2023 Third Quarter Compliance Monitoring
&
Operational Performance Report

Reporting Period July 1 – September 30, 2023

Port Hope Conversion Facility
Operating Licence
FFOL-3631.00/2027

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Version 2 (Final) - Submitted On: January 3, 2024

I Executive Summary

Cameco Corporation (Cameco) is committed to the safe, clean, and reliable operation of all its facilities and continually strives to improve its performance and processes to ensure the safety of both its employees and local residents. The Port Hope Conversion Facility (PHCF) maintains the required programs, plans and procedures in the areas of health and safety, radiation protection, environment, emergency response, fire protection, waste management, and training.

As a result of these programs, plans and procedures, the PHCF has 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.

Cameco utilizes administrative levels and action levels to provide early detection of issues and ensure levels remain well below regulatory limits. A variety of control measures and practices are employed as part of site programs to ensure the protection of the public, site employees and the environment. A robust ALARA program is in place to ensure continual improvement and to ensure exposures and emissions remain well below action levels.

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1.0 Third Quarter Overview

1.1 Facility Operation

Cameco continues to strive for operational excellence at all 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 PHCF Quality Management System.

There were no significant changes to Structure, Systems and Components (SSC) or processes in the Q3.

A contractor working in the UF_6 plant on July 14 removed their respirator too close to the work area and as a result had a urinalysis sample result above the action level of 80 µgU/L.

An operator was filling an emergency generator tank with diesel outside the Powerhouse. It was thought that the flow was turned off, but it was not and approximately 1L of diesel entered the sanitary system.

Hydrogen supply continued to be an issue in Q3. Both plants operated in the quarter, with a few outage periods in the UO_2 plant only.

1.2 Physical Design / Facility Modification

There were no modifications affecting the safety analysis of the licensed facility made in the quarter that required written approval of the Commission or a person authorized by the Commission.

At the PHCF, changes to the physical design of equipment, processes, and the facility with the potential to impact safety are evaluated using the internal design change process described in *Process and Design Change Control, CQP-113*. Changes are reviewed through Cameco's management of change workflow, which ensures all potential impacts to the environment as well as to the health and safety of personnel are evaluated prior to implementation.

A project to replace the current cooling water systems for both the UF_6 and UO_2 plants with closed loop cooling water systems began in 2022. Commissioning for the UO_2 plant closed loop cooling system was completed in Q4 2022. Commissioning for the UF_6 plant was completed in Q3 2023. The Safety Analysis Report was updated to reflect these changes and has been approved by CNSC staff.

2.0 Radiation Protection

This safety and control area covers the implementation of a radiation protection program, in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination and radiation doses are monitored and controlled. Cameco manages its Radiation Protection Program at the PHCF using ALARA principles in order to ensure doses are maintained well below regulatory limits.

There was one radiation dose action level exceedance in Q3 2023 related to contractor work in the UF_6 plant.

Whole Body Dose

Table 1 shows the whole-body dose summary results from Q3 2023 for six work groups: UF_6 Plant; UO_2 Plant; Maintenance; Technical Support (including Nuclear Energy Worker (NEW) contractors); Corporate Technical Services; and Administration.

Table 1

Third Quarter 2023 Whole Body Dose Results				
Work Group	**Number of Individuals**	**Average Dose (mSv)**	**Minimum Dose (mSv)**	**Maximum Dose (mSv)**
UF_6 Plant	100	0.15	0.00	1.30
UO_2 Plant	25	0.10	0.00	0.43
Maintenance	81	0.11	0.00	0.61
Technical Support [1]	556	0.03	0.00	0.96
Corporate Technical Services	39	0.01	0.00	0.19
Administration	93	0.01	0.00	0.05
Total (Max)	**855**	**0.05**	**0.00**	**1.30**

[1]Includes contractors (NEWs)

Table 2 shows the average, minimum and maximum quarterly individual external whole-body exposures from Q2 2022 through Q3 2023. The average whole-body dose is comparable to the previous quarters. The maximum whole-body dose received by UF_6 personnel was related to work in the flame reactor area.

Table 2

Whole Body Dose Results by Quarter				
Monitoring Period	**Number of Individuals**	**Average Dose (mSv)**	**Minimum Dose (mSv)**	**Maximum Dose (mSv)**
Q3 2022	825	0.05	0.00	1.40
Q4 2022	736	0.07	0.00	1.97
Q1 2023	684	0.10	0.00	2.08
Q2 2023	816	0.07	0.00	1.73
Q3 2023	855	0.05	0.00	1.30

Skin Dose

Table 3 shows the quarterly skin dose summary results for six work groups: UF_6 Plant; UO_2 Plant; Maintenance; Technical Support (including NEW contractors); Corporate Technical Services; and Administration. The highest exposures are from the maintenance work group related to work in the flame reactor areas of the UF_6 plant.

