

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W., SUITE 2900  
ATLANTA, GEORGIA 30323-0199

December 30, 1994



Law Engineering and Environmental Services  
804 Professional Place West  
Chesapeake, Virginia 23320

SUBJECT: REQUEST FOR MORE INFORMATION ABOUT A MATERIALS LICENSE APPLICATION  
(REFERENCE: MAIL CONTROL 256138; DOCKET NO. 030-14949)

Gentlemen:

This refers to your application dated September 29, 1994 for renewal of License No. 45-18377-01 for portable gauges at temporary job sites. We have identified areas within your materials where we do not have enough information to make an informed licensing decision. We have enclosed a copy of the Standard Review Plan for Applications for the Use of Sealed Sources in Portable Gauging Devices (PG 2-07 September 1994), and our questions are keyed to the Sections in PG 2-07. Please prepare your responses in the same format. We have also enclosed Part 20, Title 10, Code of Federal Regulations.

Item

No.

Remarks/questions

5.4.

You have not specified either the total number of source/device combinations or the total curie quantity you wish to possess at one time. You should be aware that the quantity permitted below which no financial assurance for decommissioning is required is a combination of less than 100 curies of americium 241 and 100,000 curies of cesium 137. The commitment in Appendix B is acceptable.

7.3

Duties and responsibilities of the RSO, management's commitment for support of top work authorization and time allocation have not been stated in the application nor in the previously submitted materials. Please provide information which will express your commitments, and a copy of the current organizational chart.

8.1.2

NRC believes that some refresher training is needed to assure continued awareness of safety requirements by individuals authorized to use materials. Please provide information on the frequency of refresher training, its content and duration, and the means used to assess participants' understanding.

9.7.

You have not addressed storage away from the permanent storage location. You should state that no overnight or longer storage will be permitted away from the permanent storage location or provide information on the controls you will exercise to assure security of the gauges.

10.1.2.

You should remember that dosimetry vendors are required to be NAVLAP approved. It is your responsibility to obtain documentation of participation in NAVLAP from your dosimetry vendor. Please confirm that you will obtain dosimetry only from a NAVLAP approved vendor.

Item

No.

Remark/question

- 10.2. You may choose either method of assurance that a survey meter will be available for use. Please advise of your choice and the arrangements made to ensure availability.
- 10.4 Please confirm that you will conduct a physical inventory every six months, and that you will maintain the record indicated.
- 10.5 While you have stated that maintenance involving source removal will be performed only by a specifically licensed person, you should also confirm that you will follow the manufacturer's instruction for other maintenance.
- 10.6 Please confirm that you will obtain and follow the provisions of the Department of Transportation regulations as required by 10 CFR 71.5.
- 10.7 The operating and emergency procedures referred to in your previous correspondence contain out-of-date information on individuals and locations. Please provide current operating and emergency procedures.
- 10.8 Please provide information to assure implementation of the ALARA and audit requirements of 10 CFR 20.1101.
- 10.9 Please tell us where and what records will be kept.
11. Please confirm that licensed materials will only be transferred to the manufacturer or another person specifically authorized to possess the materials you wish to transfer. Please confirm that you will verify the intended recipient's authorization to possess the materials before you transfer the material.
- Item 13. Your application should be signed by an official of the company. Please provide documentation that you have the authority to sign future correspondence.

