



**KERR-McGEE CORPORATION**

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

ENVIRONMENT AND HEALTH MANAGEMENT DIVISION

EDWIN T. STILL, DVM  
VICE PRESIDENT AND DIRECTOR

May 31, 1994

Mr. John H. Austin, Chief  
Low-Level Waste Management  
and Decommissioning Projects Branch  
Office of Nuclear Material Safety  
and Safeguards  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Re: Docket No. 70-0925  
License No. SNM-928  
Cimarron Facility Soil Disposal Plan

Dear Mr. Austin:

Cimarron Corporation addresses below the staff's comments concerning the Cimarron facility on-site disposal plan submitted by Cimarron Corporation on April 19, 1994 that were transmitted by your letter of May 5, 1994. For convenience, the staff's comments are addressed in the order presented and are briefly summarized before each response.

**General**

**Staff Comment:** Cimarron's disposal plan is considered a "description of the planned final radiation survey" in accordance with 10 CFR 70.38(c)(2)(iii)(C) and is normally approved along with the entire decommissioning plan.

**Cimarron Response:** Cimarron acknowledges the staff's characterization, but notes that Cimarron began decommissioning the uranium facility prior to NRC amending its regulations setting forth the requirements noted under 10 CFR 70.38(c)(2)(ii)(C).<sup>1</sup> Moreover, the decommissioning plans were discussed with NRC and as NRC has stated in NUREG-1444, the plans were "partly approved" and remediation is "currently in progress".<sup>2</sup> The remediation to which reference is made in NUREG-1444 has resulted in the cumulation of material which the disposal plan covers. Thus, Cimarron believes NRC

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<sup>1</sup>The commission issued a final rule on June 27, 1988, effective July 27, 1988, (53 Fed Reg 24018, General Requirements for Decommissioning Nuclear Facility) amending 10 CFR 70 to include technical and financial criteria for decommissioning licensed facilities. Cimarron began decommissioning the uranium facility prior to 1980.

<sup>2</sup>Site Decommissioning Management Plan, NUREG-1444, October 1993 (Page A-54).

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has adequate basis under these circumstances for considering the plan independently and requests that the disposal plan be approved as the "planned final radiation survey" process.

*Staff Comment:* Before placing material into the disposal cell, Cimarron must submit a report detailing the survey results to enable NRC to determine the material is suitable for unrestricted use, in accordance with 10 CFR 20.78(f)(3)(1).

*Cimarron Response:* Cimarron believes the reference to 10 CFR 20 is inadvertent and was meant to be to 10 CFR 70.38(f)(3)(i). Cimarron will submit, prior to placement of material in the cell, a report detailing the survey results, consistent with the guidance contained in Draft NUREG/CR-5849.

*Staff Comment:* All material placed in the cell must be surveyed in accordance with an approved survey plan and the results approved by NRC prior to placement of the material in the cell.

*Cimarron Response:* Affected areas will be surveyed in accordance with the survey plan and results will be provided to NRC for approval prior to placing material in the cell. Cimarron notes the requirement for NRC approval prior to material placement is burdensome and is unnecessary in view of an approved survey plan. Cimarron wishes to discuss this issue in regard to disposition of any remaining in situ material.

Specific:

**Section 4.1.** How will the average concentration be determined?

*Cimarron Response:* The average soil concentration will be determined in accordance with guidance in Section 8.5 of Draft NUREG/CR-5849, to include 8.5.2 (soil) and 8.5.4.

**Section 4.3.** The 10 CFR 20.2002 disposal is not approved until the license amendment is issued.

*Cimarron Response:* Cimarron notes the license amendment requirement.

**Section 5.5.2.** List the facility unrestricted release criteria for surface contamination.

*Cimarron Response:* The facility unrestricted release criteria are as stated in Table I, Regulatory Guide 1.86.<sup>3</sup>

**Section 6.5.** The Option 2 limit proposed by Kerr-McGee is 100 pCi/g, based on an assumption of 100% solubility. Justify that 30-150 pCi/g range for sorting Option 2 material is conservative.

*Cimarron Response:* For clarification, Cimarron has not proposed to assume the material is 100% soluble, thus restricting the concentration to 100 pCi/g under the Branch Technical Position Option

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<sup>3</sup>Regulatory Guide 1.86, Termination of Operating Licenses for Nuclear Reactors (NRC 1974). Table I: Acceptable Surface Contamination Levels.

2.<sup>4</sup> Cimarron believes sufficient data have been provided to NRC to demonstrate the uranium contained in the soil for onsite disposal averages well under 100% solubility.<sup>5</sup> Because NRC expressed a concern that Cimarron's data represented leachable fractions and not soluble fractions and the lack of a reproducible, approved uranium solubility determination method, Cimarron indicated willingness to begin disposal, as NRC had published<sup>6</sup>, under the limitation for 100% soluble material, i.e., 100 pCi/g.

