



# KERR-McGEE NUCLEAR CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

December 6, 1974

40-8027  
ENVIRON. File Cy.



Mr. J. E. Rothfleisch  
Materials Branch  
Directorate of Licensing  
U.S. Atomic Energy Commission  
Washington, D.C. 20545

Dear Mr. Rothfleisch:

Please refer to our recent discussions in regard to the Draft Environmental Statement for our Sequoyah Facility. The tables (equivalent to tables XIII - XIX, ER Supp. #1) on Environmental Water Samples (Surface and Seepage Wells) have been revised to reflect the same units as the data submitted in Supplement #1, June 1972.

The quantity of calcium fluoride to be permanently buried on the site would be, as stated on Page 129 of ER Supplement #1, approximately 20,000 tons composed of calcium bifluoride and some calcium carbonate and some unreacted lime. This number is determined by extrapolating the rate of fluoride generation shown on Table 11 of 11.1 MT/mo. X 12 X 78/38 to give 273.4 MT/yr or 300 short tons per year. Based upon our current projections, we would expect to operate at half capacity for 5 years, at capacity for 5 years, and a double initial design capacity for 20 years for the equivalent of 47.5 years of capacity which amounts to 14,280 short tons of calcium fluoride. The quantity of lime carbonate and water remaining in the settled sludge was arbitrarily established as 30% resulting in the calculated 20,000 tons.

As described to you, the original estimate of 2.3 million gallons of effluent per day was based upon the capacity of the 16 inch water supply line which tends to become fouled with fungus, algae and scale gradually reducing its delivery to approximately 1200 gallons per day until restored by cleaning. The nominal rate given on Page 3 of my letter of September 13 is the average condition expected.



2420

FROM: **Kerr-McGee Nuclear Corporation**  
**Oklahoma City, OK**

DATE OF DOCUMENT  
**Dec. 6, 1974**

DATE RECEIVED  
**Dec. 10, 1974**

NO **2420**

LTR ☒ MEMO ☐ REPORT ☐ OTHER ☐  
**X**

TO

ORIG ☐ CC ☐ OTHER ☐  
**1**

**J.E. Rothfleisch**

ACTION NECESSARY ☐ CONCURRENCE ☐ DATE ANSWERED  
NO ACTION NECESSARY ☐ COMMENT ☐ BY

CLASSIF **U** POST OFFICE  
REG NO

FILE CODE  
**Docket No. 40-8027**

DESCRIPTION: (Must Be Unclassified)

**Ltr. trans:**

REFERRED TO	DATE	RECEIVED BY	DATE
<b>Chitwood</b>	<b>12-18</b>		
<b>2 extras</b>			

**reg file cy**

ENCLOSURES

**Environmental Water Samples**

**PDR**  
**LPDR**  
**ROTHFLEISCH (adv. cy)**  
**J. Shafer**  
**Miller**

REMARKS

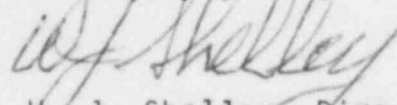
**DO NOT REMOVE**

**2420 seb**

Mr. J. E. Rothfleisch  
December 6, 1974  
Page Two

Please let me know if I can supply additional information.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "W. J. Shelley".

W. J. Shelley, Director  
Regulation and Control  
Kerr-McGee Nuclear Corporation

WJS:m1

Attachment

1973 ENVIRONMENTAL WATER SAMPLES  
SURFACE  
UNITED STATES TESTING RESULTS  
RADIOACTIVE UNITS,  $\alpha$ ,  $\beta$ , Ra, U -  $\mu\text{Ci}/\text{ml} \times 10^{-8}$   
CHEMICAL UNITS  $\text{NO}_3^1$ , F - ppm