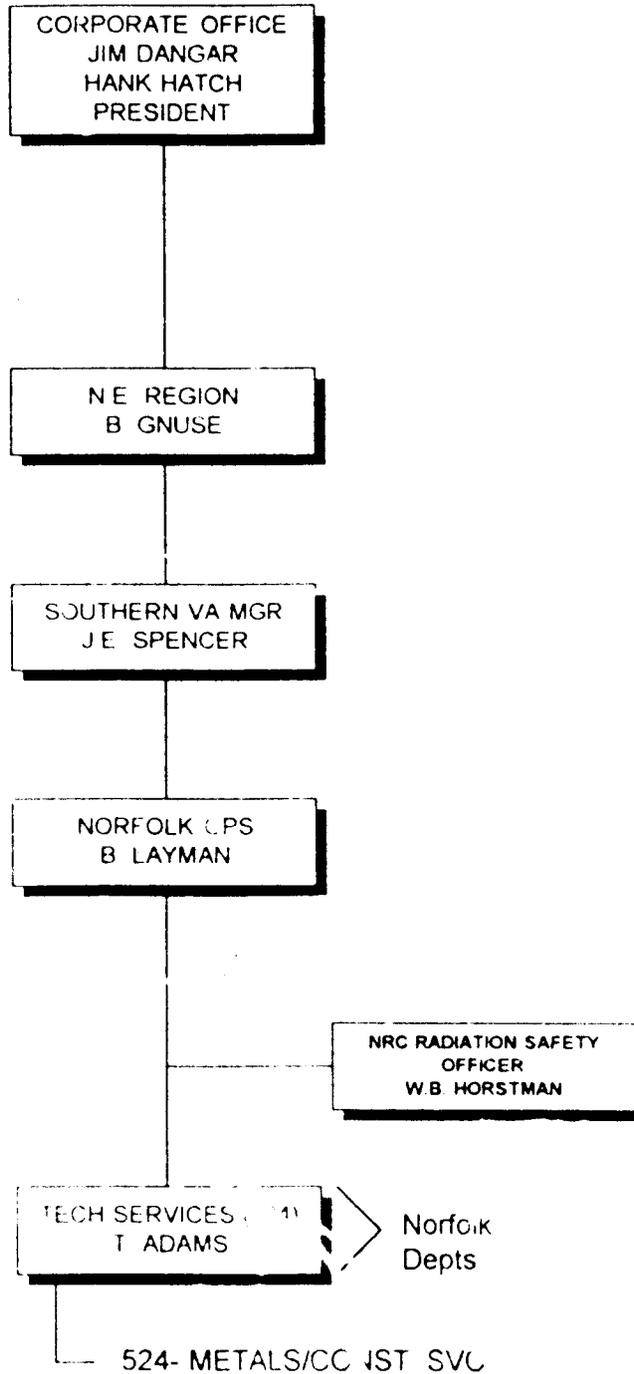
When replying, please refer to Mail Control No. 256138 and provide 2 copies of your response. We appreciate your cooperation in this matter. If you have questions, please call me at (404) 331-5617.

Sincerely,  


David J. Collins, Health Physicist  
Nuclear Materials Licensing Section  
Nuclear Materials Safety and Safeguards Branch

Enclosures: as stated

# SOUTHERN VIRGINIA/NORFOLK 1995 ORGANIZATION



**THOMAS D. ADAMS**  
Principal Technician  
Manager - Technical Services

Branch 520/Dept. 527

**Education**

Nondestructive Testing Certificate, 1982 (Spartan School of Aeronautics)  
Civil Engineering Technology, 2 years (Northern Virginia Community College)

**Professional Membership**

Certified Welding Inspector - American Welding Society  
Level III - Radiography, Magnetic Particle, Liquid Penetrant  
American Society for Nondestructive Testing  
Senior Level III - Radiography, Ultrasonics, Magnetic Particle, Liquid Penetrant  
Law Engineering (SNT-TC-1A)  
Level II - Radiography, Ultrasonics, Magnetic Particle, Liquid Penetrant  
Law Engineering (SNT-TC-1A)

**Career Summary**

Mr. Adams joined Law in 1983. He served as a metals technician in the Washington, D.C. office; Senior Metals Technician/Supervisor in Savannah, Georgia, and is currently assigned to the Norfolk, Virginia office. Mr. Adams is the Principal Technician/Technical Services Department Manager for this full service, satellite office.

His key strengths are in Project Management of NDT projects and personnel, industrial maintenance and structural steel. Emphasis areas of Mr. Adams's career are presented the following brief paragraphs.

