



**2023 First Quarter Compliance Monitoring  
&  
Operational Performance Report**

**Reporting Period January 1 – March 31, 2023**

**Cameco Fuel Manufacturing Inc.  
Fuel Facility Operating Licence  
FFL-3641.00/2043**

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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 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. During the first quarter, there were no exceedances of the action levels in the radiation protection or environmental protection program.

In the first quarter there was no planned shutdown of the facility with employees attending the facility as per normal operations.

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## 1.0 First 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 2023, CFM was granted a twenty-year licence by the Commission (FFL-3641.00/2043) effective March 1, 2023 until February 28, 2043. The current Licence Conditions Handbook (LCH) was released in March of 2022 (LCH-FFL-3641.00/2023).

There were no significant changes to Structure, Systems and Components (SSC) or processes in the first quarter. The LCH for the facility references core CFM documents that form the licensing basis in each safety and control area.

There were five documents that were submitted to the CNSC in the first quarter of 2023.

- Emergency Response plan (MSP 30-02), version #6 - Updated to reference RAVE Alert as replacement for Rapid Notify and added reference to Pre-Incident Plan – Port Hope form.
- Preventative Maintenance procedure (AP 018), version #9 - Updated periodic audit section to be conducted every 5 years and updated work order verification section to include electronic confirmation. Definitions for all work order types was provided and the reference to PHF-4440 was removed and replaced with the use of the online Nintex form. References and hyperlinks were updated along with the process map in Appendix A.
- Pressure Retaining Components Procedure (MSP 27-16), version #4 – Added references to the specific MTI’s.
- Waste Management Plan (CFM EP-02), version #3 – General revision and updated to include requirements in REGDOC 2.11.1.
- Change and Design Control procedure (MSP 13-02), version #23 – The scope and definition of change was revised. Additionally, definitions were added for Layout Change, Process, and Process Change. Also, there was clarification added for software and programming changes and AP 004 was added to the references.

Additionally, Cameco’s Fuel Services Division submitted a procedure titled “FSD External Dosimetry Programs – Process for Estimation of External Doses (FSD-PRC-RAD-04)”, dated February 14, 2023 which outlines the steps to be taken when personal external doses are missing due to lost dosimeters, or the dose was invalid or erroneously provided by the dosimetry service provider.

In the first quarter there was no planned shutdown of the facility.

There was one reportable event that required notification of the duty officer as detailed in the *Nuclear Safety and Control Act* during the first quarter.

At approximately 8:30 am on March 22, 2023, CFM became aware of a groundwater pumping well maintenance hole that was discharging groundwater intermittently onto CFM's parking lot surface. The groundwater treatment system, designed and installed for treatment of legacy trichlorethylene (TCE), was undergoing repair work at the time of the event. The intermittent surcharge of ground water was due to recent warmer temperatures and associated snow melt, ground thaw conditions and spring rain events. The Spills Action Centre (SAC – reference number # 1-338GL0), the Municipality of Port Hope, the CNSC Project Officer and the CNSC Duty Officer were notified of the event. Information was also posted to Cameco's website at Environment & Safety - Conversion: Port Hope - Fuel Services - Businesses – Cameco.

To mitigate any adverse effects on the environment, CFM implemented a process on March 23, 2023 to capture the surcharging effluent during the time the repair work on the system was conducted. Partial operation of the system was achieved on March 24, 2023 with a return to routine operation completed on April 11, 2023, at which point interim water collection and disposal was ended. Cameco identified this event as a significance level III on its severity matrix and has entered this event into its incident reporting system to document the investigation and corrective actions.

During the first quarter there were no exceedances of the radiation protection or environmental protection action levels.

## 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 first quarter of 2023, 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 CFM’s LCH. A result above an action level is investigated and remedial actions taken if necessary. During the first quarter there was no exceedance in the Radiation Protection program.

### Whole Body Dose

Table 1 shows the first 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 first quarter, the majority of NEWs received a whole body dose below 1 mSv (97%).

**Table 1**

<b>First Quarter 2023 Whole Body Dose Results</b>				
<b>Work Group</b>	<b>Number of Individuals</b>	<b>Average (mSv)</b>	<b>Minimum (mSv)</b>	<b>Maximum (mSv)</b>
Operations	108	0.26	0.00	1.54
Administration / Support	79	0.01	0.00	0.28
Contractors/Visitors	11	0.00	0.00	0.01
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 first quarter of 2022 to the first quarter of 2023 (five monitoring periods). The average whole body dose in the first quarter for all NEWs was 0.15 mSv. The average whole body dose is slightly higher than previous quarters. The maximum dose is lower than the first quarter of 2022 and higher than the other previous quarters. It is most accurate to compare the first quarter results in 2023 to the previous first quarter results in 2022 when normalized with production rates. When these two quarters are compared, the average dose was the same and the maximum dose was

lower in 2023. The individual with the highest exposure in the first quarter was an operator who works in the Pelleting Area.

