



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

March 14, 2018

Mr. Larry Reimann
Cameco Resources
Smith Ranch Highland Operation
P.O. Box 1210
Glenrock, WY 82637

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION VERIFICATION REGARDING
THE 2017-2018 FINANCIAL ASSURANCE UPDATE, POWER RESOURCES,
INC., SOURCE MATERIALS LICENSE SUA-1548

Dear Mr. Reimann:

By letters dated June 21, 2017, July 31, 2017, December 20, 2017, and January 22, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession Numbers. ML17192A348, ML17230A042, ML18017A497, and ML18037A869 respectively), Power Resources, Inc. (PRI), doing business as Cameco Resources (Cameco) submitted its most recent financial assurance estimate updates to the U.S. Nuclear Regulatory Commission (NRC) staff. The financial assurance estimates are for the main Smith Ranch facility, the Gas Hills remote satellite, Ruth remote satellite, and North Butte remote satellite, respectively. As a result of these submittals, the overall effect of these financial assurance updates is to increase the financial assurance amount to a total of \$245,095,600. This represents an increase of \$1,483,156 over the current financial assurance amount identified in condition 9.5 of NRC license SUA-1548.

Based on the information provided in the aforementioned financial assurance update submittals, the NRC staff has determined that the estimate is acceptable as documented in the NRC staff's verification (enclosed). License Condition 9.5 of Materials License SUA-1548 will be revised to reflect the financial assurance amount during a future licensing action.

If you have any questions, please contact Mr. Douglas Mandeville, Project Manager, at 301-415-0724 or, by email at douglas.mandeville@nrc.gov.

As a result of this verification, the NRC staff has completed its work on the following EPIDs: (1) L-2017-DFA-0011 (Smith Ranch); (2) L-2017-DFA-0020 (Gas Hills); (3) L-2017-DFA-0038 (Ruth); and (4) L-2018-DFA-0002 (North Butte). Therefore, these EPIDs will be closed with no further charges to them after today.

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

L. Reimann

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Document Room or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

/RA/

Douglas T. Mandeville, Project Manager
Uranium Recovery Licensing Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-8964

License No.: SUA-1548

Enclosure: NRC Staff Verification of 2017-2018 Financial Assurance Update

cc: D. Pavlick, Cameco Resources

R. Jones, WDEQ

L. McMahan, WDEQ

L. Reimann

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SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION VERIFICATION REGARDING
THE 2017-2018 FINANCIAL ASSURANCE UPDATE, POWER RESOURCES,
INC., SOURCE MATERIALS LICENSE SUA-1548, DATED MARCH 14, 2018

cc: D. Pavlick, Cameco Resources
R. Jones, WDEQ
L. McMahan, WDEQ

DISTRIBUTION:

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ADAMS Accession No.: ML18058B030

OFFICE	DUWP	DUWP	DUWP	DUWP	DUWP
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DATE	3/7/2018	3/7/2018	3/12/2018	3/14/2018	3/14/2018

OFFICIAL RECORD COPY

**U.S. Nuclear Regulatory Commission
Staff Verification of 2017-2018 Financial Assurance Estimates
Cameco Resources.
Source Material License SUA-1548**

DATE: February 22, 2018

DOCKET: 04008964

LICENSE NO.: SUA-1548

LICENSEE: Power Resources, Inc., doing business as Cameco Resources

SITE: Smith Ranch Highland, Gas Hills, Ruth, and North Butte

PROJECT MANAGER: Doug Mandeville

TECHNICAL REVIEWERS: Doug Mandeville, Mirna Flores

Background

By letters dated June 21, 2017 (Cameco, 2017a), July 31, 2017 (Cameco, 2017b), December 20, 2017 (Cameco, 2017c), and January 22, 2018 (Cameco, 2018), Power Resources, Inc. (PRI), doing business as Cameco Resources (Cameco) submitted its most recent financial assurance estimate updates to the U.S. Nuclear Regulatory Commission (NRC) staff. The financial assurance estimates are for the main Smith Ranch facility, Gas Hills remote satellite, Ruth remote satellite, and North Butte remote satellite, respectively. These submittals were accepted by the NRC staff for review on July 28, 2017 (NRC, 2017a), August 30, 2017 (NRC, 2017b), January 19, 2018 (NRC, 2018a), and February 2, 2018 (NRC, 2018b), respectively.

