

UNITED STATES NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

AUG 1 2 1994

Docket No. 70-0925 License No. SMN-928

Mr. Edwin Still Environmental and Health Management Division Kerr-McGee Corporation Kerr-McGee Center Oklahoma City, OK 73125

Dear Mr. Still:

The Nuclear Regulatory Commission staff has reviewed two Kerr-McGee submittals related to Kerr-McGee's license amendment request to dispose of contaminated soil on the Cimarron site: 1) a July 20, 1994, letter providing the sampling and analysis methods for determining the distribution coefficient (K_d) in the soil earmarked for onsite disposal; and 2) a July 21, 1994, letter providing Kerr-McGee's responses to NRC's July 7, 1994, comments on Kerr-McGee's June 15, 1994, report, "Radiological Survey Results of Option 2 Stockpiles," (Pile Survey Report).

The sampling and analysis methods for determining the K_d of the soil earmarked for disposal are acceptable to NRC. After completing the analyses, please provide the results for NRC review.

NRC has additional comments on the Pile Survey Report and on Kerr-McGee's July 7, 1994, letter:

- 1. Kerr-McGee's response to NRC comment # 3 indicates that the pile areas that failed the averaging or hot-spot criteria will be excavated and resurveyed with the "facility survey probe". NRC does not believe that it is appropriate to excavate soil that has been demonstrated to exceed the Option 2 limit using high quality, quantitative, analyses (gamma-spectroscopy), and resurvey the excavated soil using low-quality, qualitative analyses (gamma-probe of soil in the bucket of front-end loader) to verify the high-quality results. Kerr-McGee should either 1) excavate the areas that failed the averaging and hot-spot criteria during the final survey, and dispose of the material at an offsite lowlevel waste disposal facility, or 2) propose additional, in-situ, sampling of the areas to more accurately define the uranium concentration. If the analyses of the additional in-situ samples, combined with the data in the Pile Survey Report, also indicate that the areas of concern fail the averaging or hot-spot criteria, the areas should be remediated and disposed of at an offsite, low-level waste disposal facility.
- 2. Kerr-McGee's response to NRC comment #4 indicates that the quality control samples required in Kerr-McGee's April 19, 1994, "On-Site

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Mr. Edwin Still

Disposal Plan" (Disposal Plan) have not yet been analyzed. Section 6.6.3 of the Disposal Plan states that "...not less than two percent of the samples will be randomly selected,... and analyzed for uranium, thorium, plutonium, and naturally occurring radionuclides". In addition, in Section 5.7.2 of the

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and naturally occurring radionuclides". In addition, in Section 5.7.2 of the Disposal Plan, Kerr-McGee commits to collect three random soil samples from the pile, and analyze the samples for uranium, thorium, plutonium, and associated daughters. Please submit the results of the analyses required in Sections 6.6.3 and 5.7.2 of the Disposal Plan. These results will be used, in part, to demonstrate that the plutonium concentration in the soil earmarked for disposal does not exceed 1 pCi/g, a limitation recommended in the "Environmental Assessment of a Proposed Disposal of Uranium-Contaminated Soil at the Cimarron Uranium Plant," March 1994.

3. Please provide the individual sample results, and the methods, used to perform the averaging reported in the table submitted in response to NRC comment # 3.

NRC is also reviewing the draft report of the results of the confirmatory survey of the stockpiled soil earmarked for disposal. The confirmatory survey was conducted by the Oak Ridge Institute for Science and Education (ORISE) on May 4-5, 1994. The draft report should be finalized by August 19, 1994. Although the final report may provide additional findings, one issue was raised in the draft report that should be addressed at this time. This issue relates to the accuracy of the Kerr-McGee uranium analyses when the uranium concentration exceeds 100 pCi/g. ORISE found a statistically significant bias between the Kerr-McGee and ORISE results, at uranium concentrations above 100 ORISE results were 33% higher than the Kerr-McGee results. Enclosed pCi/q. is a copy of the table from the draft ORISE report that contains the results of the split samples that lead ORISE to suggest that a bias exists. Please review the enclosure and provide NRC with Kerr-McGee's analysis of the cause of the apparent bias and any proposed adjustment to the results reported in Kerr-McGee's Pile Survey Report.

If you have any questions, please contact me on (301) 415-7297 or David N. Fauver on (301) 415-6625.

Sincerely, (Original Signed by _____) John H. Austin, Chief Low-Level Waste and Decommissioning Projects Branch Division of Waste Management Office of Nuclear Material Safety and Safeguards

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TABLE 4

RADIONUCLIDE CONCENTRATIONS IN SOIL SAMPLES—CONFIRMATORY ANALYSES NORTH AND EAST SOIL PILES KERR MCGEE CORPORATION, CIMARRON FACILITY CRESCENT, OKLAHOMA

	Depth	Radionuclide Concentrations (pCi/g)								
Location ^a		U-235	U-238	Total Uranium				Total Thorium		
				ESSAP	Cimarron	Ac-228	11-208	ESSAP	Cimarron	
82.5N, 167.5E	35-50 cm	14.5 ± 0.3^{b}	85.4 ± 3.6	420	293	1.4 <u>+</u> 0.4	0.4 <u>+</u> 0.1	2.5	2	
95N, 180E	85-100 cm	1.4 ± 0.2	8.1 ± 0.3	40	51	13.6 <u>+</u> 1.0	4.3 ± 0.3	26	21	
105N, 170E	185-200 cm	21.1 ± 0.5	110.7 ± 5.9	590	442	0.7 ± 0.4	0.4 ± 0.1	1.8	3	
110N, 175E	135-150 cm	5.8 ± 0.2	37.1 ± 2.4	170	137	1.2 ± 0.3	0.3 <u>+</u> 0.1	2.0	1	
110N, 175E	185-200 cm	6.1 ± 0.2	29.9 ± 3.0	170	128	1.0 ± 0.3	0.3 ± 0.1	1.8	1	
140N, 122E	35-50 cm	0.4 ± 0.1	5.9 <u>+</u> 1.4	15	14	1.0 ± 0.3	0.3 ± 0.1	1.8	2	
140N, 122E	135-150 cm	4.2 ± 0.2	21.9 ± 1.9	120	90	1.1 ± 0.3	0.4 ± 0 1	2.2	<1	
145N, 139E	185-200 cm	1.0 ± 0.1	8.7 <u>+</u> 1.9	31	29	1.5 <u>+</u> 0.4	0.5 ± 0.1	2.9	2	
167.5N, 137.5E	35-50 cm	4.4 ± 0.2	12.7 ± 2.4	56	79	1.3 ± 0.4	0.5 ± 0.1	2.7		
170N, 124E	85-100 cm	1.8 ± 0.1	9.4 <u>+</u> 1.8	50	42	1.0 ± 0.4	0.4 ± 0.1	2.1	1	

a .b h:\cssap\reports\crescent\crescent.001

^aThese samples were provided to ESSAP by the licensee. Refer to Figures 3 and 4. ^bUncertainties represent the 95% confidence level, based only on counting statistics.

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Kerr McGee Corporation-Cimarron - July 8, 1994