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UMTRA PROJECT - RIVERTON, WYOMING

REMEDIAL ACTION INSPECTION PLAN

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RIVERTON, WYOMING

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MK-FERGUSON COMPANY

TESTING AND INSPECTION Statement of Ball.

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APPROVAL REMEDIAL ACTIONS CONTRACTOR, UMTRA/PROJECT DIRECTOR APPROVED:

APPROVED: LOCTTA 12/9/87 ACTOR, UNTRA PROJECT CUALITY MANAGER REP VIAL ACTION

APPROVED:

These & Mali U.S. DEPARTMENT OF ENERGY, UMTRA PROJECT, PROJECT MANAGER

REFERENCE: NRC Letter of Concurrence Dated March 22, 1988



STATEMENT OF POLICY

This Remedial Action Inspection Plan identifies the means by which the remedial action activities at Riverton, Wyoming are controlled, verified, and documented. This plan is developed within the scope of the Quality Assurance Program Plan and it complies with ANSI/ASME NQA-1 and the applicable portions of 10CFR50 Appendix B.

The procedures covering Organization, Qualification and Certification of Inspection and Test Personnel, Quality Assurance Records Control, Control of Measuring and Test Equipment, and Nonconformance and Corrective Action shall be in accordance with the applicable sections of the Quality Assurance Program Plan as follows: organization - QAPP-1, Qualification and Certification of Inspection and Test Personnel, Lead Auditors, and Auditors - QAPP-4, Control of Measuring and Test Equipment - QAPP-5, Quality Assurance Records Control QAPP-6, and Nonconformance and Corrective Action - QAPP-8.

This Remedial Action Inspection Plan and The Quality Assurance Program Plan describe the means by which the MK-Ferguson Company will assure that the Environmental Protection Agency and Nuclear Regulatory Commission requirements are satisfied.

It is the intent that this plan be applied to all permanent installations and work. Temporary facilities, installations, or work is to be tested and inspected as stated by the specifications. Where testing and inspection is not stated in the specifications for temporary work, the work is to be tested and inspected to the degree necessary to ensure it's integrity for the anticipated period of usage, i.e. access road, temporary ditches, etc.

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A MORRISON KNUDSEN COMPANY	Date	
REMEDIAL ACTION INSPECTION PLAN	12/09/87	
UMTRA Project	Designated Contact	
Prime Contract No. DE-AC04-83AL 18796	Phil D. Cate	

1.0 PURPOSE

1.1 To describe the methods by which the construction activities will be tested and inspected to verify compliance with the specification requirements.

2.0 SCOPE

2.1 This procedure defines the testing and inspection requirements for remedial action construction, radiological monitoring activities, and subsequent documentation at Riverton, Wyoming. Types of inspection/tests, inspection/test frequencies, inspection/test acceptance criteria, and documentation and reporting requirements are contained within this procedure. Procedures for individual tests will be performed in accordance with the applicable ASTM standards or other referenced methods.

3.0 REFERENCES

- 3.1 Contract DE-AC04-83AL18796
- 3.2 DOE 5700.6A 8-13-81
- 3.3 DOE 5700.6B 4-24-84
- 3.4 UMTRA Quality Assurance Plan
- 3.5 MK-Ferguson Quality Assurance Program Plan
- 3.6 H.S.& E. Procedures/Plans
- 3.7 ASTM
- 3.8 AASHTO

4.0 INSPECTION AND TESTING PROCEDURES

- 4.1 Field Density Control
 - 4.1.1 Soil density and moisture testing shall be performed in accordance with ASTM D-698, ASTM D-1556, ASTM D-1557, ASTM D-2167, ASTM D-2216, ASTM D-2922, ASTM D-4253, or ASTM D-4254, as applicable. Additionally, moisture control may be performed in accordance with AASHTO T217, using the speedy moisture meter.

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- 4.1.2 When the speedy moisture meter or nuclear density gauge is used in the determination of the moisture content, a correlation sample will be oven dried for every tenth test. If the difference in results is greater that one percent, all test results obtained since the previous correlation test shall be reevaluated, where possible. All test results which are not within the specified moisture requirements, will be retested.
- 4.1.3 When the Nuclear Density Gauge is used for density determination, a sand cone density test will be performed for every five densities performed using the nuclear method. The nuclear density gauge will be used on material with a nominal particle size of 3/4 inch maximum.
- 4.1.4 The density test frequency shall be a minimum of one test per 5,000 cubic yards of material placed and compacted. The foundation subgrade or original ground shall be density tested at a frequency of one test for each 1,500 square yards of compacted area. A test may be taken at any time the Inspector or Site Quality Supervisor determines the need to verify the compaction effort. To the extent possible, as allowed by placement methods and operations, there shall be a minimum of one density test per day that an appreciable amount of material (in excess of 150 cubic yards) is placed and compacted. The test elevation and location shall be documented for each density test performed.
- 4.1.5 Maximum density daterminations shall be performed prior to the start of embankment or backfill placement when possible. The Inspector or Technician shall be alert for changes in material such as color, size, distribution, etc.. When different material types are encountered, a complete maximum density test determination shall be performed. There shall be a minimum of one maximum density test performed for each 50,000 cubic yards of material placed.
- 4.1.6 In order to assure that the correct maximum dry density is utilized to determine the relative compaction, a one point proctor test may be performed. The material shall be as close to the optimum moisture as possible and shall be compacted in accordance with the requirements of ASTM D-698. The frequency for performing the one point proctor test shall be at the discretion of the Inspector or the Site Quality Supervisor, dependent upon the nature of the material.

