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Form AEC-410  
(1-61)

UNITED STATES  
ATOMIC ENERGY COMMISSION

SOURCE MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954, and Title 10, Code of Federal Regulations, Chapter 1, Part 40, "Licensing of Source Material," and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, possess and import the source material designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations in said Part. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954 and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission, now or hereafter in effect, including Title 10, Code of Federal Regulations, Chapter 1, Part 20, "Standards for Protection Against Radiation," and to any conditions specified below.

Licensee		3. License No. SUB-1010
1. Name	Kerr-McGee Corporation	4. Expiration Date February 28, 1975
2. Address	Kerr-McGee Building Oklahoma City, Oklahoma 73102	5. Docket No. 40-8027
6. Source Material  Uranium  8512180039 700220 PDR ADDCK 04008027 C PDR	7. Maximum quantity of source material which licensee may possess at any one time under this license  No quantity limitation	

CONDITIONS

8. Authorized use (Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.)

Subject to the conditions specified herein, this license authorizes the activities described in the licensee's application dated September 23, 1969, as supplemented January 14 and February 3, 1970, in accordance with the representations, specifications, and procedures in Appendix A of the said application, including supplements.

9. This license does not authorize the disposal of liquid waste containing radioactive constituents by injection into any disposal well.
10. Authorized place of use: The licensee's Sequoyah facility located about 2 1/2 miles southeast of Gore, Oklahoma.
11. This license authorizes the use of respirators in determining employee exposures to airborne radioactive materials subject to the conditions and specifications in the attached Annex A.

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## MATERIAL LICENSE

License Number SUB-1010

## Supplementary Sheet

12. The licensee is exempt under the requirements of this license from compliance with Section 20.203(e)(2) of 10 CFR 20 provided all entrances to the plant are conspicuously posted in accordance with Section 20.203(e)(2) and with the words, "Any area within this plant may contain radioactive material."
13. The licensee shall immediately notify the Director, Region IV, Division of Compliance, USAEC, Denver, Colorado, by telephone and telegraph of any failure in an earth dam retention system which results in a release of liquid wastes containing radioactive material. This requirement is in addition to the requirements of 10 CFR 20.
14. Pursuant to Sections 20.106(b) and 20.302 of 10 CFR 20, this license authorizes the incineration of licensed material in accordance with the procedures specified in the application, including supplements, listed in Item 8 of this license.
15. As a minimum, the licensee shall conduct the environmental monitoring program described on pages VI-6.1.1 and VI-6.1.2 (Rev. 2/3/70) of the licensee's application listed in Item 8 above, including supplements.
16. This license authorizes the disposal or transfer of articles contaminated with source material to persons not possessing appropriate licenses provided the conditions in Annex B are met.

2/20/70

Date FEB 20 1970

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For the U. S. Atomic Energy Commission

Original signed by

Don F. Harmon

by Don F. HarmonDivision of Materials Licensing  
Washington, D. C. 20545

A N N E X A

CONDITIONS FOR USE OF RESPIRATORY PROTECTIVE EQUIPMENT  
PURSUANT TO PARAGRAPHS 20.103(c)(1) AND (2), 10 CFR 20

1. In circumstances in which adequate limitation of the inhalation of radioactive materials by use of process or other engineering controls is impracticable, the licensee may permit an individual in a restricted area to be exposed to average concentrations of airborne radioactive materials in excess of the limits specified in Appendix B, Table 1, Column 1 of 10 CFR 20 provided:
  - A. The individual uses respiratory or other appropriate protective equipment such that the total intake, in any period of seven consecutive days by inhalation, ingestion or absorption, would not exceed that intake which would result from breathing the concentrations specified in Appendix B, Table 1, Column 1 of 10 CFR 20 for a period of 40 hours.
  - B. The licensee shall advise each respirator user that he may leave the area for relief from respirator use in case of equipment malfunction, physical or psychological discomfort, or any other condition that might cause reduction in the protection afforded the wearer.
  - C. The licensee maintains a respiratory protective program adequate to assure that the objective of Item "A" above is met. Such program shall include:
    - (i) Air sampling and other surveys sufficient to identify the hazard, to evaluate individual exposure, and to permit proper selection of the respiratory protective equipment;
    - (ii) Procedures to assure proper selection, supervision and adequate training of personnel using such protective equipment;
    - (iii) Procedures to assure the adequate fitting of respirators and the testing of equipment for operability.
    - (iv) Procedures for maintenance to assure full effectiveness of respiratory protective equipment, including issuance, cleaning and decontamination, inspection, repair, and storage;

- (v) Bioassays of individuals and other surveys as may be appropriate to evaluate individual exposures and to assess protection actually provided; and
  - (vi) Records sufficient to permit periodic evaluation of the adequacy of the respiratory protective program.
- D. The licensee has evaluated the protective equipment<sup>1/</sup> and has determined that, when used to protect against radioactive material under the conditions of use to be encountered such equipment is capable of providing a degree of protection at least equal to the protection factors listed in Table I attached hereto<sup>2/</sup>.
2. The licensee shall notify, in writing, the Director of the appropriate AEC Regional Compliance Office listed in Appendix D, 10 CFR 20, when the respiratory protection program is initiated. Such notification shall be made within thirty (30) days after the date that allowance for the use of respiratory protective equipment is first made.
  3. The licensee shall not assign protection factors in excess of those given in Table I attached hereto in selecting equipment.