**Primary Area of Expertise**

Mr. Adams has managed and provided technical expertise on numerous projects involving multi-disciplined nondestructive testing. These projects usually required the direction and coordination of geographically dispersed personnel in the successful completion of the project. Mr. Adams also prepares procedures and performs personnel certification as one of Law Engineering's Senior Level III examiners.

**Secondary Area of Expertise**

Mr. Adams has extensive experience in providing major industrial clients with assistance in developing maintenance programs involving NDT. These programs have involved tank integrity studies, process and steam piping erosion/corrosion evaluations and power and recovery boiler preventive maintenance programs. He has served the pulp and paper, petrochemical, power generation, and transportation industries.

### **Tertiary Area of Expertise**

**Mr. Adams has a wide range of experience in projects involving structural steel. This experience varies from review of the fabricator's QA/QC Programs to the field erection testing. Many of the projects Mr. Adams has been involved in have required the use of several inspectors both in the shop and field.**

**Years in Profession: 11**  
**Years with Law: 10**

# TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

THOMAS D. ADAMS

of

LAW ENGINEERING COMPANY

HAS SUCCESSFULLY COMPLETED THE TROXLER ELECTRONIC LABORATORIES, INC. TRAINING COURSE FOR THE USE OF NUCLEAR TESTING EQUIPMENT.

SUBJECTS INCLUDED IN THIS COURSE WERE AS FOLLOWS:

### Radiological Safety

1. Principles and practices of radiation protection.
2. Leak testing procedures.
3. Mathematics and calculations basic to the use and measurement of radioactivity.
4. Biological effects of radiation.
5. Radiactivity measurement standardization and monitoring techniques and instruments.
6. Accident and incident procedures.
7. Procedures for nuclear gauge storage and transportation.
8. General safety precautions.

### Gauge Operation

1. Instrument theory
2. Operating procedures
3. Maintenance
4. Field application
5. Gauge calibration

*Michael C. Farley*  
INSTRUCTOR

04-21-87

DATE

NO 17550

W. F. Troxler

PRESIDENT

SPARTAN SCHOOL OF AERONAUTICS  
 8820 EAST PINE \* TULSA, OKLAHOMA 74151

ADAMS , THOMAS , D STUDENT# 2162664-3 ENROLLMENT: 7/ 6/82

-----SUMMARY-----												
SEM	YR	DATE	DPT	CRSE	COURSE TITLE	CR	GD	PTS	ATT	COM	CRS	GPA
SUMM	82	5/82	GEN	1093	GENERAL PHYSICS	3	A	12	1			
		5/82	NDT	1813	MAGNETIC PARTICLE PENETRANT	3	A	12	1			
		5/82	NDT	1812	RADIATION SAFETY	2	A	8	1			
		5/82	NDT	2804	RADIOGRAPHY	4	A	16	1			
		5/82	NDT	2814	ULTRASONICS	4	A	16	1			
		5/82	NDT	2836	VISUAL INSP, CODES AND STAND.	6	A	24	1			
		5/82	NDT	2824	EDDY CURRENT AND LFAK	4	A	16	1	26	26	104 4.00
FALL	82	12/82	GEN	1083	MATH FOR TECHNICIANS	3	R-T1	9	1	3	3	9 3.00

CUMULATIVE: 1 29 29 113 3.89

T1 = NORTH, VA COMM COLL NO. SPRINGFIELD, VA

TRANSCRIPT ISSUED TO STUDENT

SOCIAL SECURITY # 226-82-5887 ACT/SAT:

DATE:

11/2/83

MAJOR: NDT DEGREE:

REGISTERED

*Robert G Miller*

CERTIFICATE NO:

DATE GRANTED: 12/17/82

THIS IS NOT AN OFFICIAL TRANSCRIPT

**SPARTAN****SCHOOL OF AERONAUTICS**

INTERNATIONAL AIRPORT • 8820 East Pine Street  
 Post Office Box 51133 • Tulsa, Oklahoma 74151  
 Telephone (918) 836-6886

