DMG/85/05/15

MAY 20 1985

Distribution:
WM r/f
WMLU r/f
NMSS s/f
DM Gillen
DE Martin
GN Gnugnoli
JO Bunting
MJ Bell
RE Browning
JT Greeves,
D Sollenberger

Mr. John G. Themelis, Project Manager
UMTRA Project Office
U.S. Department of Energy
Post Office Box 5400
Albuquerque, New Mexico 87115

Dear Mr. Themelis:

We have completed reviews of the Shiprock Remedial Action Inspection Plan (RAIP) and Health Physics Monitoring Plan transmitted to us by your letter dated April 25, 1985 (received April 30, 1985). Enclosed are our comments on each of these plans.

For your information, we are also presently preparing a staff position paper on minimum requirements of an acceptable program of field control for construction at UMTRA sites. Since field control (testing and inspection) is the main area of concern in our review of RAIP's, the establishment of this position may help to streamline future RAIP reviews. A draft of the position paper should be available for DOE comment in early June.

/s/ R. John Starmer

Leo B. Higginbotham, Chief
Low-Level Waste and Uranium
Recovery Projects Branch
Division of Waste Management

Enclosure:
As stated

WM Record File

WM Project 58
Docket No. 37
PDR ✓
LPDR

Distribution:

(Return to WM, 623-SS)

OFC	:WMLU:rb	:WMLU	:WMLU	:	:	:	:
NAME	: DM Gillen	:DE Martin	:LB Higginbotham	:	:	:	:
DATE	:85/05/20	:85/05/20	:85/05/20	:	:	:	:

ENCLOSURE 1

GEOTECHNICAL ENGINEERING REVIEW

COMMENTS ON "UMTRA PROJECT - SHIPROCK REMEDIAL ACTION PLAN"

(RAIP-1 THROUGH RAIP-6, REVISION 0, DATED APRIL 10, 1985)

General Comments Applicable to RAIP-1 Through RAIP 6

1. The "Statement of Policy", attached to the Inspection Plans, states that the plans will be appended as necessary to accomodate changed work conditions or changed criteria. However, a mechanism to develop, control, approve and document these changes has not been discussed in the Inspection Plans. The DOE should establish the necessary procedures to control changes and include them in the pertinent inspection plans or in the Statement of Policy.

2. The Inspection Plans do not address any provision for a "Stop Work Order". The situations when a "Stop Work Order" may become necessary should be addressed in the RAIP's. Procedures and level of authority for issuing a "Stop Work Order" should be described and a mechanism for resolving the corresponding nonconformance(s) should be discussed.

3. The forms attached to various RAIP's should be numbered and should be referenced in the text of the corresponding RAIP's as to the purpose and likely use of the forms.

4. In Section 5.0 (References), the RAIP's make reference to ANSI/ASME NQA-1 1979 document. Since the 1979 edition of this standard has been revised, the RAIP's should refer to the later (1983) edition of the document.

Comments on Section 6.1.2 of RAIP No. 2

1. The minimum test frequency requirement for field density control should be revised to read as follows: "The test frequency shall be a minimum of one test per 1,000 cubic yards of contaminated material placed and one test

per 500 cubic yards of other compacted materials." This requirement would be consistent with that proposed in NAVFAC DM 7.2, May 1982.

2. In the requirements for field density control, add the requirement that "There shall be a minimum of one test for every full SHIFT of compaction operations." (as per NAVFAC DM 7.2).

3. The DOE should provide sufficient basis to support the requirement that one test for each 1,500 square yards would be adequate to provide reasonable control of field density of compacted subgrade material.

4. The DOE should provide sufficient justification to support the provision in the RAIP No. 2 that the Site Quality Supervisor may decrease the test frequency to one test for each 4,000 square yards of the foundation subgrade. This provision seems to be arbitrary and its use may result in inconsistent and undesirable field density control of the foundation subgrade material.

Comments on Section 6.1.3 of RAIP No. 2

1. This section of RAIP No. 2, as written, is for the most part applicable to the determination of relative compaction of cohesive materials. The use of the one point proctor test is not generally applicable to non-cohesive soils. Since the remedial action also requires compaction of non-cohesive materials and ASTM D-2049 is referenced in Section 6.1.1, the Inspection Plan should include methods for verifying use of correct maximum dry densities of all materials proposed to be used at this site.

2. The section should add the following requirement, "Supplementary compaction curves (complete) on field density test samples shall be obtained, approximately one for every 10 or 20 field tests, depending on the variability of materials". Suggested addition of this requirement is consistent with NAVFAC DM 7.2, May 1982.

Comment on Section 6.1.5 of RAIP No. 2

The Inspection Plan should include a criterion for the acceptability of the inspected field density and moisture data (see Section 7.2.5 of the RAIP). The following criterion may be used for guidance:

For moisture control, if approximately two-thirds of all field values fall in the range of $\pm$ 1 percent of the specified moisture content, close moisture control would be evidenced. Similarily, if approximately two thirds of all field densities fall in the range of $\pm$ 3 percent about the percent maximum

density required, suitable compaction would be evident. However, if two thirds of all moisture content values fall in the range of + 3 percent about the specified moisture content or if two thirds of all the field densities fall in the range of 5 percent below the specified maximum density, insufficient compaction control would be evident." (Reference, NAVFAC DM 7.2).

