



**2020 Third Quarter Compliance Monitoring
&
Operational Performance Report**

Reporting Period July 1– September 30, 2020

**Cameco Fuel Manufacturing Inc.
Fuel Facility Operating Licence
FFOL-3641.00/2022**

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Submitted to:
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Executive Summary

Cameco Corporation (Cameco) is committed to the safe, clean, and reliable operations of all of its facilities and continually strives to improve safety performance and processes to ensure the safety of both its employees, local residents, and the environment. CFM maintains the required programs, plans and procedures as required by the applicable regulations including but not limited to the areas of: health and safety, radiation protection, environment, emergency response, fire protection, waste management, and training.

As a result of the programs, plans and procedures, CFM's operations have maintained radiation exposures to workers and the public well below the regulatory dose limits. Environmental emissions are also being controlled to levels that are a fraction of the regulatory limits. There were no exceedances of the action levels in the radiation protection or environmental protection program in the third quarter.

In the third quarter, Cameco continued to implement precautionary actions that were taken with respect to the Covid-19 pandemic.

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1.0 Third Quarter Overview

1.1 Facility Operation

Cameco continues to strive for operational excellence at all of its facilities through consistent application of management systems to ensure that they operate in a safe, clean, and reliable manner. Corporate policies and programs, including that for Safety, Health, Environment and Quality (SHEQ) provide guidance and direction for all site-based programs and procedures that define the CFM Management System.

In the first quarter of 2020, in accordance with Section 29 (1)(d) of the General Nuclear Safety Control Regulations, Cameco provided notification to the CNSC of some precautionary actions that were taken with respect to the Covid-19 pandemic and that Cameco activated their Local Business Continuity Plans. This continued into the third quarter with staffing levels on site reduced by requesting employees who can work from home to remain at home. During the third quarter employees began to return to the site for reduced hours while working the remainder of the time at home. Staffing levels were and continue to be monitored closely to maintain the minimum compliment for Emergency Response.

There were no significant changes to Structure, Systems and Components (SSC) or processes in the third quarter. CFM's Licence Conditions Handbook (LCH) references core CFM documents that form the licensing basis of the facility in each safety and control area. There were two documents that were submitted to the CNSC under prior notification requirements in the third quarter of 2020.

- Fuel Services Division Public Information Program (FSD-PGR-PIP-001), version #1 – The program was developed to document how Cameco meets the requirements of REGDOC 3.2.1 Public Information and Disclosure at its Ontario facilities and to combine the separate programs into one program applicable to all three sites. Cameco determined the changes to the document remained within the licensing basis for the facilities.
- Fuel Services Division Packaging and Transportation Program (FSD-PGR-TRN-001), version #1 – The manual was developed to document how Cameco meets the regulatory requirements defined in the Licence Conditions Handbook (LCH) for each of its facilities. Cameco determined the changes to the document remained with the licensing basis for the facility.

There were no shutdowns of the facility with operations continuing throughout the third quarter.

There were no reportable events as detailed in the *Nuclear Safety and Control Act* during the quarter.

In the third quarter, CFM did report to the CNSC a hydrogen leak which occurred on July 23 at 7:15 pm. The release of hydrogen to the environment is not considered reportable under section 29(1) of the GNSCR as the incident did not have a serious adverse effect on the environment and did not constitute or contribute to a serious risk to the health and safety of persons or the maintenance of security. However, according to REGDOC 3.1.2 CFM was required to report the incident to the duty officer with a follow up report to be submitted within 21 days of the incident

In the third quarter there were no exceedances of the action levels in the radiation protection or environmental protection program.

1.2 Physical Design / Facility Modification

Modifications to facility buildings, processes, equipment, procedures, programs, or organizational structure with the potential to impact safety are evaluated through the internal change and design control process from planning through to completion. This process is used to help identify impacts and potential impacts to the licensing basis, the environment as well as to the health and safety of employees and local residents.

In the third quarter of 2020, there were no modifications undertaken that required written approval from the Commission or a person authorized by the Commission.

There were also no significant changes to the physical design of equipment, processes, or the facility in the quarter.

2.0 Radiation Protection

This safety and control area covers the implementation of a radiation protection program, in accordance with the *Radiation Protection Regulations*. The program must ensure that contamination and radiation doses are monitored and controlled.

CFM has established action levels pertaining to radiation protection, which are listed in section 8.2 of CFM's LCH. A result above an action level is investigated and remedial actions taken if necessary. In the third quarter of 2020, there was no exceedances of the Radiation Protection action levels.

