Distribution:
FCPF
NMSS
Docket 40-8027
PDR
SHO
IE HQ-2
JCatania
ACabell
BBrooks
JPartlow
SDuncan
DWeiss
LCRouse
JBMartin
WTCrow
ALSoong (2)

JUL 0 7 1978

FCPF:ALS
40-8027
SUB-1010, Amendment No. 9

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

Gentlemen:

Pursuant to Title 10, Code of Federal Regulations, Part 40, Source Material License No. SUB-1010 is hereby amended to authorize the continuation of test distribution of barium treated neutralized solvent extraction raffinate over the existing 160 acres of Kerr-McGee owned land during the 1978 growing season in accordance with the statements, representations, procedures and conditions contained in your application dated March 18, 1978, subject to the following conditions:

1. In the event that the groundwater samples from any one well or soil sample indicate an increase in radium-226 or uranium to the following levels:

	Ra-226	Uranium
groundwater samples	3.0* pCi/liter	
soil samples	2.0* pCi/gm	4* ppm

*total sample counts (background and sample)

Licensee shall immediately notify USNRC and shall cease the application of treated raffinate to the test plot.

2. In April 1979, the licensee shall submit to the USNRC the results of the 1978 growing season test; the report shall include an analysis and evaluation of the test results in addition to presenting the raw test data.

All other conditions of this license shall remain the same.

OFFICE ▶						
SURNAME ▶						
DATE ▶						

This amendment specifically does not authorize the use of any vegetation as animal feed nor open field burying of any vegetation grown on the test plot.

The above conditions were discussed and agreed upon between your Mr. W. J. Shelley and A. L. Soong of my staff on June 16, 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by
Leland C. Rouse

Leland C. Rouse, Chief
Fuel Processing & Fabrication Branch
Division of Fuel Cycle and
Material Safety

OFFICE ▶	FCPF	FCPF	FCRF			
SURNAME ▶	ALSoong:mb	WTCrow	LCRouse			
6/20/78 DATE ▶	6/ /78	6/ /78	6/ /78			

NRC FORM 785 (7-77)

U.S. NUCLEAR REGULATORY COMMISSION
MATERIAL DATA INPUT ~~INDUSTRIAL~~

S/SA 77

PCS 78084A

1 - FILE COPY

A. TYPE OF ACTION AND IDENTIFICATION CODES

1 [ ] NEW LICENSE [ ] AMENDMENT TO RENEW LICENSE [ ] AMENDMENT TO TERMINATE [ ] VOID [ ] NEW LICENSE AND NEW LICENSEE [XXXX] OTHER AMENDMENT [ ] CLERICAL CHANGE NO AMENDMENT 4

DOCKET NUMBER	MAIL CONTROL NUMBER	CHANGE NAME/ ADDRESS
040-08027	08385	[ ]

B. 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)

3 ORGANIZATIONAL LICENSEES

ORGANIZATION NAME (ALPHABETIC SEQUENCE)
Kerr McGee Nuclear Corporation

DEPARTMENT OR BUREAU

ADDRESS 5 BUILDING, STREET

CITY: Oklahoma City STATE: OK ZIP CODE: 73125

6 TYPE OF APPLICANT: [ ] U.S. GOVERNMENT AGENCY [ ] INDIVIDUAL LICENSEE [3334] ORGANIZATIONAL LICENSEE

DATE REQUEST RECEIVED	INSTITUTION CODE	PENDING PROG. CODE	ACTUAL PROG. CODE
03/28/78	12630		

SECONDARY PROGRAM CODES AS REQUIRED:

#1	#2	#3	#4	#5

7

LICENSE NUMBER	DATE LICENSE ISSUED OR ACTION COMPLETED	EXPIRATION DATE
SUB-1010	7/11/78	

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

	AMOUNT	UNIT	CONFIG.	ENRICH.	MAT.	AMOUNT	UNIT	CONFIG.	ENRICH.
U5		[ ] 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

NRC FORM 785 (7-77)

U.S. NUCLEAR REGULATORY COMMISSION
MATERIAL ATA INPUT ~~INDUSTRIAL~~

5/51 11

3 - D.P. PENDING

CARD 1

1 [N] COL 1=1 [ ] COL 1=3 [ ] COL 1=5

[ ] COL 1=2 [XXX] COL 1=4 [ ] COL 1=6

4 | COL 2-9: 040-08027 | 10: 1 | COL 11-15: 08885

DUPLICATE COLUMNS 1-9 PUNCH COL 10/DUPLICATE COLUMNS 11-15

CARD	COL 10	16-44	45-73
2	2		
3	3		
4	4		
5	5	Kerr McGee Nuclear Corporation	
6	6		
7	7		46-64 Oklahoma City; 65-66 OK; 67-71 73125
8	8	COL 16 [ ] 1 PUNCH FIELD [ ] 2 NO. CHECKED [ ] 3 [ ] 4	17-22 03/28/78; 23-27 12636; 28-32; 28-32