Collectively, these submittals, seek to increase the overall financial assurance amount to a total of \$245,095,600. The financial assurance estimates for Smith Ranch and the Ruth remote satellite increase slightly, while the financial assurance estimates for the Gas Hills and North Butte satellites decrease slightly. The net result is an increase of \$1,483,156 over the current financial assurance amount identified in condition 9.5 of NRC license SUA-1548.

Staff Review and Analysis

The NRC staff reviewed Cameco's financial assurance estimates 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-1548. Additionally, the NRC staff used NUREG-1569, "Standard Review Plan for In Situ Leach Uranium Extraction License Applications" (SRP) as guidance in determining elements to be included in a financial assurance review. Specifically, the NRC staff used the review procedures and acceptance criteria guidance in Section 6.0 and in Appendix C of the SRP. The NRC staff also used Wyoming Department of Environmental

Quality (WDEQ), Land Quality Division, Guideline 12 (WDEQ, 2017) where applicable, to verify that reasonable unit costs were included in the financial assurance calculations.

Sufficiency of the Cost Estimate

In the financial assurance calculations, the licensee includes costs for ground water restoration (at locations where lixiviant has been injected), well plugging and abandonment, decommissioning and decontamination (D&D) of existing buildings, surface reclamation, and disposal of equipment and contaminated materials used in conjunction with facility operations. The remainder of the NRC staff's review below is focused on the individual financial assurance updates.

Smith Ranch Highland

The Smith Ranch–Highland facility is currently operating and producing dried yellowcake. Cameco has ceased injection of lixiviant at Smith Ranch-Highland and is focusing its efforts on ground water restoration activities. Cameco's updated financial assurance estimate identifies that \$219,685,500 would be required to complete ground water restoration and decommissioning activities for the Smith Ranch-Highland facility (Cameco, 2017a). The financial assurance estimate is based on the following items:

- Ground water restoration is estimated to require one pore volume of ground water sweep, seven pore volumes of reverse osmosis treatment, and one pore volume of reverse osmosis treatment with a chemical reductant;
- Ground water restoration, plugging and abandonment costs, and surface reclamation costs for all mine units;
- The costs to plug and abandon a total of nine deep disposal wells;
- A restoration schedule that reflects the water balance;
- The costs to decommission and remove existing buildings;
- Costs to reclaim access roads; and,
- Off-site disposal of solid byproduct material at an appropriately licensed NRC or Agreement State facility.

During its review of the estimate, the staff identified that the largest driver for the increase in the estimate was the adjustment of the restoration schedule to reflect the current water balance. This change resulted in an increase of approximately \$10,000,000. The largest change that lowered the financial assurance estimate was the removal of previously planned delineation drilling efforts. When compared to the previously approved financial assurance estimate, Cameco's update results in a net increase of \$7,010,400.

The NRC staff reviewed the most recent estimate for the Smith Ranch–Highland facility and determined that the cost estimate does include the range of activities necessary to perform ground water restoration, complete surface decommissioning and reclamation, and release the site. The NRC staff observes that the licensee's financial assurance estimates and the associated cost breakdowns were adequately summarized and calculated in a manner that is consistent with Appendix C of NUREG-1569 (NRC, 2003). The NRC staff's review included

analysis of the major changes in cost, and the staff finds that these changes were appropriate. The NRC staff finds that the cost estimate reflects the known, as-built conditions (i.e., number of wells, size, depth, completed thickness, etc.) of the mine units that have been installed. The NRC staff observes that the financial assurance estimate is based on ground water restoration efforts consistent with the water balance (i.e., Cameco's plans for ground water restoration at the facility). The NRC staff observes that the estimate includes costs to address past spills at the wellheads or along mine unit piping as well as other likely spill locations, such as beneath header houses. Additionally, the NRC staff observes the estimate does include effort to address reclamation of PSR-2, the Highland Ponds, and the on-going casing leak investigation. With respect to the unit costs, the NRC staff observes that Cameco used either the most recent guidance from WDEQ Guideline 12 or actual costs. The NRC staff spot-checked the calculations within cost breakdowns, using Microsoft Excel and found the calculations to be correct. For these reasons, the NRC staff determined that Cameco has provided adequate justification for the current financial assurance estimate at the Smith Ranch-Highland facility. 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.

