



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

February 8, 2022

Tate Hagman
Restoration Manager
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 THE 2022 SURETY UPDATE, CROW BUTTE
RESOURCES, INC., CRAWFORD, NEBRASKA, SOURCE
MATERIALS LICENSE SUA-1534**

Dear Tate Hagman:

By letter dated September 28, 2021 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML21278A037), Crow Butte Resources, Inc. (CBR) submitted its 2022 surety update to the U.S. Nuclear Regulatory Commission (NRC) staff. As a result of this submittal, the overall effect of this surety update is to increase the 2021 surety amount by \$4,737,709 to a total of \$56,121,073.

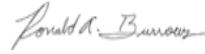
Based on the information provided in CBR's aforementioned surety update submittal, the NRC staff has determined that the surety estimate is acceptable as documented in the NRC staff's verification (enclosed). License Condition 9.5 of Materials License SUA-1534 will be revised to reflect the current updated surety amount during a future licensing action.

As a result of this verification, the NRC staff has completed its work on Cost Activity Codes (CACs) 000092 and 000089 associated with docket and Enterprise Project Identifier (EPID) 04008943/ L-2021-DFA-0008. Therefore, these CAC/docket/EPID combinations will be closed with no further charges against them.

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 the 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>.

If you have any questions, please contact Mr. Ronald Burrows, Project Manager, at 301-415-6443 or, by e-mail at ronald.burrows@nrc.gov.

Sincerely,



Signed by Burrows, Ronald
on 02/08/22

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: As stated

cc: Crow Butte listserv

**U.S. Nuclear Regulatory Commission
Staff Verification of 2022 Surety Estimate
Crow Butte Resources, Inc.
Source Material License SUA-1534**

DATE: February 8, 2022
DOCKET: 040-08943
LICENSE NO.: SUA-1534
LICENSEE: Crow Butte Resources, Inc.
SITE: Crow Butte Project
PROJECT MANAGER: Ronald A. Burrows
TECHNICAL REVIEWERS: Steve McCarthy, Tom Lancaster

Background

By letter dated September 28, 2021 (CBR, 2021), Crow Butte Resources, Inc. (CBR, or the licensee) submitted its 2022 annual surety update for the Crow Butte Project to the U.S. Nuclear Regulatory Commission (NRC). The NRC staff reviewed the surety estimate and determined that the surety update was acceptable for the NRC staff's technical review (NRC, 2021a).

Staff Review and Analysis

This report includes the results of the NRC staff's technical review of CBR's 2022 annual surety update. The NRC staff reviewed CBR's Crow Butte surety estimate in accordance with requirements in 10 CFR Part 40, Appendix A, Criterion 9, "Financial Criteria" and in License Condition 9.5 of Materials License SUA-1534 (NRC, 2021b). Additionally, the NRC staff used NUREG-1569, "Standard Review Plan for In Situ Leach Uranium Extraction License Applications" (SRP) (NRC, 2003) as guidance in determining elements to be included in a surety review. Specifically, the NRC staff used the review procedures and acceptance criteria guidance in Section 6.0 and Appendix C of the SRP. The NRC staff also used Nebraska Department of Labor, Office of Labor Market Information, Occupational Employment Statistics Program (NDOL, 2021) when applicable, to verify that reasonable unit costs were included in the surety calculations.

Sufficiency of the Cost Estimate

In the surety calculations, the licensee includes costs for decommissioning and decontamination, reclamation of sites, structures, and equipment used in conjunction with facility operations.

CBR estimated the cost to decommission and decontaminate the Crow Butte facility by an independent party at \$56,121,073. This constitutes an increase of \$4,737,709 above the previous year's surety estimate of \$51,383,364. The most significant factor contributing to the

increased surety estimate is that CBR changed the horsepower (hp) assumptions for downhole pumps from 5 hp to 3 hp and the estimated flow rate from 32 gallons per minute (gpm) to 12 gpm (CBR, 2021). These changes were made based on the actual field conditions that have been experienced during the heightened restoration efforts over the last several years. Fuel costs increases were also a significant driver of the increase of the surety estimate. The cost estimate is based on costs of a third-party contractor, does not take credit for any salvage value, and includes a 15 percent contingency factor. Chemical and electrical costs are based on actual invoices. Fuel costs are based on using the monthly average cost from the Nebraska Energy Office website.

