Safety Evaluation Report

DATE: December 5, 2016

DOCKET: 040-08943

LICENSE NO.: SUA-1534

LICENSEE: Crow Butte Resources, Inc.

SITE: Crow Butte Project

PROJECT MANAGER: Ronald A. Burrows

TECHNICAL REVIEWERS: David Brown, Ronald A. Burrows

Summary and Conclusions:

Crow Butte Resources, Inc. (CBR, or the licensee) requested an exemption from 10 CFR 20.1204(g)(1) at its in situ uranium recovery (ISR) facility in Crawford, Nebraska (CBR, 2015a). Specifically, CBR requested to exclude the beta-emitting radionuclides thorium-234, lead-210, and bismuth-210 when determining occupational internal dose. To support this request, the licensee provided monitoring data and calculations to demonstrate the impact on its occupational dose assessment. (CBR, 2015a)

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the submitted information and determined that an exemption from 10 CFR 20.1204(g)(1) for the purpose of demonstrating compliance with the dose limits in §20.1201 is warranted under 10 CFR 20.2301, provided that periodic measurement of the mixture of airborne radionuclides remains below certain limits. License Condition 10.8 of CBR's license SUA-1534 (NRC, 2014b) is being amended to reflect the terms of the exemption. The details of this review are described below. .

In addition, the licensee has submitted information (CBR, 2014a, 2014b, 2015a, 2015b, 2015c, 2015d, 2015e, 2015f, 2015g, 2015h, 2015i) required by several license conditions that have been reviewed and verified by the NRC staff (NRC, 2015a, 2015b, 2015c, 2016a, 2016b). Specifically, the licensee has fulfilled the requirements of LC 10.12, LC 11.11, and LC 11.14 to LC 11.16. Accordingly, these license conditions are being deleted with this amendment. LC 11.13 is also being modified because the licensee updated its effluent and environmental monitoring program with submittals required by LC 11.11. The bases for the amendment of each LC is detailed below. The NRC staff also amended license condition 9.2 by adding references to CBR's recently submitted information and commitments. License condition 9.2, commonly referred to as the "tie-down condition," requires the licensee to conduct operations in accordance with the commitments, representations, and statements contained in the license application and other submissions as noted.

The exemption reviewed herein meets the categorical exclusion provisions in 10 CFR 51.22(c)(25). The license amendments reviewed herein meet the categorical exclusion provisions in 10 CFR Part 51.22(c)(11). Therefore, no further environmental review is required for these actions. Page 11 contains further discussion of the categorical exclusions.

Enclosure 1

Safety Evaluation

10 CFR 20.1204(g)(1) Exemption Request

Background

At the Crow Butte Project, CBR performs airborne uranium particulate monitoring in the plant in accordance with Section 5.8.3.1 of its Technical Report (CBR, 2009). As described in its Technical Report, CBR measures airborne uranium by taking samples of particulate matter in air at locations within the plant using glass fiber filters and air pumps. The measurement of airborne uranium is performed by gross alpha counting of air filters.

In Section 5.7.4.3.1, "Airborne Particulate Uranium Monitoring," of the NRC staff's 2014 Safety Evaluation Report for the renewal of CBR's license SUA-1534, the NRC staff stated that CBR ". . . did not demonstrate that gross alpha counting would differentiate all airborne radioactivity in air samples, including radionuclides that are not uranium, some of which may not emit alpha particles and thus will not be detected." (NRC, 2014a). As a result, the NRC staff imposed LC 10.8 in CBR's license (NRC, 2014b), which states:

> 10.8 The licensee shall conduct isotopic analyses for alpha- and beta-emitting radionuclides on airborne samples at each in-plant air particulate sampling location at a frequency of once every six months for the first two years and annually thereafter to ensure compliance with 10 CFR 20.1204(g). For any changes to operations, the licensee shall conduct an evaluation to determine if more frequent isotopic analyses are required for compliance with 10 CFR 20.1204(g).