Previously, Cimarron had begun remediation of soil, using the Branch Technical Position as guidance, and had undertaken the solubility determinations stated above. The mean for some 13 determinations was  $19.4\% \pm 10.6\%$ . Three standard deviations approximate 50%, assuring with almost 100 percent certainty (on a statistical basis) that 50% solubility is the maximum for any of the material for disposal onsite. The 30 to 150 pCi/g range was based on the consideration that 30 pCi/g is the lower limit for option 2 material and 150 pCi/g provided a reasonable conservative margin under the concentration calculated on the basis of 50% solubility (i.e., 175 pCi/g @ 50% solubility) and assured the average concentration would be consistent with the limit determined from solubility.

With the issuance by NRC of Draft NUREG/CR-5849 and the staff's reliance upon the guidance, Cimarron now proposes to follow the methodology in NUREG/CR-5849 section 8.5 for sorting the material. Specifically, the criteria described in Section 8.5.2, soil, will be used for satisfying average concentration analyses.

**Section 6.6.5.** Explain how the statistical analyses described satisfy the averaging and hot-spot guidance in NUREG/CR-5849 and justify any exceptions to the guidance.

*Cimarron Response:* The statistical analyses indicated had the intent of providing current status of material placed in the disposal cell. The analyses to be performed were standard arithmetic averages on a cumulative basis, to include the range of concentrations included in averaging. The stockpiled material to be placed in the cell had previously been sorted, using 150 pCi/g as the maximum concentration to be stockpiled; however, as evident, Cimarron proposed to perform additional confirmatory analyses. These statistical treatments were for the additional analyses.

However, Cimarron will follow the guidance for averaging and hot-spot statistical analyses in NUREG/CR-5849, Section 8.5.2, Soil. This section provides for individual hot-spots up to three times the guideline value when the area of elevated activity is less than  $(100/A)^{0.5}$  times the guideline value for a 100 M<sup>2</sup> contiguous area.

**Section 6.7.** Remaining in situ material must be surveyed in accordance with the survey plan and results approved by NRC prior to placing the material into the disposal cell.

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<sup>4</sup>Branch Technical Position for Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations, 46 Federal Register 52061, 23 October 1981. (SECY 81-576).

<sup>5</sup>Solubility data were provided to staff in Cimarron's March 21, 1988 response to specific questions about the onsite disposal amendment request and more recently on September 30, 1993 in a letter to Gary Comfort, NMSS. Analyses show uranium solubility from 6% to 40%, with an average of about 20%.

<sup>6</sup>Finding of No Significant Impact and Opportunity for a Hearing Amendment of Special Nuclear Material; Cimarron Corp., Crescent, OK. 59 Federal Register 13513, 22 March 1994.

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*Cimarron Response:* Cimarron acknowledges remaining in situ material must be surveyed in accordance with the survey plan and intends to survey the remaining material in accordance with the plan. The results will be provided to NRC for approval prior to placing the material in the cell. Cimarron considers the requirement for NRC approval prior to material placement to be burdensome, unnecessary and inconsistent with the concept of an approved plan. Cimarron wishes to discuss this issue with NRC.

**Section 11.3.** Explain the purpose of conducting the final verification survey prior to covering the disposal cell with clean material.

*Cimarron Response:* Cimarron intended this survey to provide documentation about the surface exposure rates and concentrations prior to covering the disposed material with four feet of clean fill. Cimarron's practice in the past has been to conduct a survey prior to backfilling areas excavated during remediation. Although Cimarron is not aware of compelling technical reasons for such a survey where material has been relocated for backfilling, Cimarron assumed such a survey would provide useful information.

**Section 11.7.** The final survey of the cell cap should be performed in accordance with NUREG/CR-5849 and results reported to NRC.

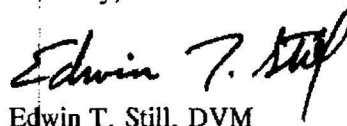
*Cimarron Response:* Cimarron believes the comment is intended to refer to Section 11.6. Cimarron acknowledges this survey will be performed in accordance with guidance in Draft NUREG/CR-5849 and the results reported in the final status survey.

**Section 12.0.** Survey results intended to demonstrate a site is suitable for unrestricted use should follow the guidance in NUREG/CR-5849 and must be submitted to NRC for review and approval.

*Cimarron Response:* Cimarron acknowledges this requirement and intends to conduct final status surveys in accordance with guidance in Draft NUREG/CR-5849 and submit the survey report to NRC. As NRC is aware, Cimarron has in the past submitted such reports for NRC review and approval prior to backfilling remediated areas, such as the former burial ground.

In summary, Cimarron believes the remediation work carried out to date at the Cimarron uranium facility complies fully with the intent of guidance in Draft NUREG/CR-5849, even though the work began years before the issuance of Draft NUREG/CR-5849. Cimarron assures NRC that Cimarron will continue to carry out remediation consistent with guidance in that document. We hope this assurance enables the prompt approval of the proposed disposal plan.

Sincerely,



Edwin T. Still, DVM  
Vice President and Director

ETS:lld

copy to: D. Fauver - NRC  
J. Kegin/K. Morgan  
R. Smith  
J. Stauter