AC FORM 518 B0 CFR 30, 32, 33, 34. and 40 APPLICATION FOR	MATERIAL LICENSE	U.S. NUCLEAR	APPROVED BY OM 3160-0120 Expires 5 31-87
NSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DE OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BE	TAILED INSTRUCTIONS FOR COMPLI	ETING APPLICATIC	IN SEND TWO COPIES
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WASHINGTON, DC 20556	U.S. NUCLEAR REGULATORY COMM	AISSION, REGION III	
DCATED IN	799 ROOSEVELT ROAD GLEN ELLYN, IL 60137		
INDECTION DELAWARE, DISTRICT OF COLOMBIA, MAINE, MARTLAND, IASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, HODE IBLAND, OR VERMONT, SEND APPLICATIONS TO	ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO: U.S. NUCLEAR REGULATORY COMMISSION, REGION IV MATERIAL RADIATION PROTECTION SECTION 611 F YAN PLAZA DRIVE, SUITE 1000 ARLINGTON, TX 76013 ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS		
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LABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSIF,BIPPI, NORTH CAROLINA, UERTO RICO, SOUTH CAROLINA, TENNESSEE, VINGINIA, VIRGIN ISLANDS, OR VEST VIRGINIA, BEND APPLICATIONS TO:			
U.S. NUCLEAR REGULATORY COMMISSION, REGION II NUCLAR MATERIALS SAFETY SECTION 101 MARIETA STREET, SUITE 2000 ATLANTA, GA 30323	50 U.S. NUCLEAR REGULATORY COMMISSION, REGION V NUCLEAR MATERIALS SAFETY SECTION 1450 MARIA LANE, SUITE 210 WALNUT CREEK, CA 94596		
ERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR #	EGULATORY COMMISSION ONLY IF THEY	WISH TO POSSESS AN	D USE LICENSED MATERIA
THIS IS AN APPLICATION FOR (Check appropriate item)	2 NAME AND MAILING ADDRESS OF APP	PLICANT (Include Zip C	ode/
A. NEW LICENSE	Bear Creek Uranium		
B AMENDMENT TO LICENSE NUMBER	P.O. Box 2654		
The NEWWAL OF LICENSE NOMBER	Casper, Wyoming 826	01	
40 miles NW of Douglas, Wyoming	8905 REG4 49-14	030038 88 LIC30 9952-01	0407 PNU
40 miles NW of Douglas, Wyoming NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION Gary R. Chase	8905 REG4 49-14	030038 88 LIC30 9952-01 TELEPHONE M 307-358	0407 PNU RUMBER 3-2514
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Application for Byproduct Material License - Supplimental information

Item 15. Radiation Protection Program

- a) All personnel permanently assigned to the restricted (mill) area are issued TLD badges that are exchanged on a quarterly basis.
- b) Beta-gamma surveys are conducted at 25 locations within the restricted area on a guarterly frequency.
- c) All sealed sources and devices are surveyed (beta-gamma) on a quarterly frequency. (re: attached procedural information)
- d) All sealed sources and devices are leak tested on an annual frequency. The analysis is conducted by the manufacturer. (re: attached procedural information)
- e) A Radiation Monitoring Request Form is required before any work can be done on or in the immediate vicinity of a sealed source. This will initiate a survey and lock-out procedure conducted by a qualified individual (designated on the Byproduct Material license) who will then supervise the work being performed.
- f) All new hires are trained in radiation safety (approx. one hour) and tested over the subject material prior to their assignment to the restricted area. Safety meetings and resfresher training sessions are conducted and documented. Individual instruction is offered (as warranted) whenever a Radiation Monitoring request is issued.
- g) Continuous strip chart recordings are used to monitor densities measured by the nuclear density gauges. These charts give an immediated indication of physical problems associated with any given gauge in the operation.