Whole Body Dose

Table 1 shows the third quarter whole body dose for three work groups: employees in the operations group, employees in administration/support roles, and outside contractors/visitors. The highest exposures are from the operations work group, consisting of production, inspection, and maintenance personnel. There were no action level exceedances for whole body dose in the radiation protection program during the quarter. In the third quarter, 98% of external whole body exposures for NEWs were 1 mSv or less.

Table 1

Third Quarter 2020 Whole Body Dose Results				
Work Group	Number of Individuals	Average (mSv)	Minimum (mSv)	Maximum (mSv)
Operations	102	0.23	0.00	1.07
Administration / Support	73	0.01	0.00	0.26
Contractors/Visitors	27	0.01	0.00	0.03
Monthly action level is 1.6 mSv (for NEWs such as production employees). Quarterly action level is 1.0 mSv (for NEWs such as support staff and contractors).				

Table 2 shows the quarterly average, minimum and maximum individual external whole body exposure for all NEWs from the third quarter of 2019 to the third quarter of 2020 (five monitoring periods). The average whole body dose in the third quarter for all NEWs was 0.16 mSv. The average and maximum whole body dose is lower than previous quarters with the exception of the third quarter of 2019. It is most accurate to compare the third quarter results in 2020 to the previous third quarter results in 2019 due to production rates. When these two quarters are compared, taking into account the amount of uranium produced, the average and maximum dose were similar. The individual with the highest exposure in the third quarter was a Pelleting Area employee.

Table 2

Whole Body Dose Results by Quarter				
Monitoring Period	Number of Employees	Average Dose (mSv)	Minimum Dose (mSv)	Maximum Dose (mSv)
Q3 2019	214	0.10	0.00	0.92
Q4 2019	205	0.13	0.00	1.51
Q1 2020	209	0.14	0.00	1.46
Q2 2020	179	0.16	0.00	1.58
Q3 2020	202	0.12	0.00	1.07

Skin Dose

Table 3 shows the third quarter skin dose results for three work groups, employees in operations (monitored monthly), employees in administration and/or support roles and outside contractors/visitors (both monitored on a quarterly basis). The highest exposures are from the operations work group, consisting of production and maintenance personnel. The maximum skin dose for all NEWs was 9.39 mSv in the third quarter and the average skin dose for all NEWs was 0.76 mSv. The action levels for skin dose were not exceeded in the quarter. All NEWs received a skin dose below 10 mSv.

Table 3

Third Quarter 2020 Skin Dose Results				
Work Group	Number of Individuals	Average (mSv)	Minimum (mSv)	Maximum (mSv)
Operations	102	1.48	0.00	9.39
Administration / Support	73	0.02	0.00	0.58
Contractors/Visitors	27	0.01	0.00	0.04
Monthly action level is 20.0 mSv (for NEWs such as production employees). Quarterly action level is 5.0 mSv (for NEWs such as support staff and contractors).				

Table 4 shows the employee quarterly average and maximum individual skin exposure from the third quarter of 2019 to the third quarter of 2020. It is most accurate to compare the third quarter results in 2020 to the previous third quarter results in 2019 due to production rates. When these two quarters are compared the average and maximum dose were lower in 2020 than the average and maximum dose in the third quarter of 2019. The individual who received the maximum skin dose was a Pelleting area employee who was not the same individual with the maximum whole body dose.

Table 4

Skin Dose Results by Quarter				
Monitoring Period	Number of Employees	Average Dose (mSv)	Minimum Dose (mSv)	Maximum Dose (mSv)
Q3 2019	214	0.72	0.00	13.34
Q4 2019	205	0.97	0.00	12.57
Q1 2020	209	1.07	0.00	19.15
Q2 2020	179	1.16	0.00	19.10
Q3 2020	202	0.76	0.00	9.39

Extremity Dose

The action level for extremity dose at CFM is 55 mSv per quarter. The quarterly action level applies to production NEWs who regularly handle product as part of their daily task. In the third quarter the extremity action level was not exceeded.

Table 5 displays the third quarter extremity results for the operation work group. In the third quarter the majority of NEWs received an extremity dose below 20 mSv for both the left and right hand extremity (97% and 99% respectively).

Table 5

Third Quarter 2020 Extremity Dose Results				
Work Group	Number of Individuals	Average (mSv)	Minimum (mSv)	Maximum (mSv)
Operations	76	4.14	0.02	21.04
Quarterly action level is 55.0 mSv (for NEWs such as production employees).				

