for their facility and must demonstrate that they remain meaningful. Action levels are derived using actual performance data from the facility operations to establish an upper value of normal operational release, which is used to define the action levels. There are administrative levels below the action levels. These action and administrative levels are meant to provide a warning to identify a potential loss of control of the EPP. This is an enhancement to the existing environmental action levels development which were set at a certain percentage of the derived release limit (DRL). Licensees are responsible for establishing action levels and CNSC staff review these action levels to verify they are meaningful and acceptable. BWXT is currently reviewing its action levels in accordance with CSA N288.8. BWXT is required to submit these revised action levels for review by the CNSC and confirmation that it complies with CSA N288.8.

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49	**LOW Recommendation 10:** that the provincial MECP and relevant municipal authorities be consulted in the developments of more conservative EBRLs and action levels, keeping in mind provincial guidance documents such as the Provincial Water Quality Objectives as well as municipal sewer bylaws and waste water treatment capacity	CMD 20-H2.76, 108 136, 154	CNSC has been in communication with MECP about BWXT's EBRLS and action levels leading up to BWXT's licence renewal hearing. BWXT is permitted by both the City of Toronto and the City of Peterborough to discharge effluent to the sewer. The regulation of radioactive and nuclear materials falls under the federal jurisdiction of the CNSC. The Sewer Use By-law requires that any facility discharging radioactive materials to the sewer must be licensed to do so by the CNSC. BWXT's release limits are protective of the health and safety of people and the environment. BWXT's actual releases into the sewer are significantly lower than the established release limits because of the control measures in place in BWXT's commitment to the ALARA principle (i.e. internal control levels, action levels, engineering control/mitigation measures, etc.).
50	**LOW Recommendation 13:** at the very least, that parameters for both Toronto and Peterborough facilities include parameters for pH and perimeter air quality monitoring.	CMD 20-H2.108	The BWXT Toronto facility already performs perimeter air quality monitoring and pH sampling. Results are publicly available on BWXT's website. Currently the BWXT Peterborough facility is exempt from requiring an air monitoring program as its emissions are below MECP's provincial air quality standards. Liquid effluent is discharged into the municipal sewers and directed to the municipal WWTPs. It is not discharged directly into the receiving environment. As part of BWXT's ERA, pH was monitored in the holding tanks and compared to the applicable drinking water criteria and sewer use by-

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			law criteria. BWXT is required through municipal Sewer Use By-law to maintain ph above 6 and below 11.
51	Concern that uranium will be released into the traditional territory of the Michi Saagiig Nishnaabeg and could impact traditional food.	CMD 20-H2.95, 216	CNSC staff confirmed that releases from the BWXT facilities throughout the current licensing period have been protective of the health and safety of people and the environment. Routine releases of uranium from the BWXT facilities have been at concentrations that are not expected to impact traditional foods.
52	How are environmental monitoring results used?	CMD 20-H2.106	Environmental monitoring results are used to confirm that the health and safety of people and the environment remains protected. Although licensees are required to implement an effective Effluent Monitoring Program which monitors direct stack emissions and liquid dischargers from the facility, the EMP is an additional control measure to assess potential impacts outside of a facility's boundary/perimeter. If results from an EMP exceed action levels, the licensee is required to conduct an investigation and implement corrective actions where warranted.
53	It's not clear from BWXT's Annual Compliance Monitoring Reports, where soil samples are collected. Are they from residences nearby the Toronto facility? At what frequency are they collected?	CMD 20-H2.104	At the BWXT Toronto facility, samples of surface soil are retrieved on an annual basis from 49 locations including the BWXT property (1 location), industrial/commercial lands (34 locations), and residential areas in the vicinity of the facility (14 locations). This information is provided in BWXT's annual compliance monitoring report tables 41 and 42 (BWXT website)

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54	Comment that IEMP beryllium sampling is conducted on only a handful of air, soil and water samples. Testing so few sites is inadequate to obtain real environmental levels.	CMD 20-H2.104	CNSC's IEMP is intended to complement BWXT's existing environmental monitoring programs that are currently in place. IEMP takes samples in publicly accessible areas in the vicinity of the BWXT facilities to ensure that the health and safety of people and the environment remains protected. The IEMP provides an independent snapshot in time of the state of the environment surrounding the BWXT facilities. The IEMP takes select samples around the BWXT facilities as the CNSC requires that BWXT's environmental monitoring programs be robust and in compliance with the relevant CSA Standards. The IEMP provides the CNSC with a means to verify that the monitoring results submitted by BWXT as part of their environmental monitoring programs are correct.
55	Can BWXT release 9000 kg of uranium in a year to Little Lake? What testing is required for Little Lake and what testing would be required if pelleting was approved in Peterborough?	CMD 20-H2.127	BWXT established release values based Facility Licence Operating Limits (FLOLs) to control uranium releases to the environment. During the 2010 relicensing CSNC staff confirmed that the FLOLs were based on a dose constraint to a member of the public of 50 µSv/hour. Based on this dose constraint, the resulting liquid effluent licence limits are 9000 kg/year (Toronto) and 760 kg/year (Peterborough). These FLOLs are established at levels that are protective of the health and safety of persons and the environment from a radiological perspective. The 9000 kg/year applies for the Toronto facility (Lake Ontario) not the Peterborough facility (Otonabee River/Little Lake). During the current licensing period,

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			uranium liquid effluent releases from BWXT Toronto were < 1 kg/year. An action level of 6 mg/L for uranium liquid effluent is in place to ensure that BWXT's releases are being controlled. For the proposed licence there are new EBRL which CNSC staff have reviewed and accepted. For more information please see response 44, 46, 47, 49 and CMD 20-H2 [2] section 3.9.
56	Comment that data presented should use consistent units of measure.	CMD 20-H2.152	Different units are reported depending on the type of emission/effluent (i.e. water or air) and whether the licensee is reporting concentration based values or loading based values which are based on the licence limits. The units are reported differently for air emissions and water effluent because of the manner for which people are exposed. Residents who reside in close proximity to a nuclear facility breathe air directly into their lungs. For these reasons, the calculation required to ensure that the health and safety of persons and the environment is protected requires that those air emissions be extremely low (units of $\mu g/m^3$). In contrast, water effluent to the sewer is directed to a waste water treatment plant where it is treated and released at a substantial distance away. In this case, the amount of uranium (kg/year) that would actually result in a very small dose is much larger. In summary, the health consequences of a high number to the sewer is very similar to the health consequences of a low number to air.
57	Are CNSC staff confident that BWXT is	CMD 20-H2.169,	CNSC staff perform multiple inspections at BWXT

