NRC Form 313 I (12-81) 10 CFR 30

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.

1. APPLICATION FOR: *(Check and/or complete as appropriate)*

	a. NEW LICENSE
	b. AMENDMENT TO: LICENSE NUMBER
X	c. RENEWAL OF: LICENSE NUMBER 49-19005-01

2. APPLICANT'S NAME *(Institution, firm, person, etc.)*

Minerals Exploration Company

TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
(307) 328-1476

3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION

Thomas J. Klein

TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
(307)328-1476

4. APPLICANT'S MAILING ADDRESS *(Include Zip Code)*
(Address to which NRC correspondence, notices, bulletins, etc., should be sent.)

P.O. Box 1500
Rawlins, Wyoming 82301

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED *(Include Zip Code)*

Sweetwater County
T24N, R93W

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL
(See Items 16 and 17 for required training and experience of each individual named below)

	FULL NAME	TITLE
a.	Thomas J. Klein	Environmental Supervisor, Sweetwater Uranium Project
b.	Jack A. Marshall	Maintenance Supervisor, Parachute, Colorado, Shale Oil Project
c.		

7. RADIATION PROTECTION OFFICER

Thomas J. Klein

Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.

8. LICENSED MATERIAL

LINE NO.	A ELEMENT AND MASS NUMBER	B CHEMICAL AND/OR PHYSICAL FORM	C NAME OF MANUFACTURER AND MODEL NUMBER *(If Sealed Source)*	D MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)	See Section 8 attached.			
(2)				
(3)				
(4)				

DESCRIBE USE OF LICENSED MATERIAL Log. Oct. 2-IV

E

(1)	
(2)	
(3)	
(4)	

Applicant.....
Check No. 672
Amount/Fee Category 1120-3P
Type of Fee Amt Rec'd
Date Check Rec'd 10/14/84
Received By RJ/aaa

8510240170 850821
REG4 LIC30
49-19005-01 PDR

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9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	See Section 8, item E.		
(2)			
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F
(1)	Geiger Counter	Ludlum	Model 5	one	beta-gamma	0 - 2000 MR/hr
(2)	Micro R Meter	Ludlum	Model 125	one	gamma	0 - 1000 uR/hr
(3)	Alpha Rate Meter	Ludlum	Model 177	one	alpha	0 - 500K CPM
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

☒ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY
Ludlum Measurements, Inc.
Sweetwater, Texas
6 month frequency

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
☐ (1) FILM BADGE ☒ (2) THERMOLUMINESCENCE DOSIMETER (TLD) ☐ (3) OTHER (Specify): _____	R.S. Landauer Jr. and Co., or other service company with quality assurance programs meeting the requirements of ANSI-N45.2.	☒ MONTHLY ☐ QUARTERLY ☐ OTHER (Specify):

13. FACILITIES AND EQUIPMENT (Check were appropriate and attach annotated sketch(es) and description(s).

☒ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.
☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.
☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.
☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC. See attached Section 13.

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED
N/A

b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.
Sealed sources will be returned to the manufacturer for disposal or to another party authorized to possess by-product material. Liquid lab standards will be disposed of in the Sweetwater Mill tailings facility.

INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

15. RADIATION PROTECTION PROGRAM. Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(if needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

16. FORMAL TRAINING IN RADIATION SAFETY. Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.

    a. Principles and practices of radiation protection.

    b. Radioactivity measurement standardization and monitoring techniques and instruments.

    c. Mathematics and calculations basic to the use and measurement of radioactivity.

    d. Biological effects of radiation.

17. EXPERIENCE. Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

18. CERTIFICATE

(This item must be completed by applicant)

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 30, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

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.

a. LICENSE FEE REQUIRED *(See Section 170.31, 10 CFR 170)* $120.00	b. CERTIFYING OFFICIAL *(Signature)* Thomas J. Klein
	c. NAME *(Type or print)* Thomas J. Klein
(1) LICENSE FEE CATEGORY: Other specific licenses	d. TITLE Environmental Supervisor
(2) LICENSE FEE ENCLOSED: $ 120.00	e. DATE 9/25/84