**Table 2**

<b>Whole Body Dose Results by Quarter</b>				
<b>Monitoring Period</b>	<b>Number of Employees</b>	<b>Average Dose (mSv)</b>	<b>Minimum Dose (mSv)</b>	<b>Maximum Dose (mSv)</b>
Q1 2022	198	0.13	0.00	1.71
Q2 2022	192	0.12	0.00	1.16
Q3 2022	199	0.10	0.00	1.33
Q4 2022	200	0.11	0.00	1.20
Q3 2023	198	0.15	0.00	1.54

Skin Dose

Table 3 shows the first 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 12.95 mSv in the first quarter and the average skin dose for all NEWs was 0.97 mSv. The action levels for skin dose were not exceeded in the quarter. The majority of NEWs received a skin dose in the first quarter below 10 mSv (98%).

**Table 3**

<b>First Quarter 2023 Skin Dose Results</b>				
<b>Work Group</b>	<b>Number of Individuals</b>	<b>Average (mSv)</b>	<b>Minimum (mSv)</b>	<b>Maximum (mSv)</b>
Operations	108	1.77	0.00	12.95
Administration / Support	79	0.02	0.00	0.32
Contractors/Visitors	11	0.00	0.00	0.01
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 first quarter of 2022 to the first quarter of 2023. It is most accurate to compare the first quarter results in 2023 to the previous first quarter results in 2022 due to production rates. When these two quarters are compared the average and maximum dose were lower in 2023. The individual who received the maximum skin dose was a



Pelleting area employee but was not the same individual with the maximum whole-body dose.

**Table 4**

<b>Skin Dose Results by Quarter</b>				
<b>Monitoring Period</b>	<b>Number of Employees</b>	<b>Average Dose (mSv)</b>	<b>Minimum Dose (mSv)</b>	<b>Maximum Dose (mSv)</b>
Q1 2022	198	1.03	0.00	14.06
Q2 2022	192	1.00	0.00	11.91
Q3 2022	199	0.60	0.00	8.65
Q4 2022	200	0.82	0.00	12.95
Q1 2023	198	0.97	0.00	12.95

Eye Dose

Table 5 shows the first quarter eye 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 eye dose for all NEWs was 6.05 mSv in the first quarter and the average eye dose for all NEWs was 0.51 mSv. The interim action levels for eye dose were not exceeded in the quarter. The majority of NEWs received an eye dose below 2 mSv (89%).

**Table 5**

<b>First Quarter 2023 Eye Dose Results</b>				
<b>Work Group</b>	<b>Number of Individuals</b>	<b>Average (mSv)</b>	<b>Minimum (mSv)</b>	<b>Maximum (mSv)</b>
Operations	108	0.93	0.00	6.05
Administration / Support	79	0.01	0.00	0.28
Contractors/Visitors	11	0.00	0.00	0.01
*Monthly interim action level is 6.0 mSv				
*Quarterly interim action level is 12.0 mSv.				

\*Interim action levels approved by CNSC July 11, 2022

Table 6 shows the employee quarterly average and maximum individual eye exposure from the first quarter of 2022 to the first quarter of 2023. The average dose in the first quarter of 2023 was lower than the dose in the first quarter of 2022 and was higher than the other quarters in 2022. The maximum eye dose in the first quarter was higher than previous quarters with the exception of the first quarter of 2022. When production

quantity is considered for the quarters, the average and maximum eye dose in 2023 was the same or lower to the average and maximum eye dose in 2022. The individual who received the maximum eye dose was a Pelleting area employee who was the same individual with the maximum skin dose.

**Table 6**

<b>Eye Dose Results by Quarter</b>				
<b>Monitoring Period</b>	<b>Number of Employees</b>	<b>Average Dose (mSv)</b>	<b>Minimum Dose (mSv)</b>	<b>Maximum Dose (mSv)</b>
Q1 2022	198	0.53	0.00	6.40
Q2 2022	192	0.50	0.00	5.42
Q3 2022	199	0.32	0.00	4.31
Q4 2022	200	0.42	0.00	5.92
Q1 2023	198	0.51	0.00	6.05

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 2021, CFM completed an assessment for extremity dose to align with the Radiation Protection Regulations (RPR) issued in 2020. Specifically, section 8 of the RPR adds the requirement to use a licensed dosimetry service for equivalent doses to the skin, hands, and feet if the annual dose would be over 50 mSv. It was determined that the extremity dose for NEWs at CFM do not exceed 50 mSv/yr and therefore are not required to wear dosimeters from a licensed dosimetry service provider. Extremity dose can be estimated using historic data.

If there is a change in processing techniques or work configurations that would impact extremity dose, then an assessment is required to determine if the 50 mSv/yr criteria would be exceeded. Changes to equipment or processes are captured through CFM's Management of Change (MoC) process. In the first quarter of 2023, there were no changes implemented that would have required an assessment of the impact to extremity dose; therefore, the first quarter extremity dose is equivalent to previous quarters.

