



CORE LABORATORIES

## AMENDED REPORT

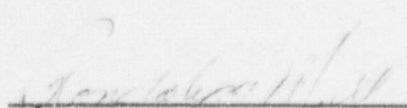
### CORE LABORATORIES ANALYTICAL REPORT

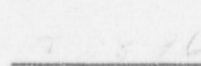
Job Number: 951925  
Prepared For:

KEPR MCGEE CORPORATION  
JEFF OSTMEYER  
P.O. BOX 89  
CUSHING, OK 74023

Date: 02/08/96

RECEIVED 3-4-96  
DATE 3-4-96

  
Signature

  
Date:

Name: Rondalynn Mull

Core Laboratories, Inc.  
420 West First Street  
Casper, WY 82601

Title: Laboratory Supervisor

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FEB 09 1996

Lab of Cushing

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## CORE LABORATORIES

### FINAL REPORT DISTRIBUTION

02/08/96

JOB NUMBER: 951925

| COMPANY NAME                            | COMPANY MAILING ADDRESS | COMPANY CITY | STATE | COMPANY ZIP CODE |
|-----------------------------------------|-------------------------|--------------|-------|------------------|
| KERR MCGEE CORPORATION<br>JEFF OSTMEYER | P.O. BOX 89             | CUSHING      | OK    | 74023            |

PAGE:1

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# CORE LABORATORIES

## LABORATORY TESTS RESULTS 02/08/96

JOB NUMBER: 951925

CUSTOMER: KERR MCGEE CORPORATION

ATTN: JEFF OSTMEYER

CLIENT I.D.: ANNUAL ENVIRONMENTAL CMW 19.1  
DATE SAMPLED: 08/23/95  
TIME SAMPLED: :  
WORK DESCRIPTION: CU2-26-024

LABORATORY I.D.: 951925-0001  
DATE RECEIVED: 08/24/95  
TIME RECEIVED: 10:08  
REMARKS: WATER

| TEST DESCRIPTION               | FINAL RESULT | DETECTION LIMIT | UNITS OF MEASURE | TEST METHOD | DATE     | TECHNICIAN |
|--------------------------------|--------------|-----------------|------------------|-------------|----------|------------|
| Gross Alpha, total             | 136          |                 | pCi/l            | EPA 900.0   | 08/30/95 | NRF        |
| Gross Alpha, total, error, +/- | 45.3         |                 | pCi/l            |             | 08/30/95 | NRF        |
| Gross Alpha, total, LLD        | 37.1         |                 | pCi/l            |             | 08/30/95 | NRF        |
| Gross Beta, total              | 135          |                 | pCi/l            | EPA 900.0   | 08/30/95 | NRF        |
| Gross Beta, total, error, +/-  | 35.1         |                 | pCi/l            |             | 08/30/95 | NRF        |
| Gross Beta, total, LLD         | 48.3         |                 | pCi/l            |             | 08/30/95 | NRF        |
| Thorium 232, total             | 0.89         |                 | pCi/l            |             | 09/25/95 | DW         |
| Thorium 232, total, error, +/- | 0.6          |                 | pCi/l            |             | 09/25/95 | DW         |
| Thorium 232, total, LLD        | 0.7          |                 | pCi/l            |             | 09/25/95 | DW         |
| Uranium 234, total (ISO U)     | 3.9          |                 | pCi/l            | CA-GLR-R405 | 09/26/95 | DW         |
| Uranium 234, total, error, +/- | 0.9          |                 | pCi/l            |             | 09/26/95 | DW         |
| Uranium 234, total, LLD        | 0.3          |                 | pCi/l            |             | 09/26/95 | DW         |
| Uranium 235, total (ISO U)     | 0.1          |                 | pCi/l            | CA-GLR-R405 | 09/26/95 | DW         |
| Uranium 235, total, error, +/- | 0.2          |                 | pCi/l            |             | 09/26/95 | DW         |
| Uranium 235, total, LLD        | 0.2          |                 | pCi/l            |             | 09/26/95 | DW         |
| Uranium 238, total (ISO U)     | 2.0          |                 | pCi/l            | CA-GLR-R405 | 09/26/95 | DW         |
| Uranium 238, total, error, +/- | 0.7          |                 | pCi/l            |             | 09/26/95 | DW         |
| Uranium 238, total, LLD        | 0.2          |                 | pCi/l            |             | 09/26/95 | DW         |
| Thorium 228, total             | 0.59         |                 | pCi/l            |             | 09/26/95 | DW         |
| Thorium 228, total, error, +/- | 0.6          |                 | pCi/l            |             | 09/26/95 | DW         |
| Thorium 228, total, LLD        | 1.2          |                 | pCi/l            |             | 09/26/95 | DW         |

