United States Department of Energy

**FINAL AUDIT REPORT OF
REMEDIAL ACTION CONSTRUCTION
AT THE UMTRA PROJECT
RIFLE, COLORADO, SITE**

January 1997

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**U.S. Department of Energy
Environmental Restoration Division
Albuquerque, New Mexico**

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Uranium Mill Tailings Remedial Action Project

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January 1997

**Prepared for
U.S. Department of Energy
Environmental Restoration Division
UMTRA Project Team
Albuquerque, New Mexico**

**Prepared by
Jacobs Engineering Group Inc.
Albuquerque, New Mexico**

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1.0 INTRODUCTION

This final audit report summarizes the assessments performed by the U.S. Department of Energy (DOE) Environmental Restoration Division (ERD) and its Technical Assistance Contractor (TAC) of remedial action compliance with approved plans, specifications, standards, and 40 CFR Part 192 at the Rifle, Colorado, Uranium Mill Tailings Remedial Action (UMTRA) Project site. Remedial action construction was directed by the Remedial Action Contractor (RAC).

2.0 RADIOLOGICAL SURVEILLANCES AND AUDITS

The ERD and TAC performed three radiological surveillances (DOE, 1989a; 1990; 1991) and six radiological audits (DOE, 1993a; 1993b; 1994a (1994 report contains two audits); 1995a; 1995b) at the Rifle UMTRA Project site. The radiological surveillances and audits provided an independent assessment that the quality of remedial action work was sufficient to ensure compliance with U.S. Environmental Protection Agency (EPA) standards (40 CFR Part 192) and Department of Energy (DOE) orders. The radiological surveillances and audits the ERD and TAC performed included, but were not limited to, a comprehensive review of the RAC's radiological/health physics (HP) procedures, instrument calibration records, data management, personnel monitoring, and operational performance of the contractors and subcontractors responsible for HP remedial action work at the former uranium ore processing sites and the uranium tailings disposal cell.

Table 1 summarizes the radiological surveillances and audits. The surveillances and audits resulted in 7 findings and 123 observations. All findings and observations that raised ERD concerns were resolved at the site or through subsequent corrective action. On December 9, 1996, all outstanding issues were closed with respect to the May 16, 1994 and September 12-14, 1994 audits.

3.0 QUALITY ASSURANCE IN-PROCESS SURVEILLANCES

The ERD and TAC performed 12 quality assurance (QA) in-process surveillances at the Rifle site to ensure the RAC properly implemented approved construction plans and specifications (DOE, 1992a; 1993c; 1993d; 1994b; 1994c; 1994d; 1995c; 1995d; 1995e; 1995f; 1996a; 1996b). A team consisting of at least one representative from the ERD and one QA TAC lead auditor performed the surveillances independent of the organizations who performed the work.

Objectives of the surveillances were to verify RAC compliance with the approved remedial action plan (RAP) (DOE, 1992b) and to implement the remedial action inspection plan (RAIP) (MK-F, 1996). The surveillance team accomplished the objectives by reviewing the approved RAP and RAIP, observing construction activities from established checklists, and observing testing and inspection activities performed by the RAC's QC technicians in the field.

Table 1 summarizes the QA in-process surveillances, which resulted in 150 observations. Fourteen observations contained recommendations that required responses from the RAC.