Gas Hills Remote Satellite

Cameco's Gas Hills remote satellite facility was first licensed by the NRC in January 2004. The Gas Hills remote satellite has not operated. Since receiving a license from the NRC for Gas Hills, Cameco has focused its efforts at the facility on exploratory drilling and permitting activities with the Bureau of Land Management. Cameco's updated financial assurance estimate for Gas Hills anticipates that \$2,465,799 will be necessary to complete decommissioning, demolition, and disposal of the existing buildings that are present at the site (Cameco, 2017b). The current cost estimate is a slight decrease from the current amount of \$2,834,243 identified in license condition 9.5. In reviewing the submittal, the NRC staff identified that the decrease is the result of Cameco's efforts to delay efforts to further develop the Gas Hills site. As a result, activities that were envisioned occurring at the time of the NRC staff's previous approval are no longer planned. Therefore, these items do not need to be included in the financial assurance estimate. The staff observes that Cameco's change remains consistent WDEQ Guideline 12.

During its review, the NRC staff determined that the cost estimate does include the range of activities necessary to reclaim and close the site. These efforts include removal of existing buildings, plugging and abandonment of existing wells and delineation drill holes, surface reclamation, and off-site disposal of debris. The NRC staff determined that the quantities included in Cameco's cost estimate (i.e., number of wells, depth of wells, size of buildings, etc.) are consistent with its knowledge of the site. The NRC staff observes that Cameco used either guidance from the most recently available version of WDEQ Guideline 12 or actual costs to develop its cost estimate. The NRC staff observes that the licensee's financial assurance estimates and the associated cost breakdowns were adequately summarized and calculated in a manner that is consistent with Appendix C of NUREG-1569 (NRC, 2003). The NRC staff spot-checked the calculations within cost breakdowns, and found the calculations to be correct. The NRC staff determined that Cameco has provided adequate justification for the financial assurance estimate at the Gas Hills remote satellite facility. 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.

Ruth Remote Satellite

The Ruth remote satellite remains non-operational, and Cameco's financial assurance estimate does not anticipate startup of any facilities at the Ruth remote satellite in the upcoming year (Cameco, 2017c). The Ruth remote satellite previously operated as a research and development facility. Limited infrastructure, such as a building, roads, storage ponds, and monitoring wells, remain at the site. Cameco's updated financial assurance estimate for Ruth identifies that \$418,900 would be required to complete decommissioning activities at the facility. This is an increase of approximately \$54,000 over the currently approved amount of \$364,900.

As there is no change in the operational status of the Ruth remote satellite, the increase in the financial assurance estimate results from changes in unit costs and an increase in the contingency amount. Cameco's financial assurance estimate is based on the following items:

- Decommissioning and demolition of the existing process building (associated with previous research and development operations);
- Off-site disposal of debris;
- Surface reclamation of the existing ponds;
- Reclamation of existing roads; and,
- Plugging and abandonment of three monitoring wells.

The NRC staff reviewed the most recent estimate for Ruth and determined that the cost estimate does include the range of activities necessary to complete surface decommissioning and reclamation activities and release the site. During its review, the NRC staff observed that the cost estimate does reflect the known, as-built conditions at the site (i.e., number of wells, depth of wells, size of building, etc.). With respect to unit costs, the NRC staff observes that Cameco either followed the recommendations provided by Guideline 12 or based the unit costs on its actual costs. The NRC staff observes that the licensee's financial assurance estimates and the associated cost breakdowns were adequately summarized and calculated in a manner that is consistent with Appendix C of NUREG-1569 (NRC, 2003). The NRC staff spot-checked the calculations in Microsoft Excel, and found the calculations to be correct. For these reasons, the NRC staff determined that Cameco has provided adequate justification for the current financial assurance estimate at the Ruth remote satellite. 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.

North Butte Remote Satellite

The North Butte remote satellite is capable of performing the ISR process through the ion exchange step. Loaded ion exchange resins are shipped from North Butte to Cameco's Smith Ranch Highland facility for further processing into dried yellowcake. Cameco has ceased injection of lixiviant into Mine Units 1 and 2 at North Butte. Cameco is recirculating native ground water in advance of starting ground water restoration activities. Cameco submitted its

updated financial assurance estimate for North Butte on January 22, 2018 (Cameco 2018). The estimate identifies that \$22,526,000 will be required to complete decommissioning activities for the North Butte remote satellite. This is a decrease of approximately \$5,212,300 from the currently approved amount of \$27,738,300. The financial assurance estimate is based on the following items:

- The amount of ground water restoration is estimated to require one pore volume of ground water sweep, seven pore volumes of reverse osmosis treatment, and one pore volume of reverse osmosis treatment with a chemical reductant.
- A ground water restoration time frame of approximately 10 years (not including the stability period).
- No future delineation drilling or ground water restoration costs for Mine Units 3, 4, and 5. No lixiviant has been injected into these mine units. Cameco used either guidance from Guideline 12 or actual costs to develop the cost estimate.