Item 16. Formal Tra item 16)	ining in Radiation Safety (Courses	covering	all areas	Insted	10
E.Y. Scott	Texas Nuclear Corp. Austin, Texas	1976	32	hours		
	T.L. Clifford and Assoc. Niantic, Conn.	1976	40	hours		
G.R. Chase	MESA - Denver, Colorado	1976	16	hours		
	The Ohmart Corp. Cincinati, Ohio	1977	16	hours		
	Georgia Tech. Atlanta, Geo.	1981	80	hours		
K.(Z) Patrick	MESA - Denver, Colorado	1978	16	hours		
	The Ohmart Corp.	1978	16	hours		

Application for Byproduct Material License - Supplimental information .				
Item 16. (cont.)				
D.S. Patrick	The Ohmart Corp. Cincinati, Ohio.	1977	16 hours	
E.S. Lewis	The Ohmart Corp. Cincinate, Ohio	1981	16 hours	
Item 17. Experience				
E.Y. Scott	A.S. Chemistry 15 years in uranium milling, analytics, operation, metalurgy and radiation safety. (10yrs with Pathfinder Mines; 5 yrs with Bear Creek Uranium)			
G.R. Chase	B.S. Biological Science $5\frac{1}{2}$ years in uranium analytics and radiation safety. $(1\frac{1}{2}$ yrs with Pathfinder Mines and 5 yrs with Bear Creek Uranium)			
K.(Z) Patrick	b.S. Chemistry 5½ years in uranium analy (1 yr Exxon Minerals Co.	tics and radi and 4½ yrs wi	iation safety ith Bear Creek Uranium)	
D.S. Patrick	Eight years experience in uranium mill operations and maint- enance.			
	Thirty-two hours training nuclear density gauges. (on calibrati The Ohmart Co	ion and maintenance of orp 1977)	
E.S. Lewis	Three years experience in	uranium mill	l maintenance.	
	Thirty-two hours training nuclear density gauges. (on calibrati The Ohmart Co	ion and maintenance of orp 1981)	

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SEALED SOURCE SURVEY PRODURE:

All sealed sources (density gauges and X-ray machines) must be surveyed every 3 months and leak tested every12 months. When surveying the following procedure shall be used:

- Fill in the required information on a survey sheet for each sealed source. attachments A and B note: the information can be obtained from the tag on each source holder or from previous survey sheets.
- Check the calibration of the survey meter to be used using a standard check source.
- 3. Take a gamma reading 1 foot from each point as indicated on attachments A and B and record the results. note: be sure to indicate whether the pipe is full or empty and if the shutter is open or closed.
- Any source that yeilds a reading higher than 5 mr/hr at 1 foot distance is to be investigated further.

Leak Test Procedure:

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- Romove the cotton swab from a leak test kit obtained from a vendor and slightly moisten with alcohol.
- 2. Wipe around all seams and the "off-on" mechanism of the source holder.
- Fill out the certificate that acompanies the kit as per vendors instructions. see attachment C
- 4. Return to vendor for analysis.
- The X-ray machine is to be leak tested as per instruction enclosed in the kit obtained from Texas Nuclear Corp.

ELEMENTAL AND YSER RADIATION SURVEY CERTIFICATE



Attach ment It



N K TEST PROCEDURE -OT/IK

The gauge should be dismantled or disassed bled in order to leak test. Testing of the external seams, flanges and end plate is adequate.

- 1. If the gauge has a movable shutter, position the shutter acutator to the closed position. In the event that the shutter actuator is frozen, or appears damaged, notify Texas Nuclear Corporation, Health Physics Department (512/836-0801) or Ohmart Corporation (513/272-0131).
- 2. Refer to "Calculations for Leak Testing" before proceeding. Remove the end cap from the end window of the G. M. Survey Meter, Model 2652, or its equivalent, and with the use of the appropriate certified Cs-137 standard source, calibrate the unit on the proper scale. Insure that the most active side of the source faces the meter (the labeled side).
- 3. Obtain as many cotton-tipped applicators as indicated on the applicable drawing and slightly moisten. (Use water, alcohol or other solvent.)
- 4. With the shutter closed, wipe the areas of the source housing assembly at the locations designated on the appropriate drawings (care should be taken not to touch the Q-tips with the fingers following the wiping operation).
- 5. Carefully place the swab end of each Q-tip as close to the window of the G. M. Tube on the Survey Meter as possible and read the results. The degree of removable contamination may be readily evaluated by the method referenced above.
- 6. A leak test certificate should be completed and filed as a permanent record of your leak test. Amounts of radioactivity found should be recorded in microcuries (uCi). However, if no radioactivity is detected it is preferable to record the results as < (less than) the minimum detectable amount as opposed to zero. (e.g., 0.003 uCi)</p>
- 7. One should send the wipes to a counting laboratory for additional analysis if any contamination appears on the wipes. Notify Texas Nuclear or Ohmart Corporation for instructions.
- 8. Note: Generally it is advisable to use a certified standard source containing the same isotope as that being tested. However, this is not always necessary where the isotope is an energetic gamma emitter, e.g., Cs-137 standard will work for Co-60, Ir-192, Ra-226, etc., because these isotopes have higher exposure rates /uCi than Cs-137.