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- 4.1.7 The subgrade and each layer of backfill shall be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D-698. Material placed at densities lower than the specified minimum density shall be reworked to meet the density requirement and retested to verify acceptability, or the material shall be removed and replaced by acceptable fill compacted to meet the specified requirements.
- 4.1.8 When the level of work activity is such that sand cone density tests are being performed throughout the day, the sand used for determining the volume of the test hole shall be calibrated twice a day and for each new bag of sand. The calibration data shall be documented on the density test record.

4.2 Soils Inspection

Daily inspections, where applicable, shall be performed during execution of the various work activities as follows:

- 4.2.1 Fill materials shall be obtained only from required excavations and approved borrow areas.
- 4.2.2 Excavation of contaminated material shall be carried out to the limits and grades required by Health Physics Personnel.
- 4.2.3 All unstable material, large stones, and debris shall be removed from bottoms of the excavation to a minimum depth of 12 inches.
- 4.2.4 Prior to placing uncontaminated fill material on the subgrade, it shall be radiologically surveyed to verify compliance to EPA standards.
- 4.2.5 The entire subgrade surface shall be plowed, harrowed, and mixed to a depth of at least 6 inches and subsequently compacted to the requirements of section 4.1.7.
- 4.2.6 Contaminated and uncontaminated materials shall be kept separated during earthwork activities.
- 4.2.7 Uncontaminated general fill material shall not contain organic material or other deleterious substances.

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- 4.2.8 Maximum particle size shall not be greater than the compacted lift thickness in any dimension, except that individual large stones shall be distributed within the fill material to provide visual void-free mass, and be able to meet the compaction requirements of Section 4.1.7.
- 4.2.9 Loose thickness of each layer of material placed shall not exceed 12 inches in depth.
- 4.2.10 During compaction, the moisture content of fill material shall achieve uniform distribution and be maintained to achieve the specified density.
- 4.2.11 Material shall not be placed on frozen subgrade, nor shall frozen material be used as fill.
- 4.2.12 Earthwork shall conform to the lines and grades indicated on the drawings and/or specifications.
- 4.2.13 During seasonal shutdowns, and prior to application of protective erosion control measures, exposed surfaces shall be compacted with a smooth drum roller to eliminate ruts and ridges.
- 4.2.14 During seasonal shutdowns, contaminated material shall be stabilized in a manner to assure that the integrity of the method of stabilization is maintained to prevent offsite spread of contamination.
- 4.2.15 Inspection and test status of earthwork, including amount of fill material placed, shall be identified by charts, as-builts, or periodic status reports to prevent inadvertent by-passing of inspection points, and shall be generated and maintained by the MK-Ferguson Quality Manager or his designee.

5.0 RECORDS

5.1 Test and inspection records shall be documented the same day in which a test or inspection is performed.

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- 5.2 Test and inspection records shall contain as a minimum the following:
 - 5.2.1 Items tested or inspected.
 - 5.2.2 Date of test or inspection.
 - 5.2.3 Person performing test or inspection.
 - 5.2.4 Type of test or inspection.
 - 5.2.5 Results of the test or inspection with accept/reject criteria.
 - 5.2.6 Instrument number utilized to perform the inspection or test.
 - 5.2.7 Action taken to correct deficiencies noted.
 - 5.2.8 Person evaluating results, if other than person performing test or inspection.
- 5.3 Test and inspection records shall be filed and maintained in accordance with MK-Ferguson's Quality Assurance Program Plan - 6 (Quality Assurance Records Control).

6.0 NORCONFORMING ITEMS

6.1 Nonconforming items shall be identified, documented, evaluated, segregated when practical, dispositioned, and affected organizations will be notified in accordance with MK-Ferguson's Quality Assurance Program Plan-8 (Nonconformance and Corrective Action).

7.0 AUDITS AND SURVEILLANCES

- 7.1 <u>Quality Assurance Audits and Surveillances</u>
 - 7.1.1 Site Quality Assurance Audits and Surveillances shall be performed under the direction of MK-Ferguson Project Quality Manager.
 - 7.1.2 Site Quality Assurance Audits and Surveillances will be performed to assure implementation of the Quality Assurance Program Plan, and to verify compliance with the established requirements by subcontractors performing quality related activities, or supplying services affecting the quality of the project.

7.2 Frequency of Audits and Surveillances

7.2.1 Audits of Chem-Nuclear Systems, Inc. shall be performed a minimum of twice each construction season.

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- 7.2.2 Audits of Inberg-Miller Engineers shall be performed a minimum of twice each construction season.
- 7.2.3 Surveillances of Inberg-Miller Engineers shall be performed a minimum of twice each construction season.
- 7.2.4 The MK-Ferguson Project Quality Manager may increase the audit and surveillance frequency at his option, to assure the quality of the project.
- 7.2.5 Health Physics activities shall be inspected a minimum of once per week to assure compliance with the applicable Health Physics Procedures.

8.0 TESTING AND INSPECTION SERVICES SUBCONTRACTOR

- 8.1 The testing and inspection services subcontractor is Inberg-Miller Engineers of Riverton, Wyoming.
 - 8.1.1 Inberg-Miller Engineers shall provide materials, personnel, services, and documentation in accordance with the requirements of this Remedial Action Inspection Plan.
 - 8.1.2 The Inberg-Miller Engineer's Inspector at the Riverton, Wyoming site will have the responsibili+y and authority for implementing MK-Ferguson's Quality Assurance Program Plan and the Site Specific Remedial Action Inspection Plan, as applicable. The Inberg-Miller Engineer's Inspector is designated as the Site Quality Supervisor, reporting directly to the Project Quality Manager in Albuquerque, New Maxico.

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