8

7 33-45 308-1010

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

JUL 0 7 1978

DOCKET NO.: 40-8027

APPLICANT: Kerr-McGee Nuclear Corporation

FACILITY: Sequoyah Uranium Hexafluoride Production Plant

SUBJECT: SAFET EVALUATION REPORT - LICENSE AMENDMENT APPLICATION FOR AUTHORIZATION TO CONSTRUCT AND USE OF A NEW LIQUID WASTE STORAGE POND NO. 3, LICENSE NO. SUB-1010, AMENDMENT NO. 10

Background Information

The Kerr-McGee Sequoyah Facility is currently licensed to produce 1000 tons per year of uranium as UF_6 from ore concentrates supplied by various uranium mills. The process employed, generally referred to as the "wet process," involves dissolution of the ore concentrates in nitric acid followed by purification of the resulting impure uranyl nitrate solution by treatment in a solvent extraction (Sx) circuit. The impurities are rejected from the Sx circuit in the form of a "barren" aqueous solution termed Sx raffinate which contains nitric acid, ammonium nitrate and metallic salts along with small quantities of uranium and the radioactive daughter products of natural uranium decay. The raffinate solution is treated with ammonia to neutralize the acid content which precipitates most of the heavy metal ions along with most of the radioactive materials. Subsequent treatment of the clear solution from the neutralization step with barium nitrate precipitates essentially all of the residual radium as a barium-radium sulfate. A typical analysis of treated Sx raffinate after removal of the barium-radium sludge is reported by KM as that shown in Table 1.

By letter dated March 3, 1978 and as amended June 2, 1978, KM requested: (1) to authorize the construction of a new pond, No. 3, for storage of treated raffinate solution and (2) remodeling of an existing pond No. 1 which is being used for treating the raffinate solution.

The new pond will be constructed on KM owned land, consists of two separate retention basins, each with a capacity of 12.75×10^6 gallons. The pond covers 292,000 square feet and is 18 feet deep. The location of the proposed pond does not occupy the channel of any permanent or intermittent water course and the site will be surrounded by a seven-foot chain link security fence to restrict access by unauthorized individuals and animals.

The interior of the new pond will be lined with Hypalon liners to prevent seepage. Two independent monitoring systems for detecting leakage were proposed:

(1) Perforated pipelines system: six perforated pipelines extending East to West across each basin beneath the liners, providing twelve sampling points for each basin (see attached figure).

(2) Monitoring wells system: Underground water of the site will be monitored by four wells; one at each corner outside of the pond, ranging from 32 feet deep to 42 feet deep (water table of the site was estimated to be less than 32 feet).

Liquid samples will be taken routinely from both monitoring systems and analyzed for radiological and non-radiological contaminants. The action levels and corrective action to be taken were also established as in licensee's amended letter dated June 2, 1978.

The construction of the new pond will be built in accordance with the Regulatory Guide 3.13 "Guide for Acceptable Waste Storage Method at UF_6 Production Plants" dated October 1973.

Discussion

The proposed new pond will be used only for storage of the treated raffinate solution and the concentration of various radionuclides in the solution are all at least two orders of magnitude below the 10 CFR 20 Appendix B, Table II, Column 2, Allowable Concentration for release to uncontrolled areas. Moreover, in accordance with the criteria given in Footnote No. 5 of Appendix B, the radionuclides could be considered as not present.

The liner, HYPALON, uses for interior of the pond was 28 mil in thickness, reported to highly resistant to aqueous solution of nitric acid and other inorganic acids; plus, excellent compability with ammonium nitrate and other ammonical solution. KM had a Hypalon-lined pond at its Cimmarron facility containing a similar solution for a period of seven years without observable deterioration.

The climate in Sequoyah section of Oklahoma is one of ample rainfall in the spring and fall and dry weather with high temperature during the summer months. The average annual precipitation and evaporation rates is shown in the following table:

	Annual	May-Oct.
Rainfall (inches)	40	24
Evaporation (inches)	55	40

The table indicates that the evaporation rate at the Sequoyah section is greater than the rainfall; in addition, liquid surface in the pond will be maintained a safe embankment freeboard of three feet.