In a September 21, 2015, response to the NRC staff's requests for additional information (RAIs), CBR clarified its approach to determining internal dose by air sampling, including how CBR meets the requirement in 10 CFR 20.1204(g) for disregarding certain radionuclides contained in mixtures of radionuclides in air (CBR, 2015a). As part of its analysis, CBR stated it accounts for all of the alpha-emitting radioactive material in air when measuring uranium, as described in its Technical Report, but it does not account for total activity (i.e., the sum of all alpha-emitting and beta-emitting radioactive material in air) when determining internal dose. In accordance with 10 CFR 20.1204(g)(1), a licensee may only disregard certain radionuclides in a mixture if it uses the total activity of the mixture, which includes both alpha-emitting and beta-emitting radionuclides, to demonstrate compliance with the dose limits in 10 CFR 20.1201 and to comply with the monitoring requirement in 10 CFR 20.1502(b)(1). In addition to meeting the condition of 10 CFR 20.1204(g)(1), a licensee must also show that the concentration of any radionuclide disregarded is less than 10 percent of its Derived Air Concentration (DAC), and the sum of these percentages for all of the radionuclides disregarded in the mixture does not exceed 30 percent, in accordance with 10 CFR 20.1204(g)(2) and 10 CFR 20.1204(g)(3), respectively, in order to disregard certain radionuclides in a mixture.

In its September 21, 2015 response to the NRC staff's RAIs, CBR requested an exemption from the requirement to include dose from the beta-emitting radionuclides thorium-234, lead-210, and

bismuth-210 in occupational dose calculations on the basis of information it provided. Specifically, the licensee stated that:

- CBR accounts for all alpha activity on the sample filters used in its air sampling program, which accounts for nearly all of the internal dose received from airborne radionuclides typically present at an in-situ recovery facility other than radon-222 (radon) and its short-lived progeny;

- the contribution to occupational dose from internal exposure to airborne beta-emitting radionuclides (other than radon-222 and its short-lived progeny) is very small relative to other sources of occupational dose (such as external dose and internal dose from inhalation of radon-222 and its short-lived progeny, which are accounted for separately); and

- it would be administratively complex to attempt to track, and account for, a comparatively small internal dose from airborne non-radon beta-emitting radionuclides at the Crow Butte Operation (CBR, 2015a).

The following is the NRC staff's evaluation of CBR's exemption request.

Staff Review and Analysis 10 CFR 20.1204(g)(1) Exemption Request

In its September 21, 2015 (CBR, 2015a), response to the NRC staff's RAIs, CBR provided a detailed description of the results of its isotopic analyses of in-plant air samples for radionuclides other than radon-222 and its short-lived progeny for calendar years 2013, 2014, and 2015 (CBR, 2015a). These results included measurements of concentrations of natural uranium, thorium-230, radium-226, and lead-210. The licensee also included calculations of concentrations of thorium-234, which is a short-lived progeny of natural uranium, and bismuth-210 and polonium-210, which are both progeny of lead-210. CBR, 2015a

CBR determined that the concentrations of all radionuclides analyzed were below 10 percent of their respective DACs (CBR, 2015a), which meets the conditional requirement in 10 CFR 20.1204(g)(2). In addition, the sum of these percentages was less than 30 percent, which meets the conditional requirement in 10 CFR 20.1204(g)(3). CBR did not explicitly evaluate protactinium-234m in the same manner (CBR, 2015a). Rather CBR stated (CBR, 2015a) that protactinium-234m " . . . does not have an ALI [annual limit on intake] in Appendix B of 10 CFR 20, therefore a dose cannot be calculated for this radionuclide independently, but as stated, it is included in the ALI of natural uranium." The NRC staff notes that protactinium-234m is an exception to the tabulated values for DACs. Because of the very short half-life of protactinium-234m (1.17 minutes), both in an absolute sense and in relationship to its parent (thorium-234 (24.1 day half-life)), the data used to calculate an internal dose from protactinium-234m is included in the data for thorium-234 (refer to Appendix B, p. B-86 of NRC, 2001). In regards to this evaluation by the NRC staff, all references to thorium-234 are assumed to include protactinium-234m.

Based on the licensee's analysis described above, CBR concluded that it could, in accordance with 10 CFR 20.1204(g), disregard concentrations of thorium-234, thorium-230, radium-226,

lead-210, and polonium-210, when determining internal dose (CBR, 2015a). CBR also stated that it will continue to determine internal dose based on only the total alpha activity present, rather than the total activity of the mixture (i.e., a summation of the gross alpha and gross beta concentrations) (CBR, 2015a).

