50-327
50-328

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

ENVIRONMENT AND HEALTH MANAGEMENT DIVISION

'81 JUL 23 AM

July 17, 1981

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. F. D. Fisher
US Nuclear Regulatory Commission
Division of Fuel Cycle and Material Safety
Washington, D.C. 20555

Dear Mr. Fisher:

Please refer to your recent conversation with Jim Marler regarding the current status of the required Radiological Contingency Plan for the Sequoyah facility.

We are currently assembling the documents for this plan. Unfortunately, our staff is also concurrently occupied with a series of submissions to various agencies. We expect the submission of the Sequoyah Contingency Plan to be delayed beyond the thirty (30) days initially requested.

In addition, Sequoyah has in existance, as your staff is aware, a series of emergency response procedures for the various credible radiological and chemical releases.

In view of this status, we request that you permit a delay until September 1, 1981 for the receipt of the Radiological Contingency Plan for the Sequoyah facility.

Sincerely,

W. J. Shelley

W. J. Shelley, Vice President
Nuclear Licensing and Regulation

WJS/pls

FORM AEC-783 (5-74)

U.S. ATOMIC ENERGY COMMISSION

MATERIALS DATA INPUT S/SNM

6400 8027A095

1 - FILE COPY

A. TYPE OF ACTION AND IDENTIFICATION CODES

1

				DOCKET NUMBER	MAIL CONTROL NUMBER	CHANGE NAME/ ADDRESS
☐ NEW LICENSE	☐ AMENDMENT TO RENEW LICENSE	☐ AMENDMENT TO TERMINATE	☐ VOID	040-08027	18954	☐
☐ NEW LICENSE AND NEW LICENSEE	XX OTHER AMENDMENT	☐ CLERICAL CHANGE NO AMENDMENT 4				

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)

ORGANIZATION LICENSEES

ORGANIZATION NAME (ALPHABETIC SEQUENCE)

3 Kerr McGee Nuclear Corporation

DEPARTMENT OR BUREAU

ADDRESS

BUILDING, STREET	CITY	STATE	ZIP CODE
5 Kerr-McGee Center	Oklahoma City	OK	73102

6

TYPE OF APPLICANT	DATE REQUEST RECEIVED	INSTITUTION CODE	PENDING PROG. CODE	ACTUAL PROG. CODE
☐ U.S. GOVERNMENT AGENCY ☐ INDIVIDUAL LICENSEE 333 ☐ ORGANIZATIONAL LICENSEE	04/16/81	12636		

SECONDARY PROGRAM CODES AS REQUIRED:

#1	#2	#3	#4	#5

7

LICENSE NUMBER	DATE LICENSE ISSUED OR ACTION COMPLETED	EXPIRATION DATE
SUB-1010	7-21-81	

C. STATISTICAL INFORMATION:

MEDICAL CATEGORY:

☐ FOR HUMAN USE ONLY ☐ FOR HUMAN AND NONHUMAN USE ☐ FOR NONHUMAN USE ONLY

POSSESSION OF THE MATERIAL IS AUTHORIZED IN ONE OF THE FOLLOWING AREAS.

☐ SAME AS "STATE" IN ADDRESS ☐ ALL STATES ☐ ALL NON-AGREEMENT STATES

AND/OR IN THE STATE(S), TERRITORY(S), COUNTRY CHECKED BELOW:

ALABAMA -AL	GEORGIA -GA	MARYLAND -MD	NEW JERSEY -NJ	SOUTH CAROLINA -SC	WYOMING -WY
ALASKA -AK	HAWAII -HI	MASSACHUSETTS -MA	NEW MEXICO -NM	SOUTH DAKOTA -SD	
ARIZONA -AZ	IDAHO -ID	MICHIGAN -MI	NEW YORK -NY	TENNESSEE -TN	AMERICAN SAMOA -AS
ARKANSAS -AR	ILLINOIS -IL	MINNESOTA -MN	NORTH CAROLINA -NC	TEXAS -TX	CANAL ZONE -CZ
CALIFORNIA -CA	INDIANA -IN	MISSISSIPPI -MS	NORTH DAKOTA -ND	UTAH -UT	GUAM -GU
COLORADO -CO	IOWA -IA	MISSOURI -MO	OHIO -OH	VERMONT -VT	PUERTO RICO -PR
CONNECTICUT -CT	KANSAS -KS	MONTANA -MT	OKLAHOMA -OK	VIRGINIA -VA	VIRGIN ISLANDS -VI
DELAWARE -DE	KENTUCKY -KY	NEBRASKA -NB	OREGON -OR	WASHINGTON -WA	
WASHINGTON DC -DC	LOUISIANA -LA	NEVADA -NV	PENNSYLVANIA -PA	WEST VIRGINIA -WV	CANADA -CN
FLORIDA -FL	MAINE -ME	NEW HAMPSHIRE -NH	RHODE ISLAND -RI	WISCONSIN -WI	

