UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
URANIUM RECOVERY FIELD OFFICE
BOX 25325
DENVER, COLORADO 80225

OCT 23 1989

URFO:DLJ
Docket No. 40-8681
License No. SUA-1358
04008681210R

Umetco Minerals Corporation
P.O. Box 669
Blanding, Utah 84511

Gentlemen:

We are in receipt of your letters dated September 6 and 29, 1989, transmitting the requested design drawings and calculations required for Cell 4A approval. The corrected elevations for the facility have resulted in a reevaluation of the design storm routing and the required storage and freeboard for Cells 1-I, 3, and 4A. This review has identified several areas where we believe the proposed plan is deficient. Specific concerns are provided in the enclosure to this letter. The deficiencies noted in the enclosure must be satisfactorily resolved before Cell 4A can be approved for construction.

To summarize the major review comments; freeboard calculations are unsubstantiated, upstream topographic features such as the diversion ditches are not documented sufficiently, and PMF volumes cannot be based on calculations considering infiltration on pond surfaces.

As discussed with Mr. John Hamrick of your staff on October 17, 1989, it is suggested that before you respond to the comments, you meet with NRC. Due to the numerous requests for information from our office and the current status of the Cell 4A embankment, such a meeting will be helpful in clarifying the information required to complete the review.

Should you have any further questions, you may contact Dawn Jacoby of my staff at (303) 236-2815.

Sincerely,

Ramon E. Hall
Director

DFO2
1/1

Enclosure:
As stated

UMETCO

Review Comments for Cell 4A

Design Submittals of September 6 and 29, 1989

1. In your September 6, 1989 submittal, you state that by using our draft Staff Technical Position Paper WM-8201, you determined that for Cell 1-I, the maximum operating pool is 3.15 feet below the crest of the dike, assuming that ditch 1 is in place. WM-8201 states that the storage capacity of a tailings reservoir should be sufficient to store the volume of a single PMF calculated from a 6 hour PMP with appropriate freeboard. Freeboard is defined as the difference in elevation between the crest of the dike and the maximum water surface that would result should a PMF occur. Your calculations show that of the 3.15 foot difference between the crest and the maximum operating pool, 2.15 feet is required to store the PMF runoff, so we assume that the additional 1.00 foot (3.15 ft - 2.15 ft) is your estimate of freeboard as defined above. It does not appear that this is an adequate amount of freeboard. Page 274 of the USBR publication, "Design of Small Dams," states that for a fetch of less than 1 mile, the minimum freeboard should be 3 feet. You should therefore provide freeboard calculations to justify that 1.00 foot is adequate. If 1.00 foot of freeboard is not sufficient, you should lower your proposed maximum operating pool so that an adequate amount of storage space is provided to accommodate the PMF plus adequate freeboard (also consider comment No. 4 below in estimating PMF volumes).

2. In your September 6, 1989 submittal, you take credit for the storage provided by low spots, tank berms and a 14-acre/foot sedimentation basin (fly-ash pond). Additional information is needed concerning these features together with a topographic map showing their locations. Low spots should be located totally below the surrounding ground levels. For storage features that have berms or dikes, you should provide assurance that the berms and/or dikes will not fail during a PMF. Sufficient information should be provided to allow the staff to independently verify all your conclusions.

3. You propose to take credit for three diversion ditches, but have not provided any information on the design of these ditches. You should therefore provide additional information to show that these ditches have sufficient capacity to divert a PMF away from Cell 1-I. As a minimum, you should provide the following:

   a) PMF calculations,
   b) topographic map showing delineations of the drainage areas and the locations of the ditches,
   c) cross sections and profiles of the ditches,
   d) ditch dimensions and slopes,
   e) design calculations used to size the ditches, and

f) justification for providing (or not providing) erosion protection in the ditches.

4. In calculating PMF volumes due to the occurrence of a 6-hour PMP, you used a minimum retention rate of 0.24 inch/hr. Use of a retention rate is an acceptable procedure for estimating a runoff volume from a PMP occurring over a contributing drainage area adjacent to the cells, since retention rates account for infiltration, surface storage and other more minor losses. For rainfall that occurs directly over the cells, the entire PMP should be used to estimate runoff volumes because there will be no losses due to infiltration and surface storage in the amount of rainfall that occurs over the standing water in the cells. This should also be considered in the design of Cell 4A.

5. We agree that once the interim cover is placed on Cell 2, all of the drainage area that previously ran into Cell 2 will run into Cell 3. What we are concerned about is a situation where a PMF occurs before Cell 2 is dried out and the interim cover is placed. If this were to occur, there could be a potential for the Cell 2 dike to be overtopped and breached. This could lead to a much larger volume of water and tailings flowing into Cell 3. You should therefore address this situation and provide assurance that during the period while interim cover is being placed on Cell 2, there will be sufficient storage and freeboard in Cell 2 to prevent overtopping of the Cell 2 dike. Alternately, you may be able to show that Cell 3 has sufficient storage space available to store the entire volume of water and tailings that would be released if the Cell 2 dike was breached.

6. In your September 29, 1989 submittal, you provide an analysis which shows that Cell 3 has sufficient storage space available to contain the PMF from both Cell 2 and Cell 3. You assume that Cell 3 is 35 percent filled with tailings but give no basis for your assumption. You also state that the Cell 3 freeboard is 1.0 foot and again provide no basis for this value. You should therefore provide the basis for your assumptions and assure that they are conservative. We note that the freeboard for Cell 4A, which you estimated in your May 12, 1989 submittal, is 1.25 feet. Since Cell 3 has a longer fetch, the freeboard should probably be greater than this. The information you provide should also include an elevation-storage curve for Cell 3.

7. The trapezoidal spillway you propose to construct between Cells 2 and 3, has an 18 foot bottom with 1V:16.67H side slopes. The spillway depth is 1.2 feet and the bottom slope is 0.05. No freeboard is provided in the spillway so during a PMF, the water surface in the spillway will be at the same elevation as the crest of the Cell 2 dike. Because of the uncertainties involved in sizing the spillway and in estimating a PMF, it is possible that water could flow deeper than 1.2 feet and overtop the Cell 2 dike. This could result in a breach of the dike and allow an unacceptable volume of tailings and water to flow into Cell 3. You should therefore provide an adequate amount of freeboard in the spillway.

8. Your September 29, 1989 submittal gives a minimum Cell 1-I crest elevation of 5618.4 feet. The stage-storage curve provided in your September 6, 1989 submittal indicates that the dike crest varies from 5618.2 feet to 5618.4 feet. Please clarify.

8681/210R/DLJ/89/10/17/L

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CONCURRENCE:		DATE:
DJacoby/URFO/lv		10/23/89
RGonzales/URFO		10/23/89
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