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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

October 16, 1970

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Harmon
Kerr McGee
file
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Bryant

File

MR. PRICE'S OCTOBER 9 MEMORANDUM RE DEEP-WELL DISPOSAL OF WASTES, KERR-McGEE CORPORATION

SECY:LGH

At Regulatory Information Meeting 426 on October 12, 1970, the Commission approved the proposed letter to the Kerr-McGee Corporation denying its request to dispose of liquid wastes containing natural uranium, thorium, and other radioactive constituents by injection into the Corporation's Sequoyah disposal well.

The Deputy Director of Regulation and Assistant Director of Regulation for Administration are taking the appropriate action.

W. B. McCool
Secretary of the Commission

cc:

Deputy Director of Regulation
Asst. Dir. of Reg. for Admin.

8512180011 701016
PDR ADOCK 04008027
C PDR

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Rec'd Off. Dir. of Reg.
Date 10/21/70
Time 11:36

Approved by the
Comm. at Info Mtg

10/12/70

(for L Johnson's signature)

Dr. Beck says it's OK to go

OK HSP

DML:MB:DFH
40-8027

OCT 9 1970

Chairman Seaborg
Commissioner Ramey
Commissioner Johnson
Commissioner Thompson
Commissioner Larson

DEEP-WELL DISPOSAL OF WASTES, KERR-McGEE CORPORATION

The Kerr-McGee Corporation is presently licensed to convert uranium mill concentrates to UF₆ at its Sequoyah facility near Gore, Oklahoma. In conjunction with these activities, Kerr-McGee has requested approval to dispose of its liquid wastes by deep-well disposal.

The U.S. Geological Survey and our staff consultant on geohydrology, Dr. Don L. Warner of the University of Missouri, have reviewed Kerr-McGee's application. The conclusion reached by both USGS and Dr. Warner is that disposal of waste liquids at the proposed site by deep-well injection may constitute a radiological hazard. We plan to deny Kerr-McGee's application based on the unacceptability of the proposed site for disposal of radioactive waste solutions by deep-well injection.

On May 26, 1970, a meeting was held with Kerr-McGee representatives, at which time USGS summarized its preliminary conclusions relative to Kerr-McGee's proposal. During the meeting we discussed several alternative waste handling and treatment methods presently under study by Kerr-McGee, including chemical treatment and pond storage of the waste. Presently, waste raffinates containing the significant radioisotopes are being stored in ponds. Waste scrubber solutions containing natural uranium in concentrations less than 10% of Part 20 limits are being released into the Illinois River following chemical treatment. We believe that the storage of the waste raffinates in ponds is acceptable on an interim basis in view of the geohydrological characteristics of the site and the environmental monitoring program which Kerr-McGee is required to follow.

~~4507310333~~

Commission

-2-

A copy of the proposed denial is enclosed. I would like to discuss this with the Commission at an early information meeting.

(Signed) HL

Harold L. Price
Director of Regulation

Enclosure:
Proposed denial ltr to
Kerr-McGee fm L. Johnson

cc w/encl:
Secretary (2)
General Manager (2)
General Counsel (2)

bcc w/encl:
HLPrice, DR
CKBeck, DR
MMann, DR
CLHenderson, DR
SHHanauer, DR
IRRogers, RPS
ERPrice, SLR
LDLow, CO
LJohnson, DML
RECunningham, DML
CRBuchanan, DML
DFHarmon, DML
St. Br. Dist.
DML
DR

DR	DR
CKBeck	HLPrice
1 / 70	10/18/70
OGC	DR
8/17/70	MMann
	1 / 70

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DATE

DML

DFHarmon/g1

8/5/70

DML

RECunningham

8/7/70

DML

DANussbaumer

8/11/70

DML

LJohnson

8/11/70

OGC

DR

MMann

1 / 70



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I have examined this draft and I concur with all the statements regarding the geologic conditions and hydrologic effects related to the proposed waste injection scheme.

Robert Schneider

Robert Schneider
Chief, Office of Radio-
9/24/70 hydrology

a. Geological Survey

Kerr-McGee Corporation
ATTN: Mr. G. E. Waller
Nuclear Division - Staff Engineer
Licensing and Regulation
Kerr-McGee Building
Oklahoma City, Oklahoma 73102

Gentlemen:

This refers to your application dated April 10, 1970, for AEC approval to dispose of liquid wastes containing natural uranium, thorium, and other radioactive constituents by injection into your Sequoyah disposal well.

You estimated that the injected waste fluid will be restricted to a distance of 460 feet in five years and 930 feet in 20 years. This estimate was based on a calculation which assumes that the formation porosity and permeability are homogeneous and isotropic and that the flow from the injection well is uniformly radial. Carbonate rock aquifers are notably heterogeneous, and the core analysis provided in your application (Exhibit K) demonstrates this. For example, the data show that permeabilities determined from cores taken in the Arbuckle range from less than 0.1 to 768 millidarcies, and that vuggy porosities range from 0.9 to 13.4 percent. From these data, it can be expected that the rate of movement from the well bore will be extremely variable, from low rates of movement in beds of low permeability to high rates of movement in beds of high permeability. Therefore, we are unable to agree, based on the data provided, with your estimate on fluid movement.

Furthermore, the data presented show mapped faults throughout the area surrounding the disposal site. While the nearest known fault appears to be about one mile east-southeast of the disposal well, the complexity of the site geology is such that other faults or fracture zones closer to the disposal well could exist. Should such faults exist, waste liquids could migrate to an unanticipated and presently unpredictable location, such as an aquifer used for domestic purposes. Such unknown faults or fracture zones would lead to unpredictable fluid movements.