November 12, 2013

Mr. Josh Leftwich, Director
of Radiation Safety and Licensing
Cameco Resources
2020 Carey Ave., Suite 600
Cheyenne, WY 82001

SUBJECT: LICENSE AMENDMENT NO. 27 - 2012 AND 2013 SURETY UPDATES, CROW BUTTE RESOURCES, INC., CRAWFORD, NEBRASKA, SOURCE MATERIALS LICENSE SUA-1534 (TAC NO. J00663)

Dear Mr. Leftwich:

By letters dated September 30, 2011 (NRC' s Agencywide Documents Access and Management System (ADAMS) Accession No. ML11286A119) and September 28, 2012 (ADAMS Accession No. ML12278A067), Crow Butte Resources, Inc. (CBR) submitted its 2012 and 2013 surety update to U.S. Nuclear Regulatory Commission (NRC) staff. This surety update seeks to increase the 2011 surety amount by $7,597,388 to a total of $43,223,280.

Based on the information provided in CBR's aforementioned submittals, the NRC staff has determined that the surety estimate is acceptable as documented in staff's Technical Evaluation Report (enclosed). Therefore, NRC staff is approving the new surety amount of $43,223,280. License Amendment No. 27, enclosed with this letter, includes a revised License Condition 9.5 that reflects this updated surety estimate. This licensing action meets the categorical exclusion provision for surety changes in 10 CFR Part 51.22(c)(10)(i). Therefore, no further environmental review is required for this action.

We are currently reviewing CBR's 2014 annual surety estimate dated September 30, 2013 (ADAMS Accession No. ML13277A310), which includes revisions to the period for stabilization monitoring (i.e., ground water monitoring performed after active restoration). Our evaluation of the potential effect of CBR's revised period for stabilization monitoring will be used to complete our review of CBR's requests for an alternate decommissioning schedule dated October 26, 2012 and April 30, 2013 (ADAMS Accession Nos. ML12313A517 and ML13142A132).

We note that the 2014 surety estimate also includes supporting documentation for CBR's re-baselined unit costs that were included in its 2013 surety update. Our evaluation of CBR's re-baselined unit costs and supporting documentation is currently being conducted as part of our review of the 2014 surety update.

In accordance with 10 CFR 2.390 of the NRC's Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders, 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 document 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. Tom Lancaster at 301-415-6443, or by email at Thomas.Lancaster@nrc.gov.

Sincerely,

/RA/

Andrew Persinko, Deputy Director
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

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

Enclosures:
1: Technical Evaluation Report
2: License Amendment No. 27

cc:
Schmuck, Cameco
Doug Pavlick, Cameco
Michael Linder, NDEQ

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(CLOSES TAC NO. J00663)

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TECHNICAL EVALUATION REPORT
2012 and 2013 SURETY UPDATES
CROW BUTTE RESOURCES, INC.
CRAWFORD, NEBRASKA

DATE: November 12, 2013

DOCKET NO.: 40-8943

LICENSEE NO.: SUA-1534

FACILITY LOCATION: Crawford, Nebraska

TECHNICAL REVIEWER: Thomas R. Lancaster

SUMMARY AND CONCLUSIONS:

By letters dated September 30, 2011 and September 28, 2012, Crow Butte Resources, Inc. (CBR) submitted its 2012 and 2013 surety updates to U.S. Nuclear Regulatory Commission (NRC) staff (CBR, 2011, 2012a). These updates seek to increase the financial assurance amount for the Crow Butte Uranium Project by $7,597,388 to a total of $43,223,280. The staff reviewed the financial assurance estimate update in accordance with License Condition 9.5, consistent with Criterion 9 of Appendix A to Part 40 of Title 10 of the Code of Federal Regulations (10 CFR Part 40, Appendix A). The staff determined that the changes are acceptable. Staff recommends that License Condition 9.5 be revised to include the surety amount of $43,223,280.

DESCRIPTION OF THE SURETY UPDATE:

CBR's 2012 and 2013 annual surety estimates included a description of each annual surety update, a breakdown of the surety estimated costs, and a review of the surety costs by George W. Klein, an independent certified public accountant. Mr. Klein's review included the results of his examination of spreadsheet calculations and consumer price index inflationary adjustments. Mr. Klein also provided his findings from spot checks of surety cost items with independent venders and other sources. (CBR, 2011, 2012a)

CBR's 2012 and 2013 surety update (CBR, 2011, 2012a) seeks to increase the financial assurance amount by $7,597,388 to a total of $43,223,280. This increase is based on several factors, including:

- Continued development of the in-situ recovery (ISR) uranium project,
- Expansion of stability monitoring sample analyses,
- Additional mechanical integrity tests (MITs) during restoration, and
- Contract administration and inflation.