Table 6 shows the average, minimum, and maximum extremity dose for NEWs over the period from the third quarter of 2019 to the third quarter of 2020. It is most accurate to compare the third quarter result in 2020 to the previous third quarter result in 2019 due to production rates. When these two quarters are compared the average and maximum dose for both hands were lower in 2020. The individual with the highest exposure was a Pelleting Area employee and was not the same individual with the highest whole body or skin dose.

Table 6

Extremity Dose Results by Quarter				
Monitoring Period	Number of Employees	Average Dose (mSv)	Minimum Dose (mSv)	Maximum Dose (mSv)
Q3 2019	76	4.83	1.48	73.68
Q4 2019	79	4.92	2.11	20.55
Q1 2020	80	5.52	2.61	21.30
Q2 2020	77	5.87	2.45	31.57
Q3 2020	76	4.14	0.02	21.04

Urine Analysis

The action level for a single routine urine sample is 10 µg/L of uranium concentration. During the quarter there was no exceedance of the urine analysis action level. Routine urine samples results analyzed during the third quarter are provided in Table 7 below.

Table 7

Third Quarter 2020 Routine Urine Analysis Results				
Work Group	Number of Samples	Average (µg/L)	Minimum (µg/L)	Maximum (µg/L)
Operations	407	0.27	<0.20	1.70
Routine urine sample action level is 10 µg/L				

*detection limit of equipment is 0.2 µg/L therefore reported as <0.20 µg/L

Internal Dose

Routine urine analysis samples are collected on a biweekly basis for trending purposes; if an acute uptake is noted it is verified using lung counting and dose assigned if required.

In the third quarter, there were no routine urine sample results that were above the internal administrative level of 4.0 µgU/L.

During the third quarter of 2020 there was lung counts conducted as part of the campaign conducted every six months. There were 54 employees that were counted during the campaign. The next planned campaign is scheduled for November of 2020.

Contamination Control

CFM has other programs to ensure radiation exposure levels remain low. An extensive contamination control program at CFM is zone control. The facility is divided into four zones for contamination control purposes. Zone 1 areas are designated as clean areas with no contamination permitted. Food and drink can be consumed in these areas and include the lunchroom and office areas. Zone 2 areas contain no open sources of radioactivity but have the potential for contamination. These areas include the assembly area, change rooms and the machine shop. Zone 3 areas are the access points to Zone 4. Zone 4 areas contain open sources of radioactivity and include the Pelleting Area. Consumption of food and drink are restricted in Zones 2, 3, and 4.

The administrative limits are provided in Table 8 as well as the routine contamination monitoring results for the third quarter. Of the 600 samples taken none exceeded the internal administrative control limits (ACL).

Table 8

Third Quarter 2020 Alpha Contamination Monitoring Results			
Area	# of Samples Taken	Administrative Limits (Bq/cm²)	# of Samples Above Limits
Zone 1	125	0.4	0
Zone 2	160	4.0	0
Zone 3	35	4.0	0
Zone 4	280	40	0

In-Plant Air

Routine air sampling is conducted at workstations throughout the plant continuously during operations to monitor airborne uranium dioxide in the work environment. The results for the third quarter of 2020 taken in each area, including the CAM heads in the PP2 and Waste Treatment area, are shown in Table 9 below.

There was one result above the 2000 hour ACL that occurred in the Pangborn room during a shakedown of the Hoffman vacuum system. Powder escaped the main valve causing the elevated air sample. The 5 elevated samples in the grinding area were caused by equipment failure. The equipment was fixed immediately, and the area was cleaned.

Table 9

Third Quarter 2020 Uranium In-plant Air Sampling Results					
Plant Area	# of Samples	Average ($\mu\text{g U}/\text{m}^3$)	Maximum ($\mu\text{g U}/\text{m}^3$)	# Samples > ACL^{2000 hr}	# Samples > ACL^{80 hr}
Ceramics Lab	300	2	8	0	0
Compaction Room	98	2	5	0	0
Load Room	196	2	8	0	0
Pangborn Room	98	8	85	1	0
Pelleting Area	294	2	9	0	0
UO ₂ Grinders	196	8	75	5	0
Waste Treatment	49	2	7	0	0
PP2 Area	728	2	20	0	0
Dry Waste Treatment	276	1	7	0	0
TOTAL	2235	3	85	6	0
2000 hour Administrative Control Limit = 52 $\mu\text{g}/\text{m}^3$					
80 hour Administrative Control Limit = 595 $\mu\text{g}/\text{m}^3$					

Gamma Surveys

An ongoing ALARA initiative involves posting OSL's around the facility to determine areas of elevated gamma radiation. The result for each location in the third quarter is summarized in Table 10. The results illustrate that the Fuel Storage Area had the highest gamma fields (6.0 $\mu\text{Sv}/\text{hr}$), which is expected due to the amount of product stored in the area. The area is posted instructing workers to limit the time spent in this area. The next highest reading (4.9 $\mu\text{Sv}/\text{hr}$) was in the PP2 Receiving area. This is expected due to the amount of raw material stored in this area. Employees limit their time in this area as well.