Table 1 Summary of audits and surveillances

Type/Date of activity	Total number of findings	Total number of observations	Number of findings requiring RAC response	Number of observations requiring RAC response	Date closed
DOE/TAC radiological surveillances/audits					
SURVEILLANCE, June 5-8, 1989	0	9	N/A	2	September 20, 1989
SURVEILLANCE, July 9-12, 1990	0	13	N/A	5	February 13, 1991
SURVEILLANCE, April 15, 1991	0	7	N/A	3	August 22, 1991
AUDIT, June 14-17, 1993	0	17	N/A	11	January 17, 1994
AUDIT, September 14-16, 1993	2	9	2	6	February 16, 1994
AUDIT, May 16-18, 1994	1	16	1	6	December 9, 1996
AUDIT, September 12-14, 1994	2	12	2	5	December 9, 1996
AUDIT, March 20-23, 1995	0	23	N/A	7	October 4, 1996
AUDIT, August 7-9, 1995	2	17	1	3	April 18, 1996
DOE/TAC QA in-process surveillances					
SURVEILLANCE, S215, November 4-5, 1992	0	11	N/A	4	March 12, 1992
SURVEILLANCE, QS93032, June 29 to July 1, 1993	0	12	N/A	1	September 16, 1993
SURVEILLANCE, QS93062, November 4-5, 1993	0	16	N/A	0	December 13, 1993
SURVEILLANCE, QS94123, March 9-11, 1994	0	10	N/A	0	April 4, 1994
SURVEILLANCE, QS94133, July 18-19, 1994	0	13	N/A	0	August 5, 1994
SURVEILLANCE, QS94138, November 2-3, 1994	0	13	N/A	0	December 5, 1994
SURVEILLANCE, QS95150, March 28-30, 1995	0	13	N/A	1	May 22, 1995
SURVEILLANCE, QS95160, July 19, 1995	0	9	N/A	0	September 26, 1995
SURVEILLANCE, QS95168, August 30-31, 1995	0	16	N/A	1	November 24, 1995
SURVEILLANCE, QS95182, November 14, 1995	0	11	N/A	2	March 11, 1996
SURVEILLANCE, QS96186, April 11-12, 1996	0	14	N/A	1	August 26, 1996
SURVEILLANCE, QS96190, May 13-14, 1996	0	12	N/A	4	October 2, 1996
DOE/TAC remedial action close-out inspection					
Close-Out Inspection, QA96205, October 22, 1996	N/A	25	N/A	17	December 11, 1996
Other audits/surveillances					
NRC Site Visit, June 14, 1989	0	4	N/A	0	June 14, 1989
NRC Site Visit, September 5-8, 1989	0	2	N/A	0	September 5-8, 1989
NRC Site Visit, May 3, 1990	0	7	N/A	0	May 3, 1990
NRC On-Site Construction Inspection, October 6, 1992	0	3	N/A	1	January 8, 1993
NRC On-Site Construction Review, November 17, 1992	0	5	N/A	0	January 8, 1993
NRC On-Site Construction Review, August 5, 1993	0	4	N/A	0	November 16, 1993

On October 2, 1996, all outstanding issues were closed with respect to the May 13-14, 1996 surveillance.

4.0 REMEDIAL ACTION CLOSE-OUT INSPECTION

On October 22, 1996, an ERD and TAC inspection team performed a remedial action close-out inspection at the Rifle site to ensure remedial action followed approved construction plans and specifications. Personnel from the RAC were present.

The objective of the inspection was to determine if the degree of completion of the Rifle site was in accordance with approved site construction plans and specifications. The inspection team accomplished the objective by reviewing the latest editions of the RAP (DOE, 1992b), RAIP (MK-F, 1996), design specifications, and the RAC's punch list of final walk-over items.

Table 1 summarizes the close-out inspection, which resulted in 25 observations and 17 open items. On December 9, 1996 (DOE, 1996c), the ERD sent a memo to the RAC listing the 17 open items and requesting that ERD be informed of their completion as they occur. Completion documentation for each of the 17 open items will be sent to the ERD. Verification of completion to the ERD's satisfaction for open items will be determined by the ERD. Field verification of open items may be performed by the ERD at their discretion. The close-out inspection was closed administratively when the ERD issued its close-out inspection report to MK-Ferguson on December 11, 1996 (DOE, 1996d). Therefore, this final audit report segment of the site certification process is complete.

5.0 OTHER QUALITY ASSURANCE AUDITS/SURVEILLANCES

The U.S. Nuclear Regulatory Commission (NRC) performed three site visits (NRC, 1989; 1990; DOE, 1989b) and three on-site construction inspections or reviews (OSCR) (NRC, 1992a; 1992b; 1993).

