

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

FEDERAL AGENCIES FILE APPLICATIONS WITH:

U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF FUEL CYCLE AND MATERIAL SAFETY, NMSS
WASHINGTON, DC 20555

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND,
MASSACHUSETTS, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND,
OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I
NUCLEAR MATERIAL SECTION B
631 PARK AVENUE
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA,
PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR
WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II
MATERIAL RADIATION PROTECTION SECTION
101 MARIETTA STREET, SUITE 2900
ATLANTA, GA 30323

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR
WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III
MATERIALS LICENSING SECTION
799 ROOSEVELT ROAD
GLEN ELLYN, IL 60137

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 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON,
AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS
TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V
MATERIAL RADIATION PROTECTION SECTION
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CA 94596

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A. NEW LICENSE
☐ B. AMENDMENT TO LICENSE NUMBER _____
☒ C. RENEWAL OF LICENSE NUMBER 12-16303-01

2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip Code)

Hanson Engineers, Inc.
1525 South Sixth
Springfield, IL 62703

3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED.

Permanent office facilities for gauge storage are 1525 South Sixth, Springfield, IL, 7722 Crestline Drive, Peoria, IL, and 828 First Avenue, Rockford, IL. Field locations will be at various temporary job sites of the applicant throughout the United States where the NRC holds jurisdiction over byproduct material. The appropriate regulatory agency in any Agreement State will be contacted for licensing on an as-required basis.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

George F. Jamison

TELEPHONE NUMBER

217-788-2450

SUBMIT ITEMS 5 THROUGH 11 ON 8 1/2 x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL

a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM

11. WASTE MANAGEMENT.

12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY Renewal AMOUNT ENCLOSED \$ 120.00

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN, IS TRUE AND CORRECT TO THE BEST OF THEIR 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.

SIGNATURE—CERTIFYING OFFICER

TYPED/PRINTED NAME

TITLE

DATE

George F. Jamison George F. Jamison

Associate Partner

5/29/85

14. VOLUNTARY ECONOMIC DATA

ANNUAL RECEIPTS	
<\$250K	\$1M-3.5M
\$250K-500K	\$3.5M-7M
\$500K-750K	\$7M-10M
\$750K-1M	>\$10M

b. NUMBER OF EMPLOYEES (Total for entire facility excluding outside contractors)

c. NUMBER OF BEDS

d. WOULD YOU BE WILLING TO FURNISH COST INFORMATION (Dollar and/or staff hours) ON THE ECONOMIC IMPACT OF CURRENT NRC REGULATIONS OR ANY FUTURE PROPOSED NRC REGULATIONS THAT MAY AFFECT YOU? (NRC regulations permit it to protect confidential commercial or financial—proprietary—information furnished to the agency in confidence)

☒ YES

FOR NRC USE ONLY

TYPE OF FEE

FEE LOG

FEE CATEGORY

COMMENTS

AMOUNT RECEIVED

CHECK NUMBER

8508120395 850723
REG3 LIC30
12-16303-01 PDR

CONTROL NO. 7

APPROVED BY

REGION

DATE

16/10/85

PRIVACY ACT STATEMENT

Pursuant to 5 U.S.C. 552a(e)(3), enacted into law by section 3 of the Privacy Act of 1974 (Public Law 93-579), the following statement is furnished to individuals who supply information to the Nuclear Regulatory Commission on NRC Form 313. This information is maintained in a system of records designated as NRC-3 and described at 40 Federal Register 45334 (October 1, 1975).

