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

MAY 22 1970

DCC w/encl) Report by DML
Chairman Seaborg
Commissioner Ramey
Commissioner Johnson
Commissioner Thompson
Commissioner Larson
Cong. Relations (2)
JCAE w/incoming ltr (2)
HLPrice, DR
Gladys Ertter (DR-2557)
LJohnson, DML
HKShapar, OGC (2)
LDLow, CO
St. Br. Dist
DML
DR

Honorable Allard K. Lowenstein
House of Representatives

Dear Mr. Lowenstein:

I am pleased to reply to your letter of March 19, 1970, in which you inquired about the Kerr-McGee Corporation's operation of their Sequoyah facility at Gore, Oklahoma, under an AEC license.

The Division of Materials Licensing of our regulatory staff has prepared a report on this facility, which I am enclosing. The report describes the present system for disposal of raffinates and indicates that no decision has been reached to authorize disposal by deep-well injection. The current practices for the disposal of raffinates are in accordance with the AEC license to Kerr-McGee.

I am also enclosing a copy of 10 CFR Part 20, "Standards for Protection Against Radiation", which reflects the AEC rules and guidance for normal operating releases of radioactive material into unrestricted areas.

You have also asked for information about the adequacy of the gas scrubber in the hydrogen fluoride waste treatment system. The report indicates that at the present time the gas scrubber system is used only for a gas stream which contains no materials over which the AEC has regulatory jurisdiction. The report indicates that it is anticipated that, eventually, trace quantities of natural uranium will be processed through the gas scrubber. At that time, Kerr-McGee will be required by the AEC to assure that any dispersals of uranium into the air from the system will be within limits provided by Commission regulations and by conditions of the license.

Cordially,

Chairman

Enclosures:
1. Report by the Division of Materials Licensing
2. 10 CFR Part 20

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RCunningham	CBuchanan	
5/14/70	5/15/70	5/15/70

OFFICE ▶	DML:MB	OGC	DML:DIR	DR	DR	CONG. REL
SURNAME ▶	DHarmon:mkm		[illegible]	CLHenderson	HLPrice	
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Form AEC-318 (Rev. 9-53)

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Report By The Division Of Materials Licensing
KERR-McGEE CORPORATION
Sequoyah Facility, Gore, Oklahoma

The Kerr-McGee Corporation applied for an AEC source material license in September 1969 to authorize the conversion of uranium concentrates (yellowcake) to UF_6. The application also requested approval to dispose, by deep-well injection, of liquid waste containing concentrations of radioactive materials in excess of those permitted to be released into unrestricted areas pursuant to 10 CFR Part 20, "Standards for Protection Against Radiation."

The AEC rules and guidance for releases of radioactive material into unrestricted areas are contained in 10 CFR Part 20, "Standards for Protection Against Radiation". These regulations are based on the recommendations of the Federal Radiation Council, which are approved by the President for guidance of the various Federal agencies. They reflect the combined judgments of the Federal Radiation Council, the National Academy of Sciences, the National Council on Radiation Protection and Measurements, and consultants selected for expertise in the various areas of interest. Also carefully considered are the recommendations of the International Commission of Radiological Protection.

A license was issued in February 1970 for operation of the plant but the license did not include approval of deep-well disposal of liquid waste containing concentrations of radioactive materials. A review of the initial information submitted by Kerr-McGee regarding deep-well disposal was made by the U. S. Geological Survey (USGS) and by Dr. Donald Warner of the University of Missouri who is the consultant to our staff on deep-well disposal. Both indicated that a comprehensive safety assessment of the well system was necessary. The assessment was received from Kerr-McGee on April 14, 1970, and is now under review by USGS and our consultant.

The license presently authorizes the storage of the raffinates in ponds. The ponds are lined with limestone to neutralize the acid in the raffinates. Kerr-McGee is required to conduct an environmental survey program to assure that the storage of raffinates in this manner does not result in the migration of radioactive materials into unrestricted areas in excess of regulatory limits. This survey program which is subject to AEC inspection and review involves taking samples from test wells around the ponds and from other water wells in the vicinity. Also, surface water sources at 15 locations in the area are sampled on at least a quarterly basis and analyzed for radioactivity. An immediate investigation to determine the source of contamination is required if any radioactivity above background is detected in any of these samples.

On April 29 and 30, 1970, the Division of Compliance conducted an inspection of Kerr-McGee's activities for compliance with AEC rules and regulations and license conditions. Oklahoma State Health Department personnel accompanied AEC personnel during the inspection. The inspection revealed that all raffinates containing radioactive materials are being stored in ponds as described above. Background samples had been obtained from the water sources described above and analyzed prior to startup of the plant. Thirty-six samples from eighteen different locations have been collected since startup in late February. These samples were in the process of being analyzed at the time of the inspection.

The inspection further revealed that waste liquids from the scrubber system serving the HF waste treatment system are being discharged to a limestone sump for neutralization and fluoride removal. According to Kerr-McGee, this liquid consists of about 98% water, 2% HF, and no radioactive material at the present time. When the plant is fully operational this waste stream may contain low concentrations of uranium.

Under the Atomic Energy Act of 1954, as amended, the Commission is given authority over the transfer, possession, and use of special nuclear material (generally enriched uranium and plutonium), byproduct material (generally reactor-produced radioisotopes), and source material (generally natural uranium and thorium). At the present time, the HF systems do not involve any of the materials over which the AEC has jurisdiction.

Liquid waste from an analytical laboratory joins the scrubber waste and the combined stream, after flowing through the sump, is diluted with water obtained from Lake Tenkiller, and then flows to the Illinois River. Samples of the pond, waste stream and the Illinois River were obtained during the inspection. These samples will be assayed by the AEC for radioactivity and fluoride content. Assay results on the fluoride content will be provided to the Oklahoma State Health Department.

The gas scrubber mentioned above serves the HF waste treatment system in the plant. Its purpose is to clean off-gases prior to their release into the environment through a 150-foot stack. The only radioactive material in the gas stream treated in this scrubber will be natural uranium. The manufacturing system was designed by Kerr-McGee so that the concentration of uranium in the gas stream even before it enters the scrubber would be less than that permitted to be released into unrestricted areas under 10 CFR 20. The scrubber serves to further reduce the uranium concentration in the off-gas so that only trace amounts are released.

It might be noted, incidentally, that we have learned from Kerr-McGee that the scrubber system was designed to allow no more than 330 parts per million (ppm) of HF to leave the scrubber with a maximum stack emission of 15 ppm. Under these specifications, the maximum ground level concentrations of HF on the plant property would not be expected to exceed 3 ppm. The maximum off-site concentration is not expected to exceed 1 part per billion. According to the American Conference of Governmental Hygienists, the recommended HF limit for occupational exposure is 3 ppm. Oklahoma Health officials reviewed the fluoride aspect during the inspection of April 29-30, 1970.