KECO

KING EQUIPMENT COMPANY • 140 Smith Street • Keasbey, NJ 08832 • (201) 826-0800

June 20, 1984

RECEIVED BY REGION I
Date 7/2/84
Log JULY I
By Brown
Orig. To
Action Compl 9/9/84

U.S. Nuclear Regulatory Commission
Nuclear Materials and Safeguards Branch
Region I
King of Prussia, Pennsylvania 19406

Attn: John E. Glenn

Ref: Materials License
Amendment Request
Docket 030-20702
License 29-20671-01

Dear Mr. Glenn:

This is a request by Keco, Inc. for an amendment to our NRC License No. 29-20671-01 that will permit our company to install, relocate, and conduct leak tests on nuclear gauging devices containing specified radioactive materials from 1 millicurie to 4 curies, as used in our customer's plants for the purposes authorized by our license, including density, level, analysis and weight.

Installation and/or relocation of devices shall be made by and/or under the supervision of Kevin L. Ravaioli, who has attended and successfully completed a course of instruction conducted under the auspices of Texas Nuclear Corporation, Austin, Texas. The course contents are itemized in the attached Radiation Safety Training Course agenda. Installation and relocation shall be conducted in accordance with the enclosed procedure entitled "Industrial Device Installation".

Leak tests shall be conducted by Kevin L. Ravaioli, who shall use a portable Survey Meter, Model DG10, Serial #340, manufactured by Certified Radiation Instruments, which has a demonstrated capability to measure less than 0.005 uCi of the isotope being tested, namely, Cs-137, Co-60, etc. Leak tests shall be made using the QT/1S procedure enclosed.

Applicant
Check No. 1847 3M
Amount/Fee Category $930
Type of Fee Application
Date Check Rec'd 7.1.84
Received by Brown

Very truly yours,

Gary L. King
BJM

Gary L. King
President

GLK:bjm
Encl.

02567

ML10

8502110124 850130
NMS LIC30
29-20671-01 PDR

"OFFICIAL RECORD COPY"

JUN 22 1984

Postmarked 6/20/84

RADIATION SAFETY TRAINING COURSE
AGENDA

First Day's Session

Introduction
1. Contents and Purpose of Course
2. Agenda

Review of Preparation Material

Atomic Structure
1. Nomenclature
2. Periodic Table

Coffee Break

Radioactive Materials
1. Isotopes
2. Radioactivity
3. Decay
4. Half-Life

Lunch

Radiation Interaction with Matter
1. Ionizing Radiation
    a. electromagnetic
    b. Charged particle
    c. Neutron
2. Specific Ionization

Coffee Break

Radiation Dosimetry
1. Definitions and Units of Dose
2. Quality Factor

HAPPY HOUR

Homework Assignment -

Read over work covered.
Study new definitions and concepts

Second Day's Session

Question and Answer Session

Radiation Dosimetry (Continued)

3. Gamma Exposure Rate
4. Neutron Exposure Rate

Coffee Break

Biological Effects

1. Dose Limits
2. Radiation Protection Guides

Lunch

Radiation Detection

Detection Instruments

1. Basic Operation
2. Ionization Chambers
3. Geiger-Mueller Instruments
4. Neutron Detectors

Personnel Dosimetry

Coffee Break

Distance, Time, Shielding

1. Inverse Square Law
2. Half-Value Layer

Discussion and Review

Homework Assignment -

Complete Part I of Radiation Safety Manual.
Complete Study Quiz I.
Briefly look over Part II of Manual.

Third Day's Session

Question and Answer Session

Device Installation
1. Requirements
2. Format
3. Responsibility

Travel to Texas Nuclear

Laboratory Work at Texas Nuclear Corporation
1. Check-out and briefing on use of portable radiation survey meters.
2. Survey density, level and belt weigh devices.
3. Leak test devices using QT/1S procedure
    a. count swabs
    b. prepare leak test certificates

Lunch

Working Definitions

Licensing
1. Title 10 Code of Federal Regulations
2. Agreement States
3. Specific License

Radiation Area and Posting

Coffee Break

Shipping Radioactive Material
1. Definitions
2. Classification
3. Labels

Coffee Break

Occupational Safety & Health Act

Emergency Procedures
1. Guidelines
2. Fire or Explosion
3. Incident Report

Homework Assignment -
Read Part II of Radiation Safety Manual.
Complete Study Quiz II on regulations.
Material Review for Exam.

Fourth Day's Session

Material Review

Question and Answer Session

Written Test on Lectures and Homework Assignments

Lunch

ADJOURNMENT

Certificate Of Training

This is to certify that

KEVIN L. RAVAIOLI

Has Successfully Completed a Radiation Safety Training Course presented by Texas Nuclear Corporation.

TEXAS NUCLEAR
A SUBSIDIARY OF RAMSEY ENGINEERING

Issued 21st Day Of May 19 84

W. Hendrick
Health Physicist

Tom Prudhomme
President

RECORD OF PERFORMANCE

Kevin L. Ravaioli

Service Supervisor

King Equipment Co.

Quiz I	Quiz II	Exam	Final Grade
90	100	96	96

Class Average - 91

INDUSTRIAL DEVICE INSTALLATION

"Installation" means the placement of, or supervising the placement of, the source containing components of a measurement system in an operable use condition. Some devices are shipped and authorized so that the user may already have physically mounted the device. If this is the case, proceed with the installation surveying, leak testing and instructing of the user personnel. If the device is not authorized for the user to physically mount, then installation starts with the shipping container. Each separate placement or relocation is to be construed as a new installation.

Installation of industrial devices may be conducted only by those persons specifically licensed to perform this work. The installer must be equipped with an appropriate survey meter for the type of source utilized, a source to verify the meter operability and accuracy, calibrated leak test standard, and must be physically present at the site during the entire operation.

