

May 27, 2015

Mr. Larry Teahon, Manager  
SHEQ  
Cameco Resources  
Crow Butte Operation  
86 Crow Butte Road  
P.O. Box 169  
Crawford, Nebraska 69339-0169

SUBJECT: SAFETY EVALUATION REPORT, REVIEW OF THE RESPONSE TO LICENSE  
CONDITION 11.15, CROW BUTTE RESOURCES, INC., CRAWFORD,  
NEBRASKA, LICENSE SUA-1534 (TAC L00764)

Dear Mr. Teahon:

By letter dated December 4, 2014 (Agencywide Documents Access and Management System (ADAMS) accession # ML14364A197), Cameco Resources Crow Butte Operation (Cameco) submitted to the U.S. Nuclear Regulatory Commission (NRC) staff a response to license condition (LC) 11.15 of SUA-1534 providing information on its proposed operational soil sampling program for NRC written verification. The NRC staff previously accepted this response for a detailed technical review (refer to NRC e-mail dated December 18, 2014 (ML14353A037)). Subsequent to the NRC staff's acceptance of the December 18, 2014 response, Cameco submitted a revised response dated May 11, 2015 (ML15146A026). This revised response replaced the initial response in its entirety.

The NRC staff has completed its technical review of the revised response. This letter transmits the NRC staff's review and verification that the requirements of LC 11.15 have been met.

The NRC staff's review of Cameco's response to LC 11.15 (ML15146A026) is documented in the enclosed Safety Evaluation Report (SER) (Enclosure). The SER documents the NRC staff's conclusion that Cameco's proposed operational soil sampling program for the Crow Butte Project meets the requirements of 10 CFR Part 40, Appendix A, Criterion 7, and is protective of public health, safety and the environment.

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 NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

L. Teahon

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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:  
Safety Evaluation Report

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

L. Teahon

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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,  
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Safety Evaluation Report

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

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**ML15134A137**

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**U.S. Nuclear Regulatory Commission  
Safety Evaluation Report  
Cameco Resources Crow Butte Operation  
Technical Review of Response to License Condition 11.15  
For Source Material License SUA-1534**

DATE: May 27, 2015

DOCKET: 04008943

LICENSE NO.: SUA -1534

LICENSEE: Crow Butte Resources, Inc.

SITE: Crow Butte Project

PROJECT MANAGER: Ronald A. Burrows

TECHNICAL REVIEWER: Ronald A. Burrows

SUBJECT: Crow Butte Resources, Inc.'s Response to License Condition 11.15

**BACKGROUND**

By letter dated November 5, 2014 (Agencywide Documents Access and Management System (ADAMS) accession # ML13324A088), the U.S. Nuclear Regulatory Commission (NRC) staff renewed Crow Butte Resources, Inc.'s (CBR's or the licensee's) Source and Byproduct Materials License SUA-1534 (license) for the extraction and recovery of uranium source material at its Crow Butte In-Situ Recovery (ISR) Project. License Condition (LC) 11.15 of the renewed license requires CBR to submit an operational soil sampling program for NRC staff's written verification.

By letter dated December 4, 2014 (ML14364A197), and as revised in its entirety by letter dated May 11, 2015 (ML15146A026) (the submittal), Cameco Resources Crow Butte Operation (Cameco) submitted to the NRC staff a response to LC 11.15 providing information on its operational soil sampling program for the Crow Butte Project.

The purpose of this evaluation is limited to NRC staff reviewing the proposed operational soil sampling program. The NRC staff previously evaluated other aspects of the licensee's effluent and environmental monitoring program, as documented in the Safety Evaluation Report for the renewed license (ML14149A433).

Enclosure

## REGULATORY REQUIREMENTS

The requirement for an operational monitoring program is found in 10 CFR Part 40, Appendix A, Criterion 7. The NRC staff evaluated Cameco's submittal against the acceptance criteria in Section 5.7.7.3 of NUREG-1569, Standard Review Plan for In Situ Leach Uranium Extraction License Applications.

## TECHNICAL EVALUATION

In accordance with LC 11.15, the licensee submitted an operational soil sampling program to address the requirements of 10 CFR Part 40, Appendix A, Criterion 7. The licensee proposed taking operational soil samples at its current operational air monitoring stations. The NRC staff has determined that taking surface soil samples at locations chosen for air particulate samples is consistent with Section 2.1.5 of Regulatory Guide 4.14, Radiological Effluent and Environmental Monitoring at Uranium Mills, and is therefore acceptable.

The licensee provided a map depicting seven locations where air monitoring stations were established for the operational environmental monitoring program for the Crow Butte Project. These locations were previously approved by the NRC staff (refer to Section 5.7.7 of ML080940335 and Section 5.2 of ML080730293). The NRC staff has found nothing to invalidate previous findings; therefore, the original findings stand and previous staff conclusions remain valid.

The licensee proposed collecting annual operational surface soil samples in accordance with Section 2.1.5 and Table 2 of Regulatory Guide 4.14. Table 2 of Regulatory Guide 4.14 contains recommendations for collecting operational soil samples. These recommendations include location, frequency, and type of analysis. In addition, Footnote (k) to Table 2, applicable to operational soil sampling, recommends collecting surface soil samples "...using a consistent technique to a depth of 5 cm." The NRC staff finds the licensee's proposed soil sampling approach consistent with the recommendations in Regulatory Guide 4.14 and therefore acceptable.

Based upon the review conducted by the NRC staff as indicated above, the information provided in Cameco's submittal (ML15146A026) meets the applicable acceptance criteria of Section 5.7.7.3 of NUREG-1569 and the requirements of 10 CFR Part 40, Appendix A, Criterion 7.

## CONCLUSION

The NRC staff has reviewed Cameco's proposed operational soil monitoring program for consistency with the acceptance criteria in NUREG-1569. Based on the information provided in Cameco's submittal (ML15146A026) and the NRC staff's review discussed in this SER, the NRC staff concludes that the proposed operational soil monitoring program for the Crow Butte Project meets the requirement of 10 CFR Part 40, Appendix A, Criterion 7, and therefore NRC staff has reasonable assurance that public health, safety and the environment will be protected.