

March 14, 2014

Mr. Josh Leftwich  
Director, Safety, Health,  
Environment and Quality  
Cameco Resources  
2020 Carey Avenue  
Suite 600  
Cheyenne, WY 82001

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - COMPLIANCE OF SMITH  
RANCH AND CROW BUTTE IN-SITU URANIUM RECOVERY FACILITIES  
WITH 10 CFR 20.1301 AND 10 CFR 20.1302

Dear Mr. Leftwich:

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed historical environmental monitoring data from 2013 submitted in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 40.65, "Effluent monitoring reporting requirements," for the Smith Ranch and Crow Butte licensed in-situ uranium recovery facilities (ADAMS Accession Nos. ML13073A836 and ML13254A201 for Smith Ranch and ML13070A014 and ML13246A013 for Crow Butte). The NRC staff finds that additional information is required to verify Cameco's compliance with 10 CFR 20.1301, "Dose limits for individual members of the public," and 10 CFR 20.1302, "Compliance with dose limits for individual members of the public," for both facilities. Therefore, the NRC staff is requesting additional information to estimate maximum potential annual radiation doses to the public resulting from effluent releases from Cameco's facilities pursuant to 10 CFR 40.65(a)(1).

Specifically, staff requests additional information on Cameco's dose compliance methodology specific to the placement of environmental air monitoring stations and justification for applying 10 CFR Part 20, Appendix B, Table 2, "Annual Limits on Intake and Derived Air Concentrations of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage," effluent concentrations to the data collected from these environmental air monitoring stations. Under 10 CFR 20.1302, two general compliance methods are acceptable: performance of a dose assessment (10 CFR 20.1302(b)(1)), or comparison of concentrations to the effluent values in 10 CFR Part 20, Appendix B (10 CFR 20.1302(b)(2)). From the February 2013 reports (ML13073A836 for Smith Ranch and ML13070A014 for Crow Butte), it appears that Cameco attempts to rely on both methods to demonstrate compliance. However, Cameco's demonstrations are insufficiently described and the additional information requested above is necessary before the staff can determine whether Cameco's demonstrations satisfy the regulatory requirements. Specifically, for use of a dose assessment, 10 CFR 20.1302(b)(1) requires assessment of dose to the individual likely to receive the highest dose from the licensed operation. The staff cannot determine whether Cameco has assessed dose to the individual likely to receive the highest dose. Likewise, for use of comparisons of air concentrations to the effluent values in 10 CFR Part 20, Appendix B, the concentrations must be of effluents at the boundary of the unrestricted area. It appears to staff that the measured

concentrations used by Cameco are generally at the site boundary, and not at the boundary of the unrestricted area.

NRC staff also request additional information regarding how Cameco is incorporating radon progeny into its public dose compliance demonstration. In particular, your recent reports of environmental monitoring data (noted above) compare measured concentrations of radon-222 in air to a value of  $1 \times 10^{-8}$   $\mu\text{Ci/mL}$  from 10 CFR Part 20, Appendix B, Table 2. This value is for radon "with daughters removed," so this value does not account for the dose from the radon progeny. Also, in the dose assessments provided in the February 2013 reports, Cameco determined doses using a dose conversion parameter that does not appear to account for the dose from radon progeny. Thus, the calculated dose also appears not to account for the dose from the radon progeny. Whether Cameco demonstrates compliance by a dose assessment (10 CFR 20.1302(b)(1)) or by comparison of concentrations to the effluent values in 10 CFR Part 20, Appendix B (10 CFR 20.1302(b)(2)), it must account for the dose from the radon progeny.

For the Smith Ranch facility, Cameco was issued a request for additional information (RAI) for related information [RAI 40 and 45 (ML13094A254)] as part of its timely license renewal; however, Cameco has not yet responded to the request or provided the NRC with a schedule for when it will respond.

For the Crow Butte facility, NRC staff also began discussions on compliance demonstrations as part of its timely renewal review. Most recently, the staff held a public meeting with Cameco on December 4, 2013, where Cameco presented, for discussion only, its proposed changes to its Crow Butte effluent monitoring program. However, as a result of staff's recent review of Crow Butte's historical effluent data, the NRC is requesting additional information on its compliance demonstrations, as noted above.

Within 30 calendar days from receipt of this letter, please inform NRC how and when Cameco plans to address the above-referenced concerns.

If Cameco needs clarification on the NRC's RAIs, staff will arrange for a meeting or a teleconference for this purpose.

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>.

J. Leftwich

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If you have any questions related to Smith Ranch, please contact Mr. Doug Mandeville via email at [Douglas.Mandeville@nrc.gov](mailto:Douglas.Mandeville@nrc.gov) or at (301) 415-0724. For any questions related to Crow Butte, please contact Mr. Ronald Burrows via email at [Ronald.Burrows@nrc.gov](mailto:Ronald.Burrows@nrc.gov) or at (301) 415-6443.

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.: 40-8964 (Smith Ranch)  
License No.: SUA-1548

Docket No.: 40-8943 (Crow Butte)  
License No.: SUA-1534

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J. Leftwich

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If you have any questions related to Smith Ranch, please contact Mr. Doug Mandeville via email at [Douglas.Mandeville@nrc.gov](mailto:Douglas.Mandeville@nrc.gov) or at (301) 415-0724. For any questions related to Crow Butte, please contact Mr. Ronald Burrows via email at [Ronald.Burrows@nrc.gov](mailto:Ronald.Burrows@nrc.gov) or at (301) 415-6443.

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.: 40-8964 (Smith Ranch)  
License No.: SUA-1548

Docket No.: 40-8943 (Crow Butte)  
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