TECHNICAL EVALUATION:

NRC staff reviewed the licensee's 2012 and 2013 surety updates for sufficient funding of CBR project restoration, reclamation, and decommissioning. Staff also reviewed the updates for consistency with CBR's ISR project license (NRC, 2012a) and CBR's Wellfield Decommissioning Plan (CBR, 2004). Staff observes that the licensee's surety estimates and the associated cost breakdowns were adequately summarized and calculated in accordance with Appendix C of NUREG-1569 (NRC, 2003b). Staff spot-checked the calculations within cost breakdowns, using Microsoft Excel and found the calculations to be correct.

The following is staff's evaluation of the cost update changes as well as the adequacy of the active restoration[1] time period and associated costs in the 2012 and 2013 surety update (CBR, 2011, 2012a).

Restoration Sample Analyses and MITs

Staff reviewed changes to the ground water restoration cost breakdowns, which included the expansion of stability monitoring sample analyses as well as the addition of Mechanical Integrity Tests (MITs) during restoration (CBR, 2011). Staff observes the licensee proposed an expansion of the list of parameters for analytical analysis to be performed on stability monitoring ground water samples (CBR, 2011). Staff also observes the licensee made minor adjustments to the number of MITs to be performed for certain mine units and added a line to the cost breakdown to further account for the remaining MITs per five year cycle (CBR, 2011). Staff finds these changes to the 2012 surety update to be consistent with the CBR license (NRC, 2012a). Thus, staff finds these changes to be acceptable.

Additionally, staff observes that the MIT unit cost amount was adjusted (CBR, 2011). Staff is currently reviewing this unit cost and all other unit costs in CBR's re-baselined 2014 surety estimate dated September 30, 2013 (CBR, 2013c) to verify that the all unit costs are at or above costs offered by an independent third party in local economies.

Active Restoration Period

Staff reviewed the adequacy of the active restoration time period and associated costs in the 2012 and 2013 surety update (CBR, 2011, 2012a). Staff compared the period of active restoration reflected in the two surety estimates to active restoration period that has been demonstrated at Mine Unit 1 (MU-1), MU-2, and MU-3 within CBR's operating facility.

Staff observes that MU-1 ground water restoration was completed and approved by NRC on February 12, 2003 (NRC, 2003a). Active ground water restoration of MU 1 was initiated in May 1994 and completed in February 1999 (CBR, 2000). Staff observes that this demonstrated period of active restoration (4.75 years) is less than the period contained in CBR's request for an alternate decommissioning schedule (CBR, 2012b, 2013b) and that is reflected in the surety estimate (CBR, 2011, 2012a).

[1] Active restoration refers to all phases of ground water remedial treatment after sucession of lixiviant injection and before final stabilization monitoring.

In 2009, staff observes that CBR's MU 2 and MU 3 were 30 to 50 percent restored, respectively (CBR 2013a). In order to improve the efficiency of ground water restoration, CBR developed and applied a model-based restoration plan (MBRP), which consisted of a three-dimensional ground water flow and transport model for the purpose of optimizing restoration well locations as well as injection and extraction rates. Following the implementation of MBRP at MU 2 and MU 3, restoration at these mine units was accomplished in approximately six to nine months (with the exception of localized elevated concentrations of arsenic and/or vanadium) and completed within approximately three years (CBR 2013a). By comparison, staff finds the improvement in the restoration efficiency at MU 2 and MU 3 using the MBRP indicate that complete active restoration of the production aquifer can be achieved in less time than the period contained in CBR's request for an alternate decommissioning schedule (CBR, 2012b, 2013b) and that reflected in CBR's surety estimate (CBR, 2011, 2012a).

Based on the time period of active ground water restoration in CBR's surety estimate being greater than that demonstrated at the NRC approved restoration of MU 1 and the demonstrated ground water restoration efficiency at MU 2 and MU 3 (both currently in stability monitoring), staff finds that the time period of active restoration in CBR's surety estimate to be greater than that demonstrated at CBR's operating ISR facility. Thus, staff finds the active restoration period in CBR's surety estimate has sufficient funds and is acceptable.