D. POSSESSION LIMITS OF SOURCE AND SPECIAL NUCLEAR MATERIALS AND TRITIUM

SOURCE MATERIAL CEILING ☐ GRAMS ☐ KILOGRAMS SNM CEILING ☐ GRAMS ☐ KILOGRAMS ☐ "X" HERE IF FOR POWER REACTOR

MAT	AMOUNT	UNIT	CONFIG	ENRICH	MAT	AMOUNT	UNIT	CONFIG	ENRICH
U5	no materials change	☐ G Kg ☐	☐ S UNS ☐				☐ G Kg ☐	☐ S UNS ☐	
U3		☐ G Kg ☐	☐ S UNS ☐				☐ G Kg ☐	☐ S UNS ☐	
PU		☐ G Kg ☐	☐ S UNS ☐				☐ G Kg ☐	☐ S UNS ☐	
UR		☐ G Kg ☐	☐ S UNS ☐				☐ G Kg ☐	☐ S UNS ☐	
TH		☐ G Kg ☐	☐ S UNS ☐				☐ G Kg ☐	☐ S UNS ☐	
		☐ G Kg ☐	☐ S UNS ☐				☐ G Kg ☐	☐ S UNS ☐	
		☐ G Kg ☐	☐ S UNS ☐				☐ G Kg ☐	☐ S UNS ☐	
H3		☐ CURIES ☐ MILLICURIES	☐ MICROCURIES		RIS CODES				

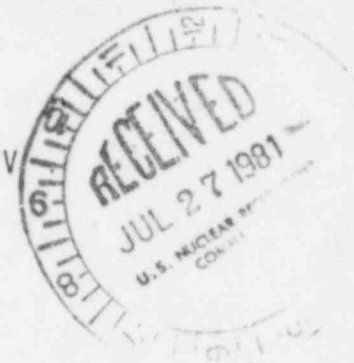
U5=U235, U3=U233, PU=PLUTONIUM, UR=URANIUM, TH=THORIUM, H3=TRITIUM, G=GRAMS, Kg=KILOGRAMS, S=SEALED, UNS=UNSEALED

SER attached

Rec'd 8/7

JUL 2 1 1981

Distr:
Docket 40-8027 8/2/81
NMSS
FCUF
PDR
SHO
IE HQ (2)
DCS
RJEverett, R:IV
HWerner
BBrooks
RErickson
JRObertson
DWeiss
ACabell
ALSoong
WTCrow
LTyson
WANixon RECunningham



FCUP:WAN
40-8027
SUB-1010, Amendment No. 13

Kerr-McGee Nuclear Corporation
ATTN: Mr. W. J. Shelley, Director
Regulation and Control
Kerr-McGee Center
Oklahoma City, Oklahoma 73102 25

Gentlemen:

Pursuant to Title 10, Code of Federal Regulations, Part 40, Source Material License No. SUB-1010 is hereby amended to authorize the following activities:

1. The use, on a permanent basis, of barium treated neutralized solvent extraction raffinate for fertilizer on Kerr-McGee owned land in Haskell County, Oklahoma, in accordance with the statements contained in your April 13, 1981 application, and subject to the following requirements:

   a. The barium treated neutralized solvent extraction raffinate to be used as fertilizer shall have a pH no lower than 7.5 and a Ra-226 content not exceeding 2 pCi/l of solution.

   b. No fertilizer shall be applied closer than 100 feet to any occupied residence, business or school.

   c. In addition to the sampling and monitoring program described in the April 13, 1981 application, quantitative analyses for heavy metals, and specified isotopes shall be performed as outlined in the attached Appendix I.

   d. A description of the previous year's fertilizer program for the Choctaw area and the results obtained shall be included in the annual completion report submitted to NRC by May 1 of each year.

All other conditions of this license shall remain the same.

Please note that this license amendment does not authorize disposal off-site, except for non-forage use, of any material grown on the areas fertilized with treated raffinate. In addition, grazing of livestock on the fertilized areas is prohibited.

OFFICE ▶							
SURNAME ▶							
DATE ▶							

JUL 21 1981

We note that the area covered by the detailed soil map given in Appendix A of the application does not correspond completely with the proposed fertilizer application area shown on Drawing 290-C-1017. Soil mapping should be completed for all areas prior to the start of the fertilizer program to help assure that the soils are suitable for the fertilizer program.

The general requirements for metal analyses of soil, vegetation and treated raffinate were discussed with your Mr. Shelley by W. A. Nixon of my staff on July 14, 1981.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
W. T. Crow for

Ralph G. Page, Chief
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety

Enclosure:
Appendix I

OFFICE	FCUP	FCUF	FCUP	FCUF			
SURNAME	WANixon:mjb	LTyson	WTCrow	RGPage			
DATE	7/21/81	7/21/81	7/21/81	7/21/81			

APPENDIX I

Element	Required Quantitative Analyses		
	Soil[1]	Vegetation [2]	Treated Raffinate[3]
As	X	X	X
Ba			X
B	X	X	X
Cd			X
Co	X	X	X
Cr			X
Cu	X	X	X
Fe	X	X	X
Hg			X
Mg			X
Mn	X	X	X
Mo	X	X	X
Ni	X	X	X
Pb	X	X	X
Se			X
V	X	X	X
Zn	X	X	X
U	X	X	X
Th-230	X	X	X
Ra-226	X	X	X

(1) Soil samples representative of the major soil types in the fertilized area should be collected and individually analyzed once per year for the elements indicated. Samples should be collected after the final raffinate addition each year. Base line soil samples shall be analyzed prior to the use of raffinate fertilizer.