The primary driver for the decrease in costs is the removal of any future mine unit development beyond what has been constructed and operated in Mine Unit 2. The NRC staff reviewed the estimate for the North Butte remote satellite facility and determined that the cost estimate does include the range of activities necessary to perform ground water restoration, complete surface decommissioning and reclamation, and close the site. The NRC staff finds that the cost estimate reflects the known as-built conditions (i.e., number of wells, size, depth, completed thickness, etc.) of the Mine Units 1 and 2. The NRC staff observes that the estimate includes costs to address spills at the wellheads. The NRC staff observes that the licensee's financial assurance estimates and the associated cost breakdowns were adequately summarized and calculated in a manner that is consistent with Appendix C of NUREG-1569 (NRC, 2003). The NRC staff spot-checked the calculations in Microsoft Excel, and found the calculations to be correct. For these reasons, the NRC staff determined that Cameco has provided adequate justification for the current financial assurance estimate at the North Butte remote satellite. 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 financial assurance estimate for Cameco's Smith Ranch Highland and the associated remote satellite facilities at Gas Hills, Ruth, and North Butte, the NRC staff concludes that the financial assurance estimate updates reasonably includes funds sufficient to cover the estimated current costs of ground water restoration and decommissioning efforts at the facilities. The staff determined that the updated financial assurance amount meets the requirements of 10 CFR Part 40, Appendix A, Criterion 9 and LC 9.5 (NRC, 2016a) and is therefore acceptable.

The NRC staff is not amending License SUA-1548 at this time. During the November 2017 inspection of Smith Ranch Highland, the NRC staff reviewed copies of the licensee's letters of credit and determined that the letters of credit maintained a financial assurance amount that is equal to or greater than the amount currently identified in License Condition 9.5 (NRC, 2017c). Condition 9.5 of license SUA-1548 will be revised to reflect the updated financial assurance amount during a future licensing action.

References

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

Cameco, 2017a. Letter from L. Reimann re: 2017-2018 Financial Assurance Update for Smith Ranch Highland, dated June 21, 2017 (ADAMS Accession No. ML17192A348)

Cameco, 2017b. Letter from L. Reimann re: 2017-2018 Financial Assurance Update for Gas Hills, dated July 31, 2019 (ADAMS Accession No. ML17230A042)

Cameco, 2017c. Letter from L. Reimann re: 2018 Financial Assurance Update for Ruth, dated December 20, 2017 (ADAMS Accession No. ML18017A497)

Cameco, 2018. Letter from L. Reimann re: 2018 Financial Assurance Update for North Butte, dated January 22, 2018 (ADAMS Accession No. ML18037A869)

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

NRC, 2017a, email from D. Mandeville to L. Reimann, re: acceptance review for 2017-2018 financial assurance update for Smith Ranch Highland, dated July 28, 2017 (ADAMS Accession No. ML17212A485).

NRC, 2017b, email from D. Mandeville to L. Reimann, re: acceptance review for 2017-2018 financial assurance update for Gas Hills, dated August 30, 2017 (ADAMS Accession ML17243A031)

NRC, 2017c, letter to L. Reimann re: NRC inspection report 2017-002, dated December 27, 2017 (ADAMS Accession ML17354B228)

NRC, 2018a, email from D. Mandeville to L. Reimann, re: acceptance review for 2017-2018 financial assurance update for Ruth remote satellite, dated January 19, 2018 (ADAMS Accession ML18022A383)

NRC, 2018b, email from D. Mandeville to L. Reimann, re: acceptance review for 2018 financial assurance update for North Butte remote satellite, dated February 2, 2018 (ADAMS Accession ML18036A178)

Wyoming Department of Environmental Quality, Guideline 12 – Standard Reclamation Performance Bond Format and Cost Calculation Methods, accessed on February 22, 2017 at [http://deg.wyoming.gov/media/attachments/Land%20Quality/Guidelines/Guideline_12_Bond_Calculations_\(2_2017\).pdf](http://deg.wyoming.gov/media/attachments/Land%20Quality/Guidelines/Guideline_12_Bond_Calculations_(2_2017).pdf)