CALLATIONS FOR LEAK TESTING (QT/1S)

The following technique can be used to assess the presence of small amounts of radioactive material necessary during leak testing of gauging devices, using a Texas Nuclear Model 2652 Portable Survey Meter or equivalent that has the necessary sensitivity to detect 0.005 uCi or less of almost all gamma emitting isotopes and beta emitting isotopes with Emax greater than 80 KeV.

- 1. Turn on unit; check battery, verify unit operation using the supplied check source; and remove end cap from G. M. Tube.
- 2. Place the appropriate certified standard source (Cs-137, Ra-226, etc.) disk on a clean flat surface and position the open end of the G. M. Tube over it and as close as possible without damaging the thin window. No fixture is necessary if the source in simply centered under the window. Set the range selector to give an approximate mid-scale reading. Note and record the observed readings; M1 (in either c/m or mR/h).
- 3. Remove the standard source away a few feet. With the G. M. probe in the same position, note and record the background (Bkg.) radiation in the same units as M₁.
- 4. Each swab end of the cotton-tipped applicators used in wiping the gauge is in turn placed in the same geometrical position as the above-noted standard. Note and record the observed meter reading, M₂. M₁ and M₂ must be taken in the same units.
 - To determine the degree of contamination in microcuries, a simple expression of proportionality is used:

 $\frac{A}{m_1} = \frac{C}{M_2}$ Where

5.

A= activity of certified standard source in microcuries (uCi);

C= 'amount of removable contamination in microcuries (uCi);

- M1= survey meter reading with calibrated source in place in either milliroentgens per hour (mR/h) or counts per minute (cpm);
- Bkg. = survey meter reading with neither source nor swab near the G. M. probe in either milliroentgens per hour (mR/h) or counts per minute (cpm). This should be subtracted from both M1 and M2, however, the results can't be zero. Background will be the lower limit of the measurement.

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LEAK TEST PROCEDURE - TYPE QT/2S

This procedure is specifically designed to leak test radioactive sources contained in Portable X-Ray Analyzers.

INSTRUCTIONS

- Move the unit to a clean, well-lighted area so as not to get dust into the probe head upon disassembly.
- 2. Do the work on a clean, flat surface and wash hands before starting.
- 3. Partially disassemble the probe as instructed in the attachment, using any furnished drawings for reference.
- Remove Q-tips and the small bottle of solvent from the kit and open solvent.
- 5. Moisten one Q-tip, then wipe and dry the source as instructed on the following page.
- Break the Q-tip stems off leaving the cotton ends in the solvent bottle. Be careful not to touch the cotton tips with the fingers.
- 7. Replace the bottle cap and seal with tape.
- 8. Reassemble the probe head.

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- 9. Fill out the sheet labeled "Leak Test Certification" with your company identification, product model, serial number and source type.
- 10. Repackage all components in the mailing tube; survey the tube with an appropriate instrument, if available, and mail to Texas Nuclear.
- NOTE: In Canada, one cannot mail the tube, but must send the tube by Air Express.

Any questions concerning leak testing should be referred to:

Health Physics Section Texas Nuclear Division P. O. Box 9267 Austin, Texas 78766

Telephone: 512/836-0801

Leak Test Procedure - QT/2S Page 2

TEXAS NUCLEAR SOURCE HOUSING ASSEMBLY - (Models 9254, 9256, 9257 and 9263)

Г.

