

CIMARRON CORPORATION

P.O. BOX 25861 • OKLAHOMA CITY, OKLAHOMA 73125

September 21, 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

Dear Mr. Austin:

This responds to your August 12, 1994 letter concerning matters related to disposal of Option 2 Stockpiled Soil at the Cimarron Facility. For your information, Dr. Still has retired from Kerr-McGee Corporation effective September 1, 1994, and further correspondence regarding Cimarron should be addressed to Dr. John C. Stauter.

Your first item confirms the Kd sampling and analysis methods approval and requests the results for NRC review. The results were provided to you by correspondence dated August 8, 1994. For convenience, an additional copy is enclosed (Attachment 1). We understand the NRC has accepted the results.

The second item consists of three numbered additional comments regarding the Pile Survey Report and Kerr-McGee's July 7, 1994 letter. The comments are addressed below as numbered in your letter.

1. Comment 1 concerns two areas that did not conform with the averaging and hot-spot criteria in Draft NUREG/CR-5849. You state these two areas should be either 1) excavated with the material disposed "at an offsite low-level waste disposal facility" or 2) further in-situ sampling be done "to more accurately define the uranium concentration."

Cimarron plans to undertake further in-situ sampling and analysis for the areas that did not pass the Draft NUREG/CR-5849 maximum and averaging methodology. Further sampling, in fact, had been planned from the start for the remaining in-situ contamination for the location at the northeast corner of the East pile that indicated a concentration greater than three times the guideline value and for remaining

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site locations in-situ with contamination that have not yet been remediated. In any event, Cimarron commits to excavating and drumming soil that exceeds the derived guideline maximum and averaging concentration criteria and to disposing this soil ultimately at an off-site licensed facility. Given our commitment above, we make the following points:

First Cimarron believes the Commission and the staff are aware that Cimarron does not have access to an "offsite low-level waste disposal facility" developed, licensed and operated pursuant to requirements enacted under the Low-Level Radioactive Waste Policy Act. Even if a facility were available, Cimarron does not believe the one area within the stockpiled soil that failed the averaging methodology in Draft NUREG/CR-5849 requires excavation and drumming for disposal at such a facility.

Second, average uranium concentration in this more than 300,000 cubic feet of soil is at least a factor of two below the most limiting concentration under the Option 2 criteria. More than 600 individual samples, representing the entire volume, have been analyzed and show the average uranium concentration is less than 50 pCi/g. Furthermore, had NRC followed the statistical methods established by the U. S. EPA in SW-846 for determining whether a material is hazardous waste, these hot spots would have been insignificant and disposal of the entire volume into the cell should be appropriate.

Third, the guideline concentration used in the averaging methodology was the concentration limit for 100 percent soluble uranium -- 100 pCi/g. Cimarron has submitted the results of leaching analyses, of simulated lung fluid solubility analyses and Kd determinations that show the average solubility is well below 50 percent. We acknowledge NRC staff, in the absence of an "NRC approved" solubility test, discounts these results. But the analyses confirm what is apparent -- the uranium in the soil is mostly insoluble.

Fourth, the averaging methodology in the Draft NUREG/CR-5849 has no rational basis. On one hand, units of concentration per mass or volume, i.e., pCi/g, are somehow translated into criteria in units of area, i.e., m². No explanation is provided, and a sensible explanation is not evident. On the other hand, assuming the averaging methodology had a foundation, the NUREG provides no basis for applying the methodology over a given area or volume. The square meters can be defined in any fashion, apparently, and the results can be made to fit almost any convenient concentration.

For these reasons Cimarron made every effort to convince the Commission that disposing of all the stockpiled soil as proposed was appropriate.

2. Comment 2 concerns quality control analyses of stockpiled soil samples randomly selected and submitted to an independent laboratory. The results of analyses of two percent of the soil samples for uranium, plutonium, thorium and radium are provided in Attachment 2. The analyses, performed by Teledyne Brown Engineering Environmental Services, confirm the absence of plutonium contamination that has been demonstrated through three decades of environmental sampling and validate the concentration levels obtained by Cimarron for uranium and thorium and daughters.

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Cimarron also collected the additional "three random soil samples from the pile." Those results are provided in Attachment 3.

3. Comment 3 asks Cimarron to provide individual sample results and the methods used to perform the averaging reported to the NRC. The averaging was done by Dr. Still, who, as we noted earlier, has retired. A copy of his hand-written notes and calculations are provided in Attachment 4. You will note the sheets detail the locations in the piles and the concentration values for those locations and that the methods were as defined in Draft NUREG/CR-5849. Dr. Still is available to answer any questions you have about this work.

4. Your final item asks that Cimarron address an apparent bias between analyses performed by ORISE and Cimarron for uranium concentration exceeding 100 pCi/g and provide any proposed adjustment to the results reported in the Soil Pile Survey Report.

Cimarron staff previously had become aware the facility soil counting system was biased low for soil concentrations exceeding 100 pCi/g. Cimarron determined the bias at higher concentrations was because the system had been calibrated using a low level uranium standard of about 30 pCi/g. The low level standard was used because the Option 1 criterion is 30 pCi/g and Cimarron wanted the best precision possible at this point.

Cimarron has recalibrated the soil counting system using a uranium source of about 300 pCi/g. Following the recalibration, samples in the higher Uranium ranges were recounted and the results compare very well with the results reported by ORISE.

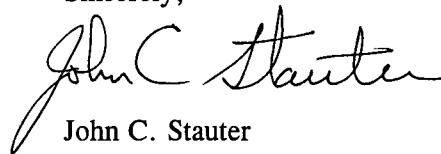
Cimarron does not believe adjustment of the results reported in the Pile Survey document is necessary or would be meaningful. As evident, the bias that existed was for concentrations greater than 100 pCi/g. Only 2 of 200 samples from the North pile exceeded 100 pCi/g and increasing these values by the amount of the apparent bias (33 percent) does not cause exceedance of the Draft NUREG/CR-5849 averaging criterion. In the East pile, only 11 of 433 samples exceeded 100 pCi/g and these were in two discrete areas. As noted earlier, one of these areas exceeded the guideline maximum criteria and further sampling will be done. The other area exceeded the averaging methodology criterion and further sampling will be done. Cimarron of course will propose any adjustment to the results deemed appropriate upon completion of the recounting of the archived samples and the resampling of the East pile areas.

Cimarron takes this occasion to remind the Commission and the Staff of the urgent need for issuing the amendment for disposing the Option 2 soil on site. Cimarron cannot continue to operate around the stockpiled soil and proceed with completion of the facility decontamination activities in a cost effective and efficient manner. The application has been under review for at least six years, each request by the Staff has been fully addressed and accommodated. We believe that our commitment to ship non-specification material off-site (Item 1 above) and data in the record support prompt issue of the amendment. Cimarron is available to provide any additional information that may be helpful. Please

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contact me at (405) 270-2623 if you have questions.

Sincerely,

A handwritten signature in cursive script, reading "John C. Stauter". The signature is written in dark ink and is positioned above the printed name.

John C. Stauter

JCS/kc .

Attachments - 4 sets

cc:

Kegin/Morgan/Rice