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	accurately reporting emissions?	180, 203	facilities annually. During Environmental Protection inspections conducted in 2016 and 2018, CNSC staff reviewed BWXT's effluent and environmental monitoring results, the control measures in place, and the calculations and lab analyses used to obtain sample results. CNSC staff are confident that BWXT is accurately reporting emissions.
58	Does the CNSC utilize the precautionary principle?	CMD 20-H2.156	Yes, the CNSC implements the precautionary principle as referenced in REGDOC 2.9.1. BWXT's operations are regulated by the CNSC to verify that the health and safety of people and the environment remains protected. BWXT developed programs which are submitted to CNSC staff for review. CNSC staff assess the program to verify that precautionary principles are included. CNSC staff have confirmed that BWXT has release limits that are protective of the health and safety of people and the environment and that BWXT has implemented control measures based on the ALARA principle to ensure releases to the environment are well below the established release limits. For example, BWXT implements a batch and release process for liquid effluent. Batches of treated wastewater are only discharged to the sewers when in-house sample results confirm the concentration is below all control levels (i.e. internal administrative control levels, action levels, etc.). This is how BWXT is capable of keeping its releases low and well below the established release limits.
59	**LOW Recommendation 26:** that the	CMD 20-H2.108	Data regarding environmental emissions from nuclear

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
	Commission tribunal and CNSC staff should protect the public right to know about the health of their communities by ensuring environmental quality information (i.e. Monitoring results and methodologies) are not denied to the public on the grounds of such information being proprietary and confidential to licensees.		facilities is provided and publicly available and the CNSC will continue to investigate opportunities to better communicate this data with the public especially those that reside nearby nuclear facilities. Annually CNSC staff report to the Commission and the public through the *Regulatory Oversight Report for Uranium and Nuclear Processing Facilities in Canada*. These reports area available on the CNSC website http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/regulatory-oversight-reports/uranium-and-nuclear-substance-processing-facilities.cfm and include detailed monitoring data results regarding emissions. In addition IEMP data, including results are regularly updated on the CNSC website (http://nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/index-iemp.cfm). The CNSC requires public information and disclosure programs from licensees and as a result BWXT posts its annual compliance report on its websites (BWXT website).

THEME: BWXT OPERATIONS

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
60	How are vehicles going on and off the BWXT sites monitored for contamination?	CMD 20-H2.50	The CNSC requires licensees develop radiation protection programs which include the need to verify that radioactive contamination is not leaving the licensed site. As part of BWXT's radiation protection program, which was reviewed, assessed and accepted by the CNSC, BWXT routinely monitors vehicles for contamination using portable alpha contamination detectors.
61	What training would be required for pelleting to be conducted at Peterborough?	CMD 20-H2.131	CMD 20-H2 [2] section 3.2.3 outlines that CNSC staff confirmed through onsite inspections and desktop reviews that workers at BWXT are trained, provided the necessary tools for their jobs and that workplace concerns are recorded and tracked to completion. The BWXT workplaces are unionized and CMD 20-H2.38 and CMD 20-H2.42 submitted by unionized workers outlines the safety measures in place and the safety culture at BWXT's facilities. As per regulatory requirements, BWXT is required to identify the necessary training requirements in accordance with the operations processes and procedures. As outlined in CMD 20-H2 [2] section 3.2.2, BWXT maintains a systematic approach to training in compliance with REGDOC-2.2.2 *Personnel Training*. SAT is a proven methodology which enables training to be analyzed, defined, designed, developed, implemented, evaluated, documented and managed in

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			order to meet changes in operational requirements
62	Why are 10 years of injury statistics not provided?	CMD 20-H2.47	CMD 20-H2 [2] table 5 and 6 outline the number of lost time injuries over the licence term. BWXT (and GE-Hitachi) reported 2 lost time injures for both facilities over the 10 year licence term.
63	Comment that GE-Hitachi requested to produce enriched pellets and that was approved by the CNSC.	CMD 20-H2.115	In January 2010 GE-Hitachi requested an amendment to its licence to produce low enriched uranium, which was approved by the Commission. During the December 2010 licence renewal GE-Hitachi stated that they would not be pursing this option and thus the authorization was removed under the renewed licence (Record of Proceedings for GE-Hitachi September 30 and December 2, 2010). Enriched uranium is not included in the current request for renewal and considered out of scope
64	How will the facility be modified?	CMD 20-H2.131	CNSC staff outline how facility modifications are conducted in CMD 20-H2 [2] section 3.5.3. CNSC staff verify modifications are completed safely and in compliance with regulatory requirements.
65	Reference to BWXT processing "weapons grade" uranium?	CMD 20-H2.21	CNSC staff concluded that BWXT Nuclear Energy Canada Inc. does not process weapons grade uranium. Numerous inspections and verifications activities continue to confirm that BWXT processes only natural uranium. Safeguards was discussed at length at the Commission Meeting held December 9-11, 2013 in Toronto. Paragraph 110 of the Minutes of the CNSC Meeting [6] outline licensee obligations regarding the International Atomic Energy Agency (IAEA) and nuclear nonproliferation.

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
66	Comment that it's not clear what insurance BWXT is required to have.	CMD 20-H2.18, 27, 77, 78, 102, 112, 114, 117, 121, 125, 134, 146, 154, 166, 167, 176, 177, 188, 192, 201, 203, 219, 223, 225, 229-232	BWXT is required to maintain commercial insurance as per municipal and provincial requirements. BWXT is not required to maintain insurance under the *Nuclear Liability and Compensation Act*. Insurance is discussed in CMD 20-H2 [2] section 4.7 and was also discussed at the Commission Meeting held December 9-11, 2013 in Toronto. Paragraphs 104 and 105 of the Minutes of the CNSC Meeting [6] outline the insurance requirements for the facilities.
67	Comment that the events reported by CNSC staff in Table 3 does not correlate with the events discussed in the BWXT CMD. There is insufficient information on these events.	CMD 20-H2.237	CNSC staff CMD 20-H2 [2] identified 22 events. Upon reviewing the interventions CNSC staff determined an error, as only 21 events were reportable as outlined in REGDOC 3.1.2 *Reporting Requirements, Volume I: Non Power Reaction Class I Facilities and Uranium Mines and Mills*. In 2016 there were only three events, not four as listed in Table 3 of CMD 20-H2 [2]. Below is a list of the events from 2012 to 2019. Events are described in greater detail in the annual *Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada* which is available at http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/regulatory-oversight-reports/uranium-and-nuclear-substance-processing-facilities.cfm 2012 – Worker injury 2013 – Radiation action level exceedance 2014 – Worker injury, radiation action level exceedance