The NDT curriculum taught at Spartan School of Aeronautics requires 840 hours of classroom instruction covering a 7-month time period. Each course is described below in detail:

GEN 1003 - BASIC PHYSICS (40 hours)

This course is an introduction to basic concepts of motion, mechanics, fluid dynamics, heat and sound, aerodynamic principles and their application to aircraft structures. —

GEN 1013 - BASIC MATHEMATICS (80 hours)

Students become proficient in adding, subtracting, multiplying, and dividing whole numbers, fractioned numerals, decimal numerals, ratios, proportions, percentages, areas, volumes, and positive and negative numbers.

NDT 1813 - ORIENTATION, MAGNETIC PARTICLE & PENETRANT INSPECTION (90 hours)

Various methods of destructive and nondestructive inspection are taught with an emphasis upon fundamental metallurgy, inspection reports, blueprints and codes, magnetic particle inspection and liquid penetration inspection.

ORIENTATION (30 hours)

NDT Methods of Testing	6 hours
Metallurgy & Effects of Discontinuities on Materials	9 hours
Cleaning Processes	3 hours
Welding Processes & Defects	6 hours
Blue Print Reading	3 hours
Report Writing	3 hours

MAGNETIC PARTICLE (30 hours)

Principles of Magnets & Magnetic Fields	2 hours
Magnetization by Means of Electric Current	4 hours
Selection of Proper Method of Magnetization	3 hours
Inspection Materials	1 hour

MAGNETIC PARTICLE CONTINUED

Principles of Demagnetization 2 hours

Magnetic Particle Test Equipment 1 hour

Types of Discontinuities Located by Magnetic Particle Testing 1 hour

Magnetic Particle Test Indications and Interpretation 4 hours

Hands on Training with Yokes and Prods, Dry Mag; Wet Horizontal Unit, Wet Mag; AC DC Mag Coil 12 hours

LIQUID DYE PENETRANT (30 hours)

Basic Principles & Properties of Liquid Penetrants 2 hours

Liquid Penetrant Processing 4 hours

Selection of Penetrant Test Techniques 1 hour

Liquid Penetrant Test Equipment 2 hours

Liquid Penetrant Indications 4 hours

Inspection Procedures & Standards 2 hours

Hands on Training Using Fluorescent & Visible Dye Penetrants 15 hours

NDT 1812 - RADIATION SAFETY (30 hours)

The fundamental rules for radiation safety are taught which include X & gamma radiation familiarization with units of radiation dose, survey instruments, isotopes and interpretation from monitoring equipment.

THE RADIATION SAFETY COURSE IS IN COMPLIANCE WITH TITLE 10, PART 34, APPENDIX A OF CODE FEDERAL REGULATIONS.

Physical Principles of Radiation  
Nature of Penetrating Radiation  
Interaction between Penetrating  
Radiation & Matter 4 hours

Radioactivity 3 hours

Hands on Training - Dummy Gamma Ray Source; Projector  
and Accessories 3 hours  
- Dummy Source Exchange

Personnel Safety and Radiation Protection  
Hazzards of Excessive Exposures 3 hours  
Reported Overexposure Accidents 3 hours  
Time, Distance and Shielding 6 hours

## RADIATION SAFETY CONTINUED

Federal Regulations and NRC Forms	3 hours
Operating and Emergency Procedures	2 hours

### NDT 2804 - RADIOGRAPHY (120 hours)

Radiation characteristics, inspection equipment, safety procedures, inspection techniques, film processing, and film interpretation are introduced. Students apply techniques while selecting film and exposing and developing radiographs.