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# CORE LABORATORIES

## QUALITY CONTROL REPORT 02/08/96

JOB NUMBER: 951925

CUSTOMER: KERR McGEE CORPORATION

ATTN: JEFF OSTMEYER

| ANALYSIS                              |                   |               |                    | DUPLICATES                         |                | REFERENCE STANDARDS |                  | MATRIX SPIKES           |             |                  |
|---------------------------------------|-------------------|---------------|--------------------|------------------------------------|----------------|---------------------|------------------|-------------------------|-------------|------------------|
| ANALYSIS TYPE                         | ANALYSIS SUB-TYPE | ANALYSIS I.D. | ANALYZED VALUE (A) | DUPLICATE VALUE (B)                | RPD or ( A-B ) | TRUE VALUE          | PERCENT RECOVERY | ORIGINAL VALUE          | SPIKE ADDED | PERCENT RECOVERY |
| PARAMETER: Gross Alpha, total         |                   |               |                    | DATE/TIME ANALYZED: 08/30/95 14:05 |                |                     |                  | QC BATCH NUMBER: 170093 |             |                  |
| REPORTING LIMIT/DF: UNITS: pCi/l      |                   |               |                    | METHOD REFERENCE : EPA 900.0       |                |                     |                  | TECHNICIAN: NRF         |             |                  |
| BLANK                                 | MB                | MB2AB0829     | ND                 |                                    |                | 25.5                | 88               |                         |             |                  |
| STANDARD                              | LCS               | LC1A0829      | 22.4               |                                    |                |                     |                  |                         |             |                  |
| SPIKE                                 | MS                | 951963-1      | 124                |                                    |                |                     |                  |                         |             |                  |
| DUPLICATE                             | MD                | 951963-1      | 10.0               | 14.6                               | 37             |                     |                  | 10.0                    | 128         | 89               |
| PARAMETER: Gross Beta, total          |                   |               |                    | DATE/TIME ANALYZED: 08/30/95 14:14 |                |                     |                  | QC BATCH NUMBER: 170097 |             |                  |
| REPORTING LIMIT/DF: UNITS: pCi/l      |                   |               |                    | METHOD REFERENCE : EPA 900.0       |                |                     |                  | TECHNICIAN: NRF         |             |                  |
| BLANK                                 | MB                | MB2AB0829     | 0.4                |                                    |                | 22.0                | 109              |                         |             |                  |
| STANDARD                              | LCS               | LC1B0829      | 23.9               |                                    |                |                     |                  |                         |             |                  |
| SPIKE                                 | MS                | 951963-1      | 144                |                                    |                |                     |                  |                         |             |                  |
| DUPLICATE                             | MD                | 951963-1      | 5.0                | 8.8                                | 55             |                     |                  | 5.0                     | 110         | 126              |
| PARAMETER: Thorium 232, total         |                   |               |                    | DATE/TIME ANALYZED: 09/25/95 16:49 |                |                     |                  | QC BATCH NUMBER: 171053 |             |                  |
| REPORTING LIMIT/DF: UNITS: pCi/l      |                   |               |                    | METHOD REFERENCE :                 |                |                     |                  | TECHNICIAN: DW          |             |                  |
| BLANK                                 | MB                | MB5T0906      | 0.47               |                                    |                |                     |                  |                         |             |                  |
| BLANK                                 | MB                | MB6T0906      | 0.95               |                                    |                |                     |                  |                         |             |                  |
| STANDARD                              | LCS               | ST3T0906      | 7.59               |                                    |                | 7.0                 | 108              |                         |             |                  |