Table 3

Third Quarter 2023 Skin Dose Results				
Work Group	**Number of Individuals**	**Average Dose (mSv)**	**Minimum Dose (mSv)**	**Maximum Dose (mSv)**
UF_6 Plant	100	0.47	0.00	2.85
UO_2 Plant	25	0.21	0.00	1.14
Maintenance	81	0.55	0.00	4.94
Technical Support[1]	556	0.07	0.00	1.45
Corporate Technical Services	39	0.02	0.00	0.26
Administration	93	0.01	0.00	0.05
Total (Max)	**855**	**0.16**	**0.00**	**4.94**

[1]Includes contractors (NEWs)

Table 4 shows the average and maximum quarterly individual skin exposure for Q3 2022 through Q3 2023. The average skin dose has decreased compared to previous quarters.

Table 4

Skin Dose Results by Quarter				
Monitoring Period	**Number of Individuals**	**Average Dose (mSv)**	**Minimum Dose (mSv)**	**Maximum Dose (mSv)**
Q3 2022	825	0.18	0.00	4.85
Q4 2022	736	0.19	0.00	4.73
Q1 2023	684	0.33	0.00	7.82
Q2 2023	816	0.24	0.00	7.36
Q3 2023	855	0.16	0.00	4.94

Eye Dose

Table 5 shows the quarterly eye dose summary results for six work groups: UF_6 Plant; UO_2 Plant; Maintenance; Technical Support (including NEW contractors), Corporate Technical Services; and Administration. The highest exposure is from the maintenance group related to time in the flame reactor and drop line filter areas of the UF_6 plant.

Table 5

Third Quarter 2023 Eye Dose Results				
Work Group	**Number of Individuals**	**Average Dose (mSv)**	**Minimum Dose (mSv)**	**Maximum Dose (mSv)**
UF_6 Plant	100	0.32	0.00	2.15
UO_2 Plant	25	0.16	0.00	0.76
Maintenance	81	0.32	0.00	2.31
Technical Support[1]	556	0.06	0.00	1.09
Corporate Technical	39	0.02	0.00	0.21
Administration	93	0.01	0.00	0.05
Total (Max)	855	**0.11**	**0.00**	**2.31**
[1]Includes contractors (NEWs)				

Table 6 shows the average, minimum and maximum quarterly individual external eye exposures for Q3 2023.

Table 6

Eye Dose Results by Quarter				
Monitoring Period	**Number of Individuals**	**Average Dose (mSv)**	**Minimum Dose (mSv)**	**Maximum Dose (mSv)**
Q3 2022	825	0.11	0.00	3.09
Q4 2022	736	0.13	0.00	2.42
Q1 2023	684	0.21	0.00	4.14
Q2 2023	816	0.15	0.00	4.08
Q3 2023	855	0.11	0.00	2.31

Urine Analysis

The urine analysis action levels are presented in Table 7 below.

Table 7

Urine Analysis Action Levels		
Parameter		**Action Level**
Urinalysis (NEW)	Weekly - UO_2/UF_6 Operators, Maintenance, Technical Support	65 µg U/L
	Monthly - Administrative Support	25 µg U/L
	Long-term Contractors	65 µg U/L
	Short-term Contractors	80 µg U/L
	Chemical toxicity – post shift sample	500 µg U/L
	Fluoride toxicity – all samples	7 mg F/L
Urinalysis (Non-NEW)	Daily - Routine Sample	40 µg U/L
	Monthly - Routine Sample	25 µg U/L
	Chemical Toxicity - Post Shift Sample	500 µg U/L
	Fluoride Toxicity – All Samples	4 mg F/L

There were no fluoride in urine results above the action level of 7 mg F/L in Q3 2023.

Table 8 shows the distribution of urine results for Q3 2023. A total of 16,055 urine samples were collected and analyzed for uranium during Q3 2023. The majority of routine urine analysis results (98.3%) were less than 5 µg U/L in the quarter.

All results above 13 µg U/L were screened by radiation protection staff. There were two official investigations for uranium in urine during the Q3 2023.

