

ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

October 31, 2001

Ms. Judith Walker
U.S. Nuclear Regulatory Commission
Region IV
Harris Tower
611 Ryan Plaza Drive - Suite 400
Arlington, TX 76011-8064

**SUBJECT: REPORT FOR ANALYSIS OF THE WATER SAMPLES FROM KERR-MCGEE
CIMARRON, CRESCENT, OKLAHOMA (DOCKET NO. 70-925; RFTA NO. 01-
015)**

Dear Ms. Walker:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) received 13 water samples collected on September 5, 2001 at the Kerr-McGee Cimarron facility in Crescent, Oklahoma. The samples were initially screened by gamma spectroscopy (Procedure CP1 Revision 11) to determine if there was evidence of quantifiable concentrations of gamma-emitting radionuclides. Next, each sample was analyzed for gross alpha and beta activity (Procedures AP1 Rev. 12 and CP3 Rev. 1), isotopic uranium by alpha spectroscopy (Procedures AP3 Rev. 15 and CP2 Rev. 10) and Tc-99 analysis (Procedure AP5 Rev. 11 and CP4 Rev. 1).

The gamma spectroscopy screening identified one sample (W003) in which uranium was quantified above the minimum detectable concentration (MDC). No other gamma-emitting radionuclides were identified. The results for gross alpha and beta, uranium isotopic, and Tc-99 are presented in Tables 1, 2, and 3, respectively.

ESSAP's Quality Control (QC) procedures were followed for these analyses. The daily QC and detector background for the counting instrumentation used in the analyses were within acceptable limits.

Please contact me at (865) 241-3242 or Wade Ivey at (865) 576-9184 should you have any questions.

Sincerely,



Dale Condra
Laboratory Manager
Environmental Survey and
Site Assessment Program

RDC:WPI:ar

Attachments

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TABLE 1
CONCENTRATIONS OF TOTAL ALPHA AND BETA
IN WATER SAMPLES
KERR-McGEE CIMARRON
CRESCENT, OKLAHOMA

ESSAP ID	NRC R-IV ID	Concentrations (pCi/L)	
		Gross Alpha	Gross Beta
796W001	1314-1282	0.2 ± 2.5 ^a	0.15 ± 2.6
796W002	1315-1283	360 ± 30	90 ± 10
796W003	TMW-13-1284	2940 ± 230	680 ± 70
796W004	1316-1285	67.6 ± 9.1	9.1 ± 3.1
796W005	1344-1286	11.0 ± 4.7	22.2 ± 6.2
796W006	1336A-1287	52.6 ± 8.5	630 ± 60
796W007	1208-1288	200 ± 20	2450 ± 250
796W008	1311-1289	4.4 ± 1.5	2.9 ± 1.2
796W009	1206-1290	120 ± 10	41.7 ± 4.3
796W010	1312-1291	90 ± 10	520 ± 40
796W011	1330-1292	34.0 ± 6.4	26.1 ± 4.2
796W012	1328-1293	23 ± 13	0 ^b ± 10
796W013	1329-1294	20.5 ± 4.7	34.0 ± 4.8

^aUncertainties represent the 95% confidence level, based on propagating the uncertainties.

^bZero value due to rounding.

TABLE 2
CONCENTRATION OF URANIUM ISOTOPES
IN WATER SAMPLES
KERR-McGEE CIMARRON
CRESCENT, OKLAHOMA

ESSAP ID	NRC R-IV ID	Radionuclide Concentrations (pCi/L)			
		U-234	U-235	U-238	Total Uranium
796W001	1314-1282	1.17 ± 0.49 ^a	0.19 ± 0.24	0.55 ± 0.29	1.91 ± 0.62
796W002	1315-1283	220 ± 20	11.8 ± 1.9	160 ± 10	390 ± 20
796W003	TMW-13-1284	1830 ± 330	90 ± 20	1040 ± 190	2960 ± 380
796W004	1316-1285	36.4 ± 3.8	1.90 ± 0.63	17.4 ± 2.1	55.7 ± 4.4
796W005	1344-1286	1.32 ± 0.50	0.05 ± 0.17	1.24 ± 0.46	2.61 ± 0.70
796W006	1336A-1287	19.2 ± 2.3	0.79 ± 0.39	6.2 ± 1.1	26.2 ± 2.6
796W007	1208-1288	27.8 ± 3.2	1.54 ± 0.55	8.1 ± 1.3	37.4 ± 3.5
796W008	1311-1289	1.12 ± 0.47	0.28 ± 0.26	1.44 ± 0.48	2.84 ± 0.72
796W009	1206-1290	80.0 ± 7.5	3.22 ± 0.86	22.0 ± 2.6	110 ± 10
796W010	1312-1291	35.8 ± 3.7	1.33 ± 0.51	11.7 ± 1.6	48.8 ± 4.1
796W011	1330-1292	10.4 ± 1.5	0.73 ± 0.39	3.64 ± 0.79	14.8 ± 1.7
796W012	1328-1293	19.7 ± 2.4	0.47 ± 0.33	10.2 ± 1.5	30.4 ± 2.8
796W013	1329-1294	4.33 ± 0.90	0.24 ± 0.22	2.66 ± 0.68	7.2 ± 1.1

^aUncertainties represent the 95% confidence level, based on propagating the uncertainties.

TABLE 3
CONCENTRATION OF TECHNETIUM-99
IN WATER SAMPLES
KERR-McGEE CIMARRON
CRESCENT, OKLAHOMA

ESSAP ID	NRC R-IV ID	Tc-99 Concentrations (pCi/L)
796W001	1314-1282	1.6 ± 9.1 ^a
796W002	1315-1283	7.8 ± 9.3
796W003	TMW-13-1284	460 ± 70
796W004	1316-1285	5.6 ± 9.3
796W005	1344-1286	3.0 ± 9.2
796W006	1336A-1287	1050 ± 80
796W007	1208-1288	2570 ± 190
796W008	1311-1289	0.9 ± 9.1
796W009	1206-1290	100 ± 20
796W010	1312-1291	1030 ± 80
796W011	1330-1292	35 ± 10
796W012	1328-1293	2.5 ± 9.2
796W013	1329-1294	-6.2 ± 8.9

^aUncertainties represent the 95% confidence level, based on propagating the uncertainties.