Table 10

Third Quarter 2020 Gamma Survey Results						
Location #	Area	Result (μSv/hr)		Location #	Area	Result (μSv/hr)
13	Kitting	0.2		37	PP2 Powder Rec. N.	1.3
14	S Stacking	0.9		38	Powder Receipt	0.1
15	Stacking	0.1		39	U ₃ O ₈ Add-back	1.0
16	Pelleting Entry	0.4		40	S End Cap	0.2
17	Pelleting Lab	0.1		41	End Cap	0.3
18	S Grinding	1.2		42	N End Cap	0.0
19	Grinding	0.9		43	E Offices	0.0
20	N Grinding	0.6		44	S End Plate	0.0
21	S Wall	0.1		45	End Plate	0.0
22	S Furnace	0.6		46	N End Plate	0.0
23	Furnace	0.6		47	W Offices	0.0
24	N Furnace	0.0		48	S Inspection	0.1
25	SE Wall	0.5		49	Inspection	0.1
26	E Wall Furnace	0.7		50	N Inspection	0.3
27	NE Wall	0.4		51	W Inspection	0.0
28	N Corridor	0.3		52	Strapping Bay	0.2
29	Ceramics Lab	0.1		53	Packing	0.2
30	R7#1 East Wall	2.0		54	Fuel Storage Area	6.0
31	PP2 West Wall	0.3		55	Graphite East	0.1
32	S Pressing	0.5		56	BMS Loading	1.0
33	N Pressing	0.5		57	PP2 Receiving	4.9
34	Pangborn	0.6		58	PP2 Press R53-1	1.2
35	S. Waste Treat	1.4		59	PP2 East Wall	0.5
36	N. Waste Treat	0.6				

3.0 Conventional Health and Safety

This safety and control area covers the implementation of a program to manage non-radiological workplace safety hazards and to protect personnel and equipment. Table 11 shows the safety statistics for the Port Hope facility.

Table 11

2020 Safety Statistics					
Year / Parameter	Q1	Q2	Q3	Q4	Year to Date
First Aid Injuries	3	6*	5	-	14
Medical Diagnostic Injuries	0	1*	0	-	1
Medical Treatment Injuries	1	0	0	-	1
Lost Time Injuries	0	0	0	-	0
Lost Time Injury Frequency	0.0	0	0	-	0.0
Lost Time Injury Severity	0.0	0	0	-	0.0

*There was a reclassification of a first aid injury to a medical diagnostic injury.

There were no lost time incidents that occurred in the third quarter. The third quarter Total Recordable Injury Rate (TRIR) was 0.0 for the Port Hope facility. The year to date TRIR at the end of September for the Port Hope facility was 0.96 and for both facilities (Port Hope and Cobourg) it was 1.49.

Health and Safety Activities

- **Communications:** The Q3 safety meetings were held each month with a different topic each month including Summer Safety, Distracted Driving, and our annual Return to Work after shutdown. Each month an update is included for the previous month on 4 topics: Safe, healthy, and rewarding workplace, clean environment, supportive communities, and outstanding financial performance. Safety statistics as well as the status on quality and production targets are included in the update on these topics.
- **Education and Training:** In the third quarter instructor led safety and equipment training continued with COVID-19 safety protocols in place, SAT development continued with the BMS documentation wrapping up, the SAT development of fire extinguisher training completed development, SAT documents and templates were updated, virtual instructor led Emergency Evacuation courses were recorded in Teams for future playback, and new virtual instructor led training sessions were introduced.