Monitoring program for detecting the leakage from the pond will be conducted routinely by twelve sampling points from the perforated pipeline collection system and four sampling points from four wells.

Each sampling point of the pipeline system representing about 8.3% of the basin area and it is unlikely that the monitor wells would collect pond liquid without the pipeline system detecting any seepage. The liquid samples collected from pipeline system will be analyzed for nitrate and condition will be added to require that the sample be analyzed for both gross alpha and nitrate to detect seepage. The liquid sample taken from four wells monthly will be analyzed for gross alpha, beta, nitrate, floride, uranium and radium. The action levels and corrective action to be taken proposed in the application have been reviewed by the staff and considered acceptable.

Licensee also requests the permit to remodel the existing pond No. 1 in July 1979. A condition is added to require that the detail plan for this remodeling be submitted prior to its implementation.

The amendment application was discussed with Robert Everett of Region IV, I&E principal inspector for the KM's Sequoyah facility, on July 24, 1978, and he saw no reason, from a regulatory point of view, why the amendment to authorize construction of the pond should not be granted.

Based on this analysis, it is concluded that the proposed amendment is non-substantive and insignificant from the standpoint of environmental impact and pursuant to subparagraph 51.5(c)(3)(d)(3) of 10 CFR 51, no environmental impact statement, negative declaration, or environmental impact appraisal need be prepared.

On the basis of the findings in the current assessment coupled with the stringent controls described by the licensee in his application, it is recommended that Source Material License No. SUB-1010 be amended to authorize the construction and use of a new liquid storage pond No. 3 in accordance with the application and subject to the following conditions:

1. Use of new constructed pond no. 3 shall comply with Condition No. 13 of Source Material License No. SUB-1010 dated October 7, 1977.

2. Detail plans for remodeling of pond no. 1 shall be submitted to USNRC for review prior to implementation.

3. Routine liquid samples collected from the pipeline system shall be analyzed for both gross alpha and nitrate to detect leakage.