1. **AUTHORITY:** Sections 81 and 161(b) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2111 and 2201(b)).
2. **PRINCIPAL PURPOSE(S):** The information is evaluated by the NRC staff pursuant to the criteria set forth in 10 CFR Parts 30, 32, 33, 34, 35 and 40 to determine whether the application meets the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations, for the issuance of a radioactive material license or amendment thereof.
3. **ROUTINE USES:** The information may be (a) provided to State health departments for their information and use; and (b) provided to Federal, State, and local health officials and other persons in the event of incident or exposure, for their information, investigation, and protection of the public health and safety. The information may also be disclosed to appropriate Federal, State, and local agencies in the event that the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding. In addition, this information may be transferred to an appropriate Federal, State, or local agency to the extent relevant and necessary for an NRC decision or to an appropriate Federal agency to the extent relevant and necessary for that agency's decision about you.
4. **WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION:** Disclosure of the requested information is voluntary. If the requested information is not furnished, however, the application for radioactive material license, or amendment thereof, will not be processed. A request that information be held from public inspection must be in accordance with the provisions of 10 CFR 2.790. Withholding from public inspection shall not affect the right, if any, of persons properly and directly concerned need to inspect the document.
5. **SYSTEM MANAGER(S) AND ADDRESS:** U.S. Nuclear Regulatory Commission
Director, Division of Fuel Cycle and Material Safety
Office of Nuclear Material Safety and Safeguards
Washington, D.C. 20555



ATTACHMENT TO NRC-313
RENEWAL OF LICENSE NO. 12-16303-01

ITEM 5 -

<u>Element & Mass Number</u>	<u>Chemical and/or Physical Form</u>	<u>Maximum Amount</u>
Cesium - 137/Americium 247: Beryllium	Sealed Source, Troxler Electronics Laboratories, Inc. Moisture Density Gauge, 3400 Series.	Unlimited Gauges, 8/40 mCi per source

ITEM 6 -

Gauges are used to measure moisture and density of construction materials such as soil, asphalt, etc.

ITEM 7 -

The Radiation Protection Officer (RPO) is George F. Jamison. He is assisted by Richard I. Neu. Both completed a two day radiological training course for nuclear gauge operation on January 27 and 28, 1976. The course was presented by Troxler Electronics Laboratories, Inc. A copy of the course outline is attached to Item 8.

In addition to the above course, the RPO has completed military training and Army correspondence courses dealing with (1) principles and practices of radiation protection, (2) radiation monitoring techniques and instruments, (3) calculations relating to measurement of radioactivity, (4) the biological effects of radiation, and (5) characteristics of radiation.

Prior to 1974, Messrs. Jamison and Neu gained several years experience using these gauges. Since acquiring our gauges, their usage and training has continued along with the supervisory duties listed in Items 8, 9 and 10.

CONTROL NO. 79081

1525 SOUTH SIXTH STREET ■ SPRINGFIELD, ILLINOIS 62703-2886 ■ 217/788-2450

SPRINGFIELD, ILLINOIS ■ PEORIA, ILLINOIS ■ ROCKFORD, ILLINOIS

ATTACHMENT TO NRC-313
RENEWAL OF LICENSE NO. 12-16303-01

ITEM 8 -

The following personnel are currently qualified to use the gauges:

<u>NAME</u>	<u>TITLE</u>	<u>QUALIFICATIONS*</u>
George F. Jamison	Associate Partner	A, B, C
Richard I. Neu	Supervising Technician	A, B, C
Claudio Pecori	Managing Technician	B, C
Mike Heinen	Sr. Engr. Technician	A, B, C
Sergio Pecori	Associate Partner	B, C
Dave Daniels	Sr. Associate	B, C
Paul Cragoe	Sr. Engr. Technician	A, B, C
Danny Kerns	Associate	B, C
Jeff Hecht	Sr. Engr. Technician	A, B, C
Albert Ting	Engr. Technician	A, B, C
Mike Matzke	Associate	A, B, C
John Coombe	Sr. Associate	B, C
Kirk Stuaan	Engr. Technician	A, B, C
Richard Miller	Vice President	B, C
William Meyer	Engineer	A, B, C
Robert Lenzini	Engineer	A, B, C
Russ Fleming	Sr. Engr. Technician	A, B, C
Charles Conner	Engr. Technician	A, B, C
David Cook	Engr. Technician	A, B, C
William Kenter	Engr. Technician	A, B, C
Juan Suields	Engr. Technician	A, B, C
Rodney Huffman	Supervising Engr. Technician	B, C

*A = Completion of Manufacturer's Training Course
(Troxler Electronics Laboratories, Inc.)