Physical Principles of Radiation	12 hours
Radiation Sources	6 hours
Principles of Radiation Detection	3 hours
Personnel Safety and Radiation Protection	6 hours
Radiographic Process and Film Processing	30 hours
Film Interpretation	15 hours
Hands on Training Utilizing 260 and 300 KV X-Ray Tubes Ir 192 Source and Manual Film Processing Dark Room	48 hours

### NDT 2814 - ULTRASONICS (120 hours)

Techniques of ultrasonic inspection such as longitudinal wave, and the shear wave techniques are taught while emphasizing the use of codes and requirements, interpretation techniques, and proper documentation.

Fundamental Properties of Sound	8 hours
Principles of Wave Propagation	8 hours
Generation of Ultrasonic Waves	8 hours
Ultrasonic Testing Methods	8 hours
Ultrasonic Testing Equipment and Operation	8 hours
Specific Testing Procedures	12 hours
Variables Affecting Test Results	16 hours
Hands on Training Using Straight Beam, Angle Beam Contact Testing Techniques	52 hours

NDT 2824 - EDDY CURRENT & LEAK (120 hours)

Students are introduced to the basic principles of leak and Eddy Current Testing. Practical application of skills required for performing the various nondestructive inspections are examined while utilizing impedance type instruments.

Brief History and Basic Principles of Eddy Currents	2 hours
Eddy Current Theory	4 hours
Types of Sensing Elements	6 hours
Factors Affecting Coil Impedance	4 hours
Selection of Test Frequency	2 hours
Coupling	2 hours
Field Strength and Its Selection	4 hours
Instrument Design Consideration	4 hours
Read Out Mechanism	2 hours
Applications	4 hours
Standards and Operating Procedures	3 hours
Hands on Training Using Portable Impedance Testing Equipment	23 hours

LEAK TESTING

Introduction and Brief History of Leak Testing	.5 hours
Fundamentals of Testing	.5 hours
Choice of Procedure for Leak Testing	2 hours
Leak Testing Methods and Techniques	3 hours
Halogen Diode Detector Leak Test	6 hours
Mass Spectrometer Leak Test	6 hours

ACHIEVEMENT TESTING AND REVIEW

42 hours

NDT 2836 - CODES AND STANDARDS AND VISUAL INSPECTION (120 hours)

This course examines the basic theories of optics and methods of visual nondestructive testings, as well as the equipment used in this facet of the field. Students familiarize themselves with the association of codes and standards with actual job-related performance.

United States Department of Commerce  
National Institute of Standards and Technology

**NVLAP<sup>®</sup>**



ISO/IEC GUIDE 25:1990  
ISO/IEC GUIDE 58:1993  
ISO 9002:1994

## Certificate of Accreditation

LANDAUER, INC.  
GLENWOOD, IL

*is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:*

### IONIZING RADIATION DOSIMETRY

January 1, 1996

Effective until

For the National Institute of Standards and Technology



**NEWCO, INC.**

Post Office Box 4013 / Florence, South Carolina 29502 4013

Material Test  
Equipment

(803) 669-2988  
(803) 664-0197 (Fax)

**CERTIFICATE OF CALIBRATION**

**CUSTOMER:** LAW ENGINEERING  
804 PROFESSIONAL PLACE WEST  
CHESAPEAKE, VA. 23320

Description of Instrument

**Manufacturer:** BICRON  
**Model Number:** RADIOGRAPHER  
**Serial Number:** B723H

Meter Range	Source Field Strength mR/hr.	Reading mR/hr.
X100	800	800
	200	200
X10	80	80
	20	21
X1	8.0	8.0
	2.0	2.2

This is to certify the above named instrument has been calibrated in accordance with State Regulations for Radiation Control and 10CFR Regulations with standards whose accuracy are traceable to NIST.