| STANDARD                              | LCS               | LC3T0906      | 7.1                |                                    |                | 7.0                 | 101              |                         |             |                  |
| SPIKE                                 | MS                | 951921-1      | 16.3               |                                    |                |                     |                  | 0.92                    | 14.0        | 110              |
| DUPLICATE                             | MD                | 951922-1      | 0.61               | 0.89                               | 37             |                     |                  |                         |             |                  |
| PARAMETER: Thorium 228, total         |                   |               |                    | DATE/TIME ANALYZED: 09/26/95 08:19 |                |                     |                  | QC BATCH NUMBER: 171058 |             |                  |
| REPORTING LIMIT/DF: UNITS: pCi/l      |                   |               |                    | METHOD REFERENCE :                 |                |                     |                  | TECHNICIAN: DW          |             |                  |
| BLANK                                 | MB                | MB5T0906      | 0.18               |                                    |                |                     |                  |                         |             |                  |
| BLANK                                 | MB                | MB6T0906      | 0.01               |                                    |                |                     |                  |                         |             |                  |
| STANDARD                              | LCS               | ST3T0906      | 7.0                |                                    |                | 7.0                 | 100              |                         |             |                  |
| STANDARD                              | LCS               | LC3T0906      | 7.01               |                                    |                | 7.0                 | 100              |                         |             |                  |
| SPIKE                                 | MS                | 951921-1      | 18.0               |                                    |                |                     |                  | 0.35                    | 14.0        | 126              |
| DUPLICATE                             | MD                | 951922-1      | 0.74               | 0.86                               | 15             |                     |                  |                         |             |                  |
| PARAMETER: Uranium 234, total (ISO U) |                   |               |                    | DATE/TIME ANALYZED: 09/26/95 10:46 |                |                     |                  | QC BATCH NUMBER: 171081 |             |                  |
| REPORTING LIMIT/DF: UNITS: pCi/l      |                   |               |                    | METHOD REFERENCE : CA-GLR-R405     |                |                     |                  | TECHNICIAN: DW          |             |                  |
| BLANK                                 | MB                | MB1U0906      | 0.2                |                                    |                |                     |                  |                         |             |                  |
| BLANK                                 | MB                | MB2U0906      | 0.3                |                                    |                |                     |                  |                         |             |                  |
| STANDARD                              | LCS               | ST1U0906      | 6.6                |                                    |                | 6.6                 | 100              |                         |             |                  |
| STANDARD                              | LCS               | LC1U0906      | 6.5                |                                    |                | 6.6                 | 98               |                         |             |                  |
| DUPLICATE                             | MD                | 952012-2      | 107                | 110                                | 3              |                     |                  |                         |             |                  |
| PARAMETER: Uranium 235, total (ISO U) |                   |               |                    | DATE/TIME ANALYZED: 09/26/95 11:13 |                |                     |                  | QC BATCH NUMBER: 171088 |             |                  |
| REPORTING LIMIT/DF: UNITS: pCi/l      |                   |               |                    | METHOD REFERENCE : CA-GLR-R405     |                |                     |                  | TECHNICIAN: DW          |             |                  |
| BLANK                                 | MB                | MB1U0906      | 0.0                |                                    |                |                     |                  |                         |             |                  |