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			2015 – Packaging and transport event, radiation calculation error, environmental release 2016 – Security event, packaging and transport event, radiation action level exceedance 2017 – Minor hydrogen fire at Toronto facility, radiation calculation error, sprinkler event at Toronto facility, beryllium occupational exposure limit exceedance, environmental release 2018 – Environmental release, security event, power outage at Toronto facility 2019 - Beryllium occupational exposure limit exceedance, stack monitoring not conducted for 30 hours, transport event.
68	Concern over the respirator event at BWXT Toronto.	CMD 20-H2.14, 102, 128, 159, 176	The CNSC requires that licensees report events as outlined in in REGDOC 3.1.2. CMD 20-H2 [2] section 3 and an Event Initial Report CMD 17-M53 [7] was presented to the Commission, regarding worker exposures. In 2017 two workers were potentially exposed to beryllium air concentrations above 0.05 µg/m^3 which is the prescribed Occupational Exposure Limit. CNSC staff required BWXT to investigate and implement corrective actions. CNSC staff confirmed the corrective actions were implemented effectively through compliance verification activities. No health effects have been noted since the discovery of the exposure exceedance and the affected workers are under more frequent medical monitoring to detect any

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			potential long term effects.
69	Can the CNSC confirm if BWXT is involved internationally in the production of nuclear weapons? How does this impact Canada's international agreements?	CMD 20-H2.81, 87	Nuclear nonproliferation was discussed at the Commission Meeting held December 9-11, 2013 in Toronto. Paragraph 110 of the Minutes of the CNSC Meeting [6] outline the requirements of the Nuclear Non-Proliferation Treaty.
70	It is not clear what the risks of servicing and receiving contaminated equipment are?	CMD 20-H2.88	BWXT is authorized to receive and service contaminated equipment. This equipment comes from nuclear generating stations. Receiving and servicing contaminated equipment is considered to be low risk activity as the equipment is decontaminated at the nuclear generating stations before being received at the radiation refurbishment facility at the Peterborough facility. This facility is equipped to service contaminated equipment used in the maintenance of nuclear power plants. The facility contains a dedicated ventilation system that exhausts through double HEPA filters to ensure that no contamination is vented to the atmosphere. Any liquids collected within the facility are pumped to storage reservoirs and monitored for contamination prior to being discharged to the sewer.
71	Was there a hydrogen fire at the BWXT Toronto facility in 2017?	CMD 20-H2.106, 121	Yes. As reported in CMD 18-M47 on January 16, 2017, BWXT reported a hydrogen flame stemming from a leak on one of its furnaces. The fire lasted for less than four minutes and did not propagate to other materials in the plant. An employee quickly pushed the emergency stop which shut off the hydrogen supply, extinguishing the fire. As per CNSC regulatory requirements, BWXT completed an investigation and

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			submitted it to CNSC staff for review. CNSC staff review and accepted the corrective actions which included replacing hydrogen lines and conducting additional leak checks. CNSC staff verified the corrective actions during compliance inspections.
72	Concern that 700,000 tonnes of uranium can be stored on site in Toronto. How does the CNSC know that there are not fugitive emissions from the facility contaminating nearby areas?	CMD 20-H2.125, 197	The Toronto facility is authorized to possess 700 tonnes of uranium. CNSC staff evaluated and confirmed that the design of the facility as documented in BWXT's safety analysis demonstrates that the processing areas of the facility are set at a negative pressure differential relative to the other areas. This ensures that air preferentially flows into process areas and does not flow out of windows and doors. The building ventilation also exhausts through a series of HEPA filters minimize the uranium escaping into the air. Measurements confirm that any amounts in air are not harmful to members of the public.
73	Comment that BWXT needs to improve the security of the Toronto site.	CMD 20-H2.225	As per regulatory requirements set out in the *Nuclear Security Regulations* BWXTs facilities meets requirements and its security program has continued to improve at both sites from continued licensee investment and as a result of CNSC security inspections. The CNSC will continually monitor the sites security program through technical assessment of the licensee's site security plan documentation and security inspections.
74	Comment that there is no indication as to the relative amounts of depleted UO_2 compared to natural UO_2 used in the manufacturing of pellets.	CMD 20-H2.237	When manufacturing pellets, the entire run will either use all depleted UO_2 or all natural UO_2. There is no mixing of depleted and natural in bundles. The CNSC

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			does authorize separate limits for depleted vs natural uranium UO_2 powder or pellets. The safety and control measures in place at the facility are appropriate for processing natural and depleted uranium. Therefore, the risk to workers, the public or the environment is low and does not differ depending on natural vs depleted UO_2 powder or pellets.

THEME: LICENSING OF NUCLEAR FACILITIES

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
75	Who is responsible for determining the location of a nuclear manufacturing facility?	CMD 20-H2.13, 15, 32, 50, 81, 83, 85, 88, 112, 115, 120, 125, 128, 129, 134, 137, 138, 144, 145, 149, 152, 154, 155, 162-164, 166, 180, 182, 183, 187, 190, 196, 198, 201, 205, 209, 231, 241, 249	Zoning of nuclear facilities was discussed at length at the Commission Meeting held December 9-11, 2013 in Toronto. Paragraphs 88 and 89 of the Minutes of the CNSC Meeting [6] outline the zoning of the facility. During the technical review of BWXT's application CNSC staff confirmed that BWXT is in compliance with municipal and provincial permitting regulations regarding its Toronto and Peterborough facilities. The CNSC is responsible for ensuring facilities can be operated safely protecting the workers, public and the environment. If pelleting could not be conducted safely, protecting the workers, public or environment at either the Toronto or Peterborough facility, the CNSC would not licence the activity.
76	Comment that CNSC should require that each BWXT facility have a separate license application and the length of the licence.	CMD 20-H2.2, 24, 41, 61, 72, 77, 90, 104, 117, 134, 152, 172	BWXT has applied for a licence to allow it to conduct pelleting operations at the Peterborough facility. CNSC staff conducted its technical review with a bounding envelope that includes the conduct of the pelleting operations at the Peterborough facility. CMD 20-H2 [2] outlined how CNSC staff reviewed this request and staff recommendations to the Commission. CNSC staff determine that the considerations by which the Commission rendered its decision in 2010 remains valid. Licensing term is

