University of Missouri - Rolla

SCHOOL OF MINES AND METALLURGY
MINING, PETROLEUM AND GEOLOGICAL ENGINEERING

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November 27, 1972

Mr. Cecil R. Buchanan
Materials Branch
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Buchanan:

After our meeting of November 20, George DeBuchananne and I considered the monitoring requirements that we believe should be specified if Kerr McGee is allowed to use its deep well for radioactive wastewater injection.

We concluded that Kerr McGee should be required to drill a well about 3,000 feet north of the present well, on a line perpendicular to the nearest fault. This well would be for the purpose of proving the presence or absence of the fault that the company showed on their most recent structural geologic map of the area. The well would need to be drilled only to the first marker bed that could be used to confirm the fault, if it is present. If the fault is not present, the well should be continued to the same stratigraphic depth as the present well to be used as a monitor well and standby injection well.

A third well should be drilled about 800 feet from the present well between wells 1 and 2. This well should be drilled to the top of the Arbuckle and cased to the top of the Simpson. The Simpson should be left open or, if necessary, supported with a slotted or perforated liner to allow monitoring of fluid pressure and quality of water in the Simpson. This well would be used to detect any vertical leakage from the Arbuckle, since such leakage would increase the pressure or water level in the Simpson and, perhaps, contaminate the Simpson with radioactive wastewater.

If the fault to the north of the Kerr McGee well is proven to exist during the drilling of well number 2, then a fourth well should be drilled about 3,000 feet southwest of the present well as a monitor and standby well. This well should be drilled to the same stratigraphic level as the present well and constructed in the same manner as the present well. If no fault exists north of the Kerr McGee well, then the fourth well would not be necessary.

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In addition to these monitoring requirements, suggestions are made in my review of June, 1972, that should be considered, if the well is allowed to be used.

I believe it might be important for Kerr McGee to realize that no matter how they might gain permission to use the well, whether through a hearing or otherwise, the same or similar monitoring requirements would probably be imposed. In addition, there is a possibility that further drilling will yield information that would change the present geologic conclusions substantially, even to the extent the permission to use the well would eventually be denied. Further complications are: EPA and others will be reviewing the impact statement and may reach different conclusions than we have, and that the State of Oklahoma will probably want to reconsider the well for licensing in view of the new information that is now available. The meaning of all of this seems to me that it will be a least a year before Kerr McGee could begin using their well, that considerable more money will need to be invested, and that, in the end, permission to use the well could conceivably be denied. When confronted with these possibilities, Kerr McGee may be inclined to seek other alternatives for disposal of the raffinate.

Please let me know if I can be any further assistance in clarifying my recommendations concerning the Kerr McGee case.

Very truly yours,

Don L. Warner, Professor
of Geological Engineering

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