



December 22, 2016

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Regional Administrator  
Fuel Cycle and Decommissioning Branch  
Division of Nuclear Materials Safety  
U.S. Nuclear Regulatory Commission  
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**Reply to a Notice of Violation, NRC Inspection Report 040-08964/2016-001, SUA-1548,  
Docket No. 040-08964**

Dear Regional Administrator:

Please find below Power Resources, Inc. d/b/a Cameco Resources (CR) reply to the Notice of Violations issued by the Nuclear Regulatory Commission (NRC) on November 23, 2016. This response is being provided in accordance with 10 CFR 2.201.

### **Violation**

During the NRC inspection conducted June 21-23, 2016 at the Smith Ranch and North Butte facilities and continued review of additional information received through October 25, 2016, the NRC identified one violation involving the failure to calculate the committed effective dose equivalent from bioassay data using the appropriate biological models. More specifically:

Title 10 CFR 20.1202(a) states, in part, that if the licensee is required to monitor under both 20.1502(a) and (b), the licensee shall demonstrate compliance with the dose limits by summing external and internal doses. The licensee may demonstrate compliance with the requirements by meeting one of conditions specified in paragraph (b) of this section. Title 10 CFR 20.1202(b)(3) requires, in part, the calculated committed effective dose equivalent to all significantly irradiated organs or tissues be calculated from bioassay data using the appropriate biological models.

Contrary to the above, between 2006 through 2016 it was identified by the NRC that the licensee failed to calculate the committed effective dose equivalent to all significantly irradiated organs or tissues using the appropriate biological models. Specifically, the licensee used incorrect bioassay Intake Retention Fractions when calculating the committed effective dose equivalents for four individuals since 2006. The licensee did

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not attempt to demonstrate compliance using any other approved method from 10 CFR 20.1202(b).

This is a Severity Level IV violation (Section 6.3.d).

1. Reason for the violation:

From 7/17/2006 through 9/13/2016, Cameco Resources had performed twenty-two (22) bioassay dose assessments using incorrect biological models. Of the twenty-two (22) dose assessments performed, five (5) assessments were performed on bioassay results that were above the 15 µg/L trigger level as found in Regulatory Guide 8.22 Rev. 2 Appendix A. By using the incorrect Intake Retention Fractions (IRFs), Cameco Resources failed to calculate dose to all irradiated organs for the five bioassay assessments.

2. The corrective steps that have been taken and the results achieved:

Health Physics procedure WYO-RPP-007 "Health Physics Manual- Exposure Monitoring Procedures" was revised to correctly define the steps required to perform a bioassay dose assessment utilizing Example 4 Uranium Intake model found in Regulatory Guide 8.9 Rev.1. In addition to changes in the procedure, Cameco Resources also created a form, WYO-RPP-FORM-070 "Bioassay Dose Assessment", to assist in the assessment process. This form was built in accordance with the model as described in Example 4 Uranium Intake found in Regulatory Guide 8.9 Rev.1. With the revised procedure, once a member of the Radiation Safety Department assesses the dose utilizing the procedure and new form, the dose is assigned to the individual using Cameco Resources CAMRAD Database. To further ensure compliance, a module is currently being created in the CAMRAD Database for the specific purpose of bioassay dose assignments. The module is anticipated to be complete in the first quarter 2017.

3. The corrective steps that will be taken to avoid further violations:

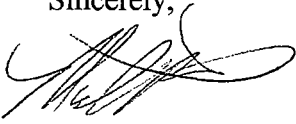
By using the revised procedure and bioassay assessment form, the proper biological models with the correct Intake Retention Fractions are being used to calculate the correct committed effective dose equivalent.

4. The date when full compliance was achieved:

The updated procedure and form were sent to NRC inspection staff that was present when the issue was discovered on 9/13/2016. After review by the NRC staff, the procedure and form were verified to be correct and in compliance on 9-15-2016. The revised procedure and form are available, on site, for NRC review.

If you have any questions regarding this submittal or need additional information, please contact me at 307-358-6541, ext. 458 or by email at: [Mike\\_Thomas@cameco.com](mailto:Mike_Thomas@cameco.com)

Sincerely,



Mike Thomas  
Director Safety, Health, Environment, Quality (SHEQ)

cc: File 4.6.4.1  
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cc: Bernadette Baca, NRC Inspector, via email