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			not a bounding determination for the regulatory oversight. Short licences divert resources away from regulatory oversight. The CNSC has many mechanisms for updating both the public and the Commission including annual reporting, status updates, updates to ERA and FG on a 5 year cycle and REGDOCs.
77	Why is the operating limit of both facilities different (1500 mg at Peterborough vs 700 mg at Toronto)? Could Peterborough produce more pellets than Toronto? Why can the Peterborough facility possess twice what the Toronto facility can?	CMD 20-H2.90	The possession limit is higher at the Peterborough facility to allow storage of nuclear materials for efficiency. BWXTs safety analysis report includes the justification for this possession limit. CNSC staff have reviewed the safety analysis report and confirmed it meets regulatory requirements. The storage of fuel bundles or drums of UO_2 powder pose very little risk to the public and the environment. These materials are very stable. The licensee must demonstrate that the storage of nuclear materials is conducted in a manner that is safe, secure and does not result in a dose to the public greater than 1mSv/year. BWXT is authorized to process 150 mg of uranium at each facility in any form and in any calendar month. If pelleting is authorized at the Peterborough facility, there would not be an increase in the quantity of pellets produced as BWXT has not requested an increase to its current licence limits.
78	Comment that self-reporting of emission and environmental monitoring results should not be allowed by the CNSC.	CMD 20-H2.169, 180, 203	The regulatory framework of the CNSC has been assessed by international experts, including most recently in the 2019 IRRS (Integrated Regulatory

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			Review Service) as being world class. The CNSC conducts compliance verification activities to independently verify that the information being provided by the licensees is accurate and adequate to meet regulatory requirements. In addition the IEMP verifies the results submitted by licensees. There is no gap in the CNSC's regulatory oversight.
79	**CARN Recommendation 1:** Matters of critical public interest and importance to safeguarding human health and the environment should not be delegated to licence conditions, only reviewable by the Commission and licensee at a later date.	CMD 20-H2.245	CMD 20-H2 [2] sections 3.4.2 and 4.8 outline CNSC staff proposal to the Commission to include a facility specific licence condition (LC 15.2) related to the conduct of pelleting at the Peterborough facility. The proposed licence condition 15.2, requires BWXT to submit a commissioning report related to the production of fuel pellets. Prior to beginning operations, the commissioning report must be reviewed and accepted by the Commission, or a person authorized by the Commission. LC 15.2 is a regulatory hold point. The removal of a regulatory hold point is a compliance activity performed by CNSC staff to verify compliance with the conditions of the licence as authorized by the Commission. Compliance verification criteria for the removal the hold point is presented in the draft Licence Conditions Handbook (LCH) presented in CMD 20-H2 [2]. As outlined in CMD 20-H2 [2], CNSC staff recommend that consent to remove regulatory hold points be delegated to the Executive Vice President and Chief

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			Regulatory Operations Officer (EVPCROO), Director General of the Nuclear Cycle Facilities Regulation and Director of the Nuclear Processing Facilities Division. Implementing pelleting at the Peterborough facility involves several sub-operations (grinding, sintering and pellet pressing). BWXT would determine when to submit its commissioning report. CNSC staff would verify that the safety measures associated with each sub-operation are present and that the pelleting activity remains within the licensing basis approved by the Commission. BWXT's documentation will include the commissioning test results against pre-defined acceptance criteria and evidence that all of the necessary systems, equipment, procedures, and qualified staff are available and ready to proceed with the next commissioning phase. CNSC staff will verify BWXT's documentation through a combination of desktop reviews and on-site inspections. Once CNSC staff are satisfied that all of the pre-requisite commitments have been met, CNSC staff will issue a report to the delegated authority recommending the removal of the regulatory hold point and update to the LCH. CNSC staff will also annually update the Commission through the *Regulatory Oversight Report on Uranium and Nuclear Substance Processing Facilities*.

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
80	**CARN Recommendation 2:** Regulatory Oversight Reports and meetings are not sufficient alternatives to licensing hearings given their limited scope and exclusion of oral intervention opportunities. They should not be relied upon to remedy outstanding issues resulting from licensing hearings.	CMD 20-H2.245	The purpose of CNSC staff's Regulatory Oversight Report is to provide information on the safety performance of licensees. The report and associated Commission meeting is not intended to be an alternative to a licensing hearing. However, stakeholders do have an opportunity to provide written interventions for consideration at the Commission meeting. As outlined in the December 2019 Commission meeting, CNSC staff are conducting a review of Regulatory Oversight Reports. We acknowledge that there are concerns and CNSC staff are the reports identifying opportunities for improvement, especially with regards to content, timeliness, frequency and participation opportunities. We welcome the intervenors' suggestions for potential improvements to the report, which we will consider for inclusion in future
81	**CARN Recommendation 3:** The Commission must ensure its decision-making aligns with the precautionary principle and only licence BWXT's activities to the extent that they are carried out in a way which ensures protection of the environment and human health and safety in accordance with the precautionary principle.	CMD 20-H2.245	CNSC staff are in full agreement with this recommendation. The CNSC already implements the precautionary principle as referenced in REGDOC 2.9.1 The CNSC applies standards that are set conservatively. BWXT's operations are regulated by the CNSC to verify that the health and safety of people and the environment remains protected. In addition to the established release limits at BWXT that are protective of the health and safety of people and the environment, BWXT has implemented control measures based on the ALARA principle to

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			ensure releases to the environment are well below the established release limits.