The objectives of the site visits and OSCRs were to assess the effectiveness of the construction and QC programs and to ensure compliance with the RAP (DOE, 1992b), EPA standards (40 CFR Part 192), RAIP (MK-F, 1996) and approved plans and specifications. The site visits and OSCRs were accomplished by qualified personnel from the NRC who reviewed documentation, observed construction activities, and observed RAC QC staff perform testing and inspection activities in the field.

Table 1 summarizes the site visits and OSCRs. Twenty five observations were made during the site visits and OSCRs. One observation required a response from the RAC. All issues resulting from the site visits were considered resolved by the ERD after the August 5, 1993 OSCR. An NRC memo to ERD (NRC, 1993), dated November 16, 1993, stated that no open issues were generated from the August 5, 1993 OSCR (the NRC November 16 memo closed the August 5 OSCR). Issues from site visits and OSCRs that took place before the August 5, 1993 OSCR were resolved during subsequent site visits or OSCRs.

6.0 SUMMARY AND CONCLUSIONS

The ERD and TAC performed 3 radiological surveillances, 6 radiological audits, 12 QA surveillances, and 1 remedial action close-out inspection during remedial action construction at the Rifle site. Three NRC site visits and three NRC OSCRs were performed during remedial action construction at the Rifle site. A total of 298 observations and 7 findings were noted during the ERD and TAC audit and surveillance activities. Twenty-five observations were noted during the NRC site visits and OSCRs. Follow-up to required RAC responses for the ERD/TAC and NRC findings and observations indicated all issues related to the Rifle site were closed and/or resolved to the satisfaction of the ERD.

All audit and surveillance observations and recommendations have been closed out and/or resolved to the ERD's satisfaction. Therefore, this final audit report segment of the site certification process is complete.

7.0 REFERENCES

- DOE (U.S. Department of Energy), 1996a. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, May 13-14, 1996, Report #QS96190*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.29.32.
- DOE (U.S. Department of Energy), 1996b. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, April 11-12, 1996, Report #QS96186*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.29.32.
- DOE (U.S. Department of Energy), 1996c. ERD memo to MK-F regarding 17 open items of Rifle close-out inspection, UPDCC File Location 6.13.2.3, Albuquerque, New Mexico, 9 December 1996.
- DOE (U.S. Department of Energy), 1996d. *Report of Quality Assurance Close-out Inspection of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, October 22, 1996, Report No. QA96205*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.13.2.3.
- DOE (U.S. Department of Energy), 1995a. *Final Report of the Radiological Audit of the Remedial Action Activities at the Processing Site, Rifle, Colorado, 7-9 August 1995*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No.6.18.5.
- DOE (U.S. Department of Energy), 1995b. *Final Report of the Radiological Audit of Remedial Action Activities at the Processing Site, Rifle, Colorado, March 20-23, 1995*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.18.5.
- DOE (U.S. Department of Energy), 1995c. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, November 14, 1995, Report # QS95182*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1995d. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, August 30-31, 1995, Report #QS95168*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No.6.29.3.2.

- DOE (U.S. Department of Energy), 1995e. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, July 19, 1995, Report #QS95160*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1995f. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, March 28-30, 1995, Report # QS95150*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1994a. *Radiological Audit of Remedial Action Activities at the Processing Site, Rifle, Colorado, May 16-18, 1994 and September 12-14, 1994*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No.6.18.5.
- DOE (U.S. Department of Energy), 1994b. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, November 2-3, 1994, Report # QS94138, March 20-23, 1995*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1994c. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, July 18-19, 1994, Report # QS94133*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1994d. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, March 9-11, 1994, Report #QS94123*, prepared for the U.S. Department of Energy, Environmental Restoration Division, UMTRA Project Team, Albuquerque, New Mexico, UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1993a. *Audit Report, Rifle, Colorado, September 14-16, 1993*, Radiological, Health and Safety, and Occurrence Reporting and Processing System audit report, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque, New Mexico, UPDCC File Location No. 6.18.5.
- DOE (U.S. Department of Energy), 1993b. *Final Radiological Audit Report of Remedial Action Activities at the Processing Site, Rifle, Colorado, June 14-17, 1993*, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque, New Mexico, UPDCC File Location No. 6.18.5.