Table 8

Third Quarter 2023 Routine Urine Analysis Results	
Distribution of Results	**Q3 2023**
Number of Samples < 5 µg U/L	15,782
Number of Samples > 5 to < 25 µg U/L	263
Number of Samples > 25 to < 50 µg U/L	5
Number of Samples > 50 µg U/L	5
Number of Samples Analyzed (Uranium)	16,055

Table 9 presents the internal urine analysis doses for the last five quarters. The average and maximum internal urine analysis doses in the quarter were 0.01 mSv and 0.23 mSv, respectively, which was consistent with previous quarters.

Table 9

Internal Dose (Urine) by Quarter				
Quarter	**Number of Individuals**	**Minimum Dose (mSv)**	**Maximum Dose (mSv)**	**Average Dose (mSv)**
Q3 2022	676	0.00	0.20	0.01
Q4 2022	633	0.00	0.16	0.01
Q1 2023	586	0.00	0.21	0.01
Q2 2023	662	0.00	0.10	0.01
Q3 2023	735	0.00	0.23	0.01

Fluoride in Urine

A total of 11,868 urine samples were analyzed for fluoride during Q3 with summary results provided in Table 10.

There were 12 routine and non-routine samples above the internal administrative investigation level of 4 mg F/L during Q3. The samples were investigated and entered into CIRS.

Table 10

Third Quarter 2023 Fluoride in Urine Analysis Results			
Type of Fluoride Samples	**Number of Samples**	**Minimum Concentration (mg F/L)**	**Maximum Concentration (mg F/L)**
All fluoride samples	11,868	0.1	6.9
Routine post-shift fluoride samples >= 7 mg F/L	0	-	-
Routine post-shift fluoride samples >= 4 mg F/L	0	-	-
Non-routine fluoride samples	504	0.1	3.0
Samples analyzed for U, insufficient volume (< 30mL) for F analysis	15	-	-

Lung Counting

The lung count trailer was on site at PHCF in Q3 2023. The PHCF maintenance and production groups were lung counted during this time.

Contamination Control

The PHCF is divided into three zones for contamination control purposes. Zone 1 areas (clean areas - no radioactive sources other than monitoring equipment) are clearly delineated. Whole body monitors are located at the Zone 1 boundary in the main lobby, men's, and women's change rooms. There is also a monitor located at the gate 12 vehicle port. In Zone 2 areas and the yard Zone 3 areas (transition areas – may contain limited amounts of uranium compounds), no visible contamination should exist and, when detected, loose contamination is promptly isolated, monitored, cleaned, and monitored again to ensure the contamination has been removed. Zone 3 production areas are production areas where uranium compounds are expected. Incidents of zone contamination are presented in Table 11.

Table 11

Q3 2023 Alpha Contamination Monitoring Results			
Area	**Number of Samples Taken**	**Zone Contamination Criteria (Bq/cm²)**	**Number of Samples Above Criteria**
Zone 1	1,231	0.4	0
Zone 2	13,155	0.4	26
Zone 3 (Yard)*	6	0.4	3

*Note – Samples are not routinely required in the yard area. Samples are taken as required if contamination is suspected.

The contamination in Zone 2 areas was primarily detected in the office areas and lunchrooms of production buildings. Contamination measurements are taken upon request in Zone 3 areas when contamination is suspected and only documented when above the applicable levels.

In-Plant Air

Routine air sampling is performed by collecting airborne particulate on air sampling filters and quantifying the airborne concentration of uranium. The Q3 results are presented in Table 12.

The site administrative level and derived air concentration (DAC), based on slow moving (low solubility) material, is 100 µg U/m^3 but protective measures, such as investigation and respiratory protection, are normally required as a precaution at lower DAC levels. Continuous air monitoring equipment (iCAMs) in the UF_6 and UO_2 plants are also used to provide early warning and to prompt response to elevated airborne uranium concentrations. Local alarms and direct communication with the control rooms provide early warning to plant personnel.

Table 12

Third Quarter 2023 In-Plant Air Uranium Concentration by Operations Group				
Operations Group	**Number of Samples Taken**	**Average (µg U/m^3)**	**Maximum (µg U/m^3)**	**Number of Samples Taken Above Administrative Level**
UF_6 Plant	4,891	10	551	69
UO_2 Plant	1,449	3	49	0
Waste Recovery	719	2	19	0
CUP	420	2	58	0

The maximum in-plant air sample of 551 µg U/m^3 was recorded on August 18, 2023, in the UF_6 plant. This result was due to work in the flame reactor and drop line filter area.

The average in-plant air concentrations are consistent with previous quarters.

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. Conventional safety statistics are presented in Table 13.