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov	Dec
2201 Ill. River Upstream	Nitrate	<0.2	1.4	0.6	0.4	0.9	0.3	0.9	0.1	0.41	0.4	0.4	0.4
	Fluoride	<0.5	0.5	<0.5	0.7	<0.5	<0.5	2.4	<0.5	<.5	<0.5	2.4	0.8
	Gross $\alpha$	.9	1.3	.54	.8	1.2	.4	1.0	.5	<.5	<.38	<.38	<.8
	Gross $\beta$	2.1	1.39	<1.8	1.4	<1.3	<1.3	1.3	1.4	<1.4	<.57	<.59	<2.2
	Uranium	2.5	.7	.7	.7	1.1	2.3	.8	2.2	5.	.7	2.3	7.4
	226 Ra			.13			.05			.06			.016
2202 Ill. River Downstream	Nitrate	<0.2	0.6	0.5	0.6	0.6	0.2	0.4	0.1	3.3	0.4	0.2	0.4
	Fluoride	<0.5	0.6	<0.5	0.8	0.7	0.5	<0.5	0.5	0.93	<0.5	1.4	1.1
	Gross $\alpha$	1.2	1.4	3.0	2.2	2.1	.4	1.2	13.8	5.2	.77	.86	.8
	Gross $\beta$	2.4	1.39	1.8	1.4	1.3	1.3	1.3	3.4	1.4	.72	1.62	2.2
	Uranium	.7	1.3	1.7	1.6	3.4	1.5	3.1	19.4	30.2	--	2.3	2.6
	226 Ra			.04			.05			.05			.08
2203 Ark. River Upstream	Nitrate	<0.2	1.1	0.8	0.5	0.4	0.3	0.7	0.4	0.23	0.6	0.2	0.4
	Fluoride	<0.5	2.1	0.6	<.6	0.5	<0.5	<0.5	0.6	0.78	0.7	1.1	1.2
	Gross $\alpha$	1.0	9.9	.9	.5	1.5	.4	1.3	.9	.5	.38	.72	1.4
	Gross $\beta$	2.2	1.1	1.8	1.4	1.3	1.3	1.3	1.4	1.4	5.7	1.4	2.2
	Uranium	.7	.7	1.6	.7	1.4	1.1	1.1	1.7	2.	.7	2.3	1.9
	226 Ra			.04			.06			.03			.05
2204 Ark. River Downstream	Nitrate	<0.2	0.8	0.8	0.6	0.4	0.3	0.6	0.4	0.25	0.6	0.2	0.4
	Fluoride	<0.5	2.4	<0.5	0.8	0.5	0.5	1.2	0.5	0.55	0.5	0.8	2.2
	Gross $\alpha$	.9	.9	1.4	.5	1.2	.6	1.4	1.2	.5	1.76	.38	.8
	Gross $\beta$	2.1	1.39	1.8	1.4	1.3	1.3	1.3	1.4	1.4	2.3	.81	2.2
	Uranium	.7	.7	.7	1.5	1.1	.9	1.2	1.2	--	3.4	2.4	4.
	226 Ra			--			.04			.03			.12