<sup>1/</sup> In evaluating respiratory protective equipment for use against radioactive materials to assure that the equipment provides the protection factors listed in the attached Table I, the licensee may accept equipment approved under appropriate test schedules of the U. S. Bureau of Mines to the extent pertinent.

<sup>2/</sup> The factors listed apply only to protection against radioactive materials. Additional precautions may have to be taken to protect against concurrent nonradiation hazards.

TABLE I

PROTECTION FACTORS FOR RESPIRATORS

Description	Modes <sup>1/</sup>	PROTECTION FACTORS <sup>2/</sup>	
		Particulates and Vapors and Gases Except Tritium Oxide <sup>3/</sup>	Tritium Oxide
<u>I. AIR-PURIFYING RESPIRATORS</u>			
Facepiece, half-mask	NP	10	1
Facepiece, full	NP	100	1
<u>II. ATMOSPHERE-SUPPLYING RESPIRATOR</u>			
<u>1. Air-line respirator</u>			
Facepiece, half-mask	CF	100	2
Facepiece, half-mask	D	100	2
Facepiece, full	CF	1000	2
Facepiece, full	D	500	2
Facepiece, full	PD	1000	2
Hood	CF	1000	2
Suit	CF	<u>4/</u>	<u>4/</u>
<u>2. Self-contained breathing apparatus (SCBA)</u>			
Facepiece, full	D	500	2
Facepiece, full	PD	1000	2
Facepiece, full	R	1000	2
<u>3. Combination respirator</u>			
Any combination of air-purifying and atmosphere supplying respirator.		Protection factor for type and mode of operation as listed above.	

<sup>1/</sup> CF: continuous flow

D : demand

NP: negative pressure (i.e., negative phase during inhalation)

PD: pressure demand (i.e., always positive pressure)

R : recirculating (i.e., negative phase during inhalation)

- 2/ (a) For purposes of this authorization the protection factor is a measure of the degree of protection afforded by a respirator, defined as the ratio of the concentration of airborne radioactive material outside the respiratory protective equipment to that inside the equipment (usually inside the facepiece) under conditions of use. It is applied to the airborne concentration to determine the concentration inhaled by the wearer, according to the following formula:

$$\text{Concentration Inhaled} = \frac{\text{Airborne Concentration}}{\text{Protection Factor}}$$

- (b) The protection factors apply:

- (i) only for individually fitted respirators worn by trained individuals and used and maintained under supervision in a well-planned respiratory protection program.
- (ii) for air purifying respirators only when high efficiency particulate filters and/or sorbents appropriate to the hazard are used.
- (iii) for atmosphere supplying respirators only when supplied with adequate respirable air.

- 3/ Excluding radioactive contaminants that present an absorption or submersion hazard.

- 4/ Appropriate protection factors must be determined taking account of the permeability of the suit to the contaminant under conditions of use. No protection factor greater than 1000 shall be used except as authorized by the Commission.

NOTE 1: Protection factors for respirators as may be approved in the future by the U. S. Bureau of Mines according to approval schedules for respirators to protect against airborne radionuclides may be used in lieu of the protection factors listed in this Table. Where additional respiratory hazards other than radioactive ones are present, especially those immediately dangerous to life, the selection and use of respirators shall also be governed by the approvals of the U. S. Bureau of Mines in accordance with their applicable schedules.

NOTE 2: Radioactive contaminants for which the concentration values in Appendix B, Table I of 10 CFR Part 20 are based on internal dose due to inhalation may, in addition, present external exposure hazards at higher concentrations.

ANNEX B

RADIOACTIVITY LIMITS FOR UNRESTRICTED RELEASE OF  
FACILITIES AND EQUIPMENT CONTAMINATED WITH  
SOURCE AND/OR SPECIAL NUCLEAR MATERIAL

1. The maximum amount of fixed alpha radioactivity in disintegrations per minute per 100 square centimeters on buildings or equipment should not exceed 25,000.
2. The average amount of fixed alpha radioactivity in disintegrations per minute per 100 square centimeters on buildings or equipment should not exceed 5,000.
3. The maximum amount of removable (capable of being removed by wiping the surface with a filter paper or soft absorbent paper) alpha radioactivity in disintegrations per minute per 100 square centimeters on buildings or equipment should not exceed 1,000.
4. (a) The maximum level at one centimeter from the most highly contaminated surface of a building or piece of equipment measured with an open-window beta-gamma survey meter through a tissue equivalent absorber of not more than seven milligrams per square centimeter should not exceed one millirad per hour.  
  
(b) The average radiation level at one centimeter from the contaminated surface of the building or equipment measured in the same manner should not exceed 0.2 millirad per hour.
5. The contamination limits for abandonment of facilities involving U-233 or plutonium should not exceed 1/10 of the limits in items 1, 2 and 3 above.

NOTES: A. A reasonable effort should be made to minimize the contamination present.

B. Surfaces of premises, equipment or scrap likely to be contaminated, and of such size, construction, or location as to make the surface inaccessible for purposes of measurement, shall be presumed to be contaminated in excess of the levels specified above.

C. Premises, equipment or scrap having contaminated surfaces which have been covered by painting, metal plating or other covering material should be presumed to be contaminated in excess of the levels specified above, unless it can be established that the contamination was below the above levels prior to applying the covering.