(2) Vegetation samples shall be collected and analyzed for the listed elements either just prior to or immediately after harvest. The licensee shall develop and use a statistically sound sampling program to ensure that the results obtained are representative of the vegetation harvested.

(3) A representative composite sample of treated raffinate shall be collected during the application season and analyzed for the elements indicated once each year.

JUL 2 1 1981

Distr:
Docket 40-8027
NMSS
FCUF
FCUP
DCS
PDR
IE HQ (2)
WTCrow
WANixon
ALSoong
IE R:V LTyson

DOCKET NO.: 40-8027, Amendment No. 13

APPLICANT: Kerr-McGee Nuclear Corporation

FACILITY: Sequoyah Uranium Hexafluoride Production Plant

SUBJECT: SAFETY EVALUATION REPORT - LICENSE AMENDMENT APPLICATION TO AUTHORIZE THE USE, ON A PERMANENT BASIS, OF TREATED SOLVENT EXTRACTION RAFFINATE AS A FERTILIZER MATERIAL ON KM OWNED LAND IN HASKELL COUNTY, OKLAHOMA

REVIEWER: W. A. Nixon

Background

Commencing in 1973 and repeated each year through April 1, 1979, USNRC has issued Amendments to license SUB-1010 to authorize a test program to investigate the effects of using treated raffinate as a fertilizer material under closely controlled conditions on Kerr-McGee (KM) owned land. On June 17, 1980 authorization was granted to use barium treated neutralized solvent extraction raffinate for fertilizer on a permanent basis on KM owned land adjacent to the Sequoyah UF_6 Production Plant.

The treated raffinate solution contains mainly ammonium nitrate and metal salts along with small quantities of uranium and its decay products. The concentration of the radionuclides in the solution are all at least one order of magnitude below the 10 CFR 20 allowable concentration for release to unrestricted areas. Descriptions and safety evaluations of the tests can be found in KM submittals and in Safety Evaluation Reports dated May 4, 1977, July 7, 1978, April 13, 1979 and June 17, 1980.

By letter dated April 13, 1981, KM requested authorization to use the treated raffinate as fertilizer on land owned by the company in Haskell County, Oklahoma. The land is the site of a KM owned underground coal mine (now shut down) about 20 miles south (45 miles by road) of the Sequoyah plant.

Discussion

1. Treated Raffinate

The concentration of the radionuclides in the treated raffinate are at least one order of magnitude below the allowable concentration for release to an unrestricted area; therefore, the probability of contaminating the site by

the raffinate testing is unlikely and this has been demonstrated by results obtained during several years of testing. Reports submitted by KM have shown that there were no measurable increases of radionuclides (U, Th and Ra) in the samples of soil, vegetation and water taken from the testing area. Further, the environmental impacts resulting from the use of treated raffinate during the past few years are the same as those that would be expected from the use of commercially available ammonium nitrate fertilizer. Finally, in a 1979 test, no differences were detected between cattle grazed on pasture treated with commercial fertilizer and those grazed on pasture treated with ammonium nitrate contained in treated raffinate.

The concentrations of heavy metals in the treated raffinate vary because of variations in plant feed and variations in waste treatment operations. Concentrations of heavy metals will exceed drinking water standards and will, in some cases, exceed the recommended maximum concentrations of heavy metals in irrigation water. The quantities of heavy metals applied to the soil through use of treated raffinate as fertilizer would not, except possibly for molybdenum, exceed the quantities that would be applied through continuous use of irrigation water at the recommended limit of heavy metal content. Past analyses of vegetation grown using treated raffinate have shown that the heavy metal content of the vegetation was below the maximum tolerable dietary level for domestic animals established by the National Academy of Sciences. To help assure that use of raffinate as fertilizer at the Haskell County site does not result in excess accumulation of heavy metals in the soil or in vegetation, a condition has been added to require analysis of treated raffinate for a broad range of potentially significant elements and analysis of soil and vegetation for those heavy elements important in animal feeding.

2. The Site

The Haskell County site is located 20 miles south of the Sequoyah UF_6 plant. The land is relatively flat with elevations ranging from about 470 to 620 feet MSL. The Sans Bois and Mule Creeks flow through the area. There are no occupied houses on the site and the site is surrounded by low population density farm lands. At present the site is 63% woodlands, 31% open land, 2% improved pasture and 4% industrial (the coal mine facility). Portions of the site, mainly low areas which could be subject to flooding and land immediately bordering streams, will not be used for raffinate application. In addition, a condition has been added to preclude use of raffinate fertilizer within 100 feet of any occupied residence, business or school. The site was visited by W. A. Nixon in the spring of 1981. The Haskell County land appears suitable for use in the KM fertilizer program.

3. The Fertilization Program

The program proposed by KM for the Haskell County site is quite similar to the current program in use for land near the Sequoyah plant. The maximum rate of treated raffinate application will be 700 lb N/acre/year. Individual applications will be about 200 lb N/acre and will be applied

to coincide with optimum plant growth and with consideration to soil profile nitrogen and proper plant and residue management. Soil profile nitrate analysis will be the primary environmental monitoring control. These analyses will be made following each fertilizer application. Additional environmental monitoring will include a limited program for vegetation, surface water and groundwater analysis for U, Ra-226 and, if appropriate, NO_3-N.