## SURFACE-CONTINUED

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2205	Nitrate	5.1	1.6	1.9	1.1	0.2	<0.2	0.2	0.2	0.27	4.6	1.0	0.7
	Fluoride	<0.5	1.4	<0.5	0.6	0.6	<0.5	0.8	<0.5	1.0	<0.5	0.7	0.6
Farm Pond	Gross $\alpha$	.1	1.3	1.3	.7	1.5	.6	1.4	.6	<.5	<.38	.54	.8
East	Gross $\beta$	1.3	1.39	<1.8	1.4	<1.3	1.3	1.3	1.4	<1.4	<.57	<.59	<2.2
	Uranium	.7	.7	.7	.7	1.1	1.7	.9	1.2	.7	.7	2.4	3.5
	226 Ra			.08			.06			.03			.03
2206	Nitrate	0.6	0.9	0.4	<0.4	<0.1	<0.2	0.1	0.9	0.35	0.1	0.4	0.4
	Fluoride	0.5	1.3	<0.5	0.8	0.5	<0.5	1.8	<0.5	0.75	<0.5	<0.5	<0.5
Farm Pond	Gross $\alpha$	1.3	3.5	.45	.8	2.0	.4	1.7	1.	<.5	<.38	<1.13	1.6
South	Gross $\beta$	2.5	1.2	<1.8	1.4	<1.3	1.3	1.3	1.10	<1.4	<.57	.99	<2.2
	Uranium	21.4	1.3	1.9	1.1	1.3	.7	1.9	.7	.7	2.7	2.6	1.9
	226 Ra			.07			.04			.03			.13
2207	Nitrate	2.4	2.5	3.0	--	5.0	1.8	0.8	1.1	6.2	2.0	2.4	2.0
	Fluoride	0.9	0.9	0.9	--	0.7	0.8	1.0	0.8	0.75	<0.5	1.3	1.7
Facility	Gross $\alpha$	47.3	53.4	64.	32.	42.	55.	57.7	146.	194.5	98.56	17.93	.9
Effluent	Gross $\beta$	10.0	2.2	70.0	1.4	<1.3	6.8	1.3	1.4	31.5	106.49	20.72	<2.2
	Uranium	40.9	46.9	65.7	47.8	45.9	50.2	70.4	134.	234.5	83.8	95.8	68.7
	226 Ra			--			.04			.03			--
2208	Nitrate	<0.2	0.2	0.6	0.6	0.6	0.6	0.7	0.5	0.58	0.5	0.2	0.4
	Fluoride	<0.5	0.9	<0.5	0.6	<0.5	<0.5	1.0	<0.5	<.5	<0.5	<0.5	1.0
Tenkiller	Gross $\alpha$	.6	.4	.41	.8	1.0	.4	.9	3.8	<.5	<.38	.5	1.6
Raw Water	Gross $\beta$	1.8	1.39	1.8	1.4	<1.3	1.3	1.3	1.4	1.4	.77	.95	<2.2
	Uranium	1.3	2.	.9	.7	.7	2.6	5.4	.7	1.9	.7	2.2	2.6
	226 Ra			.02			.07			.03			.05
2209	Nitrate	0.3	0.1	0.3	<0.4	0.4	<0.2	0.1	0.1	0.10	0.4	0.3	0.4
	Fluoride	<0.5	1.6	<0.5	0.8	<0.5	<0.5	<0.5	0.5	0.65	<0.5	1.3	0.5
Salt Fork	Gross $\alpha$	.8	.6	.45	.7	1.4	.4	1.0	2.4	<.5	3.24	1.08	2.3
River	Gross $\beta$	2.0	1.39	<1.8	1.4	<1.3	1.3	1.3	1.4	<1.4	6.04	1.04	<2.2
	Uranium	1.	.7	1.	.7	.8	2.	7.7	.7	3.2	1.2	2.2	2.1
	226 Ra			--			.06			.03			.02
Total Rainfall for Month (Inches)		2.90	2.25	8.54	8.55	5.46	12.7	2.78	2.54	8.10	4.71	7.36	4.00

<sup>1</sup>Nitrate reported as nitrogen on all tables.

1973 ENVIRONMENTAL WATER SAMPLES  
SEEPAGE WELLS  
UNITED STATES TESTING RESULTS  
RADIOACTIVE UNITS,  $\alpha$ ,  $\beta$ , Ra, U- $\mu$ Ci/ml  $\times 10^{-8}$   
CHEMICAL UNITS,  $\text{NO}_3^-$ , F, -ppm