Table 7 shows the average, minimum, and maximum extremity dose for NEWs over the period from the first quarter of 2022 to the first quarter of 2023. As noted above the dose for the first quarter of 2023 would be similar to previous quarters with the second quarter of 2021 most representative as NEWs wore their rings for the entire quarter. If the second quarter dose from 2021 was used as the basis for the first quarter of 2023 the

average dose is estimated at 1.90 mSv and the maximum dose is estimated to be 10.50 mSv.

**Table 7**

<b>Extremity Dose Results by Quarter</b>				
<b>Monitoring Period</b>	<b>Number of Employees</b>	<b>Average Dose (mSv)</b>	<b>Minimum Dose (mSv)</b>	<b>Maximum Dose (mSv)</b>
Q1 2022	-	1.90*	0.00	10.50*
Q2 2022	-	1.90*	0.00	10.50*
Q3 2022	-	1.25 <sup>+</sup>	0.00	7.87 <sup>+</sup>
Q4 2022	-	1.90*	0.00	10.50*
Q1 2023	-	1.90*	0.00	10.50*

\*estimation based on Q2 2021 data

+ estimation based on Q3 2021 data

### 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 first quarter are provided in Table 8 below.

**Table 8**

<b>First Quarter Routine Urine Analysis Results</b>				
<b>Work Group</b>	<b>Number of Samples</b>	<b>Average (µg/L)</b>	<b>Minimum* (µg/L)</b>	<b>Maximum (µg/L)</b>
Operations	446	0.24	<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 first quarter of 2023, there were no routine urine sample results that were above the internal administrative level of 4.0 µgU/L. During the first quarter there were no routine lung counts conducted. The next campaign is scheduled for June of 2023.

### 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 9 as well as the routine contamination monitoring results for the first quarter. Of the 723 samples taken none exceeded the internal administrative control limits (ACL).

**Table 9**

<b>First Quarter Alpha Contamination Monitoring Results</b>			
<b>Area</b>	<b># of Samples Taken</b>	<b>Administrative Limits (Bq/cm<sup>2</sup>)</b>	<b># of Samples Above Limits</b>
Zone 1	99	0.4	0
Zone 2	192	4.0	0
Zone 3	42	4.0	0
Zone 4	390	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 first quarter of 2023 taken in each area, including the CAM heads in the PP2 area, dry Waste Treatment area and the furnace hall are shown in Table 10 below. There were no results above the 80-hour ACL or the 2000 hour ACL in the first quarter.

**Table 10**

<b>First Quarter 2023 Uranium In-plant Air Sampling Results</b>					
<b>Plant Area</b>	<b># of Samples</b>	<b>Average (<math>\mu\text{g U}/\text{m}^3</math>)</b>	<b>Maximum (<math>\mu\text{g U}/\text{m}^3</math>)</b>	<b># Samples &gt; ACL<sup>2000 hr</sup></b>	<b># Samples &gt; ACL<sup>80 hr</sup></b>
Ceramics Lab	64	1	1	0	0
Compaction Room	127	2	4	0	0
Load Room	255	1	3	0	0
Pangborn Room	127	2	19	0	0
Pelleting Area	382	2	7	0	0
UO <sub>2</sub> Grinders	254	3	17	0	0
Waste Treatment	64	3	5	0	0
PP2 Area	720	2	2	0	0
Dry Waste Treatment	450	1	1	0	0
Furnace Hall	540	1	1	0	0
<b>TOTAL</b>	<b>2983</b>	<b>2</b>	<b>19</b>	<b>0</b>	<b>0</b>
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 OSLD's around the facility to determine areas of elevated gamma radiation. The result for each location in the first quarter is summarized in Table 10. The results illustrate that the Fuel Storage Area had the highest gamma fields (5.8  $\mu\text{Sv}/\text{hr}$ ), 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 (5.0  $\mu\text{Sv}/\text{hr}$ ) was in the PP2 Receiving area. This is also expected due to the amount of raw material stored in this area. Employees limit their time in this area as well. The dose rate result for the fuel storage area was lower than the previous quarter (6.1  $\mu\text{Sv}/\text{hr}$ ) and for the PP2 area the dose rate was the same as last quarter (5.0  $\mu\text{Sv}/\text{hr}$ ). The dose rate in both of these areas fluctuate according to production requirements.