Oklahoma State University Extension Agronomists who have been involved with the treated raffinate land application program since 1974 will continue to provide recommendation for the Choctaw area.

4. Raffinate Transportation

KM proposes to transport treated raffinate in 8000 gallon tank trucks from the Sequoyah plant to the Haskell County site. The road distance is about 45 miles and about 400 truck trips per year will be made. KM estimates, based on motor carrier accident frequency data, that the adcident frequency would be one in every 14.3 years. Transport of treated raffinate is not significantly more hazardous than transport of commercial aqueous nitrogen fertilizer solutions because the radioactivity content of the treated raffinate is very low. If an accident were to occur, conventional cleanup procedures for chemical releases could be used; no special procedures due to the radioactivity content of the treated raffinate would be necessary.

5. Reports

A condition has been added to require that information on the use of treated raffinate at the Haskell County site be included in the annual report on the fertilizer program prepared by KM.

Conclusion

Based on the results of earlier test applications of treated raffinate as fertilizer, and subject to the conditions described above, I conclude approval of the application for use of treated raffinate on a permanent basis at the Haskell County site will not constitute an undue risk to public health and safety or have significant adverse environmental impacts. I recommend that the amendment, as conditioned, be approved.

Original Signed by
W. A. Nixon

W. A. Nixon
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety

Original signed by
W. T. Crow

APPROVED BY: W. T. Crow, Section Leader

OFFICE	FCUP	FCUF	FCUB	FCUF			
SURNAME	WANixon:mjb	LTyson	WTCrow	RGPage			
DATE	7/20/81	7/ /81	7/21/81	7/21/81			

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY * USGPO 1980—329

FORM AEC-783 (6-74)

U.S. ATOMIC ENERGY COMMISSION

MATERIALS DATA INPUT S/SNM

4 - SOURCE AND SNM REFERENCE COPY

A. TYPE OF ACTION AND IDENTIFICATION CODES

☐ NEW LICENSE	☐ AMENDMENT TO RENEW LICENSE	☐ AMENDMENT TO TERMINATE	☐ VOID	DOCKET NUMBER	MAIL CONTROL NUMBER	CHANGE NAME/ ADDRESS
1 ☐ NEW LICENSE AND NEW LICENSEE	☒ OTHER AMENDMENT	☐ CLERICAL CHANGE NO AMENDMENT 4		040-08027	19316	☐

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)

ORGANIZATION LICENSEES

ORGANIZATION NAME (ALPHABETIC SEQUENCE)

3 Kerr McGee Nuclear Corporation

DEPARTMENT OR BUREAU

5 ADDRESS	BUILDING, STREET	CITY	STATE	ZIP CODE
	Kerr-McGee Center	Oklahoma City	OK	73102

6 TYPE OF APPLICANT	DATE REQUEST RECEIVED	INSTITUTION CODE	PENDING PROG. CODE	ACTUAL PROG. CODE
☐ U.S. GOVERNMENT AGENCY ☒ INDIVIDUAL LICENSEE ☐ ORGANIZATIONAL LICENSEE	06/30/81	12636		

SECONDARY PROGRAM CODES AS REQUIRED:

#1	#2	#3	#4	#5

7 LICENSE NUMBER	DATE LICENSE ISSUED OR ACTION COMPLETED	EXPIRATION DATE	
SUB-1010			

APPLICANT'S COMMUNICATION DATED	CLASSIFICATION	ASSIGNED TO	RESULTING AMD. NO.
6/24/81	Un.		

ENCLOSURES:

UNCLASSIFIED DESCRIPTION:

Request for Amendment - Land Application of Treated Raffinates

DISTRIBUTION:

Reg File Cy 7/15

FCUF (4)

I&E (2)

PDR

OTHER REFERRALS

NAME	DATE	NAME	DATE
ENH 19316			

REGULATORY ... FILE COPY

40-8027
PDR
RETURN TO
D. CRAMER
396SS

KERR-McGEE NUCLEAR CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

June 24, 1981

Applicant........
Check no. 0404073
Amount/Fee Category $3500 ...
Type of Fee. amend. safety
Date Check Rec'd 7/8/81
Received By...

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. William A. Nixon
Uranium Fuel Licensing Branch
Division of Fuel Cycle & Material Safety
US Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Amendment Request - Land Application of Treated Raffinates on Kerr-McGee Owned Lands

Dear Mr. Nixon:

Enclosed find the required amendment fee ($3,500) and eight (8) copies of a proposal for use of treated raffinate produced at Kerr-McGee Nuclear's Sequoyah Facility on Kerr-McGee owned land in Muskogee County, Oklahoma.

Approximately 1,690 acres of land located eight (8) miles directly west of the Sequoyah facility will be used for the treated raffinate fertilizer program.

Because Kerr-McGee Nuclear Corporation desires to begin land application of treated raffinate on this area during the 1981 growing season, your early consideration of this amendment request is appreciated.

If you require further information, please contact me.

