



[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[Docket No. 040-08943; NRC-2008-0208]

Crow Butte Resources, Inc.

AGENCY: Nuclear Regulatory Commission.

ACTION: Exemption; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing an exemption to Crow Butte Resources, Inc. (CBR) for the purpose of complying with occupational dose limits in response to a request from CBR dated September 21, 2015. Issuance of this exemption will allow CBR to disregard certain radionuclides that contribute to the total activity of a mixture when determining internal dose to assess compliance with occupational dose equivalent limits at its in situ uranium recovery (ISR) facility in Crawford, Nebraska.

ADDRESSES: Please refer to Docket ID **NRC-2008-0208** when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2008-0208**. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; e-mail: Carol.Gallagher@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **NRC’s Agencywide Documents Access and Management System (ADAMS):**

You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select “[ADAMS Public Documents](#)” and then select “[Begin Web-based ADAMS Search](#).” For problems with ADAMS, please contact the NRC’s Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The ADAMS accession number for each document referenced (if that document is available in ADAMS) is provided the first time that a document is referenced.

- **NRC’s PDR:** You may examine and purchase copies of public documents at the NRC’s PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Ronald A. Burrows, Office of Nuclear Material Safety and Safeguards; U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; telephone: 301-415-6443; e-mail: Ronald.Burrows@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Background

Crow Butte Resources, Inc. operates the Crow Butte ISR facility in Crawford, Nebraska (the Crow Butte Project) under NRC source materials license SUA-1534 (ADAMS Accession No. ML13324A101). 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 (ADAMS Accession No. ML091470116). 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 (SER) for the renewal of CBR's license for the Crow Butte Project (ADAMS Accession No. ML14149A433), 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, therefore, will not be detected. As a result, the NRC staff imposed license condition 10.8 in CBR's license SUA-1534, which states that 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 6 months for the first 2 years and annually thereafter to ensure compliance with section 20.1204(g) of title 10 of the Code of Federal Regulations (10 CFR). The license condition also states that 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 its September 21, 2015, response to NRC staff requests for additional information (RAIs), CBR clarified its approach to determining internal dose by air sampling, including an analysis of how CBR meets the requirement in 10 CFR 20.1204(g) for disregarding certain radionuclides contained in mixtures of radionuclides in air (ADAMS Accession No. ML15310A373). As part of its analysis, CBR stated that 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 requirements in 10 CFR 20.1502(b). 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, RAI response, CBR requested an exemption from including the internal dose from beta-emitting radionuclides in occupational dose calculations. In support of this request, CBR provided the following information: (1) 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; (2) 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 (3) 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 Project.

II. Description of Action

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. As described in the NRC staff's safety evaluation report for this exemption request (ADAMS Accession No. ML16078A238), the NRC staff found that this exemption is authorized by law and will not result in undue hazard to life or property. Therefore, the NRC is granting CBR an exemption from the requirement in 10 CFR 20.1204(g)(1) to use the total activity of the mixture in demonstrating compliance with the dose limits specified in § 20.1201. The licensee must still consider all radionuclides in demonstrating compliance with the requirements in § 20.1502(b). In conjunction with granting this exemption, the NRC is revising license condition 10.8 of CBR's license SUA-1534 to reflect the terms of the exemption.

III. Discussion

A. The Exemption is Authorized by Law

The NRC staff concluded that the 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 exemption will not be contrary to any provision of the Atomic Energy Act of 1954, as amended.

B. The Exemption Presents no Undue Hazard to Life or Property

The exemption is related to the requirement in 10 CFR 20.1501(a) for licensees to make, or cause to be made, appropriate surveys. In accordance with 10 CFR 20.1204(g), when concentrations of radioactive material in air are relied upon to determine internal dose, a licensee may disregard certain radionuclides contained in a mixture of radionuclides in air if the following three conditions are met: (1) 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); (2) the concentration of any radionuclide disregarded

is less than 10 percent of its DAC; and (3) the sum of these percentages for all of the radionuclides disregarded in the mixture does not exceed 30 percent.

CBR has demonstrated, and the NRC staff has verified, that its surveys under § 20.1501(a) and its method of determination under § 20.1204 account for nearly all of the occupational dose and that any additional contribution to occupational dose from internal exposure to airborne non-radon beta-emitting radionuclides is very small. Furthermore, in conjunction with granting this exemption, the NRC staff is revising CBR license condition 10.8 to require CBR to periodically assess the mixture of airborne radionuclides present at its facility against a specific regulatory limit. This will ensure that CBR will be aware of changes in the mixture of airborne radionuclides at the Crow Butte Project and that the contribution to occupational dose from internal exposure to beta-emitting radionuclides will remain small. Therefore, granting this exemption presents no undue hazard to life or property.

C. Environmental Considerations

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. Specifically, 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 NRC 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.

Section 7 of the Endangered Species Act (the Act) [16 U.S.C. 1531 et seq.] outlines the procedures for Federal interagency cooperation to conserve Federally-listed species and designated critical habitats. Section 7(a)(2) of the Act states that each Federal agency shall, in consultation with the Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. The NRC staff has determined that a Section 7 consultation is not required because the proposed action is administrative/procedural in nature and will not affect listed species or critical habitat. The NRC staff has also determined that the proposed action is not a type of activity that has potential to cause effects on historic properties because it is an administrative/procedural action. Therefore, no further consultation is required under Section 106 of the National Historic Preservation Act [54 USC 300101 et seq.].

IV. Conclusion

Accordingly, the NRC has determined that, pursuant to 10 CFR 20.2301, the exemption is authorized by law and will not present an undue hazard to life or property. The NRC hereby grants CBR an exemption from the requirement in 10 CFR 20.1204(g)(1) to use the total activity of the mixture in demonstrating compliance with the dose limits in § 20.1201.

Dated at Rockville, Maryland, this 14th day of November 2016.

For the Nuclear Regulatory Commission.

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[FR Doc. 2016-27946 Filed: 11/18/2016 8:45 am; Publication Date: 11/21/2016]