Table 13

2023 Safety Statistics					
Quarter / Parameter	**Q1 2023**	**Q2 2023**	**Q3 2023**	**Q4 2023**	**YTD**
First Aid Injuries	12	15	12	-	27
Medical Diagnostic Procedures	1	8*	5	-	5
Medical Treatment Injuries	5	2**	3	-	8
Other Recordable Injuries	1	0	0	-	1
Lost Time Injuries	0	0	0	-	0
Lost Time Injury Frequency	0	0	0	-	0
Lost Time Injury Severity	0	0	0	-	0

*Updated for additional Standard Threshold Shifts classified after the Q2 report was issued.

**Updated following WSIB reclassification.

There were no lost time incidents that occurred in Q3.

Health and Safety Activities

- **Communications**: OHS and CSSC continued to issue safety bulletins to promote a focus on continuing safety awareness.
- **Education and Training**: Training continued routinely using both in person methods and computer-based learning.
- **Safety Awareness Activities**: A caught working safely event was held in the third quarter. Employees were able to issue ballots to each other for acting safely. Over 30 prizes were available to be won. Additionally, the site reached 5 years without a lost time injury on September 8. Celebration BBQs were held the week of October 10, and a choice of recognition gift was provided to employees.

- **CSSC:** The CSSC committee continues to meet for regulatory meetings.
- **Safety & Industrial Hygiene**: The safety group has placed a focus on completing HIRAC assessments and ergonomic assessments in 2023. These assessments were continued in the third quarter.
- **Total Recordable Injury Rate (TRIR)** – Q3 Ending = 3.03 (12 First Aids, 5 Medical Diagnostics, 3 Medical Treatments). Site has more than 4.4 million hours without a Lost Time Injury. Contractor TRIR YTD is 2.66.

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

ORL equations for Site 1 and Site 2 have been derived and are expressed in the form shown below.

Public Dose = Dose $_{Air}$ + Dose $_{Water}$ + Dose $_{Gamma}$ < 0.3 mSv/y

The monthly dose from Site 1 and Site 2 are based on monitoring results for each dose component as shown in Table 14.

Table 14

Quarterly Dose (mSv/quarter)					
ORL Component	**Q1 2023**	**Q2 2023**	**Q3 2023**	**Q4 2023**	**YTD 2023**
Air	<0.001	<0.001	<0.001	-	0.001
Water	<0.001	<0.001	<0.001	-	0.001
Gamma – Site 1	0.026	0.031	0.019	-	0.076
Gamma – Site 2	0.036	0.039	0.033	-	0.108
Quarterly Dose – Site 1	0.027	0.031	0.020	-	0.078
Quarterly Dose – Site 2	0.037	0.039	0.034	-	0.109

Gamma Monitoring

Dose to the public is calculated for both site 1 and 2 using specific gamma fenceline monitoring locations. The results at station 2 are used for site 1 public dose calculations and the results at station 21 are used for site 2 public dose calculations. The results at these locations for this quarter are summarized and compared with regulatory action levels in Table 15.

There were no monthly gamma radiation action levels exceeded during Q3.

Table 15

Third Quarter 2023 Public Dose Gamma Monitoring Results					
Station Number	**July**	**August**	**September**	**Action Level (µSv/h)**	**Licence Limit (µSv/h)**
2	0.200	0.170	0.140	0.400	0.570
10	0.000	0.000	0.000	0.400	0.610
21	0.060	0.040	0.020	0.250	0.260

Air Emissions

The quarterly average and maximum stack emissions from the UF_6 plant main stack and the UO_2 plant main stack are presented in Table 16.

A stack monitoring program is used to determine the airborne uranium emission rates on a daily basis from the main stacks of the UF_6 and UO_2 plants.

No licensed action levels were exceeded for uranium emissions from the UF_6 plant main stack in the quarter. The UF_6 main stack average uranium emission rate was consistent with previous quarters during which production was operational.

No licensed action levels were exceeded for uranium emissions from the UO_2 plant main stack in the quarter. The UO_2 main stack average uranium emission rate was consistent with previous quarters during which production was operational.

Fluoride emissions from the UF_6 main stack are sampled and analyzed on a continuous basis using an on-line analyzer and the data is collected on the plant computer system. No licensed action levels were exceeded for fluorides in the quarter. The UF_6 main stack average fluoride emission rate was consistent with previous quarters during which production was operational.

The UO_2 main stack is also continuously sampled for ammonia. No licensed action levels were exceeded for ammonia emissions from the UO_2 plant main stack in the quarter. The UO_2 main stack average ammonia emission rate was consistent with previous quarters.