The NRC staff observes that CBR's proposal to only measure gross alpha concentrations as described above does not meet the requirement of 10 CFR 20.1204(g)(1), which states that licensees may only ". . . disregard certain radionuclides if the licensee uses the total activity of the mixture in demonstrating compliance with the dose limits in §20.1201 and in complying with the monitoring requirements in §20.1502(b)" [emphasis added]. The NRC staff evaluated CBR's request by comparing the highest annual concentrations over a 3-year period (i.e., maximum) for all measured or calculated concentrations of airborne radionuclides in the uranium series to their respective stochastic DACs, as shown in Table 1. The NRC staff used stochastic DAC fractions so that it could ultimately calculate Committed Effective Dose Equivalent (CEDE), as described further below, in accordance with 10 CFR 20.1204(h)(2).

Table 1. Comparison of CBR Airborne Particulate Sampling Results to Stochastic DACs

Radionuclide	*3-year Maximum Annual Concentration, µCi/mL*	*Stochastic DAC, µCi/mL* [1]	*Percent of DAC*
Uranium-natural	7.14×10^{-13}	8×10^{-10}	*0.089 percent*
Thorium-234	3.50×10^{-13}	8×10^{-8}	*0.00044 percent*
Thorium-230	8.14×10^{-16}	8×10^{-12}	*0.010 percent*
Radium-226	2.40×10^{-15}	3×10^{-10}	*0.00080 percent*
Lead-210	1.27×10^{-13}	2×10^{-10}	*0.064 percent*
Bismuth-210	1.27×10^{-13}	1×10^{-8}	*0.0013 percent*
Polonium-210	1.27×10^{-13}	3×10^{-10}	*0.042 percent*

The NRC staff calculated stochastic DACs for radionuclides that only have nonstochastic DACs in Appendix B to 10 CFR §§20.1001-20.2402 using the methodology in Regulatory Position 3.3 of Regulatory Guide 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses" (NRC, 1992). The NRC staff excluded radionuclides with small branching ratios and progeny of uranium-235, given their relatively low natural concentrations relative to other radionuclides in the uranium series. The NRC staff also excluded radon-222 and its short-lived daughters, which are measured and accounted for separately by CBR in estimates of internal dose, as described in Section 5.8.4.2 of CBR's Technical Report (CBR, 2009). The NRC staff evaluated stochastic DAC fractions for natural uranium, thorium-234, thorium-230, radium-226, lead-210, bismuth-210, and polonium-210. The staff's evaluation verifies CBR's statement that the conditions of 10 CFR 20.1204(g)(2) and 10 CFR 20.1204(g)(3) are met for all radionuclides.

Furthermore, the sum of the stochastic DAC fractions for all beta-emitting radionuclides (i.e., thorium-234 lead-210 and bismuth-210), is about 0.065 percent. The CEDE resulting from a DAC fraction of 0.065 percent, conservatively assuming an annual occupational time of

[1] Values for uranium-natural, thorium-234 and lead-210 were calculated by NRC staff and rounded to one significant figure.

exposure of 2,000 hours, is about 3 mrem (0.03 mSv) per year. This internal dose is about 0.07 percent of the 5 rems (0.05 Sv) occupational total effective dose equivalent limit in 10 CFR 20.1201.

The NRC staff also estimated the maximum Committed Dose Equivalent (CDE) to organs for those radionuclides in SER Table 1 above for which a nonstochastic ALI and DAC are provided in 10 CFR 20, Appendix B, Table 1. The methodology in Regulatory Position 5.3 of Regulatory Guide 8.34 (NRC, 1992) was used for this purpose. The NRC staff observes that only two of the beta-emitting radionuclides, lead-210 (all inhalation classes) and bismuth-210 (inhalation class D, for nitrate compounds), have exposures limited by a nonstochastic ALI and DAC. In other words, the dose to an organ (bone surface for lead-210, kidney for bismuth-210) for these radionuclides is more limiting than the dose to the whole body. However, bismuth is not expected to exist in the nitrate form at this licensee's facility. Therefore the CDE to the kidney was calculated by staff as a conservative measure only. The maximum CDE calculated from the intake of beta-emitting radionuclides (i.e., thorium-234, lead-210, and bismuth-210) is about 60 mrem/year to the bone surface, or about 0.12 percent of the 50 rem (0.5 Sv) limit.