LOCATIONS	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2301	Nitrate	39.	38.	33.	21.	14.	3.7	2.4	1.3	--	--	0.1	0.1
	Fluoride	1.1	2.0	1.6	1.4	0.7	0.8	1.8	1.6	--	--	2.6	2.4
Basin No. 1	Gross $\alpha$	21.2	5.3	.25	1.7	12.0	9.5	3.0	26.0	--	--	.59	1.6
North	Gross $\beta$	3.0	1.39	<1.8	1.4	<1.3	1.3	1.3	1.4	--	--	.95	<2.2
	Uranium	8.8	9.4	4.6	2.4	9.1	9.2	3.7	18.8	--	--	4.5	2.5
	226 Ra			.03			.04						.02
2302	Nitrate	26.	67.	70.	104.	24.	22.	32.8	18.0	24.6	17.5	6.0	6.0
	Fluoride	<0.5	1.0	0.9	1.2	1.0	0.7	1.3	1.0	1.0	<0.5	1.7	1.2
Basin No. 1	Gross $\alpha$	1.8	1.0	.8	1.5	2.3	1.1	2.4	1.5	2.3	6.71	.95	1.
South	Gross $\beta$	3.	1.39	<1.8	1.4	<1.3	1.3	1.3	1.4	<1.4	7.34	.72	<2.2
	Uranium	.8	2.	2.5	.7	1.1	1.4	2.1	.7	6.5	2.8	7.7	2.7
	226 Ra			.09			.06			.03			.10
2303	Nitrate	48.	44.	145.	29.	11.5	1.9	3.4	3.9	4.5	6.0	2.3	2.9
	Fluoride	--	<0.5	1.1	0.5	1.0	0.7	2.2	1.4	1.3	0.9	1.5	0.9
Raffinate	Gross $\alpha$	.6	7.4	.59	.9	2.6	2.7	2.1	2.4	1.5	.54	.38	.8
Pond No. 1	Gross $\beta$	1.8	1.39	1.8	1.4	1.3	1.3	1.3	1.4	1.4	.57	.59	2.2
	Uranium	.7	2.	.7	1.6	3.	3.9	9.4	.7	2.4	1.8	10.4	2.2
	226 Ra			.07			.06			.03			.10
2305	Nitrate	0.3	0.3	<0.4	0.6	0.1	0.2	0.2	0.3	.47	0.4	0.1	0.1
	Fluoride	6.5	1.3	1.1	0.7	0.7	0.9	1.4	1.0	1.2	0.6	0.5	0.6
Raffinate	Gross $\alpha$	2.8	7.6	3.1	2.2	3.8	1.7	10.4	2.6	<.5	.81	.38	<.8
Pond No. 1	Gross $\beta$	4.0	1.39	1.8	1.4	<1.3	<1.3	1.3	1.4	<1.4	1.53	<.59	2.2
	Uranium	3.	2.7	1.5	3.	3.4	4.7	2.7	2.7	2.	3.	4.9	1.9
	226 Ra			.04			.01						--

## SEEPAGE WELLS-Continued

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2306 Carlisle F. Pond South	Nitrate	1.7	1.3	--	0.7	0.7	0.8	0.4	0.3	.16	0.3	1.8	1.8
	Fluoride	<0.5	0.5	--	<0.5	2.0	0.5	0.6	0.7	.55	<0.5	1.1	0.7
	Gross $\alpha$	.8	1.4	.68	.5	.9	.7	1.7	1.2	.5	2.61	.9	1.
	Gross $\beta$	2.	.2	1.8	1.4	1.3	1.3	1.3	1.4	1.4	3.42	.9	2.2
	Uranium 226 Ra	.7	.7	--	12.4	.7	1.	1.1	1.7	2.	4.2	3.9	2.5
2307 Fault Well	Nitrate	0.4	0.2	--	<0.4	0.4	<0.2	0.8	0.4	.31	0.6	0.2	0.4
	Fluoride	2.8	3.0	--	2.5	2.5	1.8	3.4	2.6	2.6	2.1	2.4	2.7
	Gross $\alpha$	.5	.03	.86	.5	.4	.4	.5	3.3	.5	.38	.72	.9
	Gross $\beta$	1.7	1.39	1.8	1.4	1.3	1.3	1.3	1.4	1.4	1.17	.9	2.2
	Uranium 226 Ra	2.7	2.	--	3.	2.3	4.6	3.4	5.5	2.5	2.6	4.2	4.8
2308 Residence Well	Nitrate	0.2	0.1	0.9	0.3	0.7	0.5	0.6	0.2	--	0.2	0.1	0.1
	Fluoride	<0.5	<0.5	<0.5	1.4	0.7	<0.5	0.9	<0.5	--	<0.5	0.9	<0.5
	Gross $\alpha$	1.8	.8	.72	1.1	1.2	.4	.9	.5	--	<.38	1.26	1.4
	Gross $\beta$	3.0	1.39	1.8	1.4	1.3	1.3	1.3	1.4	--	<.57	1.17	<2.2
	Uranium 226 Ra	.7	4.7	.7	8.7	.9	1.07	1.2	.7	--	.8	1.7	1.9
2309 Carlisle School Well	Nitrate	<0.2	0.4	<0.4	1.2	0.5	<0.2	0.3	0.1	.38	0.3	0.1	0.1
	Fluoride	<0.5	0.7	<0.5	1.7	0.6	0.8	0.6	<0.5	0.6	<0.5	2.4	0.7
	Gross $\alpha$	.5	.03	.72	.5	1.4	1.1	2.1	1.8	.7	<.38	.81	1.1
	Gross $\beta$	1.7	1.39	1.8	1.4	1.3	1.3	1.3	1.4	1.4	.86	1.04	2.2
	Uranium 226 Ra	.9	3.4	1.	.7	1.2	1.7	1.5	6.7	.7	1.3	2.4	1.7
2310 Raffinate Pond No. 2	Nitrate	0.3	0.7	<0.4	0.5	0.4	<0.2	<0.1	0.1	.34	0.4	2.0	2.0
	Fluoride	<0.5	0.8	0.7	0.6	1.8	0.7	1.4	1.1	1.1	0.6	0.9	1.2
	Gross $\alpha$	2.3	1.2	1.9	1.6	2.0	2.0	3.0	1.4	.5	.38	.81	.8
	Gross $\beta$	3.5	1.39	1.8	1.4	1.3	1.3	1.3	1.4	1.4	5.7	.9	2.2
	Uranium 226 Ra	1.2	1.3	1.	2.3	1.3	1.5	2.1	3.8	2.	1.7	4.4	1.5