THEME: DECOMMISSIONING AND FINANCIAL GUARANTEES

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
82	Why is the surety bond lower for Peterborough than Toronto? Is the FG enough to ensure a thorough decommissioning of the facilities?	CMD 20-H2.131, 134, 176	The decommissioning cost estimates for the Toronto and Peterborough facilities are based on the Preliminary Decommissioning Plans (PDP). PDPs consider the type and the location of each facility, the operations and the potential for contamination, as well as the inventory of waste and cost of doing business at each site. Most of the BWXT waste inventory is located at the Toronto facility. All these considerations resulted in a higher cost estimate for the Toronto facility. BWXT has estimated the cost for decommissioning of each facility separately, but is proposing to put the total amount of the FG for both facilities on a single Letter of Credit and a Surety Bond.
83	How does the FG compare to similar aged facilities?	CMD 20-H2.39	The amount of the FG is based on the cost estimate for decommissioning the facility from operations to the final release from regulatory control. BWXT's decommissioning strategy is outlined in its PDP, which has been reviewed by CNSC staff as outlined in section 3.11 of CMD 20-H2 [2]. The age of the facility does not have a direct impact on the cost of the FG, but may impact the preferred decommissioning strategy (i.e. whether the buildings should be removed or re-purposed for other industrial uses) upon which the cost estimate is based.
84	What is the decommissioning protocol for the	CMD 20-H2.2, 6, 19	Licensees are required to plan for decommissioning at

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
	Peterborough site? What plans are in place or the eventual necessity of this sensitive and potentially environmentally hazardous procedure?		all stages of operations. The CNSC has clear defined regulatory requirements regarding decommissioning, including the requirement to submit PDPs every five years. CNSC staff CMD 20-H2 [2] section 3.11.3 outlines how decommissioning must be conducted. PDPs are developed for planning purposes. According to BWXT's PDP the facilities will be undergoing prompt decommissioning involving removal of all radioactive and other hazardous materials from the site and restoring the site to an end state of non-restrictive industrial use following release from regulatory control. The PDPs for both sites include description of the facilities and its locations, principal radiological, chemical and physical conditions at the facilities, identification of the potential hazards during decommissioning and the programs and procedures that will be put in place to manage those hazards.
85	Comment that decommissioning and cleanup will be paid by the government.	CMD 20-H2.47, 76	The purpose of the FG is to ensure that sufficient funds are available for decommissioning in case the licensee becomes insolvent. The money set aside for decommissioning cannot be used for other purposes. The cost estimate for decommissioning includes the cost of characterization and cleanup to levels acceptable for release from regulatory control are reached. To account for the uncertainties associated with decommissioning. The FG also includes 20% contingency. Licensees are required to hold a FG that covers the total cost of decommissioning their facility. Should the

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			licensee go bankrupt or be unable to complete the decommissioning these funds would be available to the CNSC to ensure decommissioning is completed safely.
86	**LOW Recommendation 27:** In the meantime, the CNSC should immediately institute the following changes concerning access to information by intervenors for future Commission meetings: a. When notifying organizations of their funding grants, Participant Funding Program officers should also provide contact information for designated individuals representing the nuclear facilities that are subject to the meeting reviews. These representatives should be prepared to field questions and should be made aware of intervenors' timeframes and deadlines; and b. Some CNSC staff time, and industry/proponent staff time must be designated to providing intervenor-requested information and engaging in follow-up information requests and/or site visits.	CMD 29-H2.108	CNSC staff will continue to investigate opportunities for efficiency and providing timely information to members of the public. We work to provide information to members of the public as efficiently as possible. CNSC staff responded to daily information requests from members of the public on the BWXT licensing application. At times the information requests required input from multiple subject matter experts. It can take time to provide high quality responses to technical questions. CNSC staff do encourage licensees to make themselves available to members of the public. As required by REGDOC 3.2.1 licensee contact information is provided on BWXT's website. CNSC staff cannot direct licensees or applicants to provide site visits or dedicated staff time.

THEME: SAFETY ANALYSIS AND ACCIDENT SCENARIOS

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
87	Concern over liquid hydrogen use.	CMD 20-H2.16, 19, 32, 41, 44, 45, 55, 57, 58, 67, 74, 77, 81, 88, 98, 102, 103, 112, 113, 116, 120, 121, 126, 132, 141, 152, 154, 157, 159, 164-166, 169, 174, 176, 178, 192, 197, 201, 203, 205, 206, 210, 214, 222-225, 299, 233, 241	CNSC staff evaluated and concluded that the hydrogen tank is designed, installed, inspected and maintained according to the applicable code and standards as outlined by the Technical Standards and Safety Authority. Appropriate engineering and administrative controls for the hydrogen system have been established to reduce the risk of hydrogen explosion to ALARA. The estimated risks associated with the hydrogen storage tank are similar to those that would exist in any location where hydrogen storage tanks are located. CNSC staff have reviewed and accepted BWXTs assessment for the hydrogen storage tank. CNSC staff agreed with BWXT's conclusion that the likelihood of an explosion is unlikely to happen. CNSC staff concluded that BWXT has provided an adequate level of protection over a broad range of operating conditions to restrict the likelihood of events that might lead to a loss of control over the safety of the licensed facility; and, to adequately protect the public and the environment from any potential harm arising from the licensed activity. Based on the safety systems, building features and procedures provided, the fire risks associated with the hydrogen tank are appropriately addressed.

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
88	What engineering controls, cryogenic liquid factors, and fire protection systems are in place to severely reduce the potential for the site's liquid hydrogen storage facility to experience a BLEVE (boiling liquid expanding vapor explosion)?	CMD 20-H2.192	The hydrogen supply tank is located outside Building 7 and within a secured fenced area. Building 7 is of non-combustible construction use of concrete, brick and steel. The hydrogen tank is separated from the building 7 by approximately by 21 m satisfying NFPA 55: "Compressed Gases and Cryogenic Fluids Code" Limiting distance requirements. Several safety system are provided such as the inner tank is protected by dual safety relief valve and rupture disc protective system; the outer vessel is protected with a relief plate that is designed to relieve any pressure build-up within the annular space and two fire control valves. CNSC staff confirmed that the safety systems are detailed in are BWXT's in fire safety plan. CNSC staff assessed and confirmed that BWXT performed a variety of accident and malfunction scenarios associated with releases from the hydrogen storage system which include a BLEVE event. A BLEVE is Beyond Design Basis Accidents (BDBA) event with a likelihood of occurrence much less than 10^{-6} per year (1 in one million). The assessment identified that the BLEVE may result in shattered glass both onsite and offsite within a radius of approximately 60 m of the tank.