As previously discussed, the licensee is required by LC 10.8 to obtain periodic isotopic analyses of in-plant particulate air samples. During the course of operations, the licensee will also be taking other particulate air samples associated with various activities, such as maintenance. Some of these activities may have radiation work permits associated with them that require particulate air sampling. The staff observes that the requirements in 10 CFR 20.1501 specify that a licensee shall make surveys that enable it to evaluate the potential radiological hazards of residual radioactivity detected. It is expected that these surveys will also inform the licensee's program for estimating internal occupational dose.

Therefore, an exemption from 10 CFR 20.1204(g)(1) which allows CBR to estimate internal dose by disregarding certain radionuclides in a mixture without using the total activity of the mixture, is warranted at the Crow Butte Project because the internal dose (CEDE and CDE) from the beta-emitting radionuclides thorium-234, lead-210, and bismuth-210 is a small fraction of the occupational dose limits.

However, the NRC staff has determined that license condition 10.8 should be revised in order to establish an acceptable internal dose from the beta-emitting radionuclides thorium-234, lead-210 and bismuth-210 (Class W) below which CBR may continue to disregard the activity of certain radionuclides to demonstrate compliance with the dose limits in 10 CFR 20.1201. Since CBR has shown that its current estimate of internal dose from the beta-emitting radionuclides thorium-234, lead-210 and bismuth-210 is 0.07 percent of the total effective dose equivalent limit and 0.12 percent of the committed dose equivalent, the staff finds that a regulatory limit of 1 percent of the DAC in Table 1 of 10 CFR Part 20, Appendix B, ensures that the contribution from the beta-emitting radionuclides thorium-234, lead-210 and bismuth-210 (Class W) remains low and also provides some operational margin for CBR. Therefore, NRC staff proposes to revise LC 10.8 to include a second paragraph that states the exemption with the limitation described above. The revised text of LC 10.8 states:

10.8 The licensee shall conduct isotopic analyses for alpha- and beta-emitting radionuclides on airborne samples at each in-plant air particulate sampling location at a frequency of

> once every six months for the first two years and annually thereafter to ensure compliance with 10 CFR 20.1204(g). For any changes to operations, the licensee shall conduct an evaluation to determine if more frequent isotopic analyses are required for compliance with 10 CFR 20.1204(g).
>
> The licensee is exempted from the requirement of 10 CFR 20.1204(g)(1) to use the total activity of a mixture of radionuclides in air in demonstrating compliance with the dose limits in 10 CFR 20.1201 as follows: the licensee may disregard the activities of thorium-234, lead-210, and bismuth-210, when assessing internal exposure for the purpose of demonstrating compliance with the dose limits in 10 CFR 20.1201 provided that the most recent results of periodic isotopic analyses of airborne samples, whether required by this license condition or for any other purpose, show that thorium-234, lead-210, and bismuth-210 (Class W) are individually present at less than 1 percent of their derived air concentration in Table 1 of Appendix B to 10 CFR Part 20.

The NRC may, under 10 CFR 20.2301, upon application by a licensee or upon its own initiative, grant an exemption from the requirements of the regulations in 10 CFR Part 20, if the NRC determines the exemption is authorized by law and would not result in undue hazard to life or property. The NRC staff concluded that the proposed exemption is authorized by law as 10 CFR 20.2301 expressly allows for an exemption to the requirements in 10 CFR Part 20, and the proposed exemption would not be contrary to any provision of the Atomic Energy Act of 1954, as amended. CBR has demonstrated, and the NRC staff has verified, that any contribution to occupational dose from internal exposure to airborne thorium-234, lead-210 and bismuth-210 is very small. Furthermore, CBR LC 10.8, as revised, requires CBR to periodically assess the mixture of airborne radionuclides present at its facility against a specific regulatory limit, which ensures that the contribution to occupational dose from internal exposure to airborne non-radon beta-emitting radionuclides remains small. Therefore, granting the exemption presents no undue hazard to life or property.