**Table 11**

<b>First Quarter 2023 Gamma Survey Results</b>						
<b>Location #</b>	<b>Area</b>	<b>Result (<math>\mu</math>Sv/hr)</b>		<b>Location #</b>	<b>Area</b>	<b>Result (<math>\mu</math>Sv/hr)</b>
13	Kitting	0.2		37	PP2 Powder Rec. N.	1.1
14	S Stacking	1.1		38	Powder Receipt	0.3
15	Stacking	0.2		39	U <sub>3</sub> O <sub>8</sub> Add-back	0.9
16	Pelleting Entry	0.6		40	S End Cap	0.1
17	Pelleting Lab	0.1		41	End Cap	0.2
18	S Grinding	1.0		42	N End Cap	0.1
19	Grinding	1.0		43	E Offices	0.0
20	N Grinding	0.9		44	S End Plate	0.0
21	S Wall	0.0		45	End Plate	0.0
22	S Furnace	0.5		46	N End Plate	0.0
23	Furnace	1.0		47	W Offices	0.0
24	N Furnace	0.1		48	S Inspection	0.1
25	SE Wall	0.6		49	Inspection	0.1
26	E Wall Furnace	0.6		50	N Inspection	0.7
27	NE Wall	0.5		51	W Inspection	0.0
28	N Corridor	0.6		52	Strapping Bay	0.2
29	Ceramics Lab	0.3		53	Packing	0.2
30	R7#1 East Wall	1.6		54	Fuel Storage Area	5.8
31	PP2 West Wall	0.2		55	Graphite East	0.1
32	S Pressing	0.6		56	BMS Loading	0.6
33	N Pressing	0.6		57	PP2 Receiving	5.0
34	Pangborn	0.8		58	PP2 Press R53-1	1.2
35	S. Waste Treat	1.5		59	PP2 East Wall	0.6
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 12 shows the safety statistics for the Port Hope facility.

**Table 12**

2023 Safety Statistics					
Year / Parameter	Q1	Q2	Q3	Q4	YTD
First Aid Injuries	1				
Medical Diagnostic Injuries	0				
Medical Treatment Injuries	0				
Lost Time Injuries	0				
Lost Time Injury Frequency	0.0				
Lost Time Injury Severity	0.0				

There were no lost time incidents that occurred in the first quarter. The Total Recordable Injury Rate (TRIR) for Jan 1<sup>st</sup> to Mar 31<sup>st</sup>, 2023 is 0.0.

#### Health and Safety Activities

- Communications:** The first quarter safety meetings were held each month with a different topic including Return to Work, Employee Assistance program, and Radiation protection. Each month an update is also 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 also included in the update on these topics.
- Education and Training:** During the first quarter of 2023, CFM training completed the draft work instructions for the PP2 area. SAT design for the Millwright position was completed. SAT for the fire safety program began with the analysis. By the end of the first quarter, training compliance numbers were ahead target at 96.5%. Safety critical “No Go” training was at 99.1% complete.
- Safety Awareness Activities:** In the first quarter the JHSC participated in International Women’s day by celebrating the different roles women at the facility fill outside of work (e.g., musicians, authors, grandmothers, moms, etc).
- JH&SC:** The JHSC continued in person meetings with the option of attending virtually if people are not comfortable in group settings. A meeting was held in the first quarter to develop the 2023 JHSC objectives.
- Safety & Industrial Hygiene:** Ergonomic risk assessments and physical demands analysis were conducted by a qualified third party on several tasks in the first quarter.

Reports will be issued by the vendor and when received CFM will enter recommendations into Cameco's incident reporting system.



#### 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

With the update to the Derived Release Limit (DRL) report, the calculated public dose was revised to include potential dose from all pathways at the CFM facility. Beginning in the first quarter of 2021, public dose was calculated by summing the total amount of uranium dioxide released to air in process stacks, building ventilation as well as liquid emissions, and was added to the gamma dose to the critical receptor (now represented by location #12). This is demonstrated in the following formula:

$$\text{Public Dose} = \text{Dose Air (stacks)} + \text{Dose Air (building ventilation)} + \text{Dose Water} + \text{Dose Gamma}$$

The estimated public dose, along with each component, for the first quarter of 2022 to the first quarter of 2023 is provided in Table 13.

The total dose to the member of the public from air, liquid emissions and gamma levels for the quarter is calculated to be 0.093 mSv, which is in line with previous quarters.

**Table 13**

<b>Public Dose by Quarter (mSv/quarter)</b>					
<b>DRL Component</b>	<b>Q1 2022</b>	<b>Q2 2022</b>	<b>Q3 2022</b>	<b>Q4 2022</b>	<b>Q1 2023</b>
Air (stacks)	0.000	0.000	0.000	0.000	0.000
Air (building ventilation)	0.025	0.028	0.021	0.028	0.026
Liquid	0.001	0.001	0.001	0.001	0.001
Gamma (Location 12)	0.059	0.071	0.067	0.069	0.067
Total dose to Critical Receptor (location #12)	0.085	0.100	0.089	0.098	0.093

##### Gamma Monitoring

The perimeter gamma derived release limit for the critical receptor at location #12 is 1.35 µSv/hr and the action level is 1.0 µSv/hr. The other DRL's listed for gamma monitoring are for location #1 and location #2 at 4.96 µSv/hr and 0.46 µSv/hr respectively with the action level of 0.2 µSv/hr for both locations. There were no exceedances of the DRL's or the action levels during the first quarter.

Table 14 provides the quarterly gamma levels in  $\mu\text{Sv/hr}$  for all fence line monitoring locations (i.e., 1-12) for the quarter.