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			CNSC staff evaluated and concluded that the BWXT facility site does not present any unique or special hazards that are not adequately addressed in applicable referenced codes and standards. The risks associated with the hydrogen tank are appropriately addressed.
89	What thoughts have been given to potential accidents?	CMD 20-H.2, 5, 32, 41, 44, 54, 58, 88, 94, 96, 105, 113, 126, 225, 201, 223, 229-232	Potential accidents must be considered in accordance with the *Class 1 Nuclear Facilities Regulations*. This is outlined in CNSC staff CMD 20-H2 [2] section 3.4.2.
90	Does the technical review completed by CNSC staff include risks from climate change (wind, flooding, etc.?	CMD 20-H2.14, 49, 50, 58, 82, 88, 94, 112, 122, 163	CNSC staff assess climate change through the safety analysis reports. As required by the *Class 1 Nuclear Facilities Regulations* BWXT submitted SARs which include postulated events such as excess rainfall, earthquake, etc. CNSC staff concluded that BWXT's SARs also include a list of corresponding measures for prevention and mitigation of the accidents. Both facilities in both locations have similar hazard profiles in terms of external initiating events (such as earthquake, aircraft impact, tornado, etc.). All of these elements have all been assessed by CNSC staff in the SARs. CNSC staff have reviewed the SARs and determined that they meet the necessary regulatory requirements.
91	Comment that uranium is pyrophoric. UO_2 powder and pellets can catch fire.	CMD 20-H.121, 169, 220	The UO_2 powder used in BWXT's processes is manufactured by Cameco Corporation. Cameco's Material Safety Data Sheet (MSDS) for Ceramic-

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			Grade Uranium Dioxide Powder states that the material is not flammable and is not reactive under normal circumstances of use. It has not been classified as pyrophoric. CNSC staff evaluated and confirmed that fire protection systems are in place including detection, suppression systems and administrative controls to minimize the likelihood of a fire and its consequences. CNSC staff concluded these fire protection systems comply with the applicable standards and codes. Should there be a fire in at the BWXT facility, fire departments have the necessary tools and equipment to address a fire involving UO_2 powder and/or pellets.
92	Concern over the transportation of dangerous goods and uranium including accidents.	CMD 20-H. 19, 58, 64, 83, 116, 207, 215, 216, 223, 229-232, 237	Transportation of dangerous goods was discussed at length at the Commission Meeting held December 9-11, 2013 in Toronto Paragraph 99 of the Minutes of the CNSC Meeting [6]. Material is transported in a safe manner according to the Packaging and Transport of Nuclear Substances Regulations 2015 (PTNSR) which are based on the international IAEA regulations. The material must be properly classified and packaged accordingly. CNSC staff review the licensee programs to verify measures are in place to comply with the applicable regulations. Licensees are also required to have an emergency response

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			assistance plan (ERAP) in place. The ERAP describes what to do in the event of a release or anticipated release of certain dangerous goods while they are in transport. Each plan is specific to certain: dangerous goods, modes of transport (air, rail, road or marine), means of containment (containers or packaging) used to hold the dangerous goods and the geographical area in which the dangerous goods will be transported. A person with an approved ERAP uses the plan to assist emergency responders. ERAPs list specialized personnel and equipment needed for responding to an incident. ERAPs are required under Part 7 of TDG and approved by Transport Canada.
93	A tractor trailer containing yellow cake uranium that flipped over on a highway in 2016 in Saskatchewan. What if this accident happened in an urban area?	CMD 20-H2.83	In the case of the 2016 accident, material was transported in accordance with the requirements of the PTNSR which are based on the international IAEA regulations. The accident did not result in any release of uranium ore concentrate to the environment. CNSC staff determined that the safety significance would have remained the same in an urban area.
94	What risks are posed by the proximity to a rail line that sees toxic and flammable substances passing through daily?	CMD 20-H2.81, 191, 206, 241	CNSC staff evaluated that the potential for a train derailment to impact the safe operation of the facility is unlikely and in BWXT's hazard assessment it was determined to be non-credible event. CNSC staff have assessed that the impact zone would be

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			expected to be smaller due to the speed limit restrictions on freight trains in heavily urbanized areas. Toronto Fire Services provide the fire protection services that are necessary to mitigate those risks to an acceptable level. Toronto Fire Services has a comprehensive training program as well as mutual assistance agreements with other fire service organizations within the region to supplement an emergency response, if required.
95	Who pays for the cleanup costs resulting from an accident or an event?	CMD 20-H2.161	Licensees are responsible for controlling any releases of radioactive materials from operations. In the case of an accident or event the licensee is responsible for conducting the clean up and is responsible to pay for any clean up required both onsite and offsite. The Commission can oversee and order any measure necessary to ensure the remediation is completed in accordance with our regulatory requirements
96	Could any event or accident occur that would result in Peterborough having historic contamination issues like Port Hope?	CMD 20-H2.57, 85, 97, 134, 155, 167, 182, 183, 201, 216, 223, 229-232	No, this is not possible. Contamination at Port Hope occurred during a time when information on the hazards of radiation were less understood and therefore activities were conducted which would not be permitted today. Much of the contamination in Port Hope occurred because waste material from the local refinery was made available for use as fill on residential properties. Today, under the regulatory oversight of the CNSC, a licensee would not be permitted to dispose of nuclear substances in any location or manner that would present a health risk to

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
			the public. In addition, releases from modern day nuclear facilities are extremely low, and the surrounding environment is continuously monitored to confirm the public and environment remain safe.
97	Concern over safety analysis reports that have been completed and the requirement for an updated safety analysis prior to the conduct of pelleting operations.	CMD 20-H2.33	Pelleting operations as currently conducted at the BWXT Toronto facility are included in the current safety analysis report (SAR) for that site. In the SAR, BWXT identified all relevant hazards, and all credible accident scenarios were identified and analyzed. CNSC staff reviewed and accepted the SAR. With respect to conducting pelleting at BWXT Peterborough, moving operations to a new location does not change the hazards associated with the pelleting activity. The Peterborough site has a similar hazard profile to Toronto in terms of external initiating events (such as earthquake, aircraft impact, tornado, etc.). All of these external initiating events have been assessed relative to pelleting operations in the current SAR at BWXT Toronto facility. CMD 20-H2 [2] sections 3.4.2 and 4.8 outline CNSC staff proposal to the Commission to include a facility specific licence condition (LC 15.2) related to the conduct of pelleting at the Peterborough facility. The proposed licence condition 15.2, requires BWXT to submit a commissioning report related to the production of fuel pellets. This commissioning report

