



July 20, 1979

Mr. Karl Seyfrit, Director
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76012

Dear Mr. Seyfrit:

This is in regard to the recent failure of the uranium mill tailings retention dike at the United Nuclear Churchrock mill near Gallup, New Mexico on July 16, 1979. I understand that several hundred acre-feet of contaminated water were released to the Puerco River, which empties into the Little Colorado River, thence to the Colorado River and Lake Mead.

Since the dike which failed is of conventional clay core design, the reason for its failure is obviously of great interest because of the possible implications on other similar structures. Consequently, this Agency would be very interested to know the results of your investigations into the cause of failure, and I request that we be provided copies of any relevant investigation reports. I would also like to receive copies of any environmental assessments and determinations of reclamation or decontamination needs that might be generated. We are particularly interested in any "lessons" that might be learned from this accident.

The EPA took a series of aerial photographs of the site on July 17, 1979 to document the accident and show flow paths and deposition locations. Hopefully, this will aid the State on the extent of cleanup operations that might be required. We are having multiple copies of the six most informative frames printed, and have reserved a set for the NRC. I will forward them to you as soon as we receive them.

Thank you for your assistance in this matter.

Sincerely,

Allen M. Davis, Director
Air & Hazardous Materials Division (6AAH)

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The Honorable Pete V. Domenici
United States Senate
Washington, D. C. 20515

Dear Senator Domenici:

This letter is in response to your October 23, 1979, request for information concerning NRC's review of the United Nuclear Corporation's (UNC) Church Rock mill tailings spill. As you know, prior to enactment of amendments to the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) on November 9, 1979, NRC was reviewing the Church Rock incident not only as a result of the State's request for technical assistance, but also as an agency exercising joint regulatory jurisdiction.

As we testified at the House Committee on Interior and Insular Affairs' October 22, 1979, hearing on the Church Rock incident, the NRC is performing a full safety review of the UNC's proposal for continued operations at the site. We also have been fully engaged, with the State, in guiding clean up efforts by the UNC. Prior to receipt of your October 23, 1979, letter, NRC took action authorizing the resumption of mill operations for a limited period of time (45-60 days) by approving the first step of a three stage plan for disposal of tailings from the Church Rock mill. The second and third stages of this plan involve expansion of the current impoundment through a dam lift which would permit operations to continue for an additional limited time while the identification and development of a new tailings impoundment site suitable for the ultimate disposal of tailings materials is accomplished. Approval of the dam lift and submission of the proposal for a new tailings disposal site by January 30, 1980, were made conditions of the NRC license.

Now that the Congress has passed the amendments to the UMTRCA, the NRC will no longer have direct licensing responsibility over tailings materials from the UNC Church Rock mill. However, the NRC will continue to provide technical assistance to the State, as requested, in the review of UNC proposals. Having approved initial resumption of operations, the NRC staff is in the process of reviewing the operator's plan for expansion of the current impoundment (stage two). We expect to provide our safety evaluation to the State by the end of November. Our review of the proposal for

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The Honorable Pete V. Domenici - -

a new tailings disposal site will be scheduled upon submittal and will be performed in a timely fashion to avoid unnecessary adverse impacts upon State review schedules or the licensee's operations.

I hope this information answers your questions on this matter. If I can be of any assistance in the future, please contact me.

Sincerely,

signed Lee V. Gossick

Lee V. Gossick
Executive Director for Operations

IDENTICAL LETTER TO:

The Honorable Harrison Schmitt
United States Senate
Washington, D.C. 20515

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Arizona
Colorado
New Mexico

Texas
Washington

Enclosed for your information is a summary statement of NRC's evaluation of the failure of the Church Rock, New Mexico, tailings retentions system. We believe certain action should be taken as a result of this evaluation.

NRC recommends that each Agreement State perform inspections and evaluations of all uranium mill tailings dams under your respective jurisdiction to insure that an incident similar to the Church Rock failure will not occur. To accomplish this it is recommended that in addition to regular state inspection procedures, the following specific evaluations should be performed by a licensed professional engineer:

- a. Embankments should be visually inspected for signs of slumping, cracking, movement or concentration of seepage. Records should be reviewed to determine whether slumping, cracking, movement or concentration of seepage has been evident in the past and if so, what remedial measures have been performed.
- b. If the embankment inspection performed under item "a" reveals evidence of slumping, cracking, movement or concentration of seepage, the following detailed analyses should be performed.
 1. The embankment and foundation soils should be checked for their susceptibility to collapse when saturated.
 2. The embankment and foundation soils should be checked for their dispersive characteristics when exposed to the impound tailings solution.
 3. The foundation profile should be examined to determine the existence of any factors which could lead to significant differential settlement.
- c. Regardless of the results of items "a" and "b", the operators should be required by license condition to initiate a continuing program that meets the criteria presented in NRC Regulatory Guide 3.11.1, "Operational Inspection and Surveillance of Embankment Retention Systems for Uranium Mill Tailings."

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Please inform us by January 31, 1980 of your plans to perform these inspections and evaluations. NRC is prepared to assist you in these evaluations. If you desire such assistance, please contact us.

G. Wayne Kerr, Assistant Director
for State Agreements Program
Office of State Programs

Enclosure:
Summary Statement

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The New Mexico Environmental Improvement Division (NM EID) on August 13, 1979 issued an Order to United Nuclear Corporation (UNC) which required UNC to comply with recommendations for a clean-up program as described in a letter from Mr. Thomas E. Baca, NM EID, to Mr. D. D. Turberville, UNC, of the same date. This letter refers to condition seven of that August 13 letter.

In accordance with Section 4-100B of the New Mexico Regulations for Governing the Health and Environmental Aspects of Radiation, every reasonable effort should be made to maintain radiation exposure as far below the limits specified in part four as practicable. Pursuant to this section, the staff of the Environmental Improvement Division has evaluated clean-up reports submitted by the United Nuclear Corporation, and performed an assessment of the radiation exposures resulting from the increased radionuclide soil concentrations in the areas affected by the spill. Based on the results of these evaluations, the interim clean-up criteria given in condition number seven of the August 13, 1979 letter will be replaced by the following:

- 7A. All contaminated areas shall be cleaned up to background levels of all radionuclides. This criteria shall be considered satisfied if the mean concentrations of thorium-230, radium-226 and lead-210, averaged over nine square feet, are less than or equal to -

thorium-230	3 pCi/gram
radium-226	3 pCi/gram
lead-210	3 pCi/gram

at the 50% confidence level.

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