B = In-House Training Program

C = On-the-job Training

The in-house training program is conducted by the Radiation Protection Officer, George F. Jamison, and/or Richard I. Neu. Their qualifications are detailed in Item 7. The primary means of training is however the manufacturer's training course.

An outline for the manufacturer's 2-day training course is attached to this item. Their training also included instruction and practical application in gauge operation, handling, maintenance, storage and shipping procedures. The in-house training program follows the Troxler course outline with particular emphasis on safety procedures, gauge operation and handling. The in-house formal training program consists of a minimum of 2 hours of instruction followed by individual study of the gauge manual and on-the-job training. Each new user is given OJT for a minimum of one day by an experienced user who has completed the required formal training. Satisfactory completion of training is judged by evaluation during OJT and periodic supervision thereafter.



CONTROL NO. 79081

Outline of Radiological Training Course for Nuclear Gauge Operation

I. Characteristics of Radiation

- A. Origin of Radiation
 - 1. Structure of the Atom
 - 2. Unstable isotopes (Radioisotopes)
- B. Activity
 - 1. Curie
 - 2. Half life
- C. Energy
 - 1. Relationship of energy and mass
 - 2. Electron volt
- D. Types of Radiation
 - 1. Alpha
 - 2. Beta
 - 3. Gamma (and x-ray)
 - 4. Neutron

II. Characteristics of Ionization


- A. Ionization from radiation
- B. Interaction with matter
 - 1. Gamma absorption
 - 2. Neutron moderation and absorption

III. Detection of Radiation

- A. Ionization chamber
 - 1. Survey meter
 - 2. Pocket dosimeter
- B. Proportional counters
 - 1. Neutron detector
 - 2. Scintillation detector
- C. Geiger - Mueller detector
 - 1. Survey & gaging instruments
 - 2. Plateau
- D. Film badges

IV. Health Safety

- A. Internal radiation hazards
- B. External radiation hazards
- C. Dosage measurement
 - 1. Roentgen
 - 2. Roentgen equivalent physical (Rep)
 - 3. Radiation absorbed dose (RAD)
- D. Biological effect measurement
 - 1. Relative biological effectiveness (RBE)
 - 2. Roentgen equivalent man (rem)
- E. Control of radiation dose
 - 1. Time
 - 2. Distance
 - 3. Shielding
 - 4. Example problems and homework assignments

- F. Radiation control procedures (Regulations)
1. Maximum permissible levels of absorbed dose
 2. Storage
 3. Transport
 4. Signing
 5. Survey Techniques
 6. Emergency procedures
- 

ITEM 9 -

Licensed materials are stored in our material testing laboratory at each office location indicated in Item 3. The gauges are secured in such a manner as to prevent unauthorized removal. All storage areas are on ground level, slab-on-grade floors. Each gauge storage area is within a locked enclosure housing other stored laboratory and field equipment. The vicinity of the gauge storage areas are not commonly frequented by personnel except to deposit or remove equipment. The areas are secured with a lock system and the gauges are housed in their shipping container. The handle on the gauges are secured with a lock to prevent source exposure. Sketches of the storage area locations are attached.

Storage and security at temporary job sites are typically provided in locked construction trailers. The gauges (with locked source handle) are secured in their locked shipping container.

Storage areas are clearly posted with a sign bearing the radiation caution symbol and the words "CAUTION RADIOACTIVE MATERIAL" (as per Section 20.203 of 10CFR20).

Gauges not in storage (in use) are under the constant surveillance and immediate control of the licensee's authorized users.