## SREPAGE WELLS-Continued

LOCATION	ANALYSIS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2311	Nitrate	10.	12.	6.6	3.8	2.5	1.6	0.3	0.1	.14	0.1	0.1	0.1
	Fluoride	<0.5	<0.5	<0.5	0.9	1.8	1.1	1.2	<0.5	<0.5	<0.5	1.5	<0.5
Raffinate	Gross $\alpha$	3.4	1.4	.99	1.3	2.3	.8	4.2	2.6	.5	1.04	1.35	.8
Pond No. 2	Gross $\beta$	4.6	1.39	1.8	1.4	1.3	1.3	1.3	1.4	1.4	1.76	2.03	.22
	Uranium	2.	1.3	.7	1.9	1.3	2.1	2.1	3.	2.	2.6	5.	2.3
	226 Ra			--			.04			.02			.02
2312	Nitrate	<0.1	0.2	<0.4	<0.4	0.3	0.3	0.6	0.1	.07	0.1	<0.1	0.1
	Fluoride	<0.5	0.5	0.5	0.8	0.8	1.2	1.1	0.8	0.8	<0.5	0.7	2.1
Raffinate	Gross $\alpha$	1.4	.8	1.3	.6	1.	1.8	2.1	2.2	.5	.99	.86	1.1
Pond No. 2	Gross $\beta$	2.6	1.39	1.8	1.4	1.3	1.3	1.3	1.4	1.4	1.94	1.71	2.2
	Uranium	.7	1.3	2.	15.7	.7	4.	1.2	2.2	.7	2.1	3.	1.7
	226 Ra			.03			.06			.04			.01
2313	Nitrate	0.1	0.2	1.9	5.5	3.2	2.9	3.6	4.3	.70	0.4	0.4	0.3
	Fluoride	2.6	0.6	<0.5	1.5	0.7	0.6	<0.5	<0.5	<0.5	<0.5	0.9	0.8
Raffinate	Gross $\alpha$	4.2	2.9	2.2	2.5	2.4	.7	2.3	1.8	.5	.41	.30	1.2
Pond No. 2	Gross $\beta$	5.4	1.39	1.8	1.4	1.3	1.3	1.3	1.4	1.4	1.13	.59	2.2
	Uranium	3.7	2.6	1.9	3.3	2.9	1.9	1.5	1.7	.7	4.6	3.7	1.8
	226 Ra			.09			.03			.03			.04
2314	Nitrate	0.7	0.3	3.3	1.9	0.7	0.2	0.3	0.4	.56	0.6	0.1	0.4
	Fluoride	1.2	0.9	<0.5	0.8	0.7	0.8	0.6	0.8	0.6	0.6	0.7	0.7
Raffinate	Gross $\alpha$	4.3	4.2	2.6	2.4	2.9	2.7	3.0	2.9	1.4	.38	.68	1.2
Pond No. 2	Gross $\beta$	5.5	1.39	1.8	1.4	1.3	1.3	1.3	1.4	.5	.68	.59	2.2
	Uranium	2.7	2.7	2.1	8.7	2.1	3.3	2.7	2.	2.7	7.4	5.	1.6
	226 Ra			.07			.04			.03			.01
2315	Nitrate	22.	34.	24.	16.	42.	12.6	11.0	21.	12.6	15.9	4.0	10.0
	Fluoride	<0.5	0.8	<0.5	0.6	1.7	1.1	<0.5	<0.5	0.5	<0.5	2.0	0.6
Raffinate	Gross $\alpha$	.6	.03	.72	.6	1.6	.8	1.9	1.2	.5	1.85	<.38	.9
Pond No. 2	Gross $\beta$	1.8	1.39	<1.8	1.4	<1.3	1.3	1.3	1.4	1.4	2.30	<.59	<2.2
	Uranium	.7	.7	1.	1.9	1.	1.9	1.5	.7	3.	5.4	5.2	1.9
	226 Ra			.04			.06			.03			.07

