40-8027

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

March 10, 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:

At least on an annual basis, the Kerr-McGee Nuclear Corporation reviews its environmental surveillance program to determine the adequacy or excessiveness of its sampling and analysis. A recent review of data obtained during 1977 and previous years shows that certain liquid samples have consistantly given us "negative" data. We, therefore, desire to lengthen the sampling frequency for the following monitoring locations listed on the attached Table #1. Also enclosed are replacement pages updating our license renewal application.

Please call if you have any questions.

Very truly yours,

W. J. Shelley, Director
Regulation and Control

WJS:hw

Enclosures

08326

Table 1

Environmental Sampling Points

Historically Giving Negative Data

Sample Point	Sample Number	Sample Frequency 1977	New Sampling Frequency
Arkansas River-Up	2203	Monthly(M)	Quarterly(Q)
Arkansas River-Down	2204	M	Q
Farm Pond	2205	Quarterly(Q)	Semi-annual(SA)
Farm Pond	2206	Q	SA
Raw Water	2208	Q	SA
Salt Fork River	2209	Q	SA
School Pond	2210	Q	SA
Monitor Well (MW)	2301	M	Q
MW	2310	M	Q
MW	2311	M	Q
MW	2313	M	Q
MW	2316	M	Q
MW	2319	M	Q
MW	ED-6	M	Q
MW	ED-8	M	Q
All "M" Series MW's	M-1 - M-10	M	Q
Fault Well	2307	Q	SA
Residence Well	2320	Q	SA

4.2 Environmental Surveillance

The combined liquid effluent stream consisting of the fluoride treatment effluent, the sanitary water treatment system discharge, the overflow from the recirculating cooling water system, and the bypassed plant intake water is sampled continuously at the point where it leaves the immediate plant-area south of the port access road. Daily grab samples are analyzed for temperature, pH, uranium, nitrate and fluoride for purposes of control. Monthly continuous samples and monthly composites are analyzed for uranium, gross alpha, gross beta, nitrate and fluoride. The samples are also analyzed quarterly for 226 Radium and 230 Thorium. In addition, the four individual streams are sampled and analyzed every two weeks to pin-point the major source of contamination.

The Illinois and Arkansas Rivers are sampled monthly and quarterly respectively, upstream and downstream of the plant outfall and are, analyzed for the constituents listed above. Two onsite "farm ponds" are sampled semiannually and are analyzed for the same components as above. Samples are taken from water wells as well as from monitoring wells located near the raffinate and fluoride treatment storage ponds and analyzed as above.

Air samples are taken along the restricted area fence line (east, west, north, south) and counted daily for radioactive particulate matter. One week continuous air samples are taken each month for fluoride analysis. Similarly, air samples are taken weekly at 750 ft. east of the plant, 1/2 mile SW of the plant, at the Carlisle School, at Hwy. 64 North and I-40 South of the plant.

Soil samples and vegetation samples are collected and analyzed each April and October. They are analyzed for uranium and fluoride.

4.3 Accident Analysis

Efforts have been to minimize the occurrance of accidents in the plant through the incorporation of all practicable safety features in the design, construction and operating procedures for the facility. Properly engineered handling equipment, installation of automatic safety devices, and training of operating personnel add further to the safety of the operations and provide means to promptly mitigate the consequences of accidents. The effectiveness of these measures is demonstrated by the fact that there have been no accidents to date having any offsite environmental effects.

Incidents having a potential for causing offsite effects are:

- Rupture of waste retention pond embankment.
- Acid storage tank rupture.

6. Seepage Well Monitoring

The ponds were constructed as described in the Supplementary Environmental Report already submitted. All construction was supervised by a civil engineer specializing in such construction. Inspection of the placement of the liner and dikes was conducted on daily basis by an on-site inspector. The exact layout of the ponds and the location of monitoring wells were shown in the above mentioned Environmental Report. Figure IV is an up-date map showing the addition of ten monitor wells constructed in 1974. All wells are being tested to determine the migration of raffinate solutions into groundwater and resolve the anomalies in the levels of chemicals appearing in well waters as compared to chemical concentrations in the raffinate pond.