- **Safety Awareness Activities:** In the third quarter the JHSC has been updating Communication boards and the TV messaging with information on mental health resources. Many people are facing a difficult time with their mental health due to COVID-19 and the social and economic challenges we have been facing. The JHSC also launched the annual Kids Safety Calendar contest, where employee's children and grandchildren are invited to draw a safety picture and submit it for the 2021 calendar. There were 2 third quarter safety activities. The first one was a Step Challenge to promote the health portion of Health and Safety. The second safety awareness activity was called "Social Distancing Promo", where employees were encouraged to submit ideas on how to improve social distancing in the workplace, or any idea's related to social distancing.
- **JH&SC and Safety Subcommittees:** The JH&SC continued to meet on a regular basis through teleconferences and skype/team meetings. Subcommittee meeting remained suspended until Covid restrictions are lifted.
- **Safety & Industrial Hygiene:** Most of our safety activities were centered around shutdown with annual inspections of fall arrest equipment being performed at both locations. The other safety activity implemented in the third quarter was the Industrial Athlete/Ergo program for employees returning at the end of shutdown. This program focused on stretching and becoming reacclimatized to working conditions including heat and humidity.
- **Covid-19 Interruption:** CFM continued to take all necessary precautions to prevent the spread of Covid-19. Processes continued to be adjusted to permit social distancing and precautionary protocols. Most support employees began to return to the site for a few days and worked from home the remaining days. A few employees continued to work exclusively from home.

4.0 Environmental Protection

This safety and control area covers the programs that monitor and control all releases of nuclear and hazardous substances into the environment, as well as their effects on the environment, as the result of licensed activities.

Public Dose

The public dose calculated below includes potential dose from all realistic pathways at the CFM facility. To calculate the public dose the total amount of uranium dioxide released to air is added to the gamma dose to the critical receptor as demonstrated in the following formula:

$$\text{Public Dose} = \text{Dose Air} + \text{Dose Gamma}$$

Dose from water is not included in the calculation as liquid emitted from the facility is not used for drinking purposes. The total dose to the member of the public from air emissions and gamma levels for the quarter is calculated to be 0.020 mSv.

The estimated dose to the public along with the dose from each component (air and gamma) from the third quarter of 2019 to the third quarter of 2020 is shown in Table 12. Total dose to the critical receptor continues to be a fraction of the public dose limits. The result in the third quarter of 2020 have returned to normal levels when compared to previous quarters. As demonstrated in the table the gamma dose to the critical receptor fluctuates from quarter to quarter whereas the air component of public dose has been consistent during the last five quarters. Since the third quarter of 2019 the public dose range has been between 0.004 mSv and 0.158 mSv. The fluctuations in gamma dose at the critical receptor arise primarily from the amount and location of finished goods (fuel bundles) stored in the Fuel Storage building. Inventory fluctuations occur depending on production levels and customer demand.

Table 12

Public Dose by Quarter (mSv/qtr)					
DRL Component	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020
Air	0.004	0.004	0.004	0.004	0.003
Gamma	0.031	0.000	0.000	0.154	0.017
Total dose to Critical Receptor	0.035	0.004	0.004	0.158	0.020

Gamma Monitoring

The perimeter gamma DRL and the action level for the critical receptor are 0.35 $\mu\text{Sv/hr}$ and 0.2 $\mu\text{Sv/hr}$ respectively. The DRL for all other locations is 1.18 $\mu\text{Sv/hr}$ with an action level of 1.0 $\mu\text{Sv/hr}$. There were no exceedances of the DRL's or the action levels during the third quarter.

Table 13 provides the quarterly gamma levels in $\mu\text{Sv/hr}$ for all fence line monitoring locations (i.e. 1-12) for the quarter. As expected, the gamma levels for location #9 returned to normal levels in the third quarter. The material for the project in the Waste Storage Building was shipped at the end of June.

Table 13

Third Quarter 2020 Gamma Monitoring Results ($\mu\text{Sv/hr}$)			
Location	Regulatory Limit (DRL)	Action Level	DRL Contribution
1	0.35	0.2	0.01
2	1.18	1.0	0.04
3	1.18	1.0	0.00
4	1.18	1.0	0.00
5	1.18	1.0	0.00
6	1.18	1.0	0.00
7	1.18	1.0	0.00
8	1.18	1.0	0.00
9	1.18	1.0	0.01
10	1.18	1.0	0.00
11	1.18	1.0	0.32
12	1.18	1.0	0.35

The monitoring results for location 1 (closest location to the critical receptor) from the third quarter in 2019 to the third quarter of 2020 are provided in Table 14. Results have been corrected to take into account background gamma levels by subtracting 0.08 $\mu\text{Sv/hr}$. The gamma levels at location 1 in the third quarter of 2020 returned to lower levels.