Comment on Section 6.2.1 of RAIP No. 2

Add the following requirement to this Section. "At least one gradation and classification test shall be run each day of seepage barrier/liner material placement to verify that the specification limits are maintained." These tests are important to provide the necessary control on materials and are fairly simple to perform.

Comment on Section 6.2.2 of RAIP No. 2

Modify the requirement for "weekly" run of gradation and classification test to require "daily" tests. The second sentence of the Section should read, "At least one gradation and classification test shall be run each day of radon barrier material placement to verify that the specification limits are maintained". These tests are important to provide the necessary control on materials and are fairly simple to perform.

Comment on Section 6.2.3 of RAIP

Due to the possible variability in the alluvial deposits to be used as rock sources, the requirements for rock durability testing should be modified to include more frequent testing of the various riprap sizes to be provided. The third paragraph of this section should read, "For each gradation of riprap, specific gravity, soundness, and abrasion testing shall be performed prior to beginning delivery of the material to the site. During construction activities, additional test series shall be performed for each type of riprap when approximately one third and two thirds of the total volume of each type of riprap have been delivered. For any type of riprap where the volume is greater than 30,000 cubic yards, a test series shall be performed for each additional 10,000 cubic yards of riprap delivered. A final sample shall be obtained for each riprap type following completion of delivery of the material." In addition, a paragraph similar to that in the Canonsburg RAIP should be added as follows:

> The placement of the riprap materials shall receive continuous inspection to assure that proper placing techniques are employed to prevent degradation of the material due to improper handling and to assure that the distribution is uniform and that voids are kept as minimal as possible

and to assure proper gradation. The inspection shall also verify the lift thickness and elevations. Inspection may be provided at the material source if required to assure compliance to the specification requirements.

Comments on Section 6.4.2 of RAIP No. 2

In the fourth line of the Section, change the word "periodically" to "frequently". Also, the following inspection requirement should be added to this Section. "Inspection shall verify that the compaction equipment (or equivalent), as per specifications, is being used for compacting the material and the number of roller passes meets the specification requirements."

Comment on Section 6.4.3 of RAIP No. 2

Add the word "frequent" at the end of first line of this Section.

Comment on Section 7.2.3 of RAIP No. 2

The records should include the name of the person checking the calculations.

Comment on Page 9 of RAIP No. 2

The form on "Maximum Density Determination" does not seem to include provisions for determination of maximum density of non-cohesive soils (relative density). Since the remedial action requires compaction of a range of materials, appropriate form should be used for maximum density determination of all the materials proposed to be used at this site.

Comment on Section 6.1.1.1 of RAIP No. 6

The Section should preferably read as follows:

"Failing density, moisture content, gradation or classification tests are considered to be nonconformances if they are not corrected prior to the placement of additional materials which would make the area or item inaccessable for a rework."

Comment on Section 6.1.1.4 of RAIP No. 6

This Section should read as follows:

"Instruments found to be out of calibration, even though deemed to have been processed in accordance with approved procedures, would require a nonconformance procedure." This would be in accordance with the definition of "Nonconformance" (Section 3.3 of RAIP No. 6), since the deficiency in calibration of instruments is likely to render the construction quality or activity unacceptable or indeterminate.

ENCLOSURE 2

COMMENTS ON "SHIPROCK SITE-SPECIFIC HEALTH PHYSICS MONITORING PLAN"

1. P.D-3, Section 3.1: Public access to the worksite should be controlled to prevent misuse of materials, including contaminated soil, which are included in the remedial action. The 200 pCi/g of Ra-226 criterion is acceptable for worker restrictions but is not acceptable for public access considerations. DOE should use two control points (one for the public and one for work restrictions).

2. P.D-6, Section 3.3: The action level of 40 MPC-hours per week or 160 MPC-hours per month is four times the action level stated in 10 CFR Part 20 which is being used as guidance for the radiation standards. The action levels in 10 CFR Part 20 are (1) levels in excess of 1 MPC at any time, or (2) a time weighted average level of 10 MPC-hours (25% of continuous exposure at 1 MPC) in any week. This lower action level should be considered so that workers will not be overexposed prior to taking mitigative action.

3. P.D-6, Section 3.4: A personnel contamination log should be required. Each worker should mark in the log whether or not he exceeded the contamination action level. Actions, following instances of worker contamination, should be well documented.

4. P.D-8, Section 4.3: The last sentence of this section states that the urinalysis program could be reduced if continuous negative urinalysis results are found. The urinalysis program described in this section is already a minimal program. The urinalysis program should have a routine sample collection regime (such as monthly or quarterly sampling) if sufficient information is to be gathered to modify the program. A program of special sampling only will not be sufficient.

5. P.D-9, Section 6.2: The worker-protection air sampling program should include exposure determinations and appropriate action levels with corrective actions specified. The Health Physics Manager should maintain individual or worker category exposure records for air particulates and radon daughter exposures and should correlate this data with the bioassy data.

6. The Shiprock health physics plan does not address the onsite QA/QC work, or the onsite health physics inspection program to be performed. This program should include daily, weekly, and monthly inspections of the worksite by the RAC. The health physics inspection responsibilities and scope should be outlined along with corrective actions.