



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

August 15, 2018

Mr. Walter Nelson  
Coordinator, Safety, Health,  
Environment & Quality  
Cameco Resources  
Crow Butte Operation  
86 Crow Butte Road  
Post Office Box 169  
Crawford, NE 69339-0169

**SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION VERIFICATION REGARDING  
LICENSE CONDITION 11.1.9 (FORMERLY LICENSE CONDITION 11.10),  
CROW BUTTE RESOURCES, INC., CRAWFORD, NEBRASKA**

Dear Mr. Nelson:

I am responding to Crow Butte Resources, Inc.'s (CBR's or the licensee's), letter to the U.S. Nuclear Regulatory Commission (NRC) staff, dated June 12, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18172A123), providing a proposed revised description of its contamination survey program.

By letter dated March 14, 2018 (ADAMS Accession No. ML18072A029), the NRC staff verified CBR's contamination survey program that was submitted in accordance with License Condition (LC) 11.10 of the renewed license SUA-1534 (ADAMS Accession No. ML17062A588) (the license). Subsequent to the March 14 verification, the license was amended resulting in LC 11.10 being renumbered as LC 11.1.9 (ADAMS Accession No. ML18117A293). By letter dated June 12, 2018 (ADAMS Accession No. ML18172A123), CBR submitted to the NRC staff a proposed revised response to LC 11.1.9 (formerly LC 11.10) for NRC written verification.

CBR revised the June 12 revision in its entirety in a letter dated July 26, 2018 (ADAMS Accession No. ML18213A183). The proposed revision in the July 26, 2018, letter is considered the submittal in regards to this verification.

The NRC staff has completed its technical review of CBR's submittal. This letter transmits the NRC staff's review and verification that the requirements of LC 11.1.9 (formerly LC 11.10) continue to be met with the revised description of the contamination survey program.

The NRC staff's review of CBR's revised response to LC 11.1.9 (formerly LC 11.10) is documented in the enclosed evaluation. The evaluation documents the NRC staff's conclusion that CBR's proposed revision to its contamination survey program for its licensed operations meets the requirements of 10 CFR 20.1101(b), and 20.1501(a) and (c), and is protective of

public health, safety and the environment. The commitments in the July 26, 2018, letter will be incorporated into LC 9.2 of license SUA-1534 as an administrative change during a future license amendment.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions, please contact me at 301-415-6443, or by e-mail at [Ronald.Burrows@nrc.gov](mailto:Ronald.Burrows@nrc.gov).

Sincerely,

*/RA/*

Ronald A. Burrows, Project Manager  
Uranium Recovery Licensing Branch  
Division of Decommissioning, Uranium Recovery,  
and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 40-8943  
License No.: SUA-1534

Enclosure:  
Verification of Revised Survey Program

cc: D. Miesbach, NDEQ  
D. Pavlick, CBR

W. Nelson

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LICENSE CONDITION 11.1.9 (FORMERLY 11.10), CROW BUTTE  
RESOURCES, INC., CRAWFORD, NEBRASKA **DATE August 15, 2018**

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**ADAMS Accession No.:** ML18225A305

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**U.S. Nuclear Regulatory Commission  
Staff Verification of Revised Description of  
Contamination Survey Program  
Crow Butte Resources, Inc.  
License Condition 11.1.9 (Formerly 11.10)  
Source Material License SUA-1534**

**BACKGROUND**

By letter dated March 14, 2018 (NRC, 2018b), the U.S. Nuclear Regulatory Commission (NRC) staff verified Crow Butte Resources, Inc.'s (CBR's or the licensee's) contamination survey program that was submitted in accordance with License Condition (LC) 11.10 of the renewed license SUA-1534 (NRC, 2017). LC 11.10 required the licensee to submit the following information for its licensed operations:

The licensee shall develop a survey program for beta/gamma contamination for personnel exiting from restricted areas, and beta/gamma contamination in unrestricted and restricted areas that will meet the requirements of 10 CFR Part 20, Subpart F and submit the program to NRC for review and written verification.