Continued Development

Staff reviewed the adjustments within the surety cost breakdowns for the continued development of the Crow Butte uranium project. This review included surety adjustments for the continued development of MUs (including the expansion of Mine Unit 8) and an increase in the capacity of reverse osmosis (RO) ground water treatment. Staff observes that increases of the decommissioning and reclamation units for this continued development was supported by staff's examination of the CBR uranium facility during the 2011 and 2012 facility inspection (NRC, 2011, 2012b). Staff verified that the added 500 gallons per minute RO capacity resulted in synergies, which decreased the estimated costs for RO. Staff finds these costs for these RO unit costs and continued development costs to be sufficient. Therefore, staff finds the updated costs for the continued development to be acceptable.

Other Cost Adjustments

The licensee's annual inflation adjustment for each of the 2012 and 2013 surety estimates was based on an increase of the consumer price index of 2 percent. Staff determined that this annual inflation adjustment is correct (U.S. Bureau of Labor Statistics, 2013). Staff finds that the contract administrative costs associated with third party contractors and the surety contingency cost increased by the appropriate percentage of the added restoration, decommissioning, and reclamation costs.

CONCLUSIONS:

The staff determined that cost changes were acceptable and consistent with the CBR license (NRC, 2012a), and CBR's Wellfield Decommissioning Plan (CBR, 2004). Therefore, staff recommends that License Condition 9.5 be revised to include the surety amount of $43,223,280.

REFERENCES

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

CBR 2013a. Restoration Status for Mine Units 2 and 3, 2012 Surety Estimate, Source Materials License SUA-1534, August 8, 2013 [ADAMS Accession No. ML13226A353].

CBR 2013b. Request for an Alternate Decommissioning (Ground Water Restoration) Schedule, Mine Unit 3, Source Materials License SUA-1534, April 30, 2013 [ADAMS Accession No. ML13142A132]

CBR, 2013c. 2014 Surety Estimate, Cameco Resources Crow Butte Operation, Source Materials License SUA-1534, September 30, 2013, [ADAMS Accession No. ML13277A310]

CBR, 2012a. 2013 Surety Estimate, Cameco Resources Crow Butte Operation, Source Materials License SUA-1534, September 30, 2012 [ADAMS Accession No. ML11286A119]

CBR 2012b. Request for Additional Information for Alternate Decommissioning (Ground Water Restoration) Schedule, Source Materials License SUA-1534, October 26, 2012 [ADAMS Accession No. ML12313A517]

CBR, 2011. 2012 Surety Estimate, Cameco Resources Crow Butte Operation, Source Materials License SUA-1534, September 28, 2011 [ADAMS Accession No. ML12278A067]

CBR, 2004. Crow Butte Resources, Inc. Wellfield Decommissiong Plan for Crow Butte Uranium Project - NRC Source Material License SUA-1534, June 30, 2004 [ADAMS Accession No. ML041980328]

CBR 2000. Mine Unit 1 Restoration Report, Crow Butte Uranium Project, Source Materials License SUA-1534, January 10, 2000 [ADAMS Accession No. ML003677938]

NRC, 2012a. License Amendment No. 26, 2011 Surety Update, Crow Butte Resources, Inc., Crawford, Nebraska, Source Materials License SUA-1534, Mar 6, 2012 [ADAMS Accession No. ML110320374]

NRC, 2012b. NRC Inspection Report 04008943-12-001, on 6/11-14/2012, Arlington, TX, July 13, 2012 [ADAMS Accession No. ML12195A073].

NRC, 2011. NRC Inspection Report 04008943-11-001, on 6/20-24/2011, Arlington, TX, Aug 4, 2011 [ADAMS Accession No. ML11216A179].

NRC, 2003a. License Amendment 15, Crow Butte Resources In Situ Leach Facility, License No. SUA-1534, Wellfield #1 Restoration Acceptance, February 12, 2003 [ADAMS Accession No. ML030440055]

NRC, 2003b. NUREG–1569, “Standard Review Plan for In Situ Leach Uranium Extraction License Applications—Final Report.” June.

U.S. Bureau of Labor Statistics, 2013. CPI data at www.bls.gov/cpi, accessed September 16, 2013.