

MATERIALS DATA INPUT



DOCKET NUMBER 040-08006	MAIL CONTROL NO. 01125	DATE REQUEST REC'D 05-01-74	PROGRAM CODE (PRIMARY)
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SECONDARY PROGRAM CODES:

#1	#2	#3	#4	#5
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INDIVIDUAL	NAME	NAME
	NAME	NAME
	NAME	NAME

ORGANIZATION	ORGANIZATION NAME Kerr- McGee Nuclear Corp.	TYPE OF ORGANIZATION		
	DEPARTMENT OR BUREAU	U. S. GOVERNMENT AGENCY	EDUCATIONAL INSTITUTION	
		MEDICAL INSTITUTION	<input checked="" type="checkbox"/> INDUST	OTHER

ADDRESS	BUILDING, STREET	CITY Oklahoma City	STATE OK	ZIP CODE 73125
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APPLICANT'S COMMUNICATION DATED: 04-30-74	CLASSIFICATION U	ASSIGNED TO:	RESULTING AMD. NO.
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ENCLOSURES:
AEC-2 dated 4-30-74 req. for a renewal of their SUB-986 license

**ACKNOWLEDGED
DO NOT REMOVE**

UNCLASSIFIED DESCRIPTION:
Void resubmitted

DISTRIBUTION:
see May 9, 1974 version

OTHER REFERRALS			
NAME	DATE	NAME	DATE
Buchanan w/ reg file cy & folder	05-02-74		
PDR			
RO			
eeb			

9/10



KERR-MCGEE CORPORATION

KERR-MCGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73102

November 9, 1973

40-8006

U.S. Atomic Energy Commission
Business Management Branch
Office of Administration
Washington, D.C. 20545

Gentlemen:

We received your letter of June 26, 1973, and
have attached our billing addresses for license
fees.

Sincerely,

A handwritten signature in cursive script that reads "W. J. Shelley".

W. J. Shelley, Director
Regulation and Control
Nuclear Division

WJS:ml

Attachment

UNITED STATES ATOMIC ENERGY COMMISSION

APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

<p>1. (Check one)</p> <p><input type="checkbox"/> (a) New license</p> <p><input checked="" type="checkbox"/> (b) Amendment to License No. <u>SUB-986</u></p> <p><input type="checkbox"/> (c) Renewal of License No. _____</p> <p><input type="checkbox"/> (d) Previous License No. _____</p>		<p>2. NAME OF APPLICANT</p> <p style="text-align: center;">Kerr-McGee Corporation</p> <hr/> <p>3. PRINCIPAL BUSINESS ADDRESS</p> <p style="text-align: center;">Kerr-McGee Building Oklahoma City, Oklahoma 73102</p>																	
<p>4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED</p> <p style="text-align: center;">Research Department, 3301 Northwest 150th Street, Oklahoma City, Oklahoma</p>																			
<p>5. BUSINESS OR OCCUPATION</p> <p>Production of Nuclear Fuel Materials</p>		<p>6. (a) IF APPLICANT IS AN INDIVIDUAL, STATE CITIZENSHIP</p>	<p>(b) AGE</p>																
<p>7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED</p> <p style="text-align: center;">Thorium containing materials will be used for the development of a solvent extraction process for the separation and purification of thorium.</p>																			
<p>8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:20%;">(a) TYPE</th> <th style="width:25%;">(b) CHEMICAL FORM</th> <th style="width:25%;">(c) PHYSICAL FORM (Including % U or Th.)</th> <th style="width:30%;">(d) MAXIMUM AMOUNT AT ANY ONE TIME (in pounds)</th> </tr> </thead> <tbody> <tr> <td>NATURAL URANIUM</td> <td></td> <td></td> <td></td> </tr> <tr> <td>URANIUM DEPLETED IN THE U-235 ISOTOPE</td> <td></td> <td></td> <td></td> </tr> <tr> <td>THORIUM (ISOTOPE)</td> <td>Natural Thorium as ThO_2, ThCl_4, $\text{Th}(\text{NO}_3)_4$</td> <td>Wet cakes and Solutions ~10% Th</td> <td>300 pounds</td> </tr> </tbody> </table> <p>(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (in pounds)</p> <p style="text-align: center;">800 pounds (uranium plus thorium)</p>				(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (Including % U or Th.)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (in pounds)	NATURAL URANIUM				URANIUM DEPLETED IN THE U-235 ISOTOPE				THORIUM (ISOTOPE)	Natural Thorium as ThO_2 , ThCl_4 , $\text{Th}(\text{NO}_3)_4$	Wet cakes and Solutions ~10% Th	300 pounds
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<p>9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL RADIATION HAZARDS ASSOCIATED WITH EACH STEP OF THOSE PROCESSES.</p> <p style="text-align: center;">Thorium in impure solutions will be extracted with an organic solvent and this solvent stripped with water to yield a pure solution from which thorium will be recovered by precipitation. The maximum amount in process at any one time should be about 30 pounds. Potential radiation hazard for this process is negligible.</p>																			
<p>10. DESCRIBE THE MINIMUM TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE THAT WILL BE REQUIRED OF APPLICANT'S SUPERVISORY PERSONNEL INCLUDING PERSON RESPONSIBLE FOR RADIATION SAFETY PROGRAM. (OR OF APPLICANT IF APPLICANT IS AN INDIVIDUAL).</p> <p style="text-align: center;">At this time supervision of the use of this source material and radiation safety at the facility will be the responsibility of W. J. Robertson. A graduate chemist; Dr. Robertson has had 14 years of experience in Feed Materials processing.</p>																			
<p>11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air sampling, and other survey equipment as appropriate. The description of radiation detection instruments should include the instrument characteristics such as type of radiation detected, window thickness, and the range(s) of each instrument).</p> <p>(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE, INCLUDING AIR SAMPLING EQUIPMENT (for film badges, specify method of calibrating and processing, or name supplier).</p>																			

