



CMD 19-M13

Date: 2019-05-09

File / dossier : 6.02.04

Edocs pdf : 5898576

Event Initial Report

Rapport initial d'événement

Cameco Corporation

**Uranium in groundwater
monitoring well at Key Lake
Operation (December 2018)**

Cameco Corporation

**Uranium dans le puit de
surveillance des eaux souterraines
à l'usine de concentration de
Key Lake (décembre 2018)**

Commission Meeting

Réunion de la Commission

May 15, 2019

Le 15 mai 2019

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EVENT INITIAL REPORT (EIR)

e-Doc 5893150

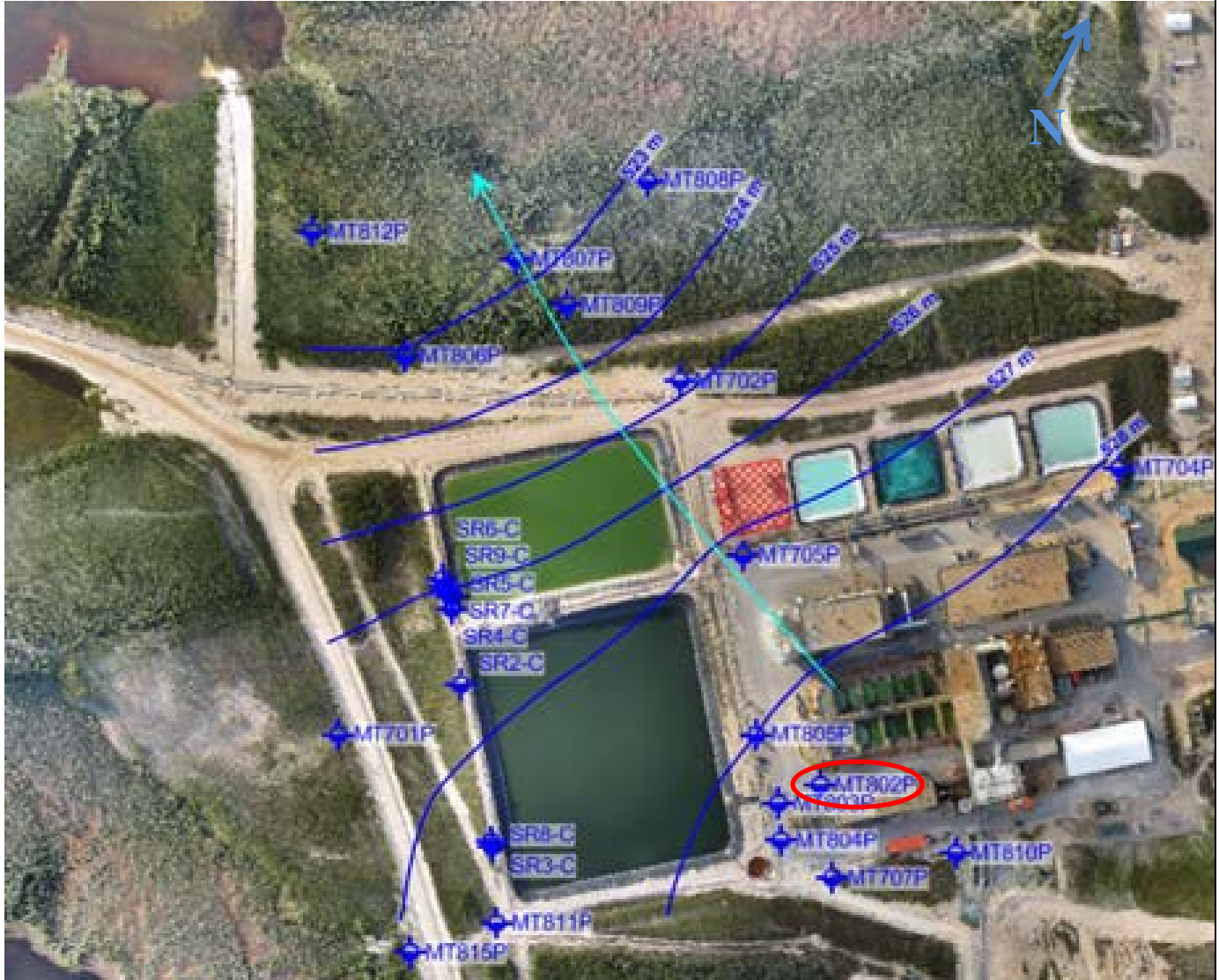
EIR: Cameco Corporation: Uranium in Groundwater Monitoring Well at Key Lake Operation (December 2018)	
Prepared by: DNCFR, UMMD	
Licensee: Cameco Corporation	Location: Key Lake Operation
Date Event was Discovered: 2018-12-03 Cameco Initial Agency Notification, e-Doc 5726751	Have Regulatory Reporting Requirements been met? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Proactive Disclosure: Licensee: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> CNSC: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Overview	
Reporting Criteria: Unplanned / unanticipated release of a nuclear or hazardous substance into the environment. Media interest.	
<p>Description: The Key Lake Operation is a uranium mill facility located in northern Saskatchewan which has been in operation for approximately 36 years. Due to low uranium prices, Cameco Corporation (Cameco) announced the temporary suspension of milling in November 2017 and announced in July 2018 that the temporary suspension would be indeterminate, pending economic considerations.</p> <p>On December 4, 2018, Cameco Corporation notified the CNSC Duty Officer and the Project Officer for the Key Lake Operation of the discovery of elevated uranium concentrations in groundwater monitoring well MT-802. This monitoring well is located on the mill terrace (circled in red on figure 1) immediately adjacent to the molybdenum extraction building, within the boundaries of the licensed site. The peak uranium concentration from samples collected from the well was 35 mg/L which was reported by Cameco as a spill. On December 5, 2018, CNSC posted information regarding the elevated uranium on the CNSC website, and Cameco also posted information on their website.</p> <p>The elevated uranium concentrations in groundwater are reportable to the CNSC pursuant to paragraph 29(1)(c) of the <i>General Nuclear Safety and Control Regulations</i> requiring Cameco to report a release not authorized by their licence of a quantity of radioactive nuclear substance into the environment. There are no CNSC set limits to uranium concentration or the amount to be considered a spill. For comparison purposes only, 35 mg/L uranium in the groundwater is about ten times higher than the Province of Saskatchewan's treated effluent discharge limit.