DOCKETED USNRC JUL 15 1981 NMSS MAIL SECTION DOCKET CLERK

Sincerely,

W. J. Shelley

W. J. Shelley, Vice President
Nuclear Licensing and Regulation

WJS/pls

Attachment

RECEIVED JUN 30 1981 U.S. NUCLEAR REGULATORY COMMISSION NMSS

19316

KERR-McGEE NUCLEAR CORPORATION
SEQUOYAH FACILITY
TREATED RAFFINATE LAND APPLICATION PROGRAM
MUSKOGEE COUNTY, OKLAHOMA

Proposed Activity

Since 1973, Kerr-McGee Nuclear Corporation has applied barium-treated neutralized solvent extraction raffinate produced at its Sequoyah UF_6 conversion facility as ammonium nitrate fertilizer on Kerr-McGee owned lands. In 1980, the program operated under SUB-1010, Amendment No. 11 and approximately 1,100 acres near the Sequoyah facility were utilized for land application of treated raffinate. Criteria were established for treated raffinate fertilizer, usage rates, environmental monitoring program, and action limits. Detailed environmental sampling and analysis results were reported to USNRC in the Completion Report submitted April 24, 1981. These 1980 program results continued to demonstrate the environmental feasibility of the land application program.

During 1980, approximately 1.5 million gallons of treated raffinate were applied to permanent application acreage owned by Kerr-McGee near the Sequoyah facility. Because quantities of treated raffinate available exceed this utilization, it is necesary for Kerr-McGee to either: (1) construct additional holding ponds for storage of liquid raffinate, (2) acquire additional lands for application of treated raffinate as fertilizer, or (3) use existing Kerr-McGee owned lands in the vicinity of the Sequoyah facility for application of treated raffinate as fertilizer. In addition to the permanent application acreage, Kerr-McGee Nuclear requested an amendment April 12, 1981 for use of treated raffinate on approximately 2,200 acres at the site of the Kerr-McGee Coal Corporation's Choctaw underground coal mine.

Thus, all additional available Kerr-McGee owned acreage in the vicinity of the Sequoyah facility is currently operating under or pending USNRC licensing action. Kerr-McGee Nuclear had previously requested that the USNRC allow unlimited use of this byproduct material as a conventional ammonium nitrate fertilizer (see amendment request, letter dated May 16, 1980, W. J. Shelley to W. A. Nixon). As yet, no final action has been taken by the USNRC on either amendment request. In order for Kerr-McGee Nuclear to maintain continuity of operations at the Sequoyah UF_6 conversion facility, the disposition of the liquid raffinate produced must be resolved.

Therefore, Kerr-McGee Nuclear proposes to purchase an additional 1,690 acres located in Muskogee County, Oklahoma for use in the treated raffinate application program. This land is located approximately eight (8) miles due west of the Sequoyah facility and is comprised of pasture (open lands) and mixed timber lands (Figure 1). The area is compositionally similar to the permanent raffinate application acreage near the Sequoyah facility. Development of this property for use in the treated raffinate land application program is detailed in the following amendment request.

Location

The 1,690 acres of land is located in southeastern Muskogee County, Oklahoma approximately eight (8) miles west of the Sequoyah facility. The area is located in portions of Sections 18, 19, 29, and 30, T12N, R20E and Section 25 T12N, R19E. The property boundary is provided in Figure 1.

Treated raffinate will be transported to the area in gasoline or diesel tanker trucks (capacity approximately 8,000 gallons). Prior to and following use for

transport of treated raffinate, tanks will be steam-cleaned to remove residues. The truck haulage miles from the Sequoyah facility are as follows:

State Highway	1.0 miles
Interstate 40	8.0 miles

From published statistics, 2.65×10^5 miles are traveled per truck accident.[1/] Approximately 425 truck trips involving 3,825 miles will be necessary to transport treated raffinate to the area. Expected accident frequency from these data would be one (1) in every sixty-nine (69) years. Because material transported (treated raffinate) is compositionally similar to other commercially available ammonium nitrate fertilizer products, in the unlikely event of a transport accident (with material release), standard site cleanup procedures would be followed. No special material handling or cleanup provisions are considered necessary.

Topographic Features

Elevations range from 650 to 500 feet M.S.L. in the area and most of the area is relatively flat and ideally suited for treated raffinate land application. The steepest slopes are located in conjunction with the Rabbit Hill area in the NE¼ of Section 30. The area is bordered on the north and west by Dirty Creek and Georges Fork, respectively.

Soils

Site soils were evaluated by Oklahoma State University Extension Soil

---

1/ "1975 Accident to Motor Carriers of Property", U.S. Department of Transportation, Federal Highway Administration, Bureau of Motor Carriers Safety.

Scientist (Dr. James Steigler) and preliminary analyses shows that soil types are comparable to those on the existing land application acreage. Preliminary laboratory results indicate that from 0 - 10 lbs NO_3-N per acre are present in upper soil profile units with Stigler and Vian soil series present on the area. A detailed soils report is currently under preparation but field surveillance indicates that no soil characteristics are present which would preclude use of treated raffinate in this area. However, certain soils will be excluded from raffinate treatment due to topographic position (steep slopes) or location near perennial streams (flood plain). (See Figure 1).