Table 16

Daily Main Stack Emissions by Quarter									
Plant	**Parameter**	**Licence Limit**	**Action Level**	**Value**	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**	**Q3 2023**
UF_6	Uranium g U/h	280	40	Quarterly Daily Average	2.0	1.9	2.5	2.1	2.1
				Quarterly Daily Maximum	6.7	3.7	5.0	4.3	10.7
	Hydrogen Fluoride g HF/h	650	230	Quarterly Daily Average	21	12	9	16	15
				Quarterly Daily Maximum	236	201	60	197	107
UO_2	Uranium g U/h	240	10	Quarterly Daily Average	0.4	0.5	0.8	1.1	0.6
				Quarterly Daily Maximum	1.2	1.4	1.7	2.9	1.8
	Ammonia kg NH_3/h	58	10	Quarterly Daily Average	1.4	2.0	2.3	1.7	1.6
				Quarterly Daily Maximum	3.8	4.3	4.6	2.8	4.6

Liquid Discharges

The PHCF ceased operating a once-through non-contact cooling water system in support of UF_6 plant operations in mid-July 2023 in association with a transition to a closed loop cooling system. The UO_2 plant had previously ceased discharging once-through cooling water to the harbour in late-July 2022 in association with a transition to a separate closed loop cooling system.

Cooling water return quality data for the UF_6 plant cooling water return (monitoring location UO2N) is summarized in Table 17. Results included in Table 17 are reflective of July 1 – 13 only.

Table 17

UO2N Water Quality Data by Quarter							
Parameter	**Units of Measure**	**Value**	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**	**Q3 2023**
Uranium	µg U/L	Average	160	140	310	160	29
		Maximum	420	320	730	440	47
Fluoride	mg F/L	Average	0.10	0.12	0.11	0.095	0.13
		Maximum	0.15	0.33	0.14	0.15	0.18
Ammonia & Ammonium	mg N/L	Average	0.014	0.27	0.067	0.056	0.16
		Maximum	0.028	0.84	0.25	0.46	0.37
Nitrate	mg N/L	Average	0.34	0.89	1.5	0.77	0.47
		Maximum	0.51	1.6	1.9	1.4	0.67
pH	-	Minimum	8.08	8.10	8.14	8.20	8.14
		Maximum	8.76	8.57	8.38	8.51	8.28

A daily sanitary sewer discharge uranium action level of 100 µg U/L (0.10 mg U/L) and a monthly mean release limit of 275 µg U/L (0.275 mg U/L) are currently in place. Tables 18 and 19 summarize uranium concentrations and pH values recorded for the third quarter of 2023. Facility discharge quality remained well below the monthly average limit during the quarter.

In early January, sanitary sewer trending increased corresponding to a period of unreasonably warm and rainy weather. The magnitude and frequency of precipitation events has been seen to influence sanitary sewer quality as a function of an increase in groundwater infiltration potential. The mid-January action level excursion groupings were partially influenced by Powerhouse effluent discharges. Harbour water was entering the sanitary sewer system at the Powerhouse, and harbour water trending was elevated during the time period in question. The harbour water supply to the Powerhouse was ultimately isolated by January 20 and a municipal water supply displaced former harbour water uses. Uranium trending decreased following the Powerhouse remedial actions, but trending increases were subsequently observed starting in mid-March in association with warmer ambient conditions and precipitation events that exacerbated baseline groundwater infiltration conditions.

The March and April 2023 sanitary sewage uranium excursions are interpreted to have resulted from groundwater infiltration, exacerbated by precipitation events and spring thaw conditions. Uranium trending has generally decreased since April, and no uranium excursions were recorded for the third quarter.

Cameco has evaluated targeted sanitary sewer infrastructure rehabilitation, replacement and/or abandonment tasks, taking into consideration work completed to date and planned site and VIM project sanitary sewer system improvements. Near term focus items include the replacement and realignment of sewer infrastructure servicing existing facility lift stations and portions of building 20, and the abandonment of associated inactive utilities. Rehabilitation work had also been planned for the building 13 lateral service. Sewer contractor work had been initiated in preparation for a planned service reline, however, it's been determined the work scope needs to be expanded to include the replacement of at least a portion of the sercice. At present, it's anticipated the noted sanitary sewer infrastructure work will likely be initiated in spring 2024.