</p> <p>Cameco noted an increasing trend in uranium in the well in November 2018. The elevated results date back to a June 2018 sample. Additional samples were then collected from this well and surrounding wells to confirm contamination concentrations and geographic extent. To date, the elevated uranium is limited to monitoring well MT-802. The direction of groundwater flow is shown on figure 1. The groundwater flow rate is slow and there is no risk to the health and safety of workers or to the surrounding environment. As noted, the elevated concentration of uranium has not been detected in any of the surrounding wells or in any other monitoring locations on site and therefore, the uranium remains contained under the mill area wholly within the licensed site.</p> <p>Cameco has an extensive groundwater monitoring program for the site which is reviewed and approved by CNSC staff. In addition to this mandatory sampling, Cameco also conducts voluntary groundwater sampling from other monitoring wells, such as MT-802, to gather additional information which may be used for a variety of reasons, including special studies. Cameco installed well MT-802 to monitor water quality adjacent to the molybdenum extraction building and it is voluntarily sampled. CNSC staff will be reviewing the approved groundwater monitoring program to determine whether this well and/or other wells which will be established as part of this current investigation should be added to the mandatory groundwater monitoring program.</p> <p>Cause(s): The initial investigation conducted by Cameco concluded that the concrete in a sump area within the molybdenum extraction building was degraded allowing water to seep through the concrete floor into the ground. Due to past releases of process liquids to the sump, contaminants including uranium became embedded in the concrete. The sump area has been regularly filled with water as a radiation protection measure to reduce radon emanation from the embedded uranium in the concrete. Cameco estimates a maximum of 50 cubic metres of contaminated water leaked into the ground.</p>	

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Figure 1 – Key Lake Operation: Mill and Terrace, Well MT-802 and Groundwater Flow Direction



Impact of the Event

On People:

How many workers have been (or may be) affected? 0

How many members of the public have been (or may be) affected by the event? 0

How were they affected?