Vegetation

A vegetation survey of the area was conducted in June 1981 to typify major plant communities present. As indicated on Figure 1, the area is comprised of open lands (pasture) interspersed with timbered areas. The majority of the open areas were, at one time, in improved pasture with bermuda grass and yellowtop clover still present. However, persimmon and sumac have also encroached on these open areas and most open areas will require brush removal (brush hogging) prior to raffinate applications.

Timbered areas consist of persimmon, winged elm, black locust, oak, and hickory. These "scrub" timber stands will require development of access corridors 20 feet wide on 100 foot centers parallel to slopes to allow sprayer tank access. The bottomland areas along Dirty Creek and Georges Fork will be excluded from raffinate applications and clearing due to their proximity to streams and location within the flood plain.

Hydrology

Hydrologic characteristics in this area are expected to be similar to those which exist at the Sequoyah facility. Typically, no significant deep aquifers exist in this area of eastern Oklahoma and localized shallow aquifers are present in alluvium along streams and tributaries. The shallow (less than 100 feet) alluvial aquifers are known for poor quality of water. Shallow wells penetrating this aquifer are low yielding. No wells located within the property boundary will be used for domestic supply following Kerr-McGee's aquisition of the property.

Because residences exist adjacent to the property boundary which utilize private wells for water supply, Kerr-McGee will develop a groundwater monitoring program to evaluate hydrologic conditions and baseline quality of groundwater in this area. Surface water quality characteristics will also be monitored prior to and during raffinate applications (see Monitoring Program).

Environmental Considerations

Soil and vegetation types present are suitable for the land application program as some areas were previously developed for improved pasture and cattle grazing. Following raffinate applications, the remainder of the brushland, open areas, and native grassland will eventually be converted to improved pasture through use of fertilizer, seeding program, and vegetation management techniques (i.e., clearing access corridors, brush hogging, etc.).

Timbered areas will have access corridors cleared and seeded to allow sprayer tank access. This technique has been used successfully on permanent raffinate application acreage at the Sequoyah facility. Continued raffinate

application will eventually result in open woodland interspersed with improved pastures. Broken or hilly terrain will be excluded from raffinate applications, and therefore, no clearing would be conducted which might enhance erosion in these areas. Additionally, raffinate applications will be restricted to sites above the projected floodplains of Dirty Creek and Georges Fork which are located on the area.

Raffinate applications will be subject to the same fertilizer management techniques in use on permanent application acreage at the Sequoyah faciltiy. These techniques include: (1) timing of raffinate application to coincide with optimum plant growth and development, (2) management of residual soil profile NO_3-N to insure maximum uptake rates by plants, and (3) proper residue and plant management. The profile management of NO_3-N is of primary importance in maintaining a sustainable rate of treated raffinate applications to the area.

Environmental Monitoring Program

To assess the impact of raffinate applications and provide necessary input data for the continuous fertilizer management program, the following environmental monitoring program will be implemented. This environmental monitoring program is summarized in Table 1 and sampling locations provided in Figure 1.

The environmental program provides for assessment of surface water quality characteristics in sub-drainage areas, permanent impoundments, and in Dirty Creek. Groundwater monitoring stations will be established as necessary to assess hydrologic conditions following completion of the hydrologic review. However, based upon previous experience with land application of treated

raffinates, quality monitoring of surface and groundwater represents an indirect system of monitoring treated raffinate applications. The direct or primary environmental monitoring system for the treated raffinate land application program involves soil profile nitrate (NO_3-N) analysis. Proper fertilizer management and control of soil profile NO_3-N levels will preclude an excess of nitrogen becoming available to the hydrologic system of the area.

Soils

Following each raffinate application (200 lbs N/acre), an adequate number of soil analyses will be performed to monitor residual soil NO_3-N levels. This profile survey will be supplemented by pre-season (early spring) and post-season (fall) analyses as required to verify residual NO_3-N levels. Parameters analyzed are provided in Table 1. Oklahoma State University Extension Service specialists will be involved in interpretation and evaluation of these soil monitoring results.

Vegetation

Vegetation sampling will be conducted following completion of raffinate applications. The post-season sampling program will include analyses of Uranium, Ra-226, and Th-230. Provisions for hay release are currently outlined in SUB-1010, Amendment No. 12. It is expected that provisions given in SUB-1010, Amendment No. 12 are also applicable to release hay produced on the area, as hay from all raffinate application sites is expected to be similar in chemical composition.

Surface Water

Surface water sampling will be conducted at locations provided in Figure 1.

Monitoring will be conducted prior to and following raffinate applications to the area. Parameters analyzed are provided in Table 1. Surface water sampling locations provide for assessment of quality characteristics of drainage areas, major streams in the area, and ponds (permanent water impoundments). As such, all aspects of surface water characteristics of the area will be evaluated in the environmental monitoring program.

Treated Raffinate

Treated raffinate containing less than 3 pCi/l Ra-226 will be available from holding ponds at the Sequoyah facility for use on the area. Treated raffinate will be analyzed to establish compliance with the existing license condition for material discharged to treated raffinate holding ponds. Nitrogen content of treated raffinate applied will also be measured to establish fertilizer rates. The maximum rate of treated raffinate application to the area during the growing season will be 700 lbs N/acre/year. Approximately 200 lbs N/acre will be applied in any one treatment. Therefore, depending upon soil NO_3-N levels observed, three or four applications (200 lbs N/acre) will be conducted to achieve this rate (700 lbs N/acre) during the growing season.