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JOB NUMBER: 951925

CUSTOMER: KERR MCGEE CORPORATION

ATTN: JEFF OSTMEYER

PARAMETER: Uranium 238, total (ISO U)      DATE/TIME ANALYZED: 09/26/95 11:19      QC BATCH NUMBER: 171092  
REPORTING LIMIT/DF:                  UNITS: pCi/l      METHOD REFERENCE : CA-GLR-R405      TECHNICIAN: DW

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LOG - IN JOB REPORT  
08/25/95

JOB NUMBER 951925 CUSTOMER: (KE0001) KERR-MCGEE CORPORATION CONTACT: JEFF OSTREYER PHONE: ( ) -

SAMPLE NUMBER: 0001

DATE RECEIVED: 08/24/95 TIME RECEIVED: 10:08 SAMPLE DATE: 08/23/95 SAMPLE TIME: DUE DATE: 09/21/95  
PROJECT ID: ANNUAL ENVIRONMENTAL CMW 19.1 SAMPLE ID: CU2-26-024 REM: WATER  
LAB NOTES: 114 L CUBE SHORT ID: BIN NUMBER: L

| CODE | TEST DESCRIPTION               | TEST LIMITS | UNITS OF MEASURE | TEST METHOD | COMMENTS |
|------|--------------------------------|-------------|------------------|-------------|----------|
| R000 | UNAT CHECK FOR ISO U           |             |                  |             |          |
| R513 | Gross Alpha, total             |             | pCi/l            | EPA 900.0   |          |
| R514 | Gross Alpha, total, error, +/- |             | pCi/l            |             |          |
| R515 | Gross Alpha, total, LLD        |             | pCi/l            |             |          |
| R516 | Gross Beta, total              |             | pCi/l            | EPA 900.0   |          |
| R517 | Gross Beta, total, error, +/-  |             | pCi/l            |             |          |
| R518 | Gross Beta, total, LLD         |             | pCi/l            |             |          |
| R555 | Thorium 232, total             |             | pCi/l            |             |          |
| R556 | Thorium 232, total, error, +/- |             | pCi/l            |             |          |
| R557 | Thorium 232, total, LLD        |             | pCi/l            |             |          |
| R561 | Uranium 234, total (ISO U)     |             | pCi/l            | CA-6LR-R405 |          |
| R562 | Uranium 234, total, error, +/- |             | pCi/l            |             |          |
| R563 | Uranium 234, total, LLD        |             | pCi/l            |             |          |
| R564 | Uranium 235, total (ISO U)     |             | pCi/l            | CA-6LR-R405 |          |
| R565 | Uranium 235, total, error, +/- |             | pCi/l            |             |          |
| R566 | Uranium 235, total, LLD        |             | pCi/l            |             |          |
| R567 | Uranium 238, total (ISO U)     |             | pCi/l            | CA-6LR-R405 |          |
| R568 | Uranium 238, total, error, +/- |             | pCi/l            |             |          |
| R569 | Uranium 238, total, LLD        |             | pCi/l            |             |          |
| R570 | Thorium 228, total             |             | pCi/l            |             |          |
| R571 | Thorium 228, total, error, +/- |             | pCi/l            |             |          |
| R572 | Thorium 228, total, LLD        |             | pCi/l            |             |          |





## CORE LABORATORIES

### QUALITY CONTROL FOOTER

#### METHOD REFERENCES

- (1) EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, March 1983
- (2) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, November 1990 and July 1992 update
- (3) Standard Methods for the Examination of Water and Wastewater, 17th, 1989
- (4) EPA 600/4-80-032, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, August 1980
- (5) Federal Register, Friday, October 26, 1984 (40 CFR Part 136)
- (6) EPA 600/R-78-017, Microbiological Methods for Monitoring the Environment, December 1978

#### COMMENTS

- (1) The data in the Laboratory Test Results Report may differ from the data in the QC Report due to calculations for sample preparation and/or dilutions.
- (2) The "Time Analyzed" in the QC Report may not reflect the actual time of each analysis. The "Date Analyzed" is the actual date of analysis.
- (3) Soil and sludge samples are reported on a wet basis or on an "as received" basis unless otherwise indicated.
- (4) The data in this report are within the limits of uncertainty specified in the referenced method unless otherwise indicated.
- (5) Analyses performed by a subcontract laboratory are indicated with an asterisk and associated code in the "Technician" data field.

#### Subcontract Laboratories

#### Code

|                                        |      |
|----------------------------------------|------|
| Core Laboratories - Anaheim, CA        | * AN |
| Core Laboratories - Aurora, CO         | * AU |
| Core Laboratories - Casper, WY         | * CA |
| Core Laboratories - Corpus Christi, TX | * CC |
| Core Laboratories - Houston, TX        | * HP |
| Core Laboratories - Lake Charles, LA   | * LC |
| Core Laboratories - Long Beach, CA     | * LB |
| Other Subcontract Laboratories         | * XX |

#### DEFINITIONS

- (1) NC = Not Calculable due to values lower than the reporting limit.
- (2) ND = Not Detected above the reporting limit.

### QC SAMPLE IDENTIFICATIONS

#### BLANKS

MB = Method Blank (also referred to as a preparation blank)  
RB = Reagent Blank  
IB = Instrument Blank  
ICB = Initial Calibration Blank  
CCB = Continuing Calibration Blank  
HB = Holding Blank (also referred to as a storage blank)

#### SPIKES

MS = Matrix Spike  
MSD = Matrix Spike Duplicate  
PDS = Post Digestion Spike  
BS = Blank Spike (also referred to as a method spike)  
SS = Surrogate Spike

#### DUPLICATES

MSD = Matrix Spike Duplicate  
MD = Method Duplicate

#### REFERENCE STANDARDS

CS = Calibration Standard  
RS = Reference Standard (also referred to as an external reference standard)  
ICV = Initial Calibration Verification  
CCV = Continuing Calibration Verification  
LCS = Laboratory Control Sample

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