Table 18

Sanitary Sewer Discharge Data by Quarter							
Parameter	**Units of Measure**	**Value**	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**	**Q3 2023**
Uranium	mg U/L	Average	0.022	0.040	0.039	0.038	0.0054
		Maximum	0.18	0.094	0.22	0.10	0.020
pH	-	Minimum	7.12	7.56	7.39	7.44	7.26
		Maximum	8.21	8.22	8.84	8.28	8.29

Table 19

Q3 2023 Monthly Sanitary Sewer Discharges			
Period	**Sanitary Sewer Action Level/Release Limit**	**Monthly Average Uranium Concentration (µg U/L)**	**Daily Maximum Uranium Concentration (µg U/L)**
July	Action Level of 100 µg U/L – daily composite samples Release Limit of 275 µg U/L – monthly average of daily composite samples	6.8	14
August		6.8	20
September		2.7	4.6

Ambient Air Monitoring

Table 20 shows the quarterly all-station average and maximum uranium dustfall results from Q3 2022 through to Q3 2023.

No uranium dustfall results exceeded the internal administrative screening level in the third quarter. The average uranium in dustfall results in the third quarter of 2023 were consistent with the uranium in dustfall averages during the previous quarters.

Table 20

Uranium in Dustfall Results by Quarter (mg U/m^2/30 days)					
Value	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**	**Q3 2023**
Average	0.2	0.2	<0.1	0.1	0.3
Maximum	1.7	1.3	0.1	0.2	0.9
Internal Administrative Screening Level = 10 mg U/m^2/30 days					

Table 21 summarizes the average and maximum uranium hi-vol results from Q3 2022 through to Q3 2023.

No uranium hi-vol results exceeded the AAQC in the third quarter. The average uranium in hi-vol results in the third quarter of 2023 were consistent with the uranium in hi-vol averages during the previous quarters.

Table 21

Uranium-in-Air Concentration at Hi-Vol Stations by Quarter (µg U in TSP/m^3)					
Quarter	**Result**	**Waterworks**	**Shuter Substation**	**Marsh Street**	**Hayward Street**
Q3 2022	Average	0.001	0.001	0.004	0.001
	Maximum	0.003	0.008	0.025	0.005
Q4 2022	Average	0.001	0.001	0.003	0.002
	Maximum	0.006	0.004	0.010	0.015
Q1 2023	Average	0.008	0.001	0.006	0.002
	Maximum	0.381	0.003	0.132	0.047
Q2 2023	Average	0.002	0.001	0.005	0.002
	Maximum	0.007	0.005	0.022	0.010
Q3 2023	Average	0.002	0.002	0.009	0.004
	Maximum	0.009	0.021	0.099	0.027
Average <0.06 µg U in TSP/m^3 (annual) AAQC Maximum <0.3 µg U in TSP/m^3 (24 hr) AAQC					

Table 22 shows the quarterly all-station average and maximum fluoride dustfall results from Q3 2022 through to Q3 2023.

The average fluoride in dustfall results in the third quarter of 2023 were consistent with previous quarters.

Table 22

Fluoride in Dustfall Results by Quarter (mg F/m^2/30 days)					
Value	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**	**Q3 2023**
Average	0.4	0.8	0.6	1.1	0.8
Maximum	4.1	4.2	5.3	5.5	6.8
Internal Administrative Screening Level = 20 mg F/m^2/30 days					

Table 23 shows the average and maximum lime candle results from the third quarter of 2022 through to the third quarter of 2023. The average results are comparable to levels observed in the previous quarters.

Table 23

Monthly Lime Candle Results by Quarter (µg F/100 cm^2/30 days)					
Value	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**	**Q3 2023**
Average	4	2	3	3	3
Maximum	7	4	4	7	10
The desirable ambient air quality criteria for lime candles are to protect forage crops consumed by livestock. During the summer growing season (April 1 – October 31), the criteria is 40µg F/100cm^2/30 days, changing to 80µg F/100cm^2/30 days in winter (November 1 – March 31).					

Ambient Water Quality Monitoring

A summary of harbour water intake (SCI) water quality data is presented in Table 24 for the period of July 1-13. Water intake operations ceased in July in association with the UF_6 plant transition to a closed loop cooling system.

