

Mr. George Rael, Director  
U.S. Department of Energy  
Albuquerque Operations Office  
ERD/UMTRA  
P.O. Box 5400  
Albuquerque, NM 87185-5400

June 03, 1997

SUBJECT: REVIEW OF PROJECT INTERFACE DOCUMENT 14-S-08 FOR THE MAYBELL,  
COLORADO SITE

Dear Mr. Rael:

By letter dated May 3, 1996, the U.S. Department of Energy (DOE) submitted Project Interface Document (PID) No. 14-S-08, for the Maybell, Colorado Uranium Mill Tailings Remedial Action (UMTRA) Project site. The PID requests U.S. Nuclear Regulatory Commission approval for decreasing the "by-dry-weight" bentonite content of the radon barrier from 10 percent to seven percent. To concur with PID No. 14-S-08, the staff requested: 1) that DOE provide information on its procedures to ensure that the permeability of the as-constructed radon barrier is  $\leq 10^{-7}$  cm/sec; and 2) that DOE commit to sample and measure Ra-226 concentrations at a minimum of 30 locations after placement of the frost barrier, and provide the data to NRC as soon as possible. DOE provided the information requested to close these issues in its correspondence dated December 16, 1996.

The enclosed Technical Evaluation documents the staff's review of the responses provided by DOE. Based on its analyses, the staff concurs with DOE's request for the stated decrease in the bentonite content of the radon barrier. DOE has committed to provide a discussion of the "borrow" and "as-placed" frost barrier Ra-226 analyses in its Completion Report. Also, as stated by DOE, the measured cover Ra-226 concentrations will be used in the final radon barrier calculation.

If you have any questions concerning this subject, please contact the NRC Project Manager, Mr. Robert Carlson, at (301) 415-8165.

Sincerely,

Original Signed By  
Joseph J. Holonich, Chief  
Uranium Recovery Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

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PDR WASTE  
WM-69 PDR

Enclosure: As stated

cc: L. Woodworth, DOE Alb  
S. Hamp, DOE Alb  
E. Artiglia, TAC Alb

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PROJECT INTERFACE DOCUMENT (PID) REVIEW  
TECHNICAL EVALUATION

PID NO: 14-S-08

SITE: Maybell, CO

PROJECT MANAGER: Robert Carlson

TECHNICAL REVIEWER(S): Elaine Brummett, Health Physicist  
Dan Rom, Geotechnical Engineer

SUMMARY AND CONCLUSIONS:

The U.S. Department of Energy (DOE), by its letters dated May 3, May 13, and December 16, 1996, requested formal concurrence for a Class I specification change through Project Interface Document (PID) No. 14-S-08. DOE requests concurrence for decreasing the "by-dry-weight" bentonite content of the radon barrier from 10 percent to seven percent. Based on its review of DOE submittals, the staff concurs on PID No. 14-S-08.

TECHNICAL EVALUATION:

Based on its review of DOE's original submittal of May 3 and May 13, 1996, the staff had identified a need for additional information on two items. Staff concerns with PID No. 14-S-08 were discussed at length during conference calls between NRC and DOE Uranium Mill Tailings Remedial Action (UMTRA) Project personnel on August 19 and 27, 1996. To concur on PID No. 14-S-08, the staff requested: 1) that DOE provide information on its procedures to ensure that the permeability of the as-constructed radon barrier is  $\leq 10^{-7}$  cm/sec; and 2) that DOE commit to sample and measure Ra-226 concentrations at a minimum of 30 locations after placement of the frost barrier, and provide this data to the NRC as soon as possible. DOE provided the information requested to close these issues in its correspondence dated December 16, 1996. The staff reviewed and found the information acceptable. These items are considered resolved as discussed below.

Radon Barrier Permeability

Radon barrier samples containing 7% Wyoming bentonite were compacted to 95% dry density and optimum moisture content determined by ASTM D698. A triaxial permeability of  $10^{-7}$  cm/sec was the targeted value that DOE wanted to achieve on laboratory samples under conservative conditions. As a conservative approach, DOE measured the permeability of the radon barrier lab samples under saturated conditions, an unlikely condition because of the frost barrier covering the radon barrier material. Saturated permeability of the samples ranged from  $2.79 \times 10^{-8}$  cm/sec to  $1.97 \times 10^{-7}$  cm/sec with a geometric mean of  $7.65 \times 10^{-8}$  cm/sec. Based on its review, the staff finds that DOE's response provides reasonable assurance that the radon barrier permeability will be  $\leq 10^{-7}$  cm/sec.

Enclosure

### Sampling and Measuring Ra-226 Concentrations after Placement of Frost Barrier.

After placement, DOE will collect twenty-five frost barrier Ra-226 samples from the middle of the frost barrier. These locations will be the same as where previous radiological samples were taken for contaminated materials. It will be assumed that the radon barrier has the same Ra-226 concentrations as the frost barrier. Since the radon barrier is a mixture of Rob Pit overburden material and bentonite, this assumption is considered conservative. Measured Ra-226 concentrations will be used in the final radon barrier calculation.

The staff concurs with the understanding that the "borrow" and "as placed" frost barrier Ra-226 analyses will be discussed in DOE's Completion Report. Also, as stated by DOE, the measured cover Ra-226 concentrations will be used in the final radon barrier calculation.

#### REFERENCE:

- Letter from DOE, PID No. 14-S-08, Class I designation and request for NRC formal concurrence, May 3, 1996.
- Letter from DOE, PID No. 14-S-08, Calculations for the Maybell radon barrier design, May 13, 1996.
- Letter from DOE, PID No. 14-S-08, Responses to staff issues, December 16, 1996.