Alternatives to the Proposed Action

Since 1973, KMNC has been involved in feasibility studies related to disposal of liquid raffinate. These studies have involved: (1) treatment and disposal on land, (2) biological denitrification, (3) feasibility of algal biomass conversion, and (4) ponding (surface impoundment). Based upon the data which have been generated, Kerr-McGee Nuclear Corporation believes that land application of treated raffinates represents the most cost-effective and beneficial use of this by-product material.

Other bioconversion systems which employee bacteria or algae result in a residual sludge biomass which has no practical method for disposal or utilization at this time. The surface impoundment area required for algal conversion is also prohibitive. Of the methods currently available, the conversion of treated raffinate into usable forage biomass represents the preferred disposal alternative.

Through the testing program of land application of treated raffinates, Kerr-McGee Nuclear has demonstrated that liquid, treated raffinate represents a valuable resource comparable to other conventional, commercially available ammonium-nitrate fertilizer.

TABLE 1. Proposed Chemical Analyses of Site Soils, Water and Vegetation. (Sampling locations provided in Figure 1).

Sample Type	Frequency	Parameters
Soils (Composite)	Following each application 200 lbs. N/acre	NO_3-N, P, K, pH
Vegetation (Composite)	Post-application	U, Ra-226, Th-230 (Action limits as provided in SUB-1010 Amendment No. 12)[1/]
Surface Water (4 locations)	Pre/Post-application	U, Ra-226, NO_3-N, pH
Groundwater[2/]	Monthly during raffinate application to area	U, Ra-226, NO_3-N, pH,
Treated Raffinate (holding ponds)	Pre-application	U, Th-230, NO_3-N, pH, Ra-226

1/ Ra-226 - 1 pCi/gm; U - 2.5 µg/gm; Th-230 - .25 pCi/gm

2/ Locations established following hydrologic review.

OVERSIZE DOCUMENT PAGE PULLED

SEE APERTURE CARDS

NUMBER OF PAGES: 1

ACCESSION NUMBER(S):

8107280662

APERTURE CARD/HARD COPY AVAILABLE FROM RECORD SERVICES BRANCH, TIDC
FTS 492-8989

'ate of copy submitted 5/5/81

40 8027

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

05/19/81

DOCKET NO.: 04008027

MEMORANDUM FOR: WILLIAM O. MILLER, CHIEF
LICENSE FEE MANAGEMENT BRANCH
OFFICE OF ADMINISTRATION

FROM: W. NIXON
URANIUM FUEL LICENSING BR
DIVISION OF FUEL CYCLE & MATERIAL SAFETY
OFFICE OF NUCLEAR MATERIALS
SAFETY AND SAFEGUARDS

SUBJECT: COSTS AND MANHOURS FOR LICENSING ACTION

THE CONTRACT COSTS INCURRED AND MANHOURS USED IN REVIEWING THE APPLICATION DATED 01/19/81 ARE TABULATED BELOW FOR LICENSE NO. SUB-1010 .

1. NAME: KERR MCGEE

2. A) CASEWORK CONTROL NO. 04008027A08S
   B) MAIL CONTROL NO. 18273
   C) TAC NO. -

3. A) COMPLETION DATE: 02/24/81
   B) AMENDMENT NO. 12

4. FINAL FEE TYPE IDENTIFIED BY NMSS: Minor Safety

5. CONTRACT COSTS ASSOCIATED WITH THIS LICENSE APPLICATION:

   A) FOR ENVIRONMENTAL REVIEW $ -
   B) FOR SAFETY REVIEW $ -
   C) TOTAL CONTRACT COSTS $ -

6. TAC WORK BY NRR: - HOURS

7. NMSS HOURS:

   A) ENVIRONMENTAL REVIEW 0.0 HOURS
   B) SAFETY REVIEW 12.0 HOURS
   C) MATERIAL CONTROL 0.0 HOURS
   D) PHYSICAL SECURITY 0.0 HOURS
   E) TOTAL 12.0 HOURS

original signed by WANixon
W. NIXON
PROJECT MANAGER

APPROVED: original signed by WTCrow for RGPage
R. PAGE
BRANCH CHIEF
URANIUM FUEL LICENSING BR

Lois Tyson
5/22/81

FROM	DATE OF DOCUMENT	DATE RECEIVED	NO
Kerr-McGee Corporation	5/19/81	5/22/81	19213
	LTR: X	MEMO	REPORT	OTHER
TO	ORIG: 1	CC	OTHER
W.T.Crow	ACTION NECESSARY ☐ / NO ACTION NECESSARY ☐	CONCURRENCE ☐ / COMMENT ☐	DATE ANSWERED / BY

CLASSIF	POST OFFICE REG NO	FILE CODE
un		40-8027

DESCRIPTION (Must Be Unclassified)

set of split samples from environmental air particulates for performing the verification of uranium solubility in lungs fluid analyses.

ENCLOSURE

REFERRED TO	DATE	RECEIVED BY	DATE
Reg File cy	6/8		
FCUF (4)			
I&E (2)			
Erickson			
PDR			

REMARKS

1 copy of enclosure received, maintained as file copy.