11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, OR GASES, INCLUDING PLAN VIEW SHOWING TYPE AND LOCATION OF HOOD AND FILTERS, MINIMUM VELOCITIES MAINTAINED AT HOOD OPENINGS AND PROCEDURES FOR TESTING SUCH EQUIPMENT.

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

13. WASTE PRODUCTS: *If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here and explain on a supplemental sheet:*

- (a) Quantity and type of radioactive waste that will be generated.
- (b) Detailed procedures for waste disposal.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

- (a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.
- (b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.
- (c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (*Specify instrument used, date of calibration and calibration technique used*) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.
- (d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(This item must be completed by applicant)

15. *The applicant, and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.*

Kerr-McGee Corporation

(Applicant named in Item 2)

Dated

September 11, 1972

BY

[Handwritten Signature]

(Print or type name under signature)

George H. Cobb

Executive Vice-President

(Title of certifying official authorized to act on behalf of the applicant)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

Reg. No.

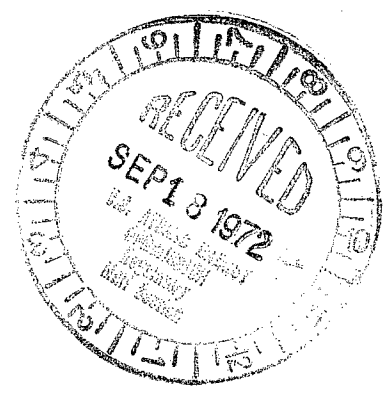
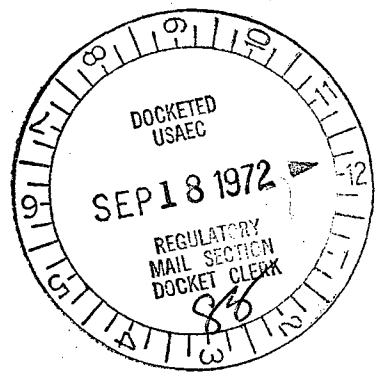
File No.

