NRC FORM 313 (3-2009)
10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 3/31/2012

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

OFFICE OF FEDERAL & STATE MATERIALS AND
ENVIRONMENTAL MANAGEMENT PROGRAMS
DIVISION OF MATERIALS SAFETY AND STATE AGREEMENTS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
612 E. LAMAR BOULEVARD, SUITE 400
ARLINGTON, TX 76011-4125

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 JURISDICTIONS.

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

- [ ] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER
- [x] C. RENEWAL OF LICENSE NUMBER **21-26188-01**

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

Marquette County Road Commission
1610 North 2nd Street
Ishpeming, MI 49849

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Will be stored at MCRC Office at 1610 n. 2nd Street, Ishpeming, MI 49849 and used at various temporary job sites throughout Marquette County.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Kurt B. Taavola

TELEPHONE NUMBER

906-486-4491 ext. 201

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. maiximum 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 EXPERIENCE.

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

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY **3P** AMOUNT ENCLOSED $ Paid See Attached

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, 36, 39, AND 40, AND THAT ALL INFORMATION CONTANED 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.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
Kurt B. Taavola Dir. of Engineering	Kurt B. Taavola	**07/23/2010**

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		
APPROVED BY				DATE	

Item 5. RADIOACTIVE MATERIAL

a.) Element & Mass Number	Chemical and/or b.) Physical Form	Maximum Amount Possessed at c.) Any One Time
A. Cs-137	Sealed source Troxler Drawing A-102112	One source not to exceed 10 mCi
B. Am241:Be	Sealed source Troxler Drawing A-102451	One source not to exceed 50 mCi

Item 6. PURPOSES FOR WHICH LICENSED MATERIAL WILL BE USED

Both the Cs-137 and the Am241:Be are for use in a Troxler Model 3400 series portable measuring gauge, used for measuring moisture and density of construction materials. Typically the gauge will not be lowered into the ground more than 3 feet. Most tests will be taken at the surface or up to 3 feet below, but there may be occasional tests taken in trenches or other excavated areas more than 3 feet below ground level. In these areas to prevent collapse of the trench, a trench box will be used or 1 on 1 or flatter slopes will be constructed. If the trench does collapse, the gauge will be dug out by hand to prevent damage to the gauge and/or sources.

Item 7. INDIVIDUAL RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE

Kurt B. Taavola has been designated as the Marquette County Road Commission Radiation Safety Officer. A copy of Mr. Taavola's Troxler Nuclear Gauge Training Certificate is attached. The R.S.O.'s duties and responsibilities will be those listed in Appendix C of Policy and Guidance Directive PG 2-07 (REV. 0), dated September 1994. Kurt B. Taavola is a user of the gauge since 1990 and also is the supervisor of the Inspectors that use the gauge, at the M.C.R.C..

Item 8. TRAINING PROVIDED TO OTHER USERS

All individuals operating the nuclear gauge will complete the Troxler Nuclear Training Course, read and understand our radiation safety procedures, and be approved by our Radiation Safety Officer. Copies of the individual's training certificate will be maintained on file. Refresher training will be provided to all gauge users, at intervals not to exceed one year, and will include "dry runs" of our emergency procedures and reviewing (1) operating and emergency procedures, (2) DOT requirements, (3) changes in applicable regulations or license conditions and (4) deficiencies identified during the performance of annual audits of the radiation safety program.

Item 9. FACILITIES AND EQUIPMENT

A. Facilities: The gauge will be stored in the basement of the Marquette County Road Commission Office Building at 1610 N. 2 nd Street, Ishpeming, MI 49849. The location is away from regulary occupied work stations. The radiation safety officer and gauge users are the only ones that have access to the keys to the storage room.

B. Transportation of Equipment

1. All possible means shall be provided to ensure that the equipment will be secured in the transporting vehicle and the equipment is away from passenger compartment. When transporting in an enclosed vehicle (van), the vehicle will be locked. When transporting in an open vehicle, the gauge will be securely fastened to the truck bed with straps and also chained and locked.

2. The gauge will be transported in a suitable, labeled transportation case.

3. At all times during transport, the operator will have a properly completed Bill of Lading for each gauge, "Type A" Package Certificate, Source Certificate, and a copy of our operating and emergency procedures.

C. Utilization Procedures

1. When the gauge is in the field, you as the authorized user must maintain control over the gauge at all times. The gauge must never be left unattended.

2. When not taking measurements, the gauge should be placed in the transportation case and returned to its permanent storage area as soon as possible. The gauge is to be used for its intended purpose only. By doing so, you will maintain any radiation exposure to as low as reasonable attainable.

3. When using the equipment, you will wear the personnel monitoring device that has been assigned to you. When you are not using the equipment, your monitoring device is to be stored in the radiation-free area that has been designated in the office.

Item 10. RADIATION SAFETY PROGRAM

As listed in Item 7, Kurt B. Taavola has been designated as the company Radiation Safety Officer and will assume the duties and responsibilities as listed in Appendix C of Policy and Guidance Directive PG 2-07 (Rev. 0), dated September 1994.

1. Personnel Monitoring Program

The R.S.O. will ensure that the use of the equipment is only by individuals whom have been authorized by the Radiation Safety Officer and that all users wear personnel monitoring equipment when utilizing the equipment. Personnel monitoring equipment will consist of TLD's supplied by Troxler Radiation Monitoring Services, Division of Troxler Electronic Laboratories, Inc., P.O. Box 12057, Research Triangle Park, North Carolina 27709, on a quarterly exchange period.

2. Radiation Detection Instruments

Since all operators will wear a personnel monitoring device--TLD badge supplied by Troxler Radiation Monitoring Services, we do not plan to purchase a radiation survey meter. In case of emergency