DLC 19213

U. S. NUCLEAR REGULATORY COMMISSION — MAIL CONTROL FORM — FORM NRC 326 (1-75)

40-8027
PDR
Return to
D. Crow
396-55

REGULATORY OPERATIONS
FILE COPY

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

Technology Division

Kerr-McGee Technical Center
P. O. Box 25861
Oklahoma City, OK 73125

May 19, 1981

Mr. W. T. Cross,
Section Leader
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and Material Safety
United States NRC
Washington, DC 20555

Dear Mr. Cross:

I am enclosing one set of split samples (six) from environmental air particulates for performing the verification of uranium solubility in lung's fluid analyses.

These are the first-quarter 1980 hi-volume air samples taken from a location near the nearest residence.

Yours truly,

Asok Kumar DasGupta

Asok Kr. DasGupta
Analytical Chemist

AKD/nvb

enclosure

cc: C. A. Grosclaude
C. H. Long
W. J. Shelley
G. E. Van De Steeg

FEE EXEMPT
cite

19213

MAY 14 1981

DOCKET NO. 40-8027

Kerr-McGee Nuclear Corporation
ATTN: Mr. W. J. Shelley, Vice President
Nuclear Licensing and Regulation
Environment and Health Management
Kerr-McGee Center
Oklahoma City, Oklahoma 73125

Gentlemen:

Amendment No. 12 to License SUB-1010 was issued on February 24, 1981, in response to your January 19, 1981 application for amendment. An amendment fee of $3,500 was paid for approval of the request.

In accordance with Footnotes 1(d) and 4 of the enclosed 10 CFR 170, we have reviewed the manpower expenditures required for the review of the subject application for amendment, and the actual review cost is $456. We have notified the NRC Office of the Controller to refund $3,044 to your Company.

Sincerely,

William O. Miller, Chief
License Fee Management Branch
Office of Administration

Enclosure:
10 CFR 170

DISTRIBUTION:
Docket File
PDR
Matls. License Fee File
Matls. Manpower File
LFMB R/F (SS)
LFMB R/F (Beth)
ASCabell, LFMB

8105200167

OFFICE	LFMB:ADM	LFMB:ADM	LFMB:ADM	LFMB:ADM			
SNAME	DWeiss:rej	ASCabell	CHolloway	WOMiller			
	5/11/81	5/13/81	5/13/81	5/13/81			

NRM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO 1980—329-824

Standard Form 1047
September 1973
4 Treasury FRM 2000
1047-106

PUBLIC VOUCHER FOR REFUNDS

Voucher No. _____

Schedule No. _____

U. S. Nuclear Regulatory Commission
(Department or Establishment, Bureau or Office)

Location: Washington, D.C 20555

Appropriation or Fund: _____

PAID BY

To
Address Kerr-McGee Nuclear Corporation
Kerr-McGee Center
Oklahoma City, Oklahoma 73125

ATTN: Mr. W. J. Shelley

Deposit received from the above-named depositor on January 28 & March 3, 19 81

for $150 and $3,350 (D81-266 and 341)

has been applied as herein stated and the balance indicated is returned herewith:

Amount of deposit	Check Nos 098536 & 101625	$ 3,500
Applied as explained in "Remarks" below		
From: Acct. 1129 to AA905 AMD-S		456
Balance authorized to be refunded		$ 3,044

Remarks:

$3,500 - Fee Paid
456 - Fee Due (12 man-hrs @ $38/man-hr)
$3,044 - Refund Due

Partial refund of amendment fee for January 19, 1981 application; Amendment No. 12 issued February 24, 1981 (Docket No. 40-8027 License SUB-1010).

DISTRIBUTION: Docket File
~~Matls. License Fee File~~ ✓
Matls. Manpower File
LFMB R/F (SS)
LFMB R/F (Beth)
ASCabell, LFMB

Original Signed by
Wm. O. Miller

Date MAY 13 1981

(Sign original only) William O. Miller, Chief
~~License Fee Management Br.~~
Title Office of Administration

Refund by
Check No. _____
Cash, $ _____ on _____ (Signature of payee) _____ (Sign original only)
Other method, $ _____ _____ (Describe)

DW 5/11/81 ans 5/13/81 5/13/81

* U.S. GOVERNMENT PRINTING OFFICE : 1974 O—546-900

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

05/05/81

DOCKET NO.: 04008027

MEMORANDUM FOR: WILLIAM O. MILLER, CHIEF
LICENSE FEE MANAGEMENT BRANCH
OFFICE OF ADMINISTRATION

FROM: W. NIXON
URANIUM FUEL LICENSING BR
DIVISION OF FUEL CYCLE & MATERIAL SAFETY
OFFICE OF NUCLEAR MATERIALS
SAFETY AND SAFEGUARDS

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B) SAFETY REVIEW	12.0 HOURS
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D) PHYSICAL SECURITY	0.0 HOURS
E) TOTAL	12.0 HOURS

RECEIVED
'81 MAY -7 P3:45
U.S.N.R.C.
LIC. FEE MGMT. BRANCH

W. NIXON
PROJECT MANAGER

APPROVED: for R. PAGE
BRANCH CHIEF
URANIUM FUEL LICENSING BR