This surety estimate maintains 11 pore volumes (PVs) as a basis to complete restoration for each mine unit (MU) consisting of 3 ion exchange PVs, 6 reverse osmosis PVs, and 2 recirculation PVs. The NRC staff previously approved 11 PVs for restoration purposes during the 2009 surety update (NRC, 2009) based on the licensee's experience with restoring MU-1. The NRC staff finds nothing to invalidate the previous findings regarding the licensee's estimate of 11 PVs required for MU restoration and therefore the NRC staff's previous conclusions remain valid.

The NRC staff determined that the licensee's surety estimate, and the associated cost breakdowns, were adequately summarized and calculated in accordance with Appendix C of NUREG-1569. The NRC staff spot-checked the calculations within cost breakdowns, using Microsoft Excel, and found the calculations to be correct. The NRC staff observes that 10 CFR Part 40, Appendix A, Criterion 9, does not specify a specific contingency factor to be used in the surety calculations. Guidance in NUREG-1569 recommends a minimum 15 percent contingency as an acceptance criterion. The NRC staff finds that the contingency used by the licensee is consistent with that guidance.

As a result of this review, the NRC staff determined that the cost adjustments are consistent with current operations. The NRC staff found that the licensee has included in the update all activities: (1) listed in the reclamation plan or in Section 6.0 of NUREG-1569; and (2) conducted during the period covered by the estimate. The NRC staff has also found that the licensee has based the assumptions for the financial surety analysis on site conditions, including experiences with generally accepted industry practices, research and development at the site, and previous operating experience. Therefore, the NRC staff finds that the licensee has established an acceptable financial assurance cost estimate based on the requirements in 10 CFR Part 40, Appendix A, Criterion 9.

Conclusion

Based on the information provided in the application and the detailed review conducted of the surety estimate for CBR's Crow Butte Uranium Project, the NRC staff concludes that the 2022 surety estimate reasonably includes funds sufficient to cover the estimated current costs of completing groundwater restoration, decommissioning, reclamation, and waste disposal by an independent party. The staff determined that the updated surety amount meets the requirements of 10 CFR Part 40, Appendix A, Criterion 9 and LC 9.5 and is therefore acceptable.

REFERENCES

10 CFR Part 40. *Code of Federal Regulations*, Title 10, Energy, Part 40, “Domestic Licensing of Source Material.”

CBR, 2021. CBR, 2022 Surety Estimate, Cameco Resources Crow Butte Operation, Source Materials License SUA-1534, September 28, 2021, ADAMS Accession No. ML21278A037.

NDOL, 2021. Nebraska Department of Labor, Office of Labor Market Information, Nebraska Wages by Occupation, Occupational Employment Statistics, accessed November 8, 2021 <https://networks.nebraska.gov/vosnet/analyzer/resultsNew.aspx?session=oeswage&qlink=1>.

NRC, 2021a. E-mail from R. Burrows, US NRC, to W. Nelson, Crow Butte Resources, Inc., Acceptance review 2022 financial surety estimate, October 26, 2021, ADAMS Accession No. ML21299A030.

NRC, 2021b. Crow Butte Resources, Inc., Materials License SUA-1534, Amendment No. 5, March 4, 2021, ADAMS Accession No. ML20324A073.

NRC, 2009. Letter from K. McConnell, US NRC, to L. Teahon, Crow Butte Resources, Inc., License Amendment No. 24, 2009 Surety Update, October 21, 2009, ADAMS Accession No. ML092220124.

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

Crow Butte Resources, Inc., Crow Butte Project, 2022 surety verification DATE February 8, 2022

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