Table 24

SCI Water Quality Data by Quarter							
Parameter	**Units of Measure**	**Value**	**Q3 2022**	**Q4 2022**	**Q1 2023**	**Q2 2023**	**Q3 2023**
Uranium	µg U/L	Average	180	160	340	170	34
		Maximum	500	360	740	450	52
Fluoride	mg F/L	Average	0.099	0.11	0.11	0.095	0.12
		Maximum	0.19	0.16	0.14	0.14	0.14
Ammonia & Ammonium	mg N/L	Average	0.019	0.13	0.020	0.021	0.040
		Maximum	0.46	0.76	0.14	0.14	0.12
Nitrate	mg N/L	Average	0.42	1.2	1.7	0.90	0.79
		Maximum	0.65	1.9	2.1	1.6	1.1
pH	-	Minimum	8.04	7.94	8.13	8.19	8.10
		Maximum	8.74	8.60	8.34	8.47	8.32

5.0 Public Information Program

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

Public Engagement

Cameco entered a float in the Port Hope Canada Day parade on July 1. Cameco sponsored the Northumberland Father Daughter Ball on July 7 and the United Way Northumberland's Backpack for Kids program in the summer.

The summer issue of Energize was mailed out to residents of Port Hope in July. A digital version was also posted on the Cameco website on July 27. Stories in this issue included a message from the vice-president of Fuel Services Division, Vision in Motion update and various community activities such as Step Up for Mental Health. The newsletter is also promoted on Cameco's social media channels.

On August 28, Cameco representatives attended a Port Hope Business Chamber of Commerce breakfast event with Minister Smith and Minister Piccini.

Cameco sponsored and participated in the Port Hope Business Chamber of Commerce golf tournament on September 14.

Cameco participated in the Port Hope Fall Fair on September 15, 16 and 17. Cameco leaders and subject matter experts staff a booth where they could speak to members of the public and answer questions. Approximately 215 people visit Cameco's booth which featured the How It's Made video and various information boards about its operations in Port Hope such as PHCF, CFM and Vision in Motion.

On September 28, Cameco celebrated its 35th anniversary with a $100,000 donation to Habitat for Humanity Northumberland. Cameco leaders participated in a team build day at the site in the afternoon. A news release was issued to local media and posted to the website.

Cameco provided free advertising to local charitable organizations with its sponsorship of MyFM's Community Partner Program. Through the quarter, Cultivate, Capitol Theatre, Cornerstone Family Violence Prevention Centre benefitted from this sponsorship by receiving advertising.

Public Disclosure

PHCF made two public disclosures during the third quarter: Environment & Safety - Conversion: Port Hope - Fuel Services - Businesses - Cameco

Posting Date	July 24, 2023
Incident Date	July 22, 2023
Incident	Reportable Spill
Details	During the filling of an emergency generator tank with diesel, the flow was not shut off and approximately 2 litres of diesel overflowed out of the tank and into a dyke. Approximately 1 litre of diesel entered the sanitary system. There was no health or safety risk posed to the public, workers or the environment.
Corrective Action	The spill was cleaned up within 20 minutes. Cameco notified the Canadian Nuclear Safety Commission and the Municipality of Port Hope.
Cameco Environmental Effect Rating	1

Posting Date	September 12, 2023
Incident Date	September 11, 2023
Incident	Non-Occupational Emergency Transport
Details	An ambulance was dispatched to the Port Hope Conversion Facility on September 11, 2023, for a non-occupational medical emergency. There was no health or safety risk posed to the public, workers or the environment.
Corrective Action	The worker was transported to the hospital. Cameco notified the Canadian Nuclear Safety Commission and the Municipality of Port Hope.
Cameco Environmental Effect Rating	1

Social Media

Cameco Ontario's Facebook community grew by six new page fans (1,107 total) and had a total of 1,115 page likes at the end of the quarter. Cameco Ontario's 25 posts covered information such as:

- Cameco recognized Canada Day on July 1 on social media and participated in the Port Hope Canada Day parade
- Shared various career opportunities
- Shared the Cameco ESG report
- The summer issue of Energize was released on July 28, 2023
- Promotion for our community partners, including Cultivate Festival, the Capitol Theatre, and Cornerstone
- Various community events sponsored by Cameco, including the Northumberland Father Daughter Ball, K9ine Community Outreach, All Handson Deck Food Drive, and Port Hope Movies in the Park.
- Alarm testing at the Port Hope Conversion Facility on August 19
- Cameco recognized National Day of Truth & Reconciliation on September 30
- Cameco's participation in the Port Hope Fall Fair on September 15, 16 & 17
- Cameco's announcement of a $100,000 gift to Habitat for Humanity Northumberland

By the end of the quarter the Instagram account had grown by 21 new followers for a total of 828 followers. Photos and information featured were similar to the Cameco Facebook page.

