



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

MAR 8 1994

Mr. Albert R. Chernoff, Project Manager  
Uranium Mill Tailings Remedial Action  
Project Office  
U. S. Department of Energy  
Albuquerque Operations Office  
P. O. Box 5400  
Albuquerque, New Mexico 87185-5400

Dear Mr. Chernoff:

The U.S. Nuclear Regulatory Commission staff has completed its review of the U.S. Department of Energy's (DOE's) submittal of additional Completion Report (CR) information for the Canonsburg, Pennsylvania, Uranium Mill Tailings Remedial Action (UMTRA) Project site. The information addressed outstanding issues on the erosion protection and the material disposed of within the site boundary but outside the encapsulation cell. Based on our review of the additional information, as discussed in the enclosure, we can not yet concur with the CR.

In our letter, dated October 6, 1992, the NRC staff identified a need for additional information on the erosional stability of the site, and on four other issues related to the contaminated material outside the cell. In response, DOE transmitted to NRC by a letter dated May 21, 1993, a Geomorphic Stability Field Reconnaissance Site Visit Report (May 1993) addressing the stability issue, and additional information regarding issues one and four. Later, DOE submitted with a transmittal letter dated August 26, 1993, additional information addressing issues two and three. The staff considers issue four resolved, but the other issues remain open.

The staff provided comments on the geomorphic report during an informal meeting with DOE staff on August 2, 1993, at Albuquerque, New Mexico, but has not yet received the revised report. The enclosure includes those staff comments on the report and the remaining three issues.

You should submit a revised version of the geomorphic report suggesting appropriate measures for erosion protection, along with the resolution

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of the other issues. The NRC staff is willing to meet with you to discuss resolution of these issues at your request. If you have any questions, please contact the NRC Project Manager, Mohammad Haque at (301) 504-2580.

Sincerely,

ORIGINAL SIGNED BY

Joseph J. Holonich, Acting Chief  
Uranium Recovery Branch  
Division of Low-level Waste Management  
and Decommissioning  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

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## GEOMORPHIC REPORT

Based on the Nuclear Regulatory Commission staff review of the geomorphic report, we conclude that the report provides a good assessment of the erosion problem along Chartiers Creek. The report shows the extent of erosion and evaluates its cause. The report further indicates that additional riprap will be placed in the channel to reduce the erosion rate and protect the contaminated material from erosion. However, it is not clear to the NRC staff how this will be accomplished.

The geomorphic report (or possibly a separate hydraulic design report) should provide information regarding locations of the proposed additional rock. Locations, cross-sections, areal extent, toe depth, etc. should be assessed. While a final design is not necessary at this time, the report should address several key design parameters, including: the magnitude of the flood that will be used to design the rock; and the design bases that will be used to determine the configuration of the erosion protection. More specific locations of the rock placement and associated earthwork activities would also be helpful.

Based on our review of the report, it appears that the erosion problem may be caused to a great extent by sloughing and collapse of the stream banks. If such instability is present, merely placing riprap may not solve the problem. If riprap is placed on unstable banks, the riprap will also collapse and its stabilizing effects will be greatly reduced. Therefore, additional information should be provided regarding the design of the new erosion protection relative to the stability of the slopes of the channel banks. Plans for cutting back the channel side slopes and/or reducing the potential for sloughing should be discussed.

## ISSUE 1 - Th-230 in Area C

The Department of Energy (DOE) used the Radiation Attenuation Effectiveness and Cover Optimization with Moisture Effects (RAECOM) computer code to estimate the radon flux from the grids with elevated Th-230 (Enclosure 2 with DOE's May 24, 1993 letter), based on the maximum amount of Ra-226 that would occur from the decay of Th-230 and residual Ra-226, during 1000 years. The working level (WL) within a potential slab-on-grade structure built on the grid was then calculated in order to relate the potential radon progeny concentration to the EPA indoor standard of 0.02 WL. This calculation assumes that a surface radon flux of  $3.9 \text{ pCi/m}^2/\text{s}$  will produce 0.02 WL inside a structure.

Enclosure

According to the corrected verification data (Enclosure 3 with DOE's May 24, 1993 letter) only grid #240 (of the 28 grids analyzed for Th-230 in Area C), has a projected 1000-year Ra-226 level (25.8 pCi/g), that is above the EPA standard. The result for grid #660 is marginal with a projected Ra-226 of 16.3 pCi/g. DOE also obtained a soil sample from the creek bank in February 1993, that has a Th-230 concentration of 54 pCi/g and a Ra-226 value of 7 pCi/g. This results in a projected Ra-226 concentration of 23.4 pCi/g.

Although DOE could have been more appropriately conservative in its assumptions for the RAECOM model input, the parameter values chosen and the resulting flux are defensible. However, the main question is whether or not the use of the radon flux approach is appropriate. The EPA standard for soil cleanup is the Ra-226 concentration, not an estimated radon flux. The flux assessment helps to support the ALARA demonstration, but DOE does not account for erosion or disruption of the covering soil. If six inches of backfill soil were removed, the radon flux (using DOE's model) would exceed the proposed radon flux limit.

If this property were released for unrestricted use, there is no assurance that the Th-230 deposits will remain covered and in place. Therefore, if some locations of elevated Th-230 will remain in Area C, DOE should indicate what land use control or restrictions will be imposed.

#### ISSUE 2 - Verification Data for Residential and Technology Areas

- a. DOE's submittal of August 26, 1993 stated that Section D 3.3a of the Remedial Action Plan (RAP) indicated that no verification soil samples were required for these areas of the processing site. NRC staff disagrees with that because that section of the RAP reads "In addition to soil samples taken during excavation, a composite soil sample will be prepared from 10 or more samples taken from the excavated surface for each grid block. ... The composite soil samples will later be sent to the laboratory for preparation and final analysis." The laboratory results were to be used to document Ra-226 residual levels. DOE should address why this data was not presented in the Completion Report (CR).
- b. DOE indicated that, for simplicity, only one area of excavation was shown for the technology area in drawing CAN-PS-10-0030. The CR should identify all areas of excavation to substantiate the provisions of the RAP.
- c. DOE proposed additional information for the CR that is acceptable, but not complete. DOE should include its response statement on page 2 of the Attachment of DOE letter of August 26, 1993, which reads "Soil sample composite data obtained during excavation control would not provide an accurate estimate of residual contamination because this data was obtained prior to burial of vicinity property contaminants."

### ISSUE 3 - Clarification of Materials in the Satellite Cell

NRC staff pointed out three portions of the CR that refer to Vicinity Property (VP) material disposed outside of the main cell. Clarification was requested as to the volumes, sources, and location of all VP material placed outside the disposal cell. Staff could not determine if the three portions of the CR were referring to the same material.

DOE responded that radiological characterization of the site would be needed to completely define material location, but that the VP material was placed in the manner prescribed in the RAP. If any documentation of VP material placement exists, it should be incorporated into the indicated portions of the CR.