1. Survey the shipping box or crate at the storage location to insure that the radiation levels are the same as indicated by the shipping labels. If you find significant differences (e.g., +50%), remove any customer personnel from the immediate area and suspect shipping damage. If you are going to need any equipment to move the head for examination, make sure it is available before proceeding. If it is going to be necessary to work in areas with radiation levels in excess of 100 mrem/h, control the area physically and call Texas Nuclear before proceeding.

2. Remove the outer cover of the box or shipping crate but do not remove the unit from the base skid. Visibly inspect the unit for transportation damage to the shutter assembly, locking mechanism and correctness of labeling. Verify by radiation survey that the shutter is fully closed.

3. If visible damage is evident, the unit should be leak tested for contamination. Damage or any degree of contamination precludes installation and Texas Nuclear Health Physics should be notified immediately. Following this inspection, the device may be transported to job location and mounted.

4. A radiation survey will be made by the installer in accordance with the appropriate survey pattern sheet and the original furnished the user as a permanent record. Generally, all radiation levels measured around an installed device must be less than 5 mR/h one foot from any accessible surface. If this is not the case evaluate the installation for additional shielding needs and make user aware of posting requirements.

5. The installer will conduct a leak test and complete the appropriate leak test certificate. The original should be furnished the user as a permanent record.

6. The installer will insure that individual users are furnished the applicable training, paperwork and information called for on the check list titled "Customer Training For Use of Measuring Devices".

BELT WEIGH SCALE RADIATION SURVEY OR LEAK TEST CERTIFICATE

NOTES:

1) THIS FORM MAY BE USED ON EITHER RADIATION SURVEY OR LEAK TEST. WHEN USED FOR LEAK TEST, WIPE AREA 1 (AROUND COVER) AND AREA 2 (AROUND FOUR BOLT HEADS). WHEN USED FOR RADIATION SURVEY, SURVEY LETTERED POINTS AT ONE FOOT FROM SURFACE AND/OR AT SURFACE.

2) SOME GEIGER TUBE TYPE SURVEY METERS MAY NOT HAVE SUFFICIENT RANGE TO TAKE SURFACE READINGS ON SOME APPLICATIONS. IN SUCH CASES, USE ION CHAMBER TYPE SURVEY METER OR TAKE READINGS AT ONE FOOT.

3) ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

4) CHECK OPERATION OF SHUTTER WHEN LEAK TEST IS PERFORMED

USER _____

GAUGE LOCATION _____

_____

SOURCE HEAD MOD. NO. _____

TAG NO _____

SOURCE HEAD SER. NO. _____

ACTIVITY _____ mCi _____ CS137, _____ CO60

MEASURING INSTRUMENT _____

_____

LEAK TEST TYPE _____

RESULTS:

SHUTTER OPERATION - _____ OK

_____ NEGATIVE; _____ POSITIVE, _____ uCi

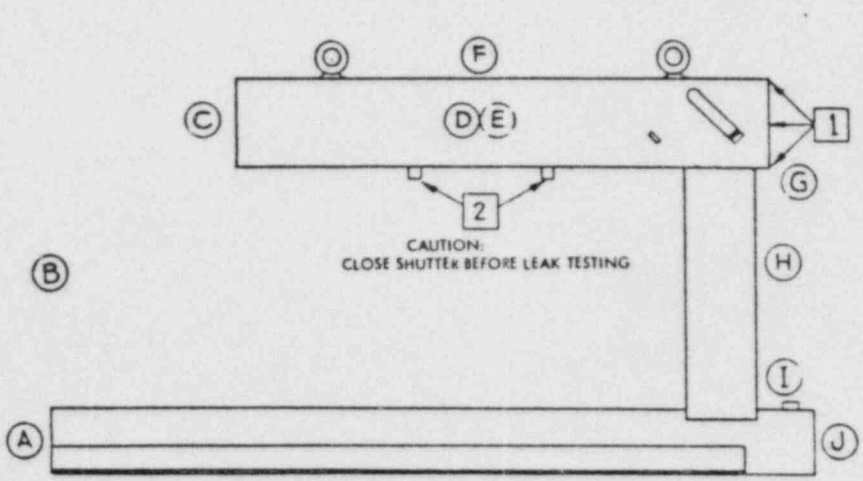
SIGNATURE (ONLY AFTER RESULTS RECORDED) DATE

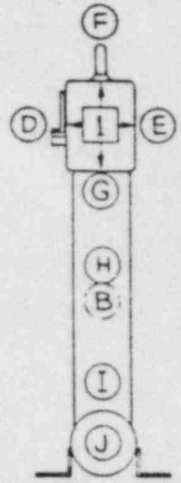
COMPANY NAME

COMPANY ADDRESS

WITH MAILABLE LEAK TEST KIT, MAIL TO:

TEXAS NUCLEAR
9101 HI WAY 183, AUSTIN TEXAS 78766
PHONE (512) 836-0801; TELEX: 77-6413





(K) (BELOW RETURN BELT IF NORMALLY ACCESSIBLE TO PERSONNEL)

mR/h READINGS TAKEN: ☐ AT ONE FOOT; ☐ AT SURFACE

SHUTTER	A	B	C	D	E	F	G	H	I	J
OPEN										
CLOSED										

LEVEL GAUGE RADIATION SURVEY CERTIFICATE

ES.

SURVEY LETTERED POINTS AT ONE FOOT FROM THE SURFACE AND/OR AT THE SURFACE.

SOME GEIGER TUBE TYPE SURVEY METERS MAY NOT HAVE SUFFICIENT RANGE TO TAKE SURFACE READINGS ON SOME APPLICATIONS. IN SUCH CASES, USE ION CHAMBER TYPE SURVEY METER OR TAKE READINGS AT ONE FOOT.

ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

TE _____

R _____

UGE LOCATION _____

_____

URCE HEAD MOD. NO. _____

S NO. _____

URCE HEAD SER. NO. _____

TIVITY _____ mCi _____ CS137, _____ CO60

ASURING INSTRUMENT _____

_____

ADINGS TAKEN : _____ AT SURFACE, _____ AT ONE FOOT

_____

GNATURE (ONLY AFTER RESULTS RECORDED) DATE

_____

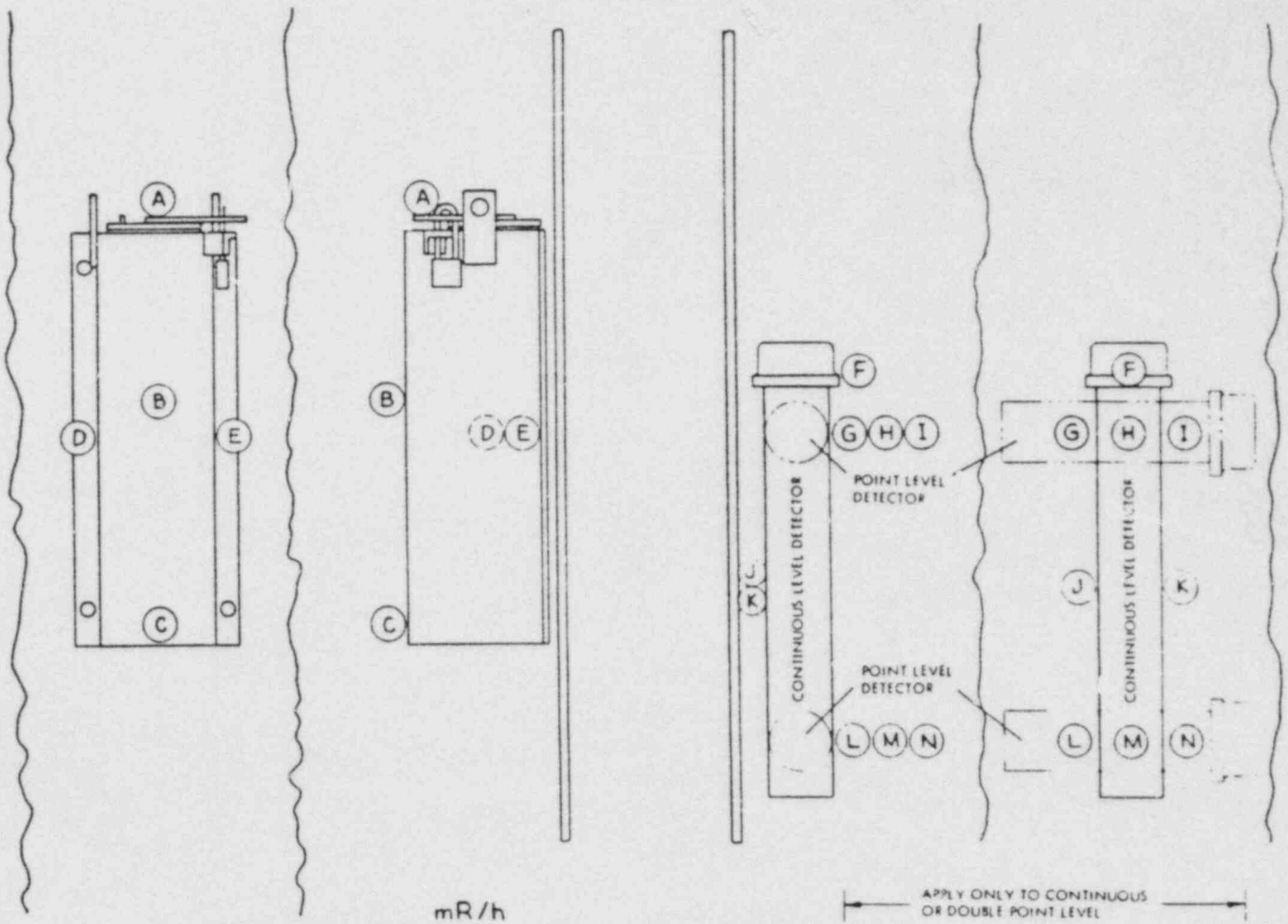
MPANY NAME

_____

MPANY ADDRESS

_____

KAS NUCLEAR
31 HI WAY 183, AUSTIN TEXAS 78766
ONE (512) 836-0801; TELEX: 77-6413



mR/h

APPLY ONLY TO CONTINUOUS OR DOUBLE POINT LEVEL

SHUTTER	A	B	C	D	E	F	G	H	I	J	K	L	M	N
OPEN														
CLOSED														

VESSEL; EMPTY ☐ ; FULL ☐

LEVEL GAUGE RADIATION SURVEY CERTIFICATE

NOTES:

1) SURVEY LETTERED POINTS AT ONE FOOT FROM THE SURFACE AND/OR AT THE SURFACE.

2) SOME GEIGER TUBE TYPE SURVEY METERS MAY NOT HAVE SUFFICIENT RANGE TO TAKE SURFACE READINGS ON SOME APPLICATIONS. IN SUCH CASES, USE ION CHAMBER TYPE SURVEY METER OR TAKE READINGS AT ONE FOOT.

3) ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

DATE _____

USER _____

GAUGE LOCATION _____

_____

SOURCE HEAD MOD. NO. _____

TAG NO _____

SOURCE HEAD SER. NO. _____

ACTIVITY _____ mCi _____ CS137, _____ CO60

MEASURING INSTRUMENT _____

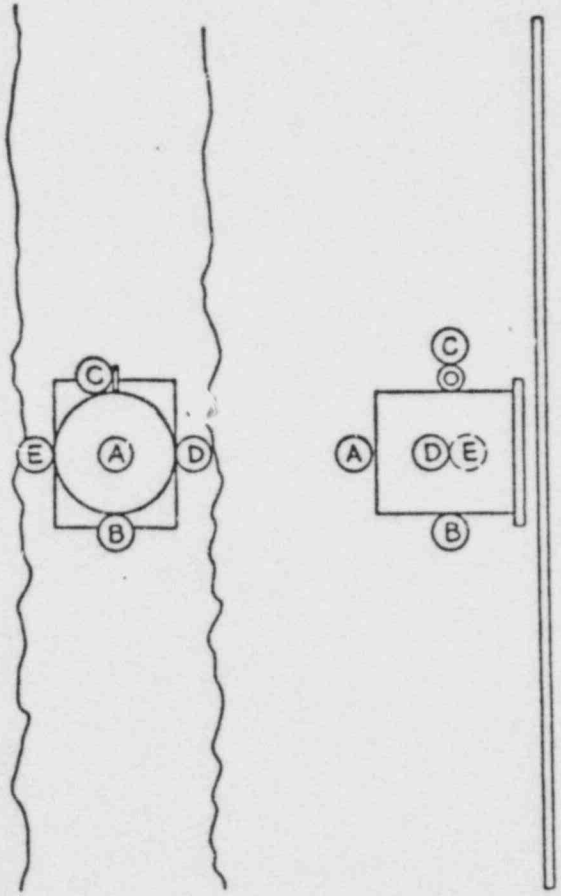
_____

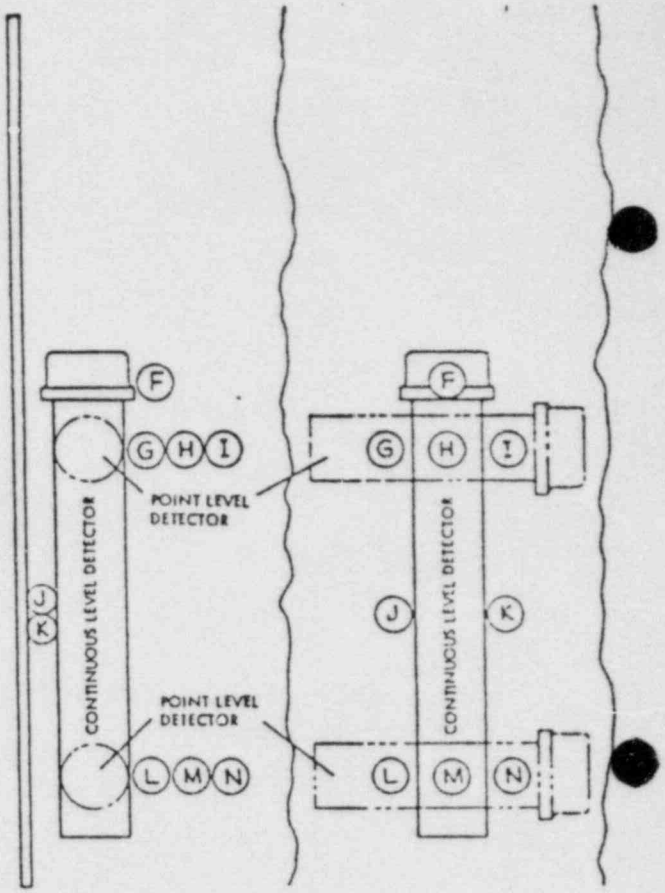
READINGS TAKEN : _____ AT SURFACE, _____ AT ONE FOOT

SIGNATURE (ONLY AFTER RESULTS RECORDED) DATE

COMPANY NAME

COMPANY ADDRESS





mR/h

APPLY ONLY TO CONTINUOUS OR DOUBLE POINT LEVEL

SHUTTER	A	B	C	D	E	F	G	H	I	J	K	L	M	N
OPEN														
CLOSED														

VESSEL; EMPTY ☐ ; FULL ☐

TEXAS NUCLEAR
9101 HWY 183, AUSTIN TEXAS 78766
PHONE (512) 836-0801, TELEX 77-6413

DENSITY GAUGE RADIATION SURVEY CERTIFICATE

TES:

SURVEY LETTERED POINTS AT ONE FOOT FROM THE SURFACE AND/OR AT THE SURFACE.

SOME GEIGER TUBE TYPE SURVEY METERS MAY NOT HAVE SUFFICIENT RANGE TO TAKE SURFACE READINGS ON SOME APPLICATIONS. IN SUCH CASES, USE ION CHAMBER TYPE SURVEY METER OR TAKE READINGS AT ONE FOOT.

ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

E _____

_____

GE LOCATION _____

_____

RCE HEAD MOD. NO. _____

NO _____

RCE HEAD SER. NO. _____

TVITY _____ mCi _____ CS137, _____ CO60

SURING INSTRUMENT _____

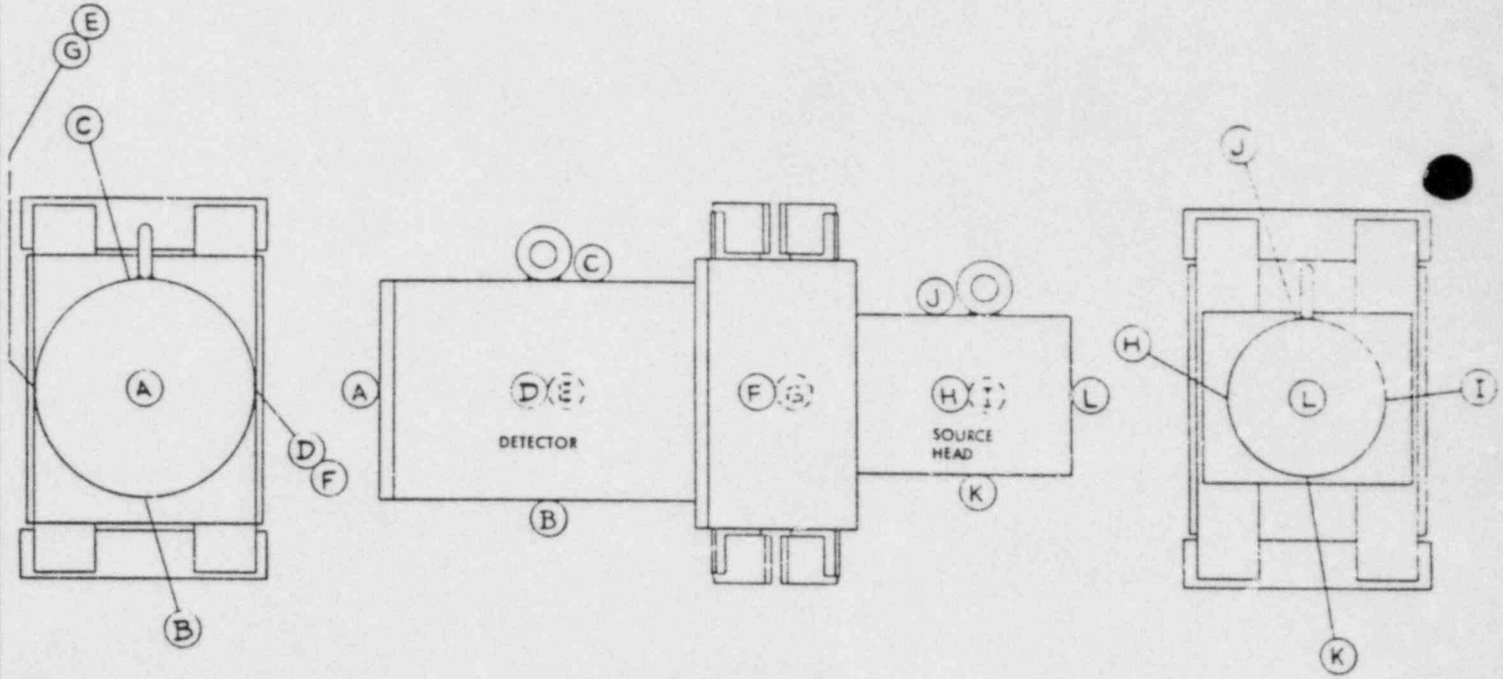
_____

DINGS TAKEN: _____ AT SURFACE, _____ AT ONE FOOT

NATURE (ONLY AFTER RESULTS RECORDED) DATE

PANY NAME _____

PANY ADDRESS _____



mR/h

SHUTTER	A	B	C	D	E	F	G	H	I	J	K	L
OPEN												
CLOSED												

PIPE FULL ☐ PIPE EMPTY ☐

AS NUCLEAR
HI WAY 183, AUSTIN TEXAS 78766
NE (512) 836-0801; TELEX: 77-6413

BELT WEIGH SCALE RADIATION SURVEY OR LEAK TEST CERTIFICATE

NOTES:

1) THIS FORM MAY BE USED ON EITHER RADIATION SURVEY OR LEAK TEST. WHEN USED FOR LEAK TEST, WIPE AREA 1 (AROUND COVER) AND AREA 2 (AROUND FOUR BOLT HEADS). WHEN USED FOR RADIATION SURVEY, SURVEY LETTERED POINTS AT ONE FOOT FROM SURFACE AND/OR AT SURFACE.

2) SOME GEIGER TUBE TYPE SURVEY METERS MAY NOT HAVE SUFFICIENT RANGE TO TAKE SURFACE READINGS ON SOME APPLICATIONS. IN SUCH CASES, USE ION CHAMBER TYPE SURVEY METER OR TAKE READINGS AT ONE FOOT.

3) ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

4) CHECK OPERATION OF SHUTTER WHEN LEAK TEST IS PERFORMED

USER _____

GAUGE LOCATION _____

_____

SOURCE HEAD MOD. NO. _____

TAG NO. _____

SOURCE HEAD SER. NO. _____

ACTIVITY _____ mCi ± _____ CS137, _____ CO60

MEASURING INSTRUMENT _____

_____

LEAK TEST TYPE _____

RESULTS:

SHUTTER OPERATION - ____ ____ OK

____ NEGATIVE; _____ POSITIVE, _____ uCi

_____

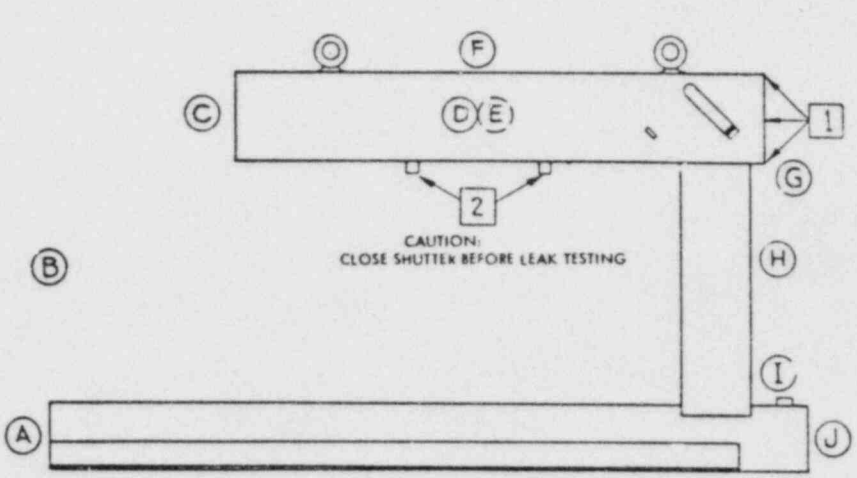
SIGNATURE (ONLY AFTER RESULTS RECORDED) DATE

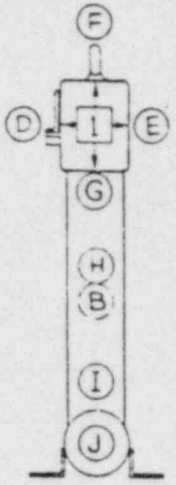
COMPANY NAME

COMPANY ADDRESS

WITH MAILABLE LEAK TEST KIT, MAIL TO:

TEXAS NUCLEAR
2101 HE WAY 183, AUSTIN TEXAS 78766
PHONE (512) 836-0801; TELEX: 77-6413





(K) (BELOW RETURN BELT IF NORMALLY ACCESSIBLE TO PERSONNEL)

mR/h READINGS TAKEN: ☐ AT ONE FOOT; ☐ AT SURFACE

SHUTTER	A	B	C	D	E	F	G	H	I	J
OPEN										
CLOSED										

DENSITY AND LEVEL GAUGE LEAK TEST CERTIFICATE

NOTES:

1) NUMBERED POINTS INDICATE AREAS TO BE WIPED FOR LEAK TEST.

2) ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

3) CHECK OPERATION OF SHUTTER WHEN LEAK TEST IS PERFORMED.

USER _____

GAUGE LOCATION _____

_____

SOURCE HEAD MOD. NO. _____

TAG NO. _____

SOURCE HEAD SER NO. _____

ACTIVITY _____ mCi ____ CS137, ____ CO60

MEASURING INSTRUMENT _____

_____

LEAK TEST TYPE _____

RESULTS:

SHUTTER OPERATION - ____ OK

____ NEGATIVE, ____ POSITIVE, _____ mCi

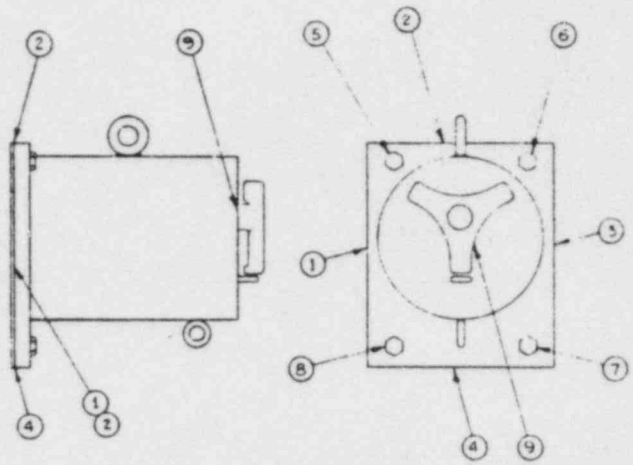
SIGNATURE (SIGN ONLY AFTER RESULTS ARE FILLED IN) DATE

COMPANY NAME

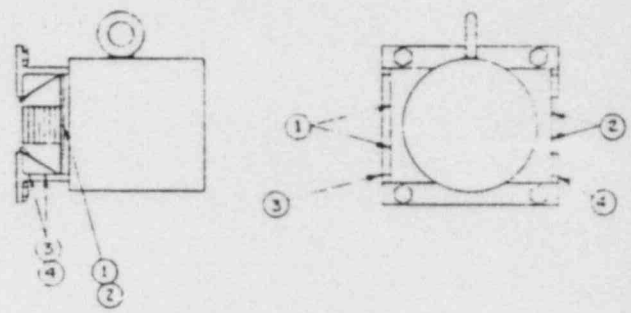
COMPANY ADDRESS

WITH MAILABLE LEAK TEST KIT, MAIL TO:

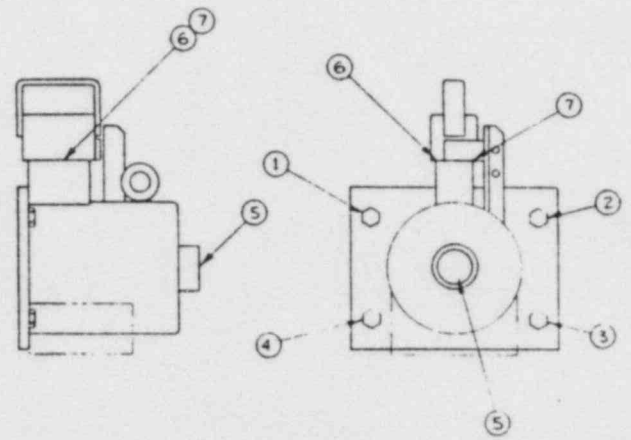
TEXAS NUCLEAR
9101 HI WAY 183, AUSTIN TEXAS 78766
PHONE (512) 836-0801, TELEX: 77-6613



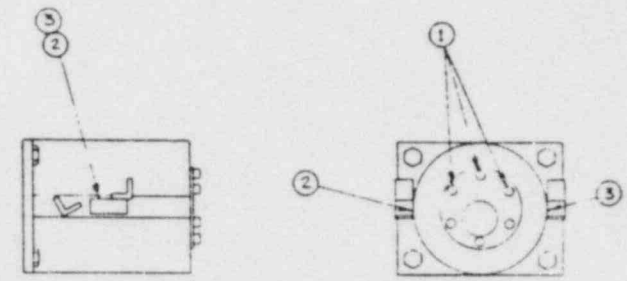
1, 2, 3, 4 - WIPE ALL AROUND GASKET
9 - WIPE ALL AROUND SHUTTER HANDLE
SOURCE HEAD NO. 5174, 5175, 5176



1, 2 - WIPE UP AND DOWN SHUTTER (AND, OR INSIDE EDGE OF HEAD IF EXPOSED).
3, 4 - WIPE ALL ALONG INSIDE EDGE.
SOURCE HEAD NO. 5189, 5190, 5191, 5192, 5193, 5199



5 - WIPE ALL AROUND PLUG (EXCEPT ON 5178 OR 5181).
6, 7 - WIPE ALL AROUND SHUTTER.
SOURCE HEAD NO. 5178, 5179, 5180, 5181, 5182, 5183



1 - WITH SHUTTER CLOSED, WIPE ALL AROUND SEAM AND BOLTS TO THE EXTENT THAT THEY ARE ACCESSIBLE.
2, 3 - WIPE ALL AROUND BOTH SHUTTER HANDLES.
SOURCE HEAD NO. 5188

DENSITY AND LEVEL GAUGE LEAK TEST CERTIFICATE

NOTES:

1) NUMBERED POINTS INDICATE AREAS TO BE WIPED FOR LEAK TEST.

2) ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

3) CHECK OPERATION OF SHUTTER WHEN LEAK TEST IS PERFORMED.

USER _____

GAUGE LOCATION _____

_____

SOURCE HEAD MOD. NO. _____

TAG NO _____

SOURCE HEAD SER NO. _____

ACTIVITY _____ mCi ____ Cs^{137}, ____ Co^{60}

MEASURING INSTRUMENT _____

_____

LEAK TEST TYPE _____

RESULTS:

SHUTTER OPERATION - _____ OK

___ NEGATIVE; ____ POSITIVE, _____ - Ci

_____

SIGNATURE (SIGN ONLY AFTER RESULTS ARE FILLED IN) DATE

_____

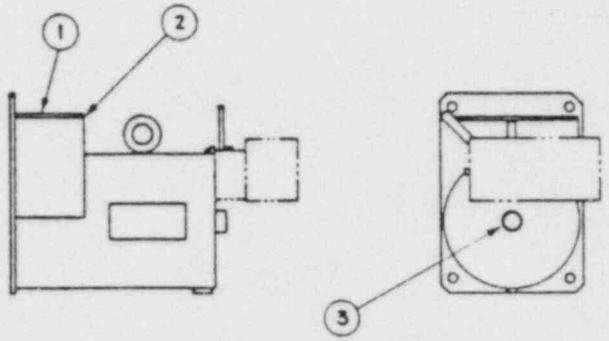
COMPANY NAME

_____

COMPANY ADDRESS

WITH MAILABLE LEAK TEST KIT, MAIL TO:

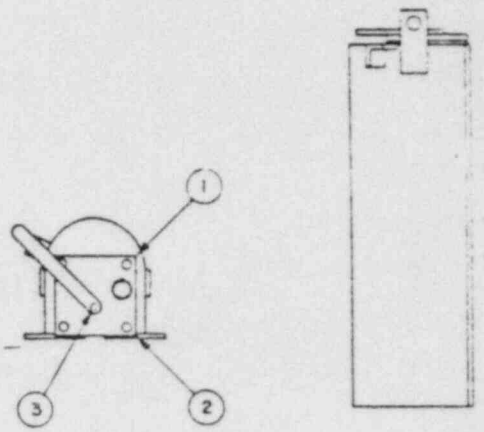
TEXAS NUCLEAR
9101 HI WAY 183, AUSTIN TEXAS 78766
PHONE (512) 836-0801, TELEX: 77-6413



1, 2 - WIPE ALL AROUND GASKET

3 - WIPE PLUG SEAL

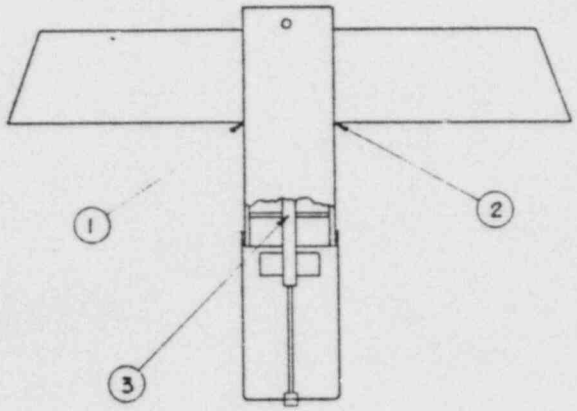
SOURCE HEAD NO. 5184



1, 2 - WIPE ALL AROUND GASKET

3 - WIPE SHUTTER SHAFT

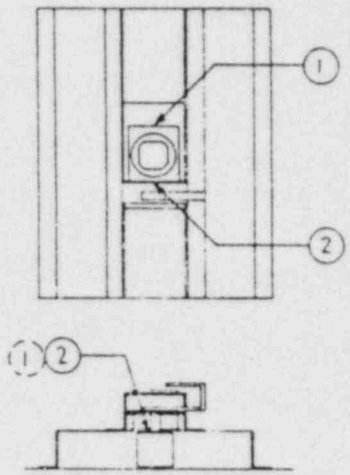
SOURCE HEAD NO. 5194-95-96



1, 2 - WIPE AROUND BOTTOM OF BEAM SHROUD

3 - WIPE AROUND SOURCE HOLDER

SOURCE HEAD NO. 5197



1, 2 - WIPE AROUND SOURCE HEAD BASEPLATE

SOURCE HEAD NO. 5198

CALCULATIONS 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 μCi 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 and calibration using the supplied check source.

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 is simply centered under the window. Set the range selector to give an approximate mid-scale reading. Note and record the observed readings; M_1 (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 M_1.

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, M_2. M_1 and M_2 must be taken in the same units.

5. To determine the degree of contamination in microcuries, a simple expression of proportionality is used:

$$\frac{A}{M_1} = \frac{C}{M_2} \quad \text{or} \quad C = A(\mu Ci) \times \frac{M_2\ (mR/h)}{M_1\ (mR/h)} \quad \text{where}$$

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

C = amount of removable contamination in microcuries (μCi); to be calculated

M_1 = survey meter reading with calibrated source in place in either milliroentgens per hour (mR/h) or counts per minute (cpm); minus background

M_2 = survey meter reading with swab in place in either mR/h or cpm minus background

Bkg. = survey meter reading with neither source nor swab near the G.M. probe in either mR/h or counts cpm. This should be subtracted as stated, however, the result can't be zero. Background will determine the lowest detectable level (conservatively taken as 2 times Bkg.).