 (a) Remove the front housing assembly holding screws.

9254	(49)
9256	(2)
9257	(33)
9263	(33)
anon	annes

by loosening the three

(b) With the moist Q-tip carefully wipe the back of the source spider assembly 9254 (4) and drop the Q-tip into the solvent bottle. 9256 (4) 9257 (35) 9263 (35)

Keep the hands away from the shutter actuator pin.

- (c) With the other Q-tip dry, wipe the same area until all the remaining moisture is taken up. Drop the second Q-tip into the solvent bottle.
- (d) Proceed to Items 6 and following on Page 1.

TEXAS NUCLEAR PROBE ASSEMBLY - (Model 9261)

- (a) Remove the entire front cover assembly by loosening the three holding screws.
- (b) Aim the probe away from the body.
- (c) With the moist Q-tip, carefully clean the front face of the source holder and drop the Q-tip into the solvent bottle.
- (d) With the other Q-tip dry, wipe the source holder until all the remaining moisture is taken up and drop the second Q-tip into the solvent bottle.
- (e) Proceed to Items 6 and following on Page 1.

WIPE THE PROCEDURES FOR RADIOACTIVE DURCE

for

PGT Model 100 Chemical Analyzers and XK Units

Radiation Regulations [See manual, page A-4, item 31.5 d(3)] require that instruments using a radioactive source be tested for leakage at regular six (6) month intervals. Instructions for performing this test are given below.

A. Moisten the lint-free tissue from the PGT Wipe Test Kit with alcohol.

Model 100-open the protective cover and gently wipe the tissue over the entire surface of the probe head area, including the Beryllium or Mylar window surface. CAUTION: The window surface is extremely fragile.

Model XK Units-wipe over the entire measuring probe case, including the bottom face-plate. CAUTION: The window surface is fragile on the XK-2 unit.

- B. Insert and seal the tissue in the plastic bag from the test kit.
- C. Test all power and shutter controls and all indicator lights on the instrument, noting any malfunctions on the information card below.
- D. Complete the Wipe Test Information Card, and mail the card and plastic bag to PGT in the pre-addressed envelope. The results of the analysis will be mailed back to the Radiation Officer named on the card. These reports must be kept on file for review by state or federal Radiation Inspectors.
- E. Affix the attached "Next Wipe Test Due" sticker prominently on the device.

WIPE TEST INFORMATION CARD		Detach and retu
Company or Agency:		
Unit tested:	zer)	
Serial number:		
Source date: Source:	Co Activity:	mCi
Power and shutter controls and indicator lights:		
D All O.K.		
D Not O.K. (specify).		
Designated Radiation Officer to whom results will be returned:		
Name:	Title:	
Address:		
	Zip code:	
Test performed by:	Title:	
Signature:	Date:	

Relocation of Nuclear Density Gages (SOP)

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(1) The shutter of the source holder shall be placed in the off position and padlocked to ensure that the shutter does not open.

(2) A radiation survey will be conducted on the source holder prior to removal from its location, to ensure that the shutter is closed.

(3) The source holder will be monitored with a survey meter during relocation.

(4) A radiation survey will be conducted immediately after relocating the gage, while the shutter is in the off position.

(5) A wipe test for leakage will be conducted immediately after relocation.

(6) The shutter shall be unlocked and placed in the on position and a radiation survey will be conducted immediately.

Certificate of Proficiency

This is to Certify that <u>ERIC S. LEWIS</u> has satisfactorily completed the Ohmart Training Course in the U.S. MRC Rules & Regulations, Radiation Safety and the safe handling of Radioactive materials as used in Ohmart nuclear gauges.

Date _ 1/15/79

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THE OHMART CORP. CINCINNATI, OHIO 45209

and the second Certificate of Proficiency This is to Certify that ____ CATHY ZEPR 1.181.2 has satisfactorily completed the Ohmart Training Course in the U.S. NRC Rules & Regulations, Radiation Safety and the safe handling of Radioactive materials as used in Ohmart nuclear gauges. Date 8-8-73 ANDREW J. LIVINGSTON THE OHMART CORP. FRAINING DIRECTOR CINCINNATI, OHIO 45209