Table 14

Gamma Monitoring Results at Critical Receptor by Quarter ($\mu\text{Sv/hr}$)			
Period	Regulatory Limit (DRL)	Action Level	DRL Contribution
Q3 2019	0.35	0.20	0.01
Q4 2019	0.35	0.20	0.00
Q1 2020	0.35	0.20	0.00
Q2 2020	0.35	0.20	0.05
Q3 2020	0.35	0.20	0.01

Stack Emissions

The release limit for air emissions is 14 kg per year as outlined in the operating licence issued by the CNSC. The total amount of uranium dioxide released to the environment during the quarter in gaseous effluent from stacks was 0.002 kg. The action level for stack emissions is 2.0 µg/m³ uranium concentration for a daily stack reading. There were no exceedances of the release limit or action levels with respect to air emissions during the quarter.

Table 15 provide the average and maximum uranium concentration for all stacks in µg/m³ from the third quarter of 2019 to the third quarter of 2020. The average concentrations measured in stack emissions in the third quarter were similar to previous quarters. The maximum result in the third quarter was less than the fourth quarter of 2019 and the second quarter of 2020; however, it was elevated when compared to the third quarter of 2019 and the first quarter of 2020. The maximum result was above CFM's screening level of 1.0 µg/m³ and occurred in the PP2 East exhaust system. The cause was identified as work that was being done on the extraction system. The results returned to normal range once the work was completed.

Table 15

Daily Stack Emissions by Quarter (µg/m³)							
Source	Action Level	Avg. / Max.	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020
PP2 West	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.1	0.5
PP2 East	2.0	Avg.	0.0	0.1	0.1	0.1	0.1
		Max.	0.1	1.5	0.2	0.2	1.1
Waste Treatment Area Absolute	2.0	Avg.	0.1	0.0	0.0	0.1	0.1
		Max.	0.6	0.3	0.2	0.3	0.5
BMS Extraction	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.1	0.4
Hoffman Vacuum	2.0	Avg.	0.0	0.0	0.0	0.1	0.1
		Max.	0.1	0.1	0.1	1.5	0.3
Pangborn North Dust Collector	2.0	Avg.	0.0	0.0	0.0	0.1	0.1
		Max.	0.2	0.1	0.1	0.2	0.7
Pangborn South Dust Collector	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.4	0.3	0.1	0.6
Waste Treatment Dust Collector	2.0	Avg.	0.1	0.1	-	-	-
		Max.	0.1	0.1	-	-	-
DeVilbiss Mist Collector	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.0	0.2	0.5
Furnace Burn-off	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.0	0.0	0.1	0.1	0.0
Overall	2.0	Avg.	0.0	0.0	0.0	0.0	0.1
		Max.	0.6	1.5	0.3	1.5	1.1

- Stack was taken out of service at the end of the fourth quarter 2019.

Building Ventilation Emissions

The action level for building ventilation is 1.0 g/hr monitored on a daily basis for the Pelleting Area and 0.5 g/hr for the PP2 area. There were no exceedances of either action level in the third quarter. The estimated release of uranium dioxide in exhaust ventilation from both areas during the quarter was 0.203 kg (0.174 kg from the Pelleting Area and 0.028 kg from the PP2 area).

Table 16 provides the average and maximum uranium concentration emitted through the building ventilation system in g/hr from the third quarter of 2019 to the third quarter of 2020.

The table demonstrates that the PP2 area has much lower emissions through building ventilation than the Pelleting Area and the results are consistent between the quarters. In the third quarter of 2020 the building ventilation average and maximum emission rates for the Pelleting Area were comparable to previous quarters (with the exception of the second quarter of 2020 which was higher than normal).

Table 16

Building Ventilation Rates by Quarter (g/hr)							
Parameter	Action Level	Measure	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020
Uranium Emissions from Pelleting Area	1.0	Average	0.20	0.18	0.15	0.15	0.15
		Maximum	0.50	0.37	0.31	0.54	0.37
		Minimum	0.09	0.09	0.05	0.06	0.08
Uranium Emissions from PP2 Area	0.5	Average	0.01	0.01	0.01	0.01	0.01
		Maximum	0.05	0.03	0.07	0.05	0.05
		Minimum	0.00	0.00	0.00	0.00	0.00

Liquid Emissions

The release limit for liquid releases to the sewer is 475 kg per year as outlined in the operating licence issued by the CNSC. The action level for liquid effluent releases to the environment is 0.1 mg/L. In the third quarter there was no exceedance of the action level.

