

# KERR-McGEE OIL INDUSTRIES, INC.

Kerr-McGee Building • Oklahoma City 2, Oklahoma

[REDACTED]

11/28/60

Director, Division of Licensing & Regulations  
United States Atomic Energy Commission  
Washington 25, D. C.

Dear Sir:

This is to notify you of the rupture of an earthen dam impounding liquid tailings from our Shiprock uranium ore mill and the consequent release of the contents from our restricted area on August 22, 1960.

The pond concerned has been estimated to contain about 250,000 gallons of raffinate from the solvent extraction of uranium and vanadium out of leach liquor obtained from acid dissolution of uranium ore. This liquor is acidic of a pH around 1.8, containing some residual kerosene and di-2-ethyl-hexyl phosphoric acid and tri-butyl phosphate from solvent extraction. The uranium concentration was approximately .001 gpl  $U_3O_8$  or less.

The dam is on the south side of the mill proper at a distance of about 500 feet. The distance from the pond to the San Juan River is about 6,000 feet measured along the water course.

On the afternoon of August 22nd, some leakage was noted at the northwest corner of the pond. This was repaired by bulldozing earth up to the bank. In the evening there was a local rain shower which evidently weakened the earth fill and somewhere between 11:00 P.M. and midnight it gave way and within a matter of a few hours the contents of the pond flowed along the arroyo leading toward the San Juan River. Because of the porous nature of the gravel beds between the dam and the river, it cannot be determined how much of this liquid, if any, actually mixed with the river flow.

It has been subsequently estimated that the amount of Radium 226 released might have been 300 microcuries, and the concentrations for the period of the flow would have exceeded the applicable limits set forth in Appendix B of Part 20 CFR 10.

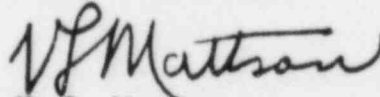
In the weeks following this incident a thorough study was made of the results of release of this radioactivity by the Atomic Energy Commission (Idaho Operations Office), the United States Public Health Service, and the Public Health Authorities of the State of New Mexico. It was concluded that no humans suffered serious overexposure because of this spill.

We immediately began a program of altering the storage system for liquid tailings to ensure that such an accident could not happen again. This includes the following:

1. Compacting the earth on all retaining walls.
2. Construction of new ponds to the south (upslope) of the present ones.
3. Leaving the two north ponds empty to serve as catch basins in case of leakage of the higher ponds.
4. Installation of a gate control at the point where the drainage crosses under the roadway to serve as additional emergency provision to prevent liquids from leaving the restricted area.
5. Adoption of an inspection and maintenance <sup>hourly</sup> program for this <sup>as need</sup> storage area.

We expect that this will prevent such an accident from ever occurring again.

Very truly yours,



V. L. Mattson  
General Manager Minerals

VLM:jl

cc: Division of Compliance  
Operations Office  
Idaho Falls, Idaho

Could inside dam surfaces be lined to prevent  
seepage thru dam? Dec 12-21-60