Conclusion

Accordingly, the NRC staff has determined that, pursuant to 10 CFR 20.2301, the proposed exemption is authorized by law and will not present an undue hazard to life or property.

License Condition 10.12

LC 10.12 states:

> Security measures for the mine units and header houses that address the requirements of 10 CFR Part 20, Subpart I, shall be described in writing to the NRC staff.

Staff Review and Analysis of LC 10.12

By letter dated May 27, 2015 (NRC, 2015a), the NRC staff transmitted the results of its review of the licensee's response (CBR, 2015f) to LC 10.12. The NRC staff concluded that the licensee's security measures meet the requirements of 10 CFR Part 20, Subpart I and are protective of public health, safety, and the environment.

The NRC staff will remove LC 10.12 from Materials License SUA-1534 and amend LC 9.2 to include the commitments, representations, and statements made by CBR in the submission dated April 2, 2015 (CBR, 2015f).

License Condition 11.11

LC 11.11 states:

> The licensee shall provide the following information for the airborne effluent and environmental monitoring program for which it shall develop written procedures for NRC written verification to:
>
> A) Discuss how, in accordance with 10 CFR 40.65, the quantity of the principal radionuclides from all point and diffuse sources will be accounted for, and verified by, surveys and/or monitoring.
>
> B) Evaluate the member(s) of the public likely to receive the highest exposures from licensed operations consistent with 10 CFR 20.1302.
>
> C) Discuss and identify how radon (radon-222) progeny will be factored into analyzing potential public dose from operations consistent with 10 CFR Part 20, Appendix B, Table 2.
>
> D) Discuss how, in accordance with 10 CFR 20.1501, the occupational dose (gaseous and particulate) received throughout the entire License Area from licensed operations will be accounted for, and verified by, surveys and/or monitoring.

Staff Review and Analysis of LC 11.11

By letter dated January 6, 2016 (NRC, 2016a), the NRC staff transmitted its verification of the licensee's submittals (CBR, 2015a, 2015b, 2015c, 2015d, 2015e) related to LC 11.11 describing specific aspects of its airborne effluent and environmental monitoring program.

The NRC staff will remove LC 11.11 from Materials License SUA-1534 and amend LC 9.2 to include the commitments, representations, and statements made by CBR in submissions dated January 2, 2015 (CBR, 2015b), June 30, 2015 (CBR, 2015c), September 21, 2015 (CBR, 2015a), November 24, 2015 (CBR, 2015d), and December 4, 2015 (CBR, 2015e) to LC 9.2.

License Condition 11.13

LC 11.13 states:

> The licensee shall establish and conduct an effluent and environmental monitoring program in accordance with the program submitted by letter dated March 18, 1999.

Staff Review and Analysis of LC 11.13

In its March 18, 1999, letter (CBR, 1999), the licensee transmitted a table summarizing its operational environmental and effluent monitoring program. The information in this table was reproduced as Table 5.8-5 in CBR's license renewal application (CBR, 2009). In addition, as discussed above for LC 11.11 and below for LC 11.15, the licensee provided additional information (CBR, 2015a, 2015b, 2015c, 2015d, 2015e, 2015g) related to its airborne effluent and environmental monitoring program. Therefore, LC 11.13 will be modified to capture these commitments.

The NRC staff will modify LC 11.13 to read:

LC 11.13:

> The licensee shall establish and conduct an effluent and environmental monitoring program in accordance with the program described in Sections 5.8.7 (Airborne Effluent and Environmental Monitoring Programs) and 5.8.8 (Groundwater/Surface Water Monitoring Program) of the approved application as revised by submittals dated January 2, 2015, May 11, 2015, June 30, 2015, September 21, 2015, November 24, 2015, and December 4, 2015.

License Condition 11.14

LC 11.14 states:

> The license shall provide flow rates for discharges to unrestricted areas and air exchange rate for the facility, and describe what method(s) will be used to control releases to unrestricted areas.

Staff Review and Analysis of LC 11.14

By letter dated August 18, 2015 (NRC, 2015b), the NRC staff notified the licensee that there were no further questions on the licensee's submittal (CBR, 2014a) and that the action required under LC 11.14 was complete.