Table 17 provides the average and maximum uranium concentration for a single composite sample from the third quarter of 2019 to the third quarter of 2020. The average and maximum concentration in the third quarter were comparable to previous quarters. Also provided in the table is the minimum and maximum pH measured in the samples.

Table 17

Sanitary Sewer Emissions by Quarter								
Parameter	Release Limit (kg/year)	Action Level (mg/L)	Measure	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020
Uranium (mg/L)	-	0.1	Average	0.01	0.01	0.02	0.01	0.01
			Maximum	0.03	0.02	0.05	0.02	0.03
pH (pH units)	-	6.5	Minimum	7.4	7.4	7.4	7.5	7.3
			Maximum	8.1	8.0	8.1	8.3	8.9
Volume of water	-	-	(m ³)	5599	6418	7333	6285	5485
Estimated Discharge	475	-	(kg)	0.07	0.07	0.13	0.08	0.07

Ambient Air Monitoring

High volume air samples are collected in the four corners of the CFM property. Table 18 shows the quarterly average and maximum results for all four locations from the third quarter of 2019 to the third quarter of 2020.

Table 18

Overall Uranium-in-Air Concentration at Hi-Vol Stations by Quarter (µg/m ³)					
Parameter	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020
Average	0.0004	0.0002	0.0004	0.0003	0.0004
Maximum	0.0016	0.0004	0.0012	0.0010	0.0024

Table 19 provides the quarterly average and maximum uranium-in-air concentrations for all locations from the third quarter of 2019 to the third quarter of 2020. The average results for the third quarter are comparable to previous results. The maximum results for the third quarter are elevated when compared to previous quarters. This occurred during shutdown when the pit tanks were removed from the Waste Treatment area. The large bay door had to remain open during removal. This occurred over a one week period after which the results returned to lower levels. The elevated result was entered into CIRS.

Table 19

Uranium-in-Air Concentration at Hi-Vol Stations by Quarter ($\mu\text{g}/\text{m}^3$)					
Quarter	Result	East	North	North West	South West
Q3 2019	Average	0.0003	0.0004	0.0004	0.0004
	Maximum	0.0008	0.0014	0.0016	0.0015
Q4 2019	Average	0.0001	0.0002	0.0001	0.0002
	Maximum	0.0003	0.0005	0.0002	0.0004
Q1 2020	Average	0.0004	0.0003	0.0003	0.0004
	Maximum	0.0010	0.0008	0.0012	0.0011
Q2 2020	Average	0.0003	0.0004	0.0003	0.0003
	Maximum	0.0009	0.0010	0.0008	0.0009
Q3 2020	Average	0.0004	0.0006	0.0003	0.0004
	Maximum	0.0014	0.0024	0.0009	0.0014

5.0 Public Information Program

During the third quarter of 2020, CFM continued to meet the requirements of CNSC RD/GD 3.2.1, Public Information and Disclosure programs.

Public Engagement

In July, Cameco sponsored the 89.7 Virtual Summer Concert Series.

On August 4, 2020 Cameco announced the results of its annual Public Polling. Cameco has been polling the local community since 2004. The survey found that 90% of residents support the continuation of Cameco's operations in Port Hope. For the past decade, Cameco has maintained an approval rating above 80% and remains a trusted corporate citizen in the local community. The summary of findings was posted to the website <https://www.camecofuel.com/community/stories/port-hope-community-survey-results-2020> and promoted on social media.

On August 20, Cameco participated in a joint announcement with Bruce Power to announce a series of initiatives. The event was live-streamed and featured Cameco and Bruce Power CEOs, along with the Premiers of Ontario and Saskatchewan, Ontario Minister of Energy, Ontario Associate Minister of Energy, Ontario Minister of Government and Consumer Affairs, MPP Huron-Bruce and MPP Northumberland-Peterborough South. A news release was issued and posted to the website <https://www.camecofuel.com/library/news/cameco-and-bruce-power-announce-a-series-of-nuclear-initiatives>.

Cameco sponsored a digital concert at the Westben Theatre and the annual United Way backpacks for kids program.

In September, Cameco announced its Cameco Charity Golf Package in partnership with Dalewood Golf Club. As a result of the COVID-19 pandemic, Cameco had to reimagine its annual charity golf event. The golf package runs from September 19, 2020 to October 31, 2020 and all funds raised go towards the Cameco Fund for Mental Health. These funds will be disbursed to organizations undertaking projects that promote or support mental health in Northumberland County. More information about the golf package is posted on the website <https://www.camecofuel.com/community/stories/step-onto-the-golf-course-to-step-up-for-mental-health>. To help promote the initiative to the community, Cameco ran advertisements on local radio station 93.3 MyFM and on social media.

