PDR 40-1341

energy fuels nuclear, inc.

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September 14, 1979

Mr. E. A. Trager
Uranium Mill Licensing Section
U.S. Nuclear Regulatory Commission
7915 Eastern Avenue
Silver Spring, MD 20910

Dear Mr. Trager:

Per your request by telephone on September 11, we transmit herewith 10 copies of supplementary material pertaining to tailings area construction, principally dealing with the subject of collapsible materials to be avoided in dike construction. This submittal is in the form of an addendum to Appendix B of the D'Appolonia Engineer's Report on the Tailings Management System which was transmitted to you last June as part of our final license application revision.

We trust this information will allow a timely completion of the Dam Safety Review, allowing Energy Fuels to proceed with embankment construction. We would very much appreciate an early response to this submittal, and request that you advise us promptly if additional information is required.

Sincerely yours,

C. E. Baker

C. E. Baker, Environmental
& Licensing Director

CEB/jf

Enclosures (10)

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ADDENDUM TO
GUIDELINE SPECIFICATIONS
INITIAL PHASE CONSTRUCTION
TAILINGS MANAGEMENT SYSTEM
WHITE MESA URANIUM PROJECT
BLANDING, UTAH

Project No. RM78-682
September 14, 1979

ITEM 1 - Add paragraph

Section 2 - EARTHWORK

Part 3 - Execution

3.02 Excavation

B. Unsuitable Material

Add.........3. Material unsuitable for use as synthetic liner subgrade shall be any material not meeting the requirements specified under Section 2, paragraph 3.09 of these specifications.

ITEM 2 - Add paragraph

Section 2 - EARTHWORK

Part 3 - Execution

3.03 Preparation of Fill Areas

B. Fill Foundations

Add.........2. During the onsite inspection prior to placement of any fill, the subgrade shall be inspected, sampled and tested to assess the potential for collapsable soils. On-site inspections shall involve visual observation for excessively calcareous soils or other indicators of potentially collapsable soils. Undisturbed samples shall be taken at the locations shown on Figure B4. Representative samples from these locations shall be tested as outlined in Paragraph 3. If the observed deformations are judged excessive by the engineer when the samples are subjected to water and/or acid without changes in loading, the soils shall be considered collapsable and shall be removed and replaced with suitable compacted fill. Excessive deformation will be considered as that which could cause significant dike distress if the deformation occurred in the dike foundation where the test samples were taken.

3. The test procedures for representative samples shall include: consolidation, percent calcium carbonate, classification and density. Consolidation tests shall be performed in accordance with the following procedure;

- Two samples from the same test site shall be placed in adjacent consolidometers and loaded to the anticipated stress level that will be produced under the dike fill.

- One sample will then be flooded with pure water. The other sample will be flooded with sulfuric acid the concentration of which is equivalent to that expected within the tailings solute.

- The amount of deformation produced under the above conditions will be measured for each sample.

The percentage of calicum carbonate by weight shall be determined for each set of two like samples by the procedure outlined in C. A. Black, Ed., Methods of Soil Analysis, American Society of Agronomy, Inc., Madison, Wisconsin, 1965.

The samples shall be visually classified by the Engineer. Atterberg limits shall be run on representative samples of cohesive soils. Densities will be determined by standard ASTM procedures from samples recovered from borrow locations.

If collapsable soils are observed at specific locations and not at other locations, correlation between percent calcium carbonate and density will be used to define collapsable soils at locations which were not tested.

ITEM 3 - Add paragraph

Section 2 - EARTHWORK

Part 3 - Execution

3.04 Fills

A. Earth Fill

Add.........9. To assess the effects of small percentages of calcium carbonate in the dike fill material, a testing program shall be conducted on the borrow material prior to fill placement. Representative borrow samples (one per 10,000 cubic yards) shall be compacted in a consolidometer ring to the specified density and water content. The samples shall then be loaded to the anticipated stress level in the embankment and flooded with a tailings solution in a manner similar to that discussed in Section 2, paragraph 3.03. The percentage calcium carbonate of the samples shall also be determined as set forth in that section. Correlation between undesirable performance of the compacted fill and percentage calcium carbonate shall be made. During construction, borrow shall be tested for calcium carbonate percentage. If the percentage is higher than that determined above to cause undesirable fill performance, materials shall not be used for fill placement.

ITEM 4 Add paragraph

Section 2 - EARTHWORK

Part 3 - Execution

3.09 Synthetic Lining Subgrade

A. General

Add.........3. The bedding material for the synthetic lining shall contain no more than a minimum percentage by weight of calcium carbonate to prevent gas generation beneath the synthetic liner if the tailings solute contacts the bedding material. The actual percentage shall be governed by the final lining material selected and/or any provisions made to vent potential gas accumulations. For PVC or other impervious liners, the percentage shall be no more than one percent (1%) by weight, if no provisions are made to vent the gas. If venting is provided, percentages as high as four percent (4%) by weight calcium carbonate may be allowed. Lower allowable percentages may be specified during field supervision.

4. If suitable borrow for a non-vented bedding material is not available on site and venting is required, vents shall be installed by placing small diameter perforated PVC pipe in the bedding material beneath the liner in an orientation to intercept and collect gas accumulations. The pipe shall pass beneath the pond and exit to the atmosphere on either side of the pond. Provisions shall be made to prevent clogging of these vented pipes and to expedite the transfer of gas to the venting system.