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8. Licensed Material

	A - Element	B - Form	C - Model	D - Amount
1	Cesium 137	Sealed Source	Texas Nuclear Dwg. 570-57157C	Not to exceed 200 millicuries per source
2	Cesium 137	Sealed source	Texas Nuclear Dwg. 570-57157C	Not to exceed 20 millicuries per source
3	Cadmium 109	Sealed source	Texas Nuclear Dwg. 696-696782	Not to exceed 3 millicuries per source
4	Americium 241	Sealed source	Amersham/Searle Model AMM-4	Not to exceed 0.5 microcurie per source
5	Polonium 210	Liquid	--	Not to exceed 5 microcuries total

E - Use

1 For use in Texas Nuclear Model 5190 source holder for density measurements.

2 For use in Texas Nuclear Model 5192 source holders for level measurements.

3 & 4 For use in Texas Nuclear Model 9200 Series X-ray fluorescence analyzers for sample analysis.

5 For use as liquid laboratory standard.

13. Facilities and Equipment

Plant facilities consist of a standard design acid-leach, organic solvent extraction uranium mill. Nuclear gauges are permanently mounted at fixed locations to control in-line densities, flows, and levels.

Laboratory facilities consist of a standard design bench lab located in a building adjacent to the Mill building. All lab drains are routed into the mill drains, and from there to the tailings cell.

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15. Radiation Protection Program

In order to comply with limits established in 10 CFR 20 and to keep exposures as low as reasonably achievable, MINERALS has established the following radiation monitoring and protection program.

Exposure Assessment

External exposure to ionizing radiation will be determined from known dose rates and exposure times or from dosimeter results.

1. Personnel Monitors: All mill operators and mill maintenance employees will be issued thermoluminescense dosimeters (TLD's) or film badges and will wear them while working in the mill complex or around sealed sources. The TLD's or film badges will be exchanged on a monthly basis, and will be furnished and analyzed by a reliable service company.

2. Exposure Control Limits-Action Levels: If an employee receives a dose in excess of 25 percent of the limits specified in the table in paragraph (a) of 10 CFR 20.101 in any calendar quarter, the following action will be implemented:

   a. The service company will be contacted to check on any possible analytical or calculation error(s). If no mistakes are found, the following steps apply:

   b. The Safety and Environmental Department will initiate an investigation to determine where and how the exposure(s) occurred. If there is an indication that a work area has unusual external radiation, a survey will be made of the area to determine the cause.

   c. If a source of unusual external radiation is noted, appropriate action will be taken to lower the level of radiation as far below the limits specified in 10 CFR 20 as is reasonably achievable and to insure that no unnecessary exposure occurs in the future.

3. Exposure Records: All exposure records will be kept in accordance with the regulations set forth in 10 CFR 20.102. All exposure investigations will be documented.

4. Employee Age Limits: No individual within a restricted area who is under 18 years of age will be allowed to receive in any calendar quarter a dose in excess of 10 percent of the limits specified in paragraph (a) 10 CFR 20.101.

5. Measurement Precision:

Exposure, MR	5	10	50	300	3,000	30,000
Standard deviation	20%	10%	4%	4%	4%	4%

6. Quality Assurance Program: A service company will be selected with a quality assurance program that meets the requirements of the American National Standards Institute (ANSI-N45.2).

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Radiation Surveys

A physical inventory of all sealed sources will be conducted semi-annually.

Texas Nuclear Model 5190 and 5192 devices will be leak tested at the time of installation, every three years during operation, and after any event which might have affected the gauge.

Texas Nuclear Model 9200 portable xray units will be leak tested each six months.

All leak test swabs will be sent to the manufacturer for analysis. Leak testing will not be performed during storage of devices. Any device placed in storage will be tested prior to being placed in storage and prior to being returned to service.

Gamma surveys will be conducted semiannually of all sealed sources in service. Radiation levels at the surface of the gauge and at one foot distance will be recorded.

Employee Instruction

All mill operators and mill maintenance employees will be instructed in nuclear gauge construction, operation, and hazard. Mill instrument technicians or other operational personnel who will work directly with nuclear gauges will receive additional formal training.

Servicing Operations

Servicing operations will be performed only by employees who have completed the Texas Nuclear course, "Industrial Radiation Safety Training", and who have been evaluated by the RPO for safe work procedures. All work will be performed in accordance with Texas Nuclear Instruction Manual "SGH Series Density Gauge" and the outline of specific operations attached to Minerals' letter of 20 June 1983 (attached).