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			would include an updated SAR for the Peterborough site incorporating the analysis of pelleting operations at that site. CNSC staff will review the report and verify that the implementation of pelleting at the Peterborough site remains within the licensing basis. BWXT will not be authorized to begin pelleting at the Peterborough site until CNSC staff conclude that workers, the public and the environment continue to be protected and that BWXT will remain within safety requirements as authorized by the Commission.
98	Quantitative Risk Assessment" (QRA), "Hazard and Operability Study", "Hazard Analysis" – do not appear in the document anywhere. Concern that QRA was not carried out and if carried out, its maximum impact distances for various concentrations of uranium, due to an accident (several scenarios), are not somehow mentioned in the report? Facility needs a credible risk identification and transparent risk reporting. In the UK the facility would be subject to a safety case.	CMD 20-H2.33	CNSC staff verified that both BWXT facilities submitted SARs as required by the *Class I Nuclear Facilities Regulations.* These SARs, along with associated safety analysis documentation, form part of the safety case for these sites. Thus, BWXT facilities are subject to the regulatory requirements in Canada that are an equivalent to the UK requirements described by the intervenor. As part of the SAR the licensee performed and documented process hazard analysis and risk analyses for all identified hazards (earthquake, aircraft impact, fire hazard, railway accident, etc.). All credible accident scenarios were identified and analyzed. Effectiveness of mitigation measures was assessed and compliance with acceptance criteria was been demonstrated.
99	Comment that Peterborough school does not	CMD 20-H2. 19, 67,	CNSC staff have reviewed the potential accident

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	conduct evacuation drills.	68, 237	scenarios from conducting pelleting operations at the Peterborough facility and none would require an evacuation of the school due to radiological releases.
100	Comment that BWXT should provide emergency plans for both the Toronto and Peterborough facilities.	CMD 20-H2.78, 105, 146, 177, 178, 180, 219, 225, 237, 238	CNSC staff have reviewed BWXT's emergency response program. BWXT is in compliance with CNSC regulatory requirements outlined in REGDOC 2.10.1 *Nuclear Emergency Preparedness and Response* and 3.2.1 *Public Information and Disclosure* regarding emergency plans and providing information regarding emergencies on its website https://www.bwxt.com/bwxt-nec/safety/emergency-response However, CNSC staff will require BWXT to review the concerns raised by intervenors and update its public information and disclosure programs as required. BWXT should also ensure that both the Community Liaison Committees in Peterborough and Toronto review the emergency plans and that additional information on the plans are provided to interested members of the public.
101	Did CNSC identify an issue in Emergency Preparedness in 2016 at the BWXT Toronto facility? What were the corrective actions taken? What was the result of the 2018 follow up inspection?	CMD 20.H2.173	CNSC staff raised enforcement actions as a result of poor performance during an emergency exercise at the BWXT Toronto facility in 2016. CNSC staff verified that BWXT undertook an in depth review of the emergency program, which involved significant investments into emergency response facilities and equipment, staff training and increased collaboration with offsite emergency responders.

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			CNSC staff concluded that all enforcement actions have been closed as a result of the improvements to the emergency program, along with the successful completion of the 2018 emergency exercise where CNSC staff conducted a follow up inspection. Further to this, CNSC staff verified that BWXT was able to implement these revised procedures and respond to real events at the facility.
102	What are the requirements of licensees to provide training to municipalities and emergency responders? Has BWXT met this requirement?	CMD 20.H2-182	Yes, BWXT is compliant with these requirements. In the case of an emergency, the *Class I Nuclear Facilities Regulations* and REGDOC 2.10.1 require licensees to assist and make arrangements with offsite responding agencies, and requires that the licensee collaborate with offsite responding agencies to educate them on radiation protection. BWXT offers annual facility tours and training to the offsite responders.
103	Does the CNSC use IAEA safety guides and standards when reviewing applications? Specifically when siting nuclear facilities.	CMD 20-H2.87, 159	Yes. The CNSC considered IAEA safety guides and standards when creating our regulatory documents (REGDOC) and while conducting technical assessments of licensee applications. Both facilities have been in operation since 1965.

THEME: PUBLIC INFORMATION PROGRAM

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
104	Comment that due to jargon and technical language the intervention process and documents are not accessible.	CMD 20-H2.13	The comment is noted and CNSC staff will continue to work on the balance of writing for the general public while ensuring that the results of detailed technical assessments are communicated. REGDOC 3.6, *Glossary of CNSC Terminology* provides a list of common terminology.
105	Comment that BWXT communication strategies and public information program needs improvement. Program is inadequate.	CMD 20-H2.9, 19, 23, 54, 67, 68, 137, 142, 146, 151, 177, 180, 207, 242, 243	CSNC staff assessed and concluded that BWXT is in compliance with regulatory requirements. CNSC staff expect that BWXT will make additional effort to understand the views of the public and the community. BWXT is expected to review the needs of its target audience on a regular basis and make the necessary changes to its public information and disclosure plan (PIDP).
106	Request that CNSC staff ensure that all BWXT licence documents, including all supplementary studies/reports, must be conveniently and transparently accessible.	CMD 20-H2.45, 133, 142, 245 (CARN Recommendation 4)	Licence applications are available by request through the CNSC website. Some studies and reports cannot be provided due to the nature of the reports. What this means is that the information may be proprietary to the licensee or the report may contain information that must remain confidential for security or safeguard reasons. CNSC staff encourage licensees to make as many documents available to the public as possible, and to create summary documents for those reports that are confidential or proprietary.
107	Comment that CNSC communication strategy is ineffective. Residents are unaware of the	CMD 20-H2.65, 211	The comment is noted. The CNSC is interested in continuous improvement and takes comments on public

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	facility.		engagement seriously. For example, CNSC staff are conducting a review of Regulatory Oversight Reports. During this review we will also look to the public for identifying opportunities for improvement on our overall public engagement. The CNSC requires licensees to have public information programs which includes objectives, target audiences and various means of communicating operational information and information regarding the health safety and environment of the facility. As outlined in REGDOC 3.2.1, PIDPs are required to be kept current and updated regularly. The CNSC communicates through various means including disseminating scientific information on its website and communicating regulatory information regularly through social media, email to subscribers and through website updates. Feedback is always welcome through our website and through the CNSC information email account. CNSC staff also submit letters to the editor and opinion pieces to share information with the general public. Additionally, CNSC staff participate in a variety of face-to-face sessions with various audiences.
108	Comment that CNSC website displaying errors when trying to review CNSC reports. Public notice for hearing was unclear.	CMD 20-H2.19	CNSC staff apologize for this inconvenience. Upon receiving the intervention CNSC staff verified that the link was corrected and the reports could be viewed on the website. The reports can be viewed at http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/regulatory-oversight-reports/uranium-and-nuclear-substance-processing-facilities.cfm

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109	Comment that the Community Liaison Committee (CLC) could be better shaped to reflect the local community. As relationships are forged, direct invitations could be extended to community groups and partners to send representatives to join the CLC. The CLC could be a resource in the future to help design any follow-up surveys and to discuss results. Local residents have insights into local issues and could suggest ways to improve community relationships.	CMD 20-H2.142	CNSC staff agree with the intervenor that the CLCs are important to disseminate information to the public surrounding BWXT's facilities. CNSC note that BWXT has committed to implementing a CLC in Peterborough in 2020. CNSC staff expect that BWXT will make additional effort to understand the views of the public and the community.