- DOE (U.S. Department of Energy), 1993c. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, June 29 to July 1, 1993, Report #QS93032*, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque, New Mexico, UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1993d. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, November 4-5, 1993, Report #QS93062*, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque, New Mexico, UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1992a. *Report of Quality Assurance Surveillance of MK-Ferguson Company Remedial Action Construction, UMTRA Project, Rifle, Colorado, November 4-5, 1992, Report #S215*, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque, New Mexico, UPDCC File Location No. 6.29.3.2.
- DOE (U.S. Department of Energy), 1992b. *Remedial Action Plan and Site Design for Stabilization of the Inactive Uranium Mill Tailings Site at Rifle, Colorado, UMTRA-DOE/AL-050506.0000*, February, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.
- DOE (U.S. Department of Energy), 1991. *Radiological Surveillance Follow-Up, Rifle, Colorado, April 15, 1991*, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, UPDCC File Location No. 6.18.5.
- DOE (U.S. Department of Energy), 1990. *Final Radiological Surveillance Report of the Rifle, Colorado, Processing Site and Vicinity Properties Remedial Action Activities, July 9-12, 1990*, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, UPDCC File Location No. 6.18.5.
- DOE (U.S. Department of Energy), 1989a. *Final Radiological Surveillance of Remedial Action Activities at the Rifle, Colorado Processing Site and Vicinity Properties, June 5-8, 1989*, prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, UPDCC File Location No. 6.18.5.
- DOE (U.S. Department of Energy) 1989b. Summary trip report for site visit to the Rifle UMTRA site, Rifle, Colorado, September 5-8, 1989; prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, UPDCC File Location No. 6.13.4.2.7.
- MK-F (Morrison Knudsen-Ferguson), 1996. Remedial Action Inspection Plan, Rifle, Colorado, document No. MK-F-UMTRA-41, 29 August 1996, Rev. 2, Rev. E, UPDCC File Location No. 6.13.4.2.

- NRC (U.S. Nuclear Regulatory Commission), 1993. *On-Site Construction Review Report, August 5, 1993*, prepared for the U.S. Department of Energy, by the U.S. Nuclear Regulatory Commission, UPDCC File Location No. 6.13.4.2.7.
- NRC (U.S. Nuclear Regulatory Commission), 1992a. *On-Site Construction Review Report, November 17, 1992*, prepared for the U.S. Department of Energy, Environmental Restoration Division, by the U.S. Nuclear Regulatory Commission, UPDCC File Location No. 6.13.4.2.7.
- NRC (U.S. Nuclear Regulatory Commission), 1992b. *On-Site Construction Review Report, October 6, 1992*, prepared for the U.S. Department of Energy, Environmental Restoration Division, by the U.S. Nuclear Regulatory Commission, UPDCC File Location No. 6.13.4.2.7.
- NRC (U.S. Nuclear Regulatory Commission), 1990. Trip report for site visit to the Rifle UMTRA site, Rifle, Colorado, May 3, 1990, prepared for the U.S. Department of Energy, Environmental Restoration Division, by the U.S. Nuclear Regulatory Commission, UPDCC File Location No. 6.13.4.2.7.
- NRC (U.S. Nuclear Regulatory Commission), 1989. Trip report for site visit to the Rifle UMTRA site, Rifle, Colorado, June 14, 1989, prepared for the U.S. Department of Energy, Environmental Restoration Division, by the U.S. Nuclear Regulatory Commission, UPDCC File Location No. 6.13.4.2.7.

CODE OF FEDERAL REGULATIONS

- 40 CFR Part 192, *Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings*, U.S. Environmental Protection Agency.