ITEM 10 -

- A. Transportation of Gauges: All gauges transported in vehicles will be fully secured (in shipping container with source handle locked in shielded position). The gauges will be located as far as possible from the passengers. Transportation will further be in accordance with applicable Department of Transportation regulations. Transportation by private carrier or air will be accomplished or supervised by the Radiation Protection Officer to assure proper labeling and preparation for shipping.
- B. Unauthorized Access: Unauthorized access will be prevented by procedures outlined in Item 9.
- C. Emergency Procedures: In case of accidents involving damage to the gauges, the user will take immediate action to restrict personnel from the vicinity of the radioactive material. After the area has been secured (with the aid of locally available personnel) or if the gauge has been lost, the user will immediately notify the Radiation Protection Officer, George F. Jamison, at 217-788-2450 (office) or 217-498-9741 (home) for instructions. In the absence of the RPO, the user should notify Richard I. Neu at the same office phone or at 217-523-8049. Either individual will then notify the local police, State personnel and the NRC, and thereafter serve as a point of contact and coordination for whatever actions are necessary to establish proper protection and security.



ITEM 10 - (cont'd.)

- D. Maintenance: Gauge maintenance by users shall not include removal of the source holder, and all maintenance shall be user-level only, as identified in the manufacturer's instruction manual. No direct contact of the sealed source is permitted. Periodic cleaning of the sealed source shall be done with tongs as recommended by Troxler. If source handle removal is required for maintenance, procedures outlined by the manufacturer will be used. Protection from the unshielded source will be accomplished by physical separation--source at least 15 ft from all personnel. Source removal is normally accomplished by the RPO or Richard Neu and will not be performed by others without specific approval or instructions from one of those two individuals.
- E. Leak Testing: Leak testing is accomplished at intervals not exceeding 6 months with a Troxler Model RK-1 Leak Test Kit (or equivalent). The leak test specimens are submitted to the manufacturer for evaluation and reporting.
- F. Film Badges and Daily Log: Film badges are worn at all times when the gauge is being transported, used, or maintained. Badges are replaced monthly by the RPO. Film badges will not be traded or loaned between users.

The maximum surface dose rate for the stored sealed source is less than 5 millirem per hour. When secured in the shipping container (at all times except when in use) the radiation dose rate would be less than 1 millirem per hour at a distance of 12 inches from the shipping container. The radiation level at the operator's location is on the order of 0.5 millirem per hour or less.

A daily log of usage is maintained at each storage location to indicate the date and scheduled location of use and the user's name.

G. Day-to-Day General User Instructions:

1. Do not operate gauge unless properly trained.
2. Keep source in shielded position when not in use.
3. Wear film badge when operating, maintaining or transporting gauge.
4. Keep unauthorized personnel away from gauge.
5. Observe proper storage and transporting procedures.
6. Maintain daily log of usage.
7. Immediately notify RPO (George Jamison) or Richard Neu in the event of gauge malfunction, loss, or damage.
8. Immediately implement emergency procedures if gauge is damaged or if loss occurs.

ITEM 10 - (cont'd.)

H. Duties and Responsibilities of Radiation Protection Officer:

The RPO is George F. Jamison. In his absence, the RPO's duties and responsibilities are shared by Richard I. Neu. The duties of the RPO are as follows:

1. Security of Gauges;
2. Notification to proper authorities and instructions to effected personnel in the event of gauge damage or loss;
3. Training of new users;
4. Periodic training and review sessions for all users;
5. Leak testing;
6. Film badge distribution and record keeping;
7. Preparation of individual annual exposure reports;
8. Troubleshooting and repair of gauges;
9. Preparation of gauges for shipment; and
10. Physical inventory of gauges.

ITEM 11 -

No commercial waste disposal service is employed. If source disposal is necessary, the sources will be returned to manufacturer or transferred to another licensee authorized to possess the specific quantity and form being transferred.



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