CNSC staff consider this event to be of low safety significance. There is no risk to workers.

On the Environment: The groundwater flow rate is slow and there is no risk to the surrounding environment. The contamination remains on site, within the boundaries of the licensed area.

CNSC staff made this determination in consideration of the following:

1. The elevated uranium is limited to one well.
2. Water in the sumps has been removed preventing further leakage.
3. There is no indication of any impacts to the surrounding environment.

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Other Implications: As part of a collaboration agreement between Cameco and English River First Nation, Cameco informed representatives of English River about the elevated uranium in the monitoring well. English River requested that Cameco and the CNSC attend community meetings to discuss the event. A community meeting was held in Patuanak on April 8, 2019 with Cameco and CNSC staff. Cameco committed to return to the community when more information was available regarding the extent and concentration of the uranium in the groundwater and corrective actions developed for remediation of the spill. CNSC staff will also participate in that follow-up community meeting.

In response to the media interest that arose following the meeting, CNSC staff responded to media inquiries through interviews and direct correspondence.

The collaboration agreements that Cameco and Orano have established, including the agreement with English River, provide a mechanism for the companies to provide information to community representatives. The representatives can then share this information directly to their community.

These community representatives are also often the Northern Saskatchewan Environmental Quality Committee (EQC) representatives. The EQC also offers opportunity to provide information on this event to a broader audience. The EQC has membership from 30 municipal and Indigenous communities in northern Saskatchewan. The EQC was established in 1995 by the provincial government to enable northerners to share views and information about uranium developments and events that might have environmental impacts on the environment. The EQC provides a way for communities to share traditional knowledge and to see and hear first-hand the measures used for environmental protection and worker health and safety. CNSC staff plan to attend the next EQC meeting, tentatively planned for July 2019, to discuss this event and answer any questions raised.

Licensee Actions

Taken or in Progress: Cameco's actions completed to date include the following:

- Report the spill
- Investigate the source
- Remove the source (water drained within the building sump areas)
- Ensure that radiation protection measures were implemented within the building
- Increase groundwater monitoring of the well and surrounding wells to confirm that the area of elevated uranium remains isolated
- Develop an investigation plan (under CNSC review)

Planned: Cameco's investigation, including the development of corrective actions is still ongoing. Cameco provided a plan for the installation of new monitoring wells to confirm the extent and concentration of groundwater contamination on May 6, 2019, and this proposal is currently under review. Once the investigation is completed, Cameco will be able to develop a corrective action plan to mitigate the event.

CNSC Actions

Taken or in Progress: Cameco's event investigation and radiation protection measures within the molybdenum extraction building were reviewed during a CNSC compliance inspection on January 28 and 29, 2019. Ongoing information and Cameco's actions on the event are being tracked by CNSC staff in the Regulatory Information Bank (RIB). CNSC staff participated in a community information session on April 8, 2019 to explain the regulatory oversight on issues such as this one.

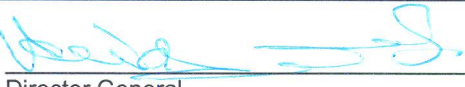

Planned: CNSC staff will continue to verify that appropriate actions are taken. Cameco's corrective action plan and results will be reviewed and verified by CNSC staff including the groundwater quality results to confirm that the surrounding environment remains protected. This event will be reported within the 2018 UMMD Regulatory Oversight Report. CNSC staff will discuss this event at the upcoming EQC meeting, currently scheduled for July 2019 and will also participate in an update to the community of Patuanak when further information is available.

Further information on this event will be included in the Regulatory Oversight Report for uranium mines and mills.

Additional reporting to the Commission Members anticipated:

- Yes
- No

If Yes, provide method of reporting:

Name and Title	Signature	Date
Haidy Tadros DNCFR	 Director General	 Date