The NRC staff will remove LC 11.14 from Materials License SUA-1534 and amend LC 9.2 to include the commitments, representations, and statements made by CBR in the submission dated August 13, 2014 (CBR, 2014a).

License Condition 11.15

LC 11.15 states:

> The licensee shall provide for NRC written verification an operational soil sampling program consistent with Regulatory Guide 4.14 or justification for an alternate program.

Staff Review and Analysis of LC 11.15

By letter dated May 27, 2015 (NRC, 2015c), the NRC staff transmitted its verification of the licensee's submittal (CBR, 2015g) related to LC 11.15.

The NRC staff will remove LC 11.15 from Materials License SUA-1534 and amend LC 9.2 to include the commitments, representations, and statements made by CBR in the submission dated May 11, 2015 (CBR, 2015g).

License Condition 11.16

LC 11.16 states:

> The licensee shall submit for NRC written verification additional information on its Wellfield Decommissioning Plan for Crow Butte Uranium Project, dated June 2004, regarding the ability to detect radionuclides other than radium. Specifically, the licensee shall provide a technical basis for applying the gamma action level derived from radium to radionuclides other than radium and provide background levels that will be utilized for radionuclides other than radium (e.g., uranium).

Staff Review and Analysis of LC 11.16

By letter dated January 19, 2016 (NRC, 2016b), the NRC staff transmitted its verification of the licensee's submittals (CBR, 2014b, 2015h, 2015i) related to LC 11.16 .

The NRC staff will remove LC 11.16 from Materials License SUA-1534 and amend LC 9.2 to include the commitments, representations, and statements made by CBR in the submissions dated December 19, 2014 (CBR, 2014b), September 14, 2015 (CBR, 2015h), and September 25, 2015 (CBR, 2015i).

License Condition 9.2

LC 9.2 states:

> The licensee shall conduct operations in accordance with the commitments, representations, and statements contained in the license application dated November 27, 2007 (ADAMS package ML073480264), as supplemented by submittals dated August 28, 2008 (ML082410902), May 12, 2009 (ML091470116), July 13, 2009 (ML091980473), September 17, 2010 (ML102640195), September 28, 2010 (ML102740030), February 8, 2012 (ML120450518), April 19, 2012 (ML121170487), August 16, 2012 (ML12235A355), August 30, 2012 (ML12250A421), October 4, 2012 (ML12285A075), March 4, 2014 (ML14064A143), May 15, 2014 (ML14135A414) and any commitments submitted for verification specified in this license. The approved application, supplements, and information submitted for verification are hereby incorporated by reference, except where superseded by license conditions below.

Whenever the word "will", “shall”, or “would” is used in the above referenced documents, it shall denote a requirement.

Staff Review and Analysis of LC 9.2

License Condition 9.2 is commonly referred to by the NRC staff as the tie down condition. Under this license condition, the NRC requires the licensee to conduct operations in accordance with the commitments, representations, and statements contained in the license application and other submissions as noted. Since the licensee has made additional commitments, representations, and statements in submissions to the NRC as discussed in prior sections of this Safety Evaluation Report, the NRC staff will amend this license condition to add references to those commitments, representations, and statements.

License Condition 9.2 will be modified to read:

9.2 The licensee shall conduct operations in accordance with the commitments, representations, and statements contained in the license application dated November 27, 2007 (ADAMS package ML073480264), as supplemented by submittals dated August 28, 2008 (ML082410902), May 12, 2009 (ML091470116), July 13, 2009 (ML091980473), September 17, 2010 (ML102640195), September 28, 2010 (ML102740030), February 8, 2012 (ML120450518), April 19, 2012 (ML121170487), August 16, 2012 (ML12235A355), August 30, 2012 (ML12250A421), October 4, 2012 (ML12285A075), March 4, 2014 (ML14064A143), May 15, 2014 (ML14135A414), August 13, 2014 (ML14247A155), April 2, 2015 (ML15097A140), and the commitments submitted for verification listed below.

