KERR-McGEE NUCLEAR CORPORATION
KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

March 21, 1978

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. E. Rothfleisch
Fuel Processing & Fabrication Branch
Division of Fuel Cycle & Material Safety
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Docket #40-8027

Dear Mr. Rothfleisch:

Please refer to our transmittal of January 11, 1977, concerning leakage of raffinate pond #2 which stated that we would furnish the NRC monitor well data on an annual basis. Attached you will find the data summary for 1977.

In addition to monthly analysis of the monitor wells, a minimum of eight wells showing elevated nitrate values were monitored weekly throughout the year. Monitor well #2314 continues to exhibit the highest nitrate values with a 1977 range of 550-1550 mg/l NO_3 (as N), the yearly average being 1000 mg/l. The four T-series wells, modified to the shallow zone, and M-3, some 80 feet due south of #2314, also show elevated nitrate values but at levels lower than #2314. The underflow rate and raffinate leakage rate as calculated previously (January 11, 1977, transmittal; p. 22 and 23) remain essentially unchanged based upon the 1977 data; that is, the calculated raffinate leakage, based upon #2314 at 1000 ppm NO_3, remains <0.1 gpd. Monitor well ED-1, completed in the lower zone at 49 feet total depth, continued to exhibit anomalous nitrate values throughout 1977 and has been placed on the weekly monitoring schedule for 1978. It is now believed that the elevated nitrate concentration for ED-1 results from communication from the upper zone to the lower zone through monitor well #2314, located some three feet away. Modification of the monitor wells to the shallow zone and the subsequent increase in nitrate values for those wells intercepting the leakage (i.e. T-series) further confirms that the very small amount of leakage is indeed confined to the upper zone as predicted earlier.

We have discussed in the past the mechanism of leaking from this pond based upon a single fissure which was discounted by some who read our initial reports. If we assumed that this rate of leakage is due to either a single fissure or a seepage uniformity through

the clay liner of the pond, we have calculated rather ridiculous leak rates. A single fissure leaking at an indicated rate of 0.1 gpd would amount to 0.3 ml/min. or approximately one drop every 20 seconds. Conversely, as you can see, if the leak rate was uniform seepage, the permeability index of the clay liner is calculated to be 1×10^{-12}, well below the rate acceptable to your branch for compacted liners under mill tailings storage impoundments. We believe on this basis that the current measured rate of leakage consistently demonstrates that no environmental hazard exists and our current license condition requiring discontinuance of the use of this pond by December 1, 1980, is in excess of any reasonable requirement.

A copy of this summary is being forwarded directly to Dr. D.L. Warner in Rolla, Missouri. Should you require additional or more information, please let us know.

Very truly yours,

W. J. Shelley, Director
Regulation and Control

WJS:hw

Enclosure