4. The new pond to be constructed shall be used only for storage of the treated raffinate solution.

Gen Liang Soong

A. L. Soong
Fuel Processing & Fabrication Branch
Division of Fuel Cycle and
Material Safety

W. T. Crow
Approved

TABLE I

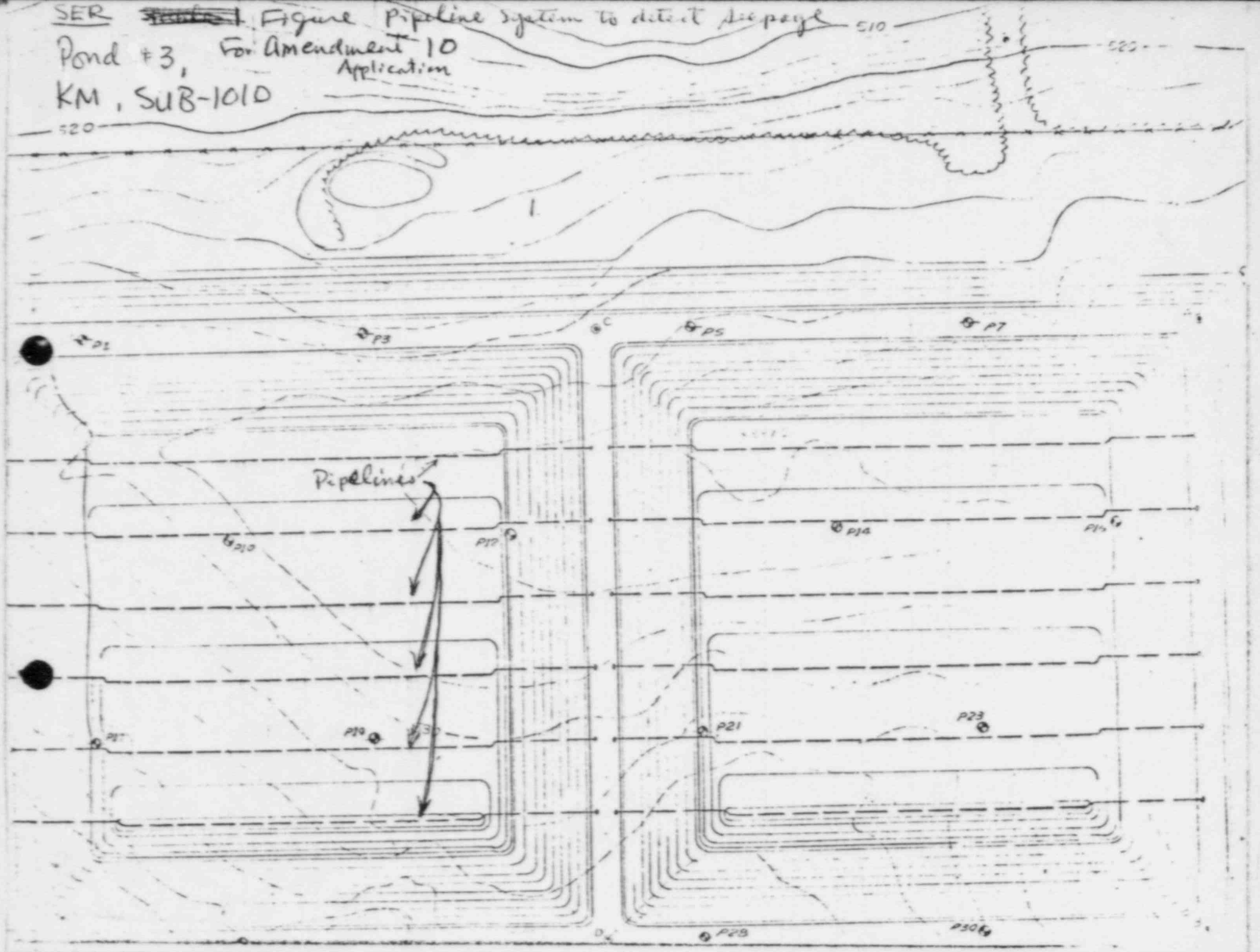
TREATED RAFFINATE ANALYSIS

PARAMETER	ANALYSIS
mg/l	
Ag	<0.001
As	0.54
Ba	3.0
B	23.
Cd	<0.001
Co	0.5
Cr	0.04
Cu	50.
Fe	1.
Hg	<0.001
Mg	310.
Mn	0.9
Mo	260.
Ni	16.
Pb	0.004
Se	<0.005
V	0.8
Zn	1.4
U	0.80 (avg of Nos. ranging 0.13 -1.5)
pCi/l	
Ra (sol.)	0.22
Ra (insol.)	0.33
Th-230	0.89
Th-232	1.12

SER ~~Figure 1~~ Figure Pipeline system to detect seepage

Pond #3, For Amendment 10 Application

KM, SUB-1010



NRC FORM 785 (7-73)

U.S. NUCLEAR REGULATORY COMMISSION
MATERIALS INPUT INDUSTRIAL

5 - INDUSTRIAL BYPRODUCT
REFERENCE COPY

A. TYPE OF ACTION AND IDENTIFICATION CODES

1 [ ] NEW LICENSE [ ] AMENDMENT TO RENEW LICENSE [ ] AMENDMENT TO TERMINATE [ ] VOID
[ ] NEW LICENSE AND NEW LICENSEE [X] OTHER AMENDMENT [ ] CLERICAL CHANGE NO AMENDMENT

DOCKET NUMBER	MAIL CONTROL NUMBER	CHANGE NAME ADDRESS
040-08027	08335	[ ]

B. INDICATIVE INFORMATION

INDIVIDUAL LICENSES

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

3 ORGANIZATION NAME (ALPHABETIC SEQUENCE)
Kerr McGee Nuclear Corporation

DEPARTMENT OR BUREAU

ADDRESS — BUILDING, STREET

Oklahoma City	STATE	ZIP CODE
	OK	73125

6 TYPE OF APPLICANT: [ ] U.S. GOVERNMENT AGENCY [ ] INDIVIDUAL LICENSEE [X] ORGANIZATIONAL LICENSEE

DATE REQUEST RECEIVED	INSTITUTION CODE	PENDING PROG. CODE	ACTUAL PROG. CODE
03/28/78	12030		

SECONDARY PROGRAM CODES AS REQUIRED:

#1	#2	#3	#4	#5

7

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

BYPRODUCT	CHEMICAL OR PHYSICAL FORM	POSSESSION LIMIT

Applicant's Communication Dated: March 27, 1978 Classification-U

8 cys rec'd

Unclassified Description: Ltr with 8 cys of a proposal for continuation of raffinate treatments to the existing 160-acre test

Distribution:

Docket File Cy
JMartin (ltr & control)
I&E (2)
PDR
LPDR

Other Referrals

LCRouse (4) 5/9/78

MAIL TO:	DATE MAILED	REVIEWER	DATE COMPLETED