The licensee shall provide for NRC review and written verification the surface contamination detection capability (minimum detection concentration (MDC)) for radiation survey instruments, including scan MDC for portable instruments, used for contamination surveys to release equipment and materials for unrestricted use and for personnel contamination surveys. The detection capability in the scanning mode for the alpha and beta radiation expected shall be provided in terms of dpm per 100 cm<sup>2</sup>.

By letter dated May 23, 2018, the NRC staff issued Amendment No. 3 to license SUA-1534 (NRC, 2018a). This amendment, in part, renumbered several license conditions, including LC 11.10. The requirements in LC 11.10, as described above, are now contained in LC 11.1.9 (NRC, 2018a).

By letter dated June 12, 2018 (Cameco, 2018a), and as revised by letter dated July 26, 2018 (Cameco, 2018b), the licensee submitted to the NRC staff a revised response to LC 11.1.9 (formerly LC 11.10). The July 26, 2018, response replaced the June 12, 2018, response in its entirety. Therefore, the NRC staff used the July 26, 2018, response (Cameco, 2018b) for this evaluation.

The purpose of this evaluation is limited to the NRC staff reviewing the proposed changes to the contamination survey program addressing the requirements of LC 11.1.9 (formerly LC 11.10) as stated above. The NRC staff is not re-evaluating previously evaluated and verified aspects of the licensee's contamination survey program as documented in the NRC staff's original verification of the licensee's program (NRC, 2018b).

Enclosure

## **REGULATORY REQUIREMENTS**

The requirements related to a contamination survey program are found in 10 CFR 20.1101(b), and 20.1501(a) and (c). The NRC staff evaluated CBR's submittal (Cameco, 2018b) against Acceptance Criteria (4) and (8) in Section 5.7.6.3 of NUREG-1569, Standard Review Plan for In Situ Leach Uranium Extraction License Applications (NRC, 2003).

## **TECHNICAL EVALUATION**

In order to make a comparison of the original contamination survey program (Cameco, 2017) and the revised contamination survey program (Cameco, 2018b), the NRC staff converted these two documents into Word format and performed a comparison of the two documents. The result is a combined document with the changes presented as redline and strikeout text. A summary of the revised text is presented in the Attachment to this Enclosure.

The NRC staff's evaluation of this proposed revision follows the same format as the evaluation of the licensee's original contamination survey program (NRC, 2018b). If the licensee did not propose any changes to a review area below, the NRC staff did not re-evaluate that review area and previous NRC staff findings remain valid for that review area.

### *Designation of Controlled Area*

The licensee did not propose any changes to its designation of the controlled area.

Therefore, as previously evaluated by the NRC staff (NRC, 2018b), the NRC staff has reasonable assurance that the licensee's designation of the controlled area will continue to meet the regulatory definition of a controlled area, including demonstrating that it can limit access to that area (refer to definition of controlled area in 10 CFR 20.1003). This includes the ability to require a member of the public to exit the controlled area at any time (refer to questions 29 and 417, and NRC's responses, from NRC, 1994).

### *Minimum Detectable Concentrations*

The licensee did not propose any changes to how it will determine the detection capability of the instruments it uses for the detection of contamination as a result of its operations. This detection capability is referred to as the minimum detectable concentration, or MDC. The MDC is the activity concentration on a surface expected to be detected with 95 percent confidence (NRC, 1998).

Therefore, as previously evaluated by the NRC staff (NRC, 2018b), the NRC staff has reasonable assurance that the licensee's methodologies for determining the MDC of the instruments it uses for the detection of contamination will continue to meet Acceptance Criterion (8) in Section 5.7.6.3 of NUREG-1569 (NRC, 2003).

### *Radionuclide Mixtures*

The licensee did not propose any changes to its methodologies for determining the counting efficiencies of expected radionuclide mixtures.

Therefore, as previously evaluated by the NRC staff (NRC, 2018b), the NRC staff has reasonable assurance that the licensee's methodologies for determining the counting efficiencies of expected radionuclide mixtures will continue to meet Acceptance Criterion (4) in Section 5.7.6.3 of NUREG-1569 (NRC, 2003).