**Table 14**

<b>First Quarter 2023 Gamma Monitoring Results (<math>\mu\text{Sv/hr}</math>)</b>		
<b>Location</b>	<b>Action Level</b>	<b>Quarterly Dose Rate</b>
1	0.2	0.00
2	0.2	0.02
3	1.0	0.00
4	1.0	0.00
5	1.0	0.00
6	1.0	0.00
7	1.0	0.00
8	1.0	0.00
9	1.0	0.04
10	1.0	0.00
11	1.0	0.27
12	1.0	0.36

The monitoring results for location 12 (closest location to the critical receptor) from the first quarter in 2022 to the first quarter of 2023 are provided in Table 15. Results have been corrected to consider background gamma levels by subtracting  $0.08 \mu\text{Sv/hr}$ . The dose rate for the first quarter of 2023 at location 12 is lower or equal to the previous quarters except for the first quarter of 2022.

**Table 15**

<b>Gamma Monitoring Results at Critical Receptor (location #12) by Quarter</b>			
<b>Period</b>	<b>Regulatory Limit (DRL)</b>	<b>Action Level</b>	<b>DRL Contribution</b>
Q1 2022	1.35	1.0	0.32
Q2 2022	1.35	1.0	0.38
Q3 2022	1.35	1.0	0.36
Q4 2022	1.35	1.0	0.37
Q1 2023	1.35	1.0	0.36

### Stack Emissions

The total amount of uranium dioxide released to the environment during the quarter in gaseous effluent from stacks was 0.001 kg. The action level for stack emissions is 2.0 µg/m<sup>3</sup> uranium concentration for a daily stack reading. There were no exceedances of the action levels with respect to air emissions during the quarter.

Table 16 provide the average and maximum uranium concentration for all stacks in µg/m<sup>3</sup> from the first quarter of 2022 to the first quarter of 2023. The average and maximum concentrations measured in stack emissions in the first quarter were lower than previous quarters except for the third quarter.

**Table 16**

<b>Daily Stack Emissions by Quarter (µg/m<sup>3</sup>)</b>							
<b>Source</b>	<b>Action Level</b>	<b>Avg. / Max.</b>	<b>Q1 2022</b>	<b>Q2 2022</b>	<b>Q3 2022</b>	<b>Q4 2022</b>	<b>Q1 2023</b>
PP2 West	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.1	0.0
PP2 East	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.2	0.1	0.1	0.1	0.0
Waste Treatment Area Absolute	2.0	Avg.	0.2	0.3	0.2	0.1	0.1
		Max.	0.7	0.7	0.3	0.4	0.3
BMS Extraction	2.0	Avg.	0.0	0.0	0.1	0.1	0.1
		Max.	0.0	0.2	0.3	0.2	0.2
Hoffman Vacuum	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.0	0.0	0.0
Pangborn North Dust Collector	2.0	Avg.	0.0	0.0	0.1	0.1	0.0
		Max.	0.1	0.2	0.2	0.2	0.1
Pangborn South Dust Collector	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.1	0.1	0.1	0.1	0.0
DeVilbiss Mist Collector	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.0	0.1	0.1	0.1	0.0
Furnace Burn-off	2.0	Avg.	0.0	0.0	0.0	0.0	0.0
		Max.	0.0	0.1	0.1	0.1	0.0
<b>Overall</b>	<b>2.0</b>	<b>Avg.</b>	<b>0.0</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
		<b>Max.</b>	<b>0.7</b>	<b>0.7</b>	<b>0.3</b>	<b>0.4</b>	<b>0.3</b>

### Building Ventilation Emissions

The action level for building ventilation is 1.0 g/hr and is monitored daily for the Pelleting Area and 0.4 g/hr for the PP2 area. There were no exceedances of either action level in the first quarter. The estimated release of uranium dioxide in exhaust ventilation from both areas during the quarter was 0.27 kg (0.24 kg from the Pelleting Area and 0.03 kg from the PP2 area).

Table 17 provides the average and maximum uranium concentration emitted through the building ventilation system in g/hr from the first quarter of 2022 to the first quarter of 2023.

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 first quarter of 2023 the building ventilation average and maximum emission rates for both areas were comparable to previous quarters.

**Table 17**

<b>Building Ventilation Rates by Quarter (g/hr)</b>							
<b>Parameter</b>	<b>Action Level</b>	<b>Measure</b>	<b>Q1 2022</b>	<b>Q2 2022</b>	<b>Q3 2022</b>	<b>Q4 2022</b>	<b>Q1 2023</b>
Uranium Emissions from Pelleting Area	1.0	Average	0.15	0.17	0.15	0.19	0.16
		Maximum	0.31	0.38	0.25	0.33	0.25
		Minimum	0.08	0.05	0.06	0.09	0.09
Uranium Emissions from PP2 Area	0.4	Average	0.01	0.01	0.02	0.02	0.01
		Maximum	0.07	0.04	0.11	0.08	0.05
		Minimum	0.00	0.00	0.00	0.00	0.00

### Liquid Emissions

The action level for liquid effluent released to the sewer is 0.1 mg/L. In the first quarter there was no exceedance of the action level.