DOCKET NO. 40-8006



KERR-MCGEE CORPORATION
KERR-MCGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73102

September 13, 1972



Mr. Robert L. Layfield
Materials Branch
Directorate of Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Layfield:

We hereby request that Item 6 of Source Material License SUB-986 be amended to read as follows:

- 6. Source Material
Uranium and Thorium

In support of this amendment we enclose a completed AC-2 form covering the proposed use of the thorium source material. As stated, we are beginning a development program involving purification of certain thorium compounds, and expect to require possession of materials containing thorium in excess of the generally licensed quantity.

Thank you for your consideration of this request, and if additional information is required, please call me at 405-341-8551.

Yours very truly,

W. J. Robertson

WJR:sw

Enc.

Addendum to Application for
Amendment of Source Material
License SUB-986

Kerr-McGee Corporation
Oklahoma City, Oklahoma

11. (a) The bulk of the thorium used in these studies will be in solution. Solutions and thorium cakes will be stored in covered containers well marked with approved warning signs.

Radiation monitoring will be accomplished by the following means:

1. Personnel film badges
 2. Alpha Counter, range 0-100,000 dpm (Eberline Instrument Company, Model PAC-3G)
 3. Geiger Counter, range 0-50 mr (Eberline Instrument Company, Model E-120)
- (b) Radiation instruments will be calibrated quarterly using standard isotopic sources. Personnel film badges are supplied by Landauer on a monthly basis.
- (c) Materials will be received as pure thorium compounds or wet cakes, and actual work will be done with solutions. No dusty operations are envisioned. Ordinary chemical laboratory hoods (face velocity 70-80 fpm) are available for solution preparation.
12. (a) The severity of a possible accident is minimized by the limited size scale of the proposed operations. Although flammable solvents will be used, the quantity on hand at any time is restricted so as not to constitute undue hazard. The building and storage areas are rated as fireproof construction. Normal safety procedures applicable to a good chemical laboratory are adhered to.
- (b) In case of accident involving source material, the affected area will be evacuated until adequate clean-up and decontamination procedures are carried out. A physician who has specialized in nuclear medicine is a consultant for the corporation. He has established a working arrangement with the University of Oklahoma Medical Center staff for assistance in case of emergency.
- (c) The radiation survey program comprises:
1. Personnel film badges (plus control badges).
 2. Routine survey on a monthly basis of the areas where source materials are stored or used. This includes use of a beta-gamma instrument and an alpha survey instrument.
 3. Any additional monitoring for which a need develops as the material is used.

DOCKET NO. 40-8006

Addendum to Application for
Amendment of Source Material
License SUB-986
Page 2

Kerr-McGee Corporation
Oklahoma City, Oklahoma

- 13. (a) Small amounts of raffinate solution from thorium extraction containing Ra-228 and Ac-228, will be generated. Analytical residues containing small quantities of natural thorium will also be generated.

- (b) These solutions will be disposed of within the limits of 10CFR20.

Kerr-McGee Nuclear Corporation
Nuclear Division
P.O. Box 25861
Oklahoma City, Oklahoma 73126

Attn: Mr. W. J. Shelley

SNM-928 - OK
MA-826 - OK
35-12636-02 - OK
SNM-1174 - OK
SUB-1010 - OK
35-12636-03 - OK

Kerr-McGee Corporation
Physical Science & Measurement
P.O. Box 25861
Oklahoma City, Oklahoma 73125

Attn: Mr. J. P. Hewlett

SUB-986 - OK
35-12636-5 - OK

Moss American
P.O. Box 25861
Oklahoma City, Oklahoma 73125

Attn: Mr. R. S. Hahn

35-12636-04 - OK

Kerr-McGee Nuclear Corporation
P.O. Box 218
Grants, New Mexico 87020

Kerr-McGee Chemical Corporation
P.O. Box 610
Hobbs, New Mexico 88240

Attn: Mr. R. C. Green

SUA-616
30-11069-01 - See if this was transferred to SA

Kerr-McGee Chemical Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125

Attn: Mr. R. G. Smith

STA-583 - OK

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

Attn: Mr. Wylie Jennings

35-12636-06 - OK