Pond seepage monitor wells may be sampled and analyzed on a weekly, monthly or quarterly basis. The analysis is done for gross alpha, beta, nitrate, fluoride, and uranium. Radium is analyzed quarterly.

Because of information gained during an extensive investigation conducted October 1976 (as described in our submittal dated January 11, 1977) and because of well modifications (described in our submittal dated May 31, 1977), we have an accurate perspective of the seepage. It is determined that weekly sampling of all the monitoring wells is not necessary, and that a longer sampling frequency for many of the wells is adequate. Currently, eight monitor wells are sampled weekly because they show abnormal nitrate values. Ten other monitor wells show no abnormal trends and are sampled monthly. Seventeen have historically given negative data and these are now sampled quarterly. Monitor well analysis data is closely scrutinized and the frequency of sampling and analysis is adjusted from weekly to monthly to quarterly or vice versa as the need is indicated.

The eight wells currently sampled on a weekly basis are No's M-3, T-1, T-2, T-4, T-5, 2305, 2314 and ED-1.

5.9 Surface Contamination

Surface contamination surveys are conducted weekly. Direct survey techniques using protable alpha survey instruments and smear survey techniques are used. Good housekeeping and dust control practices are maintained and locker room procedures prevent the spread of uranium to office areas that are outside the process area. In cases where airborne contamination has occurred, cleanup of contaminated areas is undertaken immediately.

5.9.1 Liquid Effluent

The Sequoyah plant process generates two major liquid waste streams of varying composition. The solvent extraction circuit raffinate and the waste hydrogen fluoride scrubber product are the two primary process waste streams. Sanitary and domestic waste water are combined with the fluoride effluent and treated before discharge to the river, while raffinate streams are contained in holding ponds.

The Environmental Sampling Schedule for Radioactive Contamination (Based on sample data obtained during the years 1974 through 1977, surface waters, the settling basin monitor well and the residence wells show no sign of elevated parameters. A sampling frequency as shown below is based on these observations):

Sample Location	Sample Frequency*
Illinois River	Monthly
Arkansas River	Ouarterly
Combination Stream Outfall	Monthly (Composite from daily samples)
Farm Ponds and School Pond	Semi-annually
Salt Fork River and Raw Water	Semi-annually
Settling Basin Monitor Wells	Monthly - Quarterly
Raffinate Pond Monitoring Wells	(See pg. 4-9)
Residence Monitoring Wells	Semi-annually

Eight weekly raffinate pond monitoring well samples are analyzed for uranium and nitrate only, except once a month they are also analyzed for gross alpha, gross beta and fluoride. Radium is analyzed for quarterly.

Approximately ten monthly raffinate pond monitoring well samples are analyzed for uranium, nitrate, gross alpha, gross beta and fluoride. Radium is analyzed for quarterly. Eight quarterly sampled wells are analyzed for the same constituents as the monthly samples. Nine quarterly sampled wells are remote to the raffinate ponds and these are analyzed for uranium and nitrate only.

*Frequency may be varied on individual samples depending on analysis history, pond or sample well volume (empty or full), content, etc.

5.0 Environmental Monitoring Program

Air samples are collected daily at the fence line and weekly at stations off-site. These are analyzed for gross alpha and fluoride. Two down wind sampling stations also provide samples for uranium, Th-230 & Ra-226 analysis data.

Vegetation and soil samples are obtained from sampling points that have the maximum ground level concentrations of airborne effluents, as determined by standard diffusion calculations. These are collected semi-annually and are analyzed for uranium and fluoride.

Rivers and other surface water ponds are sampled monthly, quarterly or semi-annually and are analyzed for gross alpha, beta, NO_3, fluoride and uranium. Ra is done quarterly.