LEAK TEST PROCEDURE - QT/1S

QT/1S is designed for use by service people in the field and individuals who have received specific hands-on-training in its application. The gauge should not be dismantled or disassembled 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 actuator to the closed position. In the event that the shutter actuator is frozen, or appears damaged, notify Texas Nuclear Division, Health Physics Department (512/836-0801, Ext. 310).

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 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 wiping operation).

5. Carefully place the swab end of each Q-tip in exactly the same position as the standard source and read the results. The degree of removable contamination may be readily evaluated by the method referenced above. The highest reading obtained should be used in making the calculation.

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 (μCi). 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 μCi).*

7. One should send the wipes to a counting laboratory for additional analysis if any contamination appears on the wipes. Notify Texas Nuclear 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/μCi than Cs-137.

* Leak Test Certificates furnished customers should include background reading and the meter reading of the certified standard source on the certificate.

BOX 9267, AUSTIN, TEXAS 78766-9990 USA, (512) 836-0801, TELEX 77-6413

TEXAS NUCLEAR
A SUBSIDIARY OF RAMSEY ENGINEERING

May 21, 1984

King Equipment Co.
140 Smith Street
Keasbey, NJ 08832

Attention: Kevin L. Ravaioli

This is notification that you have successfully completed the Radiation Safety Training Course offered in May 1984 by Texas Nuclear.

Enclosed are the following:

Record of Performance
Certificate of Training
Letter of Certification
Guide For Specific License Amendment
This form letter suggests what may be said to your regulatory agency to obtain the license amendments necessary to conduct installation relocation, and leak testing on the listed Texas Nuclear industrial devices. Copies of procedures, survey and leak test forms from your course manual, with necessary changes to meet your specific requirements, should be sent with your license application as necessary.

Congratulations on your having completed the Radiation Safety Training Course. If we can be of further assistance to you, do not hesitate to let us know.

Sincerely,

TEXAS NUCLEAR CORPORATION

W. Hendrick

W. G. Hendrick
Health Physicist

Enclosures

BOX 9267, AUSTIN, TEXAS 78766-9990 USA, (512) 836-0801, TELEX 77-6413

TEXAS NUCLEAR
A SUBSIDIARY OF RAMSEY ENGINEERING

LETTER OF CERTIFICATION

This is to certify that

Kevin L. Ravaioli
King Equipment Co.

has attended and successfully completed a course of instruction, conducted under the auspices of Texas Nuclear Corporation and described in the attached Course Agenda. The course covers fundamentals of radiation, units of dose and quality of radiation fields, hazards of radiation exposure, detection devices, regulatory controls, industrial devices and specific training on installation and leak testing of Texas Nuclear density, level and weigh gauges.

The said course of instruction, together with prior experience, is structured to qualify persons who complete it to understand and safely perform various operations involving nuclear devices including the installation, relocation and leak testing of such equipment. The operations are to be done in accordance with the rules and regulations of the United States Nuclear Regulatory Commission and/or "Agreement States", and are in all respects subject to such rules and regulations.

This letter cannot be used in lieu of a specific license from or other sanction by an appropriate regulatory agency.

TEXAS NUCLEAR CORPORATION

W. Hendrick

W. G. Hendrick
Health Physicist

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s); and to import such byproduct and source material. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. KECO, Inc.	3. License number 29-20671-01
2. 140 Smith Street Keasbey, New Jersey 08832	4. Expiration date May 31, 1989
	5. Docket or Reference No. 030-20702

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Cadmium 109	A. Sealed source (Texas Nuclear Model 696-696873)	A. Not to exceed 5 millicuries per source
B. Iron 55	B. Sealed source (Texas Nuclear Model 696-696863)	B. Not to exceed 45 millicuries per source
C. Americium 241	C. Sealed source (Texas Nuclear Model 696-696803)	C. Not to exceed 0.5 millicuries per source

9. Authorized use

A. through C. For use in Texas Nuclear Model 9266 portable X-ray fluorescent devices for demonstration and sales purposes.

CONDITIONS

10. Licensed material shall be used only at 140 Smith Street, Keasbey, New Jersey, and at temporary job sites in the State of New Jersey.

11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions, and Reports to Workers; Inspections" and Part 20, "Standards for Protection Against Radiation."

12. Licensed material shall be used by, or under the supervision and in the physical presence of, Gary L. King or employees who have successfully completed the Texas Nuclear training course in the safe use of the portable X-ray fluorescent devices described above.

13. A. (1) Each sealed source containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.

Date 8502110070

MATERIAL LICENSE
SUPPLEMENTARY SHEET

License number
29-20671-01

Docket or Reference number
030-20702

(13.A. continued) CONDITIONS

(2) The periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.

B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.

C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with the U. S. Nuclear Regulatory Commission, Region I, 631 Park Avenue, King of Prussia, Pennsylvania 19406, describing the equipment involved, the test results, and the corrective action taken.

D. The licensee is authorized to collect leak test samples in accordance with the procedures described in the licensee's letter dated April 26, 1984, for analysis by Texas Nuclear. Alternatively, leak test samples may be collected and/or analyzed by other persons specifically authorized by the Commission or an Agreement State to perform such services.

14. Sealed sources containing licensed material shall not be opened or removed from the portable X-ray fluorescent devices by the licensee.

15. The licensee shall conduct a physical inventory every six (6) months to account for all sealed sources received and possessed under the license. The records of the inventories shall be maintained for two (2) years from the date of the inventory for inspection by the Commission, and shall include the quantities and kinds of licensed material, location of sealed sources and the date of the inventory.

16. The licensee may transport licensed material or deliver licensed material to a carrier for transport in accordance with the provisions of Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions."

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number
29-20671-01

Docket or Reference number
030-20702

(continued)

CONDITIONS

17. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated February 9, 1984, and letter dated April 26, 1984. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

For the U.S. Nuclear Regulatory Commission

Date MAY 30 1984

By Original Signed By:
John E. Glenn
Nuclear Materials and Safeguards Branch
Region I
King of Prussia, Pennsylvania 19406