Table 18 provides the average and maximum uranium concentration for a single composite sample from the first quarter of 2022 to the first quarter of 2023. Also provided in the table is the minimum and maximum pH measured in the samples.

**Table 18**

<b>Sanitary Sewer Emissions by Quarter</b>							
<b>Parameter</b>	<b>Action Level (mg/L)</b>	<b>Measure</b>	<b>Q1 2022</b>	<b>Q2 2022</b>	<b>Q3 2022</b>	<b>Q4 2022</b>	<b>Q1 2023</b>
Uranium (mg/L)	0.1	Average	0.02	0.02	0.01	0.02	0.02
		Maximum	0.10*	0.02	0.02	0.06	0.03
pH (pH units)	6.5	Minimum	6.8	6.6	6.8	6.9	7.2
	9.0	Maximum	7.6	7.4	7.6	7.6	7.9
Volume of water	-	(m <sup>3</sup> )	3306	3928	3770	2718	3715
Estimated Discharge	-	(kg)	0.05	0.06	0.05	0.05	0.06

\*Result was 0.095 mg/L; therefore, was not above the action level.

Ambient Air Monitoring

High volume air samples are collected in the four corners of the CFM property. Table 19 shows the quarterly average and maximum results for all four locations from the first quarter of 2022 to the first quarter of 2023.

**Table 19**

<b>Overall Uranium-in-Air Concentration at Hi-Vol Stations by Quarter (µg/m<sup>3</sup>)</b>					
<b>Parameter</b>	<b>Q1 2022</b>	<b>Q2 2022</b>	<b>Q3 2022</b>	<b>Q4 2022</b>	<b>Q 2023</b>
Average	0.0002	0.0005	0.0003	0.0002	0.0002
Maximum	0.0008	0.0021	0.0006	0.0005	0.0005

Table 20 provides the quarterly average and maximum uranium-in-air concentrations for all locations from the first quarter of 2022 to the first quarter of 2023. The average and maximum result for the first quarter of 2023 is comparable to or lower than previous quarters.

**Table 20**

<b>Uranium-in-Air Concentration at Hi-Vol Stations by Quarter (µg/m<sup>3</sup>)</b>					
<b>Quarter</b>	<b>Result</b>	<b>East</b>	<b>North</b>	<b>Northwest</b>	<b>Southwest</b>
Q1 2022	Average	0.0002	0.0002	0.0002	0.0002
	Maximum	0.0005	0.0006	0.0008	0.0007
Q2 2022	Average	0.0003	0.0006	0.0005	0.0005
	Maximum	0.0009	0.0023	0.0021	0.0011
Q3 2022	Average	0.0002	0.0003	0.0002	0.0003
	Maximum	0.0003	0.0005	0.0005	0.0006
Q4 2022	Average	0.0002	0.0002	0.0002	0.0002
	Maximum	0.0003	0.0005	0.0003	0.0004
Q1 2023	Average	0.0002	0.0002	0.0002	0.0003
	Maximum	0.0003	0.0004	0.0005	0.0005

Legacy Waste Management

Limited waste management activities occurred in the first quarter due to ongoing resource constraints. CFM is still reviewing drummed material that did not meet the disposal site’s criteria; this will require the systematically opening each drum to visually identify the contents, sort, and segregate like materials. From this activity, recoverable uranium material is consolidated to be verified and the uranium recovered with other scrap material. Marginally contaminated material is repackaged, rescanned, and prepped for disposal in the United States.

## 5.0 Public Information Program

During the first quarter of 2023, CFM continued to meet the requirements of CNSC RD/GD 3.2.1, *Public Information and Disclosure programs*.

### Public Engagement

Cameco sponsored the Cobourg Winterfest Event on Jan. 28<sup>th</sup>, 2023 and hosted a booth at the Durham College Oshawa Campus job fair on Feb. 2<sup>nd</sup>, 2023.

The winter issue of Energize was mailed out to residents of Port Hope in the second week of February. A digital version was also posted on the Cameco website on February 13. Stories in this issue included: Cameco Fuel Manufacturing granted 20-year licence by the CNSC; Cameco's Port Hope Conversion Facility recognized for strong safety performance; Port Hope community survey results show strong support for Cameco Corporation; Vision in Motion update; Cameco announces over \$50,000 for local mental health initiatives.

A news release announcing that the CNSC had granted CFM a 20-year licence was posted online and on Cameco social media channels. Information about the renewal was also included in the Winter 2023 edition of Energize.

Cameco attended the Canadian Nuclear Association's annual conference from Feb. 21 – 24 in Ottawa, ON. Cameco representatives staffed a booth and shared information about its operations and activities with conference attendees.

On March 2, Cameco announced that its 5K Step Up for Mental Health fun run/walk was returning as an in-person event in Cobourg. A news release was issued and posted to [camecofuel.com](http://camecofuel.com).