Verification submittals:

Airborne Effluent and Environmental Monitoring Program -

January 2, 2015 (ML15009A031), June 30, 2015 (ML15217A332), September 21, 2015 (ML15310A373), November 24, 2015 (ML15335A040) and December 4, 2015 (ML15341A030)

Operational Soil Sampling Program -

May 11, 2015 (ML15146A026)

Wellfield Decommissioning Plan, Additional Details -

December 19, 2014 (ML14364A228), September 14, 2015 (ML15266A187), September 25, 2015 (ML15279A075)

The approved application, supplements, and information submitted for verification are hereby incorporated by reference, except where superseded by license conditions below.

Whenever the word "will", “shall”, or “would” is used in the above referenced documents, it shall denote a requirement.

Categorical Exclusion and Consultations

The NRC staff has determined that granting of an exemption from the requirements of 10 CFR 20.1204(g)(1) belongs to a category of regulatory actions which the NRC, by regulation, has determined do not individually or cumulatively have a significant effect on the environment, and as such do not require an environmental assessment or environmental impact statement. The exemption from the requirement to include all radionuclides that contribute to total activity under 10 CFR 20.1204(g)(1) is eligible for categorical exclusion under 10 CFR 51.22(c)(25) based on the staff’s determinations that requirements from which exemption is sought involve inspection or surveillance requirements (a survey under 10 CFR 20.1501(a)), and that the exemption will result in no significant change in the types or significant increase the amount of any offsite effluents; no significant increase to individual or cumulative public or occupational radiation exposure; no significant construction impact; and no significant increase to the potential for, or consequence from, radiological accidents. Therefore, an environmental assessment is not required.

In addition, in accordance with 10 CFR 51.22(b), the NRC staff has determined that an environmental assessment or an environmental impact statement is not required for modifying LC 9.2 and deleting LC 9.12, LC 10.12, LC 11.11, and LC 11.13 to LC 11.16. Specifically, these amendments are administrative and procedural in nature because they modify or remove specific license conditions noted above from NRC Materials License SUA-1534 as a result of the NRC staff’s review, approval, and verification of the information provided by the licensee in satisfaction of the specified license conditions. Therefore, as administrative and procedural amendments, these actions are categorically excluded under 10 CFR 51.22(c)(11) from the requirement to prepare an environmental assessment or environmental impact statement, based on the following NRC staff findings:

- that the modification and removal of the LCs discussed above will not result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite;

- that there will be no significant increase in individual or cumulative occupational radiation exposure as a result of the modification and removal of the LCs discussed above;

- that the modification and removal of the LCs discussed above will not result in a significant construction impact; and

- that there is no significant increase in the potential for or consequences from radiological accidents as a result of the modification and removal of the LCs discussed above.

The NRC staff has determined that a Section 7 consultation is not required because the proposed actions are administrative/procedural in nature and will not affect listed species or critical habitat. The NRC staff has also determined that the proposed actions are not a type of

activity that has potential to cause effects on historic properties because they are administrative/procedural actions. Therefore, no further consultation is required under Section 106 of the National Historic Preservation Act.

References

10 CFR Part 20. Code of Federal Regulations, Title 10, Energy, Part 20, "Standards for Protection Against Radiation."

CBR, 1999. Letter from M. Griffin, Crow Butte Resources, Inc., to N.K. Stablein, NRC, Request for Amendment of License No. SUA-1534, Groundwater Monitoring Program, March 18, 1999, Legacy Accession No. 9903310234, Microform Addresses: A7507:354-A7507:356.

CBR, 2009. Responses to NRC Request for Additional Information: Technical Review: License Renewal Amendment Request: Source Material License No. SUA-1534, Crow Butte Resources, Inc., May 12, 2009, ADAMS Accession No. ML091470116.

CBR, 2014a. E-mail from J. Schmuck, Cameco Resources, to R. Burrows, NRC, Crow Butte Ventilation Report, August 13, 2014, ADAMS Accession No. ML14247A155.

CBR, 2014b. Letter from D. Pavlick, Cameco Resources, Crow Butte Operation, to the NRC, Source Materials License SUA-1534, Response to License Condition 11.16, December 19, 2014, ADAMS Accession No. ML14364A228.

CBR, 2015a. Responses to NRC Request for Additional Information: Technical Review: License Renewal Amendment Request: Source Material License No. SUA-1534, Crow Butte Resources, Inc., September 21, 2015, ADAMS Accession No. ML15310A373.