## SEEPAGE WELLS-Continued

LOCATION	ANALYSIS	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
2316 Settling Basin No. 1	Nitrate	0.1	<0.2	1.0	0.7	.08	0.2	<0.1	0.1
	Fluoride	0.6	0.6	1.0	0.6	<0.5	0.5	1.5	<0.5
	Gross α	2.5	.7	3.5	1.1	<.5	.59	.68	1.2
	Gross β	<1.3	1.3	1.3	1.4	<1.4	1.31	<.59	<2.2
	Uranium 226 Ra	3.7	2.4	2.9	4.0	.7	5.4	2.2	2.5
2317 Raffinate Pond No. 2	Nitrate	0.7	< 0.2	1.2	0.4	.04	0.1	<0.1	0.1
	Fluoride	1.6	0.7	<0.5	0.7	0.6	<0.5	1.7	<0.5
	Gross α	2.6	1.4	3.0	1.9	<.5	<.38	1.04	1.6
	Gross β	<1.3	1.3	1.3	1.4	<1.4	.72	<.59	<2.2
	Uranium 226 Ra	1.1	1.3	1.3	2.8	.7	4.6	.2	2.3
2318 Raffinate Pond No. 2	Nitrate	0.7	0.2	0.6	0.5	.05	0.2	<0.1	0.1
	Fluoride	1.6	0.6	0.6	0.8	<0.5	< 0.5	1.9	1.0
	Gross α	2.1	1.6	2.3	.5	.0	.38	.54	.8
	Gross β	<1.3	1.3	1.3	1.4	<1.	1.62	.77	<2.2
	Uranium 226 Ra	1.1	1.5	1.9	2.8	.7	6.4	4.	2.7
2319 Raffinate Pond No. 2	Nitrate	0.1	<0.2	0.6	0.1	.12	0.1	0.1	0.1
	Fluoride	1.2	0.7	0.7	< 0.5	1.0	< 0.5	<0.5	0.6
	Gross α	2.2	.6	2.1	1.5	.5	.38	.81	.8
	Gross β	<1.3	1.3	1.3	1.4	1.4	1.08	<.59	<2.2
	Uranium 226 Ra	.7	2.6	1.3	2.3	2.	5.7	1.9	1.9

<sup>1</sup>Nitrate reported as Nitrogen on all tables.

Wells listed above added in April 1973 with concrete caps to prevent contamination from surface runoff.