Cameco sponsored and attended the Northumberland Chamber Business Awards on March 24 and presented the Communications & Technology Award.

Cameco provided free advertising to local charitable organizations with its sponsorship of MyFM's Community Partner Program. Through the quarter, Five Counties Children's Centre, Northumberland Big Brothers, Big Sisters, and Northumberland Fare Share Food Bank benefitted from this sponsorship by receiving advertising.

### Public Disclosure

CFM made one public disclosure in the first quarter: [Environment & Safety - Fuel Manufacturing: Port Hope & Cobourg - Fuel Services - Businesses - Cameco](#)

<b>Posting Date</b>	March 24, 2023
<b>Incident Date</b>	March 22, 2023
<b>Incident</b>	Reportable Spill
<b>Details</b>	<p>A maintenance hole access point at one of the groundwater pumping wells was intermittently discharging groundwater onto CFM's parking lot surface, with runoff discharging to the municipal storm sewer system. The volume of groundwater discharged is not known. Samples of the water have been collected and sent for analysis.</p> <p>There was no health or safety risk posed to the public, workers or the environment.</p>
<b>Corrective Action</b>	<p>The groundwater pump-and-treat system is currently off-line and undergoing repair. The likely cause is inflow/infiltration due to recent warmer temperatures and associated snow melt and ground thaw conditions.</p> <p>Interim water recovery and storage activities are anticipated to commence March 23.</p> <p>Cameco notified the Canadian Nuclear Safety Commission and the Spills Action Centre.</p>
<b>Cameco Environmental Effect Rating</b>	1



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## Social Media

Cameco Ontario's Facebook community grew by 19 new followers and to 1,072 page likes at the end of the quarter. Cameco Ontario's 32 posts covered information such as:

- Announced the Cameco Fuel Manufacturing had received a 20-year licence from the CNSC
- Promoted community partners, including Five Counties Children's Centre, Big Brothers Big Sisters Northumberland, and the Fare Share Food Bank
- Promoted Cameco's attendance at career fairs including the Curve Lake Alternate Routes Career Fair on January 19 and the Durham College job fair on February 2
- Supported Bell Let's Day on January 25
- Promoted Cameco sponsored events, such as the Cobourg Winterfest, Community Care Handbags for Hospice, and the Northumberland Central Chamber of Commerce Business Achievement Awards
- Recognized International Day of Women and Girls in Science with a series of posts featuring Cameco women working in STEM
- Announced the return of the Step Up for Mental Health 5K event
- Shared the winter 2023 issue of Energize
- Promoted Career opportunities at Cameco
- Shared Cameco photos from the Canadian Nuclear Association Conference in Ottawa
- Celebrated International Women's Day on March 8

By the end of the quarter the Instagram account had grown by thirty-eight new followers for a total of 756 followers. Photos and information featured were similar to the Cameco Facebook page

## Indigenous Engagement

Cameco attended the Curve Lake First Nation Alternative Routes Fair on January 19. Cameco highlighted career openings and information about Cameco's operations and career opportunities.

Cameco representatives attend the Curve Lake First Nation Consultation Committee Meeting on February 13. The meeting was part of the relationship building between Cameco and Curve Lake and review of plans to move forward.

Regular meetings with Curve Lake First Nation took place on Jan 25 and March 29. The meetings covered a review of 2022 and key focus areas for 2023. Cameco also provided an update on Vision in Motion activities.

Regular meetings with Scugog Island First Nation took place on Feb. 16 and March 31. Cameco provided a full presentation on Cameco's operations and activities as a recap for meeting attendees who are newer to the regular meetings.

Public disclosures are emailed to Curve Lake and Scugog Island and then discussed at the next available meeting.

On Jan. 4, Q3 Reports were emailed to Curve Lake, Scugog Island, Alderville, Hiawatha and Rama First Nations and the Mohawks of the Bay of Quinte.

On Jan. 18 a news release regarding the CFM licence renewal was emails to Curve Lake and Scugog Island First Nations.

On March 10, Cameco emailed the Fourth Quarter Compliance Reports, winter edition of Energize and the Step Up news release to Curve Lake, Scugog Island, Alderville, Hiawatha and Rama First Nations and the Mohawks of the Bay of Quinte.

#### Website

The Winter 2023 edition of Energize was posted.

- [Energize - Winter 2023 - Making a Difference - Community - Cameco Fuel Services](#)

A news release announcing the return of Cameco Step Up for Mental Health 5K was posted.

- [Cameco Announces the Return of Step Up for Mental Health 5K Fun Run/Walk - News Archive - Media - Cameco Fuel Services](#)

A news release announcing that the CNSC had granted CFM a 20-year licence was posted.

- [CFM Granted 20-Year Licence Renewal by CNSC - News Archive - Media - Cameco Fuel Services](#)

An abbreviated version of the licence renewal news release was posted on the CFM licence renewal page. A link to the full release was provided.