License Number 318

Calibrated By TRUMAN KEISLER

Date DECEMBER 21, 1994

Signature *Truman Keisler*

## STANDARD OPERATING AND EMERGENCY PROCEDURES

### OPERATING PROCEDURES

1. Prior to entering the storage area, verify that you are wearing your assigned current film badge.
2. Prior to removing the gauge from the storage area:
  - a. Confirm that the source is in the shielded position and locked.
  - b. Confirm that the gauge is properly secured in the transport case, and the case is locked if possible.
  - c. Sign out the gauge on the utilization log located in the storage area. Be sure to include the date of use, your name, and the project name(s) to which the gauge will be transported.
3. Follow all applicable Department of Transportation (DOT) requirements when transporting the gauge.
4. Never leave the gauge unattended while it is in your custody.
5. Do not touch the source rod with your fingers, hands, or any part of your body and always make sure that the source rod has returned to the shielded position after each measurement.
6. Always wear your assigned, current film badge while using or transporting the gauge.
7. Never wear another person's film badge.
8. Never store your film badge near the gauge.
9. Always keep unauthorized personnel away from the restricted area where the gauge is being used.

Note: During testing operations, curious people may wander into the area to ask questions. Without causing unnecessary panic or alarm, inform these people that the gauge contains Federally regulated nuclear material and you are required to maintain safe distances, as specified in the gauge operating manual. Should you be unable to maintain a safe working area, contact the appropriate site contact (project supervisor, client, etc). Should this problem persist, contact the RSO and the Law Engineering Project Manager for further guidance.

10. Always maintain constant surveillance and immediate control of the gauge when not in storage.
11. To assist operators of heavy equipment in seeing gauges at construction sites, always "stake and flag" each gauge, being sure that the flags are tall enough to be seen by the heavy equipment operators.
12. Never look under the gauge while the source rod is in the exposed position.
13. After each measurement, always return the source to the shielded position and lock it in this position.
14. When the gauge is not in use at a temporary jobsite, place the gauge in a secured storage location (e.g., locked in front or back of vehicle or in a locked storage shed).
15. Return the gauge to the permanent storage area at the end of each work day. If this is not practical, due to logistics, contact the RSO for instructions on the proper temporary storage of the gauge.
16. When the gauge is returned to storage, or is to be stored at a temporary location, indicate this information on the utilization log.

### **Emergency Procedures**

If the source rod fails to return to the shielded position (e.g., as a result of being damaged) or if any other emergency or unusual situation arises which results in damage to the gauge case (e.g., vehicle accident, gauge struck by a vehicle or dropped) the following procedures must be followed:

1. Immediately secure the area around the gauge.
2. Prevent unauthorized personnel from entering the secured area.
3. If any heavy equipment is involved, detain the equipment until it is determined that there is no contamination present.

4. Contact one of the following personnel for guidance as to further actions.

<u>Name</u>	<u>Title</u>	<u>Phone Numbers</u>
William B. Horstman	Radiation Safety Officer	(804) 436-2040 Office (804) 425-5084 Home
Charles F.P. Crawley	Construction Services Supervisor	(804) 436-2040 Office (804) 437-0871 Home (804) 630-2417 Mobile
Thomas D. Adams	Manager - Technical Services	(804) 436-2040 Office (804) 471-6882 Home (804) 650-0268 Mobile
Bryan C. Layman, P.E.	Norfolk Operations Manager	(804) 436-2040 Office (804) 468-1870 Home (804) 620-0245 Mobile
John E. Spencer, P.E.	Manager - Southern Virginia	(804) 436-2040 Office (804) 498-3848 Home

Note: Law Engineering management is required to perform the following:

- a. Arrange for a survey to be conducted as soon as possible by a knowledgeable person using the appropriate radiation detection equipment.
- b. Make necessary notifications to local authorities as well as the NRC, as required. NRC notification is required when gauges are lost or stolen, when gauges are damaged or are involved in incidents that result in doses in excess of 10 CFR 20.2203 limits. Refer to the attached NRC memorandum, dated July 1, 1993, for additional notification guidance.
- c. Timeliness of reports to the NRC must be considered.
- d. Reporting requirements are found in 10 CFR 20.2201 - 2203 and 10 CFR 30.50