CBR, 2015b. Letter from D. Pavlick, Cameco Resources, Crow Butte Operation, to the NRC, Source Materials License SUA- 1534, Response to License Condition 11.11 (A), 11.11 (B), 11.11 (C) and 11,11 (D), January 2, 2015, ADAMS Accession No. ML15009A031.

CBR, 2015c. Letter from B. Tiensvold, Cameco Resources, Crow Butte Operation, to the NRC, Request for Additional Information for Response to License Condition 11.11, Crow Butte Resources, Inc., Crawford, NE, Source Materials License SUA-1534, TAC No: L00762, June 30, 2015, ADAMS Accession No. ML15217A332.

CBR, 2015d. E-mails from L. Teahon, Cameco Resources, Crow Butte Operation, to R. Burrows, NRC, LC 11.11, November 24, 2015, ADAMS Accession No. ML15335A040 (Package of four e-mails transmitting in-plant radon daughter monitoring results).

CBR, 2015e. E-mails from L. Teahon, Cameco Resources, Crow Butte Operation, to R. Burrows, NRC, License Condition 11.11, December 4, 2015, ADAMS Accession No. ML15341A030 (Package of two e-mails transmitting wellfield radon daughter monitoring results).

CBR, 2015f. E-mail from L. Teahon, Cameco Resources, Crow Butte Operation, to R. Burrows, NRC, LC 10.12, April 2, 2015, ADAMS Accession No. ML15097A140 (Package transmitting the Security Plan).

CBR, 2015g. Letter from L. Teahon, Cameco Resources, Crow Butte Operation, to the NRC, Revised Response to License Condition 11.15, May 11, 2015, ADAMS Accession No. ML15146A026.

CBR, 2015h. Letter from L. Teahon, Cameco Resources, Crow Butte Operation, to the NRC, Response to License Condition 11.16, September 14, 2015, ADAMS Accession No. ML15266A187.

CBR, 2015i. Letter from L. Teahon, Cameco Resources, Crow Butte Operation, to the NRC, Response to License Condition 11.16, September 25, 2015, ADAMS Accession No. ML15279A075.

NRC, 1992. Regulatory Guide 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses." Washington, DC. ADAMS Accession No. ML090770221.

NRC, 2001. NUREG-1736, "Consolidated Guidance: 10 CFR 20 – Standards for Protection Against Radiation," October. ADAMS Accession No. ML013330179.

NRC, 2013. Safety Evaluation Report for License Amendment for the Crow Butte Resources North Trend Expansion Area ISR Facility, Dawes County, Nebraska, Materials License No. SUA-1534, July 21, 2013, ADAMS Accession No. ML110820512.

NRC, 2014a. Safety Evaluation Report (Revised) License Renewal of the Crow Butte Resources ISR Facility Dawes County, Nebraska. Materials License No. SUA-1534. Washington, DC. ADAMS Accession No. ML14149A433.

NRC, 2014b. Materials License SUA-1534. Washington, DC. ADAMS Accession No. ML13324A101.

NRC, 2015a. Letter from R. Burrows, NRC, to L. Teahon, Cameco Resources, Crow Butte Operation, Safety Evaluation Report, Review of the Response to License Condition 10.12, May 27, 2015, ADAMS Accession No. ML15131A475.

NRC, 2015b. Letter from R. Burrows, NRC, to L. Teahon, Cameco Resources, Crow Butte Operation, Results of Staff Review of Response to License Condition 11.14, Ventilation Report, August 18, 2015, ADAMS Accession No. ML15225A385.

NRC, 2015c. Letter from R. Burrows, NRC, to L. Teahon, Cameco Resources, Crow Butte Operation, Safety Evaluation Report, Review of the Response to License Condition 11.15, May 27, 2015, ADAMS Accession No. ML15134A137.

NRC, 2016a. Letter from R. Burrows, NRC, to L. Teahon, Cameco Resources, Crow Butte Operation, US NRC Verification Regarding License Condition 11.11, January 6, 2016, ADAMS Accession No. ML15345A256.

NRC, 2016b. Letter from R. Burrows, NRC, to L. Teahon, Cameco Resources, Crow Butte Operation, US NRC Verification Regarding License Condition 11.16, January 19, 2016, ADAMS Accession No. ML16014A080.