Website

A news release announcing a $100,000 gift to Habitat for Humanity was posted to the website:

- Cameco Celebrates 35th Anniversary with $100,000 Gift for Habitat for Humanity Northumberland - News Archive - Media - Cameco Fuel Services

Cameco posted information about the Barrier Net/Air Bubble Curtain System Removal at PHCF:

- PHCF - Barrier Net/Air Bubble Curtain System Removal - News Archive - Media - Cameco Fuel Services

Cameco posted its 2022 ESG Report to the website:

- Cameco Releases 2022 ESG Report - News Archive - Media - Cameco Fuel Services

The Summer 2023 edition of Energize was posted.

- Energize - Summer 2023 - Making a Difference - Community - Cameco Fuel Services

The Q2 Compliance Report was posted to the website:

- Media Library - Media - Cameco Fuel Services

Two public disclosures were posted to the website:

- Environment & Safety - Conversion: Port Hope - Fuel Services - Businesses - Cameco

Media Analysis

Cameco receive media coverage about Cameco's donation to Habitat for Humanity in celebration of its 35th anniversary:

- **Cameco donates $100,000 to Habitat for Humanity** – September 28, 2023 – Northumberland 89.7 FM
  - Cameco donates $100,000 to Habitat for Humanity Northumberland — Northumberland 89.7 FM (northumberland897.ca)

Communication Products

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

- Energize - Summer 2023 - Making a Difference - Community - Cameco Fuel Services

A news release announcing a $100,000 gift to Habitat for Humanity was posted to the website:

- Cameco Celebrates 35th Anniversary with $100,000 Gift for Habitat for Humanity Northumberland - News Archive - Media - Cameco Fuel Services

6.0 Indigenous Engagement

On July 15, Cameco sponsored the Scugog Island annual Pow Wow.

Cameco and Scugog Island participated in a regular meeting on August 14.

Cameco emailed the PHCF and CFM Quarterly Compliance Reports and the summer 2023 issue of Energize on September 13, to Curve Lake, Scugog Island, Alderville, Hiawatha and Rama First Nations and the Mohawks of the Bay of Quinte.

Cameco and Alderville First Nation were scheduled for an introductory meeting on August 15, however Alderville requested to reschedule the meeting.

On August 31, Cameco and Curve Lake met to establish representatives for joint Oversight Committee and the Environmental Working Group meetings. The first, in-person Oversight Committee meeting is scheduled to take place in Q4 at Cameco.

Cameco sponsored and attended the Curve Lake Pow Wow on September 17. Cameco also attended a Harvester's Meeting at Curve Lake on September 20. Representatives from Cameco staffed a booth and provided general information about Cameco operations to attendees.

Public disclosures are emailed to Curve Lake and Scugog Island First Nations as they occur, and then discussed at the next scheduled meeting.

7.0 Other Matters of Regulatory Interest

7.1 Vision in Motion

VIM engineering and procurement activities continued for building 72 (new warehouse), the large excavation to be completed west of the turning basin, and warehouse demolition (buildings 6, 7, 12, 12A) and work in Building 5 and Building 2.

Coordination continued with CNL regarding future remediation activities with shared responsibilities at the Centre Pier and near the Cameco fence line along the harbour. CNL began some soil removal at the centre pier on Cameco's behalf according to the protocol established earlier in the year.

Building 27 structure removal was completed from floors 7 to 4. Demolition of the lower portions of the structure began. In building 5B, equipment was progressed, and mobilization for the demolitions Building 14 and 15 began.

Packaged waste shipments to the LTWMF continued. Delivery of demolition wastes in roll-off bins resumed following CNL lifting the hold on this delivery method late last quarter.

The Supplementary Environmental Monitoring Plan for Vision in Motion and Other Clean-Up Program Projects is in place to monitor environmental impacts for the VIM activities, primarily during demolition/excavation.

There were no environmental monitoring exceedances that occurred in the third quarter related to VIM activities; however, an elevated high-volume air sampler total suspended particulates (TSP) was recorded in August 2023 as a result of CNL remediation activities and construction on the roof of the Municipal Waterworks building.

8.0 Concluding Remarks

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

In the third quarter of 2023, PHCF did not exceed any CNSC regulatory limits. As a result of the effective programs, plans and procedures in place, the PHCF was able to maintain individual radiation exposures well below all regulatory dose limits. In addition, environmental emissions continued to be controlled to levels that are a fraction of the CNSC regulatory limits, and public radiation exposures are also well below the regulatory limits.

PHCF's ALARA program continued to be effective in the third quarter of 2023.

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.