Samples from wells monitoring chemical waste ponds are analyzed for uranium, NO_3, gross alpha, beta, and Ra (quarterly). Depending on the well location it may be sampled monthly, weekly or quarterly.

Sampling frequency is based on previous analytical history. Corrective action is taken to prevent effluents with concentrations of contaminates in excess of permissible amounts from reaching the unrestricted areas.

5.1 Raffinate Pond Control

Submerged combustion burning (approved by Amendment No. 2) License No. SUB-1010) will continue to be used for limiting the rate of accumulation of raffinate in the retention ponds. This will include removal of radionuclides by ammonia and barium treatment. This also includes the seasonal use of some of the resultant liquid as an ammonium nitrate-liquid fertilizer as authorized by the Commission.

Additional tests for raffinate control alternatives are documented in environmental reports previously submitted.

In accordance with paragraph 20.1(c) of 10 CFR 20, every reasonable effort is being made to maintain radiation exposure as far below the permissible limits as possible.

5.2 Solid Wastes

Radioactive waste materials such as contaminated drums, sludges and other solids are buried in accordance with the provisions of 10 CFR 20.304 which permits up to 12 burials per year with as much as 100 mCi of natural uranium per burial at a minimum depth of four feet and spaced at least six feet apart.

Clean combustible materials such as boxes, crates, paper and rags are burned in an approved open pit incinerator.

An exception to 20.304(a) with respect to burial of fluoride sludge. Fluoride sludge may be buried as per the App. C (10 CFR 20 footnote except that the amount of material buried at one time can exceed unity, but the total for all burials for a calendar year would not exceed "12".

FORM AEC-783
(5-74)

U.S. ATOMIC ENERGY COMMISSION

MATERIALS DATA INPUT S/SNM

4 - SOURCE AND SNM REFERENCE COPY

A. TYPE OF ACTION AND IDENTIFICATION CODES

1

☐ NEW LICENSE	☐ AMENDMENT TO RENEW LICENSE	☐ AMENDMENT TO TERMINATE	☐ VOID	DOCKET NUMBER 40-8027 040-08027	MAIL CONTROL NUMBER 08352	CHANGE NAME/ ADDRESS ☐
☐ NEW LICENSE AND NEW LICENSEE	☒ OTHER AMENDMENT	☐ CLERICAL CHANGE, NO AMENDMENT				

B. INDICATIVE INFORMATION:

INDIVIDUAL LICENSEES

NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)

ORGANIZATIONAL LICENSEE

3 ORGANIZATION NAME (ALPHABETIC SEQUENCE): Kerr-McGee Nuclear Corporation

DEPARTMENT OR BUREAU:

2 ADDRESS: BUILDING, STREET: Oklahoma City | CITY: Oklahoma City | STATE: OK | ZIP CODE: 73125

6 TYPE OF APPLICANT: ☐ U.S. GOVERNMENT AGENCY ☐ INDIVIDUAL LICENSEE ☒ ORGANIZATIONAL LICENSEE

DATE REQUEST RECEIVED	INSTITUTION CODE	PENDING PROG. CODE	ACTUAL PROG. CODE
03/03/78	12030		

SECONDARY PROGRAM CODES AS REQUIRED:

#1	#2	#3	#4	#5

7

SUB-1010 LICENSE NUMBER	DATE LICENSE ISSUED OR ACTION COMPLETED	EXPIRATION DATE	
[redacted]			

APPLICANT'S COMMUNICATION DATED	CLASSIFICATION	ASSIGNED TO	RESULTING AMD. NO.
March 3, 1978	U		

ENCLOSURES:

UNCLASSIFIED DESCRIPTION:

Condition No. 13 of license SUB-1010 requires an amendment approval for additional waste raffinate ponding capacity

DISTRIBUTION:

Docket File Cy
JMartin
I&E (2)
[redacted]
[redacted]
PDR

OTHER REFERRALS

NAME	DATE	NAME	DATE
LCRouse (2 enclosures & 2 ltrs	4/5/78		