THEME: INDIGENOUS CONSULTATION

	COMMENT/QUESTION/CONCERN	INTERVENTIONS	CNSC STAFF'S RESPONSE
110	Has there been adequate consultation with Indigenous Groups? Who decides what type of activity requires a Duty to Consult process? Does BWXT's licensing application for new activity require Duty to Consult? Why did CNSC staff engage with certain Indigenous groups but not with others, such as those who live off-reserve or decided not to be represented by elected chiefs?	CMD 20-H2.247, 248	The CNSC as an Agent of the Crown has a duty to consult and, where appropriate, accommodate Indigenous communities when it considers conduct that might adversely impact potential or established Indigenous and/or treaty rights. CNSC staff follows best practices in regards to consultation and is committed to consulting with Indigenous communities who have interests in CNSC regulated facilities. As such, CNSC engages and consults with the appropriate rights holders and Nations. CNSC staff proactively shared information with all Indigenous groups who's traditional or treaty territories overlap with BWXT sites in Toronto and Peterborough. These groups were identified because they all have previously expressed interest in being kept informed of CNSC licensed activities occurring in proximity to their traditional and/or treaty territories. CNSC staff are committed to continuing to address any concerns raised and provide information pertaining to the BWXT renewal, where appropriate. Ultimately, as the decision maker and an Agent of the Crown, the Commission is responsible for deciding based on the information and evidence submitted and

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			brought forward as part of the hearing process, whether the duty consult was raised by the proposed licence application and if so if the consultation process was adequate.
111	**Recommendation 1:** Ensure that Indigenous peoples within Michi Saagiig territory are involved in the development of regulations that pertain to nuclear facilities within their traditional territory (in accordance with Article 18 of the UNDRIP18).	CMD 20-H2.247	CNSC staff met with member nations of the Williams Treaties First Nations in 2018 and 2019 to provide updates on a number of CNSC regulated facilities and activities in their traditional territories, including discussions on the BWXT licence renewal. CNSC staff also sent letters of notification and conducted follow up phone calls with all seven communities with regards to the licence renewal. CNSC staff held a meeting with the Michi Saagiig First Nations (Alderville, Curve Lake, Hiawatha and the Mississaugas of Scugog Island First Nations), who are the closest First Nations communities to the BWXT Peterborough facility, on June 6, 2019 in Peterborough. The three Chippewa Nations of the Williams Treaties (Beausoleil, Rama and Georgina Island First Nations) were also invited to this meeting, but were not available to attend. The Michi Saagiig First Nations will be presenting orally at the Commission Hearing as part of Curve Lake's oral intervention, as stated in Curve Lake First Nation's written submission to the Commission. The Michi Saagiig First Nations participation in the BWXT licence renewal Commission hearing process is being

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			supported through the CNSC's Participant Funding Program. CNSC staff are committed to continuing to work with the Williams Treaties First Nations and all interested Indigenous communities on their areas of interest and addressing any concerns related to BWXT they may have.
112	Comment that additional clarity is needed on the concerns expressed by Indigenous communities regarding the BWXT licence renewal.	CMD 20-H2.247	As part of CNSC staff's engagement and consultation process for the BWXT licence renewal, Indigenous communities expressed concerns pertaining to the transportation of nuclear materials, emergency safety protocols and planning documentation. These questions and concerns were answered by CNSC staff during in-person meetings and additional follow-up activities in order to provide additional information. CNSC staff are committed to continuing to address any concerns raised and provide information pertaining to the BWXT renewal and the regulation of transportation of nuclear materials to interested Indigenous communities, where appropriate
113	**Recommendation 4:** Use the consultation protocols from Alderville, Hiawatha and Curve Lake First Nations.	CMD 20-H2.247	CNSC staff follows specific Indigenous consultation protocols developed by Indigenous communities, where appropriate.
114	**Recommendation 5:** Expand the scope of engagement in REGDOC-3.2.2 to include more than just First Nations, Inuit and Metis peoples	CMD 20-H2.247	The CNSC is a learning organization and looks for continual improvement in all of our processes. CNSC staff will soon be reviewing the scope and

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	of Canada.		effectiveness of REGDOC 3.2.2 *Indigenous Engagement* as part of the five year review cycle and is open to comments from Indigenous groups and the public on how to improve the document to ensure it remains effective and relevant.
115	**Recommendation 6:** Engage in true Nation to Nation discussions, distinct from the public hearing process, whereby the Crown is not imposing its judicial powers onto sovereign treaty partners. **Recommendation 7:** Integrate all Articles of United Nations Declaration on the Rights of Indigenous People (UNDRIP) into the CNSC regulatory system. **Recommendation 8:** Commit to achieving "Free Prior and Informed Consent" The following manual could be very helpful: "Free Prior and Informed Consent: Manual for Project Practitioners".	CMD 20-H2.247	As an agent of the Government of Canada and as Canada's nuclear regulator, the CNSC recognizes and understands the importance of consulting and building relationships with the Indigenous peoples of Canada. The CNSC's Indigenous engagement practices are consistent with the principles of upholding the honor of the Crown and reconciliation, as well as with principles and objectives set out by UNDRIP. CNSC staff are committed to building long-term relationships with Indigenous peoples. Staff do so by pursuing ongoing, informative and collaborative interactions with Indigenous groups and organizations who have interests regarding the regulation of nuclear activities and facilities within their traditional and/or treaty territories. The CNSC's goal is to build partnerships and trust with Indigenous communities with an interest in CNSC regulated facilities.
116	**Recommendation 9:** Please make publicly available, the CNSC letters that are sent out to Indigenous Communities / groups / peoples.	CMD 20-H2.247	The CNSC does not typically share letters of notification to Indigenous groups with the public as they may include personal and/or private information. However, for the current licence renewal process, an overview of CNSC staff's consultation process is detailed in CMD 20-H2 [2] section 4.1 and will also be

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			discussed in CNSC staff's presentation to the Commission.