#### *Survey Program for Beta/Gamma Contamination*

The changes proposed by the licensee to its contamination control program (Cameco, 2018b and Attachment) are, for the most part, clarifying statements regarding beta/gamma contamination, and to a lesser extent its alpha survey program. Specifically, the licensee clarified when surveys will be required, taking into account restricted, controlled, and unrestricted areas. The licensee did not change the requirements for the types of surveys applied to personnel and equipment or the limits applied to those surveys.

As the NRC staff previously stated (NRC, 2018b), LC 9.6 (NRC, 2018a) requires CBR to release items for unrestricted use in accordance with the NRC guidance document "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," (the Guidelines) (NRC, 1993). In addition to specific release limits, the Guidelines provide recommendations for minimizing contamination levels on equipment and scrap. Furthermore, LC 9.7 (NRC, 2018a) requires the licensee to follow the guidance in RG 8.30 (NRC, 2002). RG 8.30 provides recommendations on surveys for surface contamination for areas, items, and personnel as well as the calibration of survey instruments.

The NRC staff finds that the revised survey program for beta/gamma contamination proposed by the licensee meets Acceptance Criterion (4) in Section 5.7.6.3 of NUREG-1569 (NRC, 2003).

#### **CONCLUSION**

The NRC staff concludes that the licensee has proposed an acceptable revision to its contamination survey program. Therefore, the NRC staff has reasonable assurance that the licensee's program, as described in its submittal (Cameco, 2018b), will continue to comply with 10 CFR 20.1101(b), and 20.1501(a) and (c), and that public health, safety and the environment will continue to be protected.

#### **REFERENCES**

Cameco, 2018a. Letter from W. Nelson, Cameco Resources, Crow Butte Operation, to the U.S. Nuclear Regulatory Commission, Correction to the proposed survey program for beta/gamma contamination, June 12, 2018, ADAMS Accession No. ML18172A123.

Cameco, 2018b. Letter from W. Nelson, Cameco Resources, Crow Butte Operation, to the U.S. Nuclear Regulatory Commission, Correction to the proposed survey program for beta/gamma contamination, July 26, 2018, ADAMS Accession No. ML18213A183.

Cameco, 2017. Letter from L. Teahon, Cameco Resources, Crow Butte Operation, to the U.S. Nuclear Regulatory Commission, Request for Additional Clarification for Response to License Condition 11.10, October 31, 2017, ADAMS Accession No. ML17313A803.

NRC, 2018a. Letter from M. Samson, U.S. Nuclear Regulatory Commission, to W. Nelson, Cameco Resources, Crow Butte Operation, License Amendment Number Three, Marsland Expansion Area, May 23, 2018, ADAMS Accession No. ML18117A293 (Package).

NRC, 2018b. Letter from R. Burrows, U.S. Nuclear Regulatory Commission, to W. Nelson, Cameco Resources, Crow Butte Operation, Verification Regarding License Condition 11.10, March 14, 2018, ADAMS Accession No. ML18072A029.

NRC, 2017. License Amendment No. 2, Crow Butte Resources, Inc., License No. SUA-1534, October 5, 2017, Accession No. ML17062A588.

NRC, 2003. NUREG-1569, "Standard Review Plan for In Situ Leach Uranium Extraction License Applications—Final Report," June, 2003, ADAMS Accession No. ML032250177.

NRC, 2002. Regulatory Guide 8.30, Revision 1, "Health Physics Surveys in Uranium Recovery Facilities," Washington, DC, May 2002.

NRC, 1998. NUREG-1507, "Minimum Detectable Concentrations With Typical Radiation Survey Instruments for Various Contaminants and Field Conditions," June 1998.

NRC, 1994. Memorandum from M.J. Rathje, NRC, to L.J. Cunningham, U.S. Nuclear Regulatory Commission, "Questions and Answers from Eight Sets of Questions and Answers on the Major Revision of 10 CFR Part 20", June 15, 1994, ADAMS Accession No. ML12166A179.

NRC, 1993. "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," U.S. Nuclear Regulatory Commission, April 1993, ADAMS Accession No. ML003745526.