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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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WMUR:RSK
Docket No. 40-8728

MEMORANDUM FOR: Docket File No. 40-8728

THRU: H. J. Miller, Section Leader
Uranium Recovery Licensing Branch

FROM: R. S. Kaufmann
Uranium Recovery Licensing Branch

SUBJECT: REVIEW OF HYDROLOGIC MONITORING OF THE TETON EXPLORATION DRILLING COMPANY, INC., R&D IN SITU PROJECT

In licensing the Teton Exploration Drilling Company, Inc., (TETON) R&D in situ project, the NRC called for monitoring of water levels in wells completed in aquifers both above and below the ore zone in each of the two well fields. Monitoring was requested to determine if excursions are taking place, to evaluate the usefulness of monitoring water level in forecasting excursions, and to provide a better understanding of aquifer interconnection. The monitoring results were reported in the first quarterly report and reviewed by both WMUR staff and Dr. Don Warner, NRC geologic consultant. Dr. Warner reported his conclusions to the NRC by telephone on June 25, 1980.

Excursion Occurrence

Both WMUR staff and Dr. Warner concluded that no excursions were indicated at the TETON site by either chemical analysis or water level monitoring. This conclusion was based on the results of water quality aralyses and the fact that no increasing water level trends were noted in any monitor well.

Water Level Monitoring for Vertical Communication

Water level monitoring data were reviewed in an effort to evaluate the degree of fluid communication between adjacent aquifers. Although the data obtained could be interpreted as indicating that hydrologic communication existed, the procedure followed in conducting the test left open alternative interpretations making the results non-conclusive. The errors in data gathering which unfortunately were not foreseen by the staff included; (1) failure to obtain baseline water level measurements

under static conditions (no pumping of the aquifer) immediately before starting the test, (2) both ore zones were pumped simultaneously during the test and (3) an insufficient number of water level and pumping rate measurements were taken during the test.

Conclusions

Although it could be concluded from the water quality and water level monitoring data that no excursions occured at the site during the test period, the results with respect to using these data to indicate fluid communication between adjacent aquifers or to provide an early warning of vertical excursions were inconclusive. In the event that a similar test is conducted any time in the future, it is recommended that the following data gathering procedures be followed:

1. Firmly establish water level baseline values by measuring static water levels (and corresponding barometric pressures) for at least one week before starting the test.

2. Do not pump more than one ore zone at a time during the test period.

3. Collect water level data with continuous chart recorders and measure well head injection and production pumping rates several times per day and in particular when flow rates are changed.

J E Rothfleisch for

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