The summer issue of Energize was mailed to residents of Port Hope in September. The issue was posted to the website and linked through social media <https://www.camecofuel.com/community/stories/energize-summer-2020>. The issue featured information about the August 20th announcement with Bruce Power, proposed changes to VIM, and public polling results.

Cameco provided free advertising to local charitable organizations with its sponsorship of MyFMs Community Partner Program. Through the quarter, Northumberland Community Counselling Centre, Cornerstone Family Violence Prevention Centre and Greenwood Coalition benefitted from this sponsorship by receiving advertising.

No meetings were held with Indigenous groups during the third quarter.

As a result of the COVID-19 pandemic, Cameco temporarily suspended all public tours and non-essential visitors.

Public Disclosure

CFM made one public disclosure during the third quarter involving a small environmental release.

No one was injured and there was no impact on the health or safety of the public or the environment.

The public disclosure was posted to the website:

<https://www.cameco.com/businesses/fuel-services/port-hope-cobourg/environment-safety#environmental-incidents>

Social Media

Cameco Ontario's Facebook community grew by 24 new followers (894 total) and had a total of 874 page likes at the end of the quarter. Cameco Ontario's 16 posts covered information regarding the 2020 Public Opinion Survey, promotion for the Cameco Charity Golf Package raising money for the Cameco Fund for Mental Health, and promotions for our community partners.

By the end of the quarter the Instagram account had grown by 50 new followers for a total of 500 followers. Photos and information featured was similar to the Cameco Ontario Facebook account.

Website

One Public Disclosure was posted to the website in the third quarter:

<https://www.cameco.com/businesses/fuel-services/port-hope-cobourg/environment-safety#environmental-incidents>

A dedicated page for the Cameco Charity Golf Package was established:

www.camecofuel.com/golf.

Two press releases were posted to the website. The first being the joint announcement with Bruce Power, the second was related to Vision in Motion and is reported on in the PHCF report:

- <https://www.camecofuel.com/library/news/cameco-and-bruce-power-announce-a-series-of-nuclear-initiatives>
- <https://www.camecofuel.com/library/news/cameco-proposes-changes-to-vim-project-avoiding-construction-of-choate-st>

The summer issue of Energize was posted to the website:

<https://www.camecofuel.com/community/stories/energize-summer-2020>.

Media Analysis

Cameco received media coverage regarding the Cameco and Bruce Power announcement:

World Nuclear News.org: <https://world-nuclear-news.org/Articles/Cameco-and-Bruce-Power-partner-to-support-nuclear>

Todaysnorthumberland.ca: <https://todaysnorthumberland.ca/2020/08/20/cameco-and-bruce-power-support-launch-of-centre-for-next-generation-nuclear-technologies/>

Owen Sound Sun Times.com: <https://www.owensoundsuntimes.com/news/local-news/bruce-power-cameco-announce-nuclear-technologies-centre>

Iheartradio.ca: <https://www.iheartradio.ca/92-3-the-dock/covid-19-updates/cameco-and-bruce-power-support-launch-of-centre-for-next-generation-nuclear-technologies-1.13275857>

Shorelinetoday.ca: <https://shorelinetoday.ca/2020/08/21/19258/>

Thelondoner.ca: <https://www.thelondoner.ca/news/local-news/bruce-power-cameco-announce-nuclear-technologies-centre-2/wcm/e221cffb-020d-41c2-bfff-ead426e664e6>

Communication Products

Two news releases were posted to the website.

The summer issue of Energize was posted to the website and mailed to all addresses in Port Hope, Ward 1, and Ward 2.

<https://www.camecofuel.com/community/stories/energize-summer-2020>.

6.0 Other Matters of Regulatory Interest

There were no processing activities of enriched material conducted on site in the third quarter of 2020 and CFM met all site-specific reporting requirements.

In the third quarter, Cameco continued to implement precautionary actions that were taken with respect to the Covid-19 pandemic.

7.0 CONCLUDING REMARKS

Cameco is committed to the safe, clean, and reliable operations of all of its facilities and continually strives to improve safety performance and processes to ensure the safety of both its employees and the local residents.

During the third quarter of 2020, CFM did not exceed any CNSC regulatory limits. CFM maintained environmental emissions and public radiation exposures to levels that are a fraction of the regulatory limits.

Cameco's relationship with local residents remains strong and we are committed to maintaining the strong support and trust we have developed over the past several years.