- [20 Year Licence Renewal - Cameco Fuel Manufacturing - Business - Cameco Fuel Services](#)

Public Disclosures: One public disclosure was posted to the website [Environment & Safety - Conversion: Port Hope - Fuel Services - Businesses - Cameco](#)

#### Media Analysis

Cameco received the following media coverage:

- **Commission renews Cameco Fuel Manufacturing Inc.'s Class IB nuclear fuel facility licence for its facility for a 20-year period** – January 18, 2023 – Canada.ca
  - [Commission renews Cameco Fuel Manufacturing Inc.'s Class IB nuclear fuel facility licence for its facility for a 20-year period - Canada.ca](#)
- **Cameco Fuel Manufacturing in Port Hope, Ont. granted 20-year licence renewal** – January 18, 2023 – Global News
  - [\(1\) Cameco Fuel Manufacturing in Port Hope, Ont. granted 20-year licence renewal - Peterborough | Globalnews.ca](#)
- **Licence renewal for Cameco Fuel Manufacturing** – January 24, 2023 – Nuclear Engineering International
  - [Licence renewal for Cameco Fuel Manufacturing - Nuclear Engineering International \(neimagazine.com\)](#)
- **Cameco will continue to fuel Ontario for at least another 20 years** – February 1, 2023 – GoNorthumberland.ca
  - [COMMUNITY SPOTLIGHT: Cameco will continue to fuel Ontario for at least another 20 years | 93.3 myFM \(gonorthumberland.ca\)](#)
- **Cameco to become sole supplier of Ukraine's nuclear power plants** – Feb 9, 2023 – CKOM.com
  - [Cameco to become sole supplier of Ukraine's nuclear power plants | 650 CKOM](#)
- **Cameco to supply Ukraine's uranium needs to 2035** – February 9, 2023 – World Nuclear News

- [Cameco to supply Ukraine's uranium needs to 2035: Uranium & Fuel - World Nuclear News \(world-nuclear-news.org\)](#)
- **Cameco Step Up For Mental Health Run May 13** – March 30, 2023 – PortHopeNow.com
  - <http://www.porthopenow.com/?p=17788>
- **Cameco's Step Up for Mental Health 5K Fun Run/Walk returns as in-person event May 13** – March 12, 2023 – Northumberland News
  - [https://www.northumberlandnews.com/life/comecos-step-up-for-mental-health-5k-fun-run-walk-returns-as-in-person-event/article\\_911751cd-8c39-5770-9828-3043c08551bc.html](https://www.northumberlandnews.com/life/comecos-step-up-for-mental-health-5k-fun-run-walk-returns-as-in-person-event/article_911751cd-8c39-5770-9828-3043c08551bc.html)

Cameco received the below media coverage on its Step Up for Mental Health initiative:

- **Cameco's Step Up for Mental Health 5K Fun Run/Walk returns as in-person event May 13** – March 12, 2023 – Northumberlandnews.com
  - [Cameco's Step up for Mental Health event returns May 13 \(northumberlandnews.com\)](#)
- **Cameco's Step Up for Mental Health 5K Fun Run/Walk returns as in-person event May 13** – March 12, 2023 – ThePeterboroughExaminer.com
  - [Cameco's Step Up for Mental Health 5K Fun Run/Walk returns as in-person event May 13 | ThePeterboroughExaminer.com](#)
- **Cameco's Step Up for Mental Health 5K returns to in-person event** – May 16, 2023 – Gonorthumberland.ca
  - [Cameco's Step Up for Mental Health 5k returns to in-person event | 93.3 myFM \(gonorthumberland.ca\)](#)
- **COMMUNITY SPOTLIGHT: Step Up for Mental Health this Saturday** – Brightontoday.ca – May 10, 2023
  - [COMMUNITY SPOTLIGHT: Step Up for Mental Health this Saturday | Brighton Today.ca](#)

#### Communication Products

The Winter 2023 edition of Energize was mailed to all addresses in Port Hope and posted online and social media.

- [Energize - Winter 2023 - Making a Difference - Community - Cameco Fuel Services](#)

A news release announcing the return of Cameco Step Up for Mental Health 5K was issued to local media and posted on the website.

- [Cameco Announces the Return of Step Up for Mental Health 5K Fun Run/Walk - News Archive - Media - Cameco Fuel Services](#)

A news release announcing that the CNSC had granted CFM a 20-year licence was posted on the website and social media.

- [CFM Granted 20-Year Licence Renewal by CNSC - News Archive - Media - Cameco Fuel Services](#)

## **6.0 OTHER MATTERS OF REGULATORY INTEREST**

There were no processing activities of enriched material conducted on site in the first quarter of 2023 and CFM met all site-specific reporting requirements.

## 7.0 CONCLUDING REMARKS

Cameco is committed to the safe, clean, and reliable operations 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 first quarter of 2023, 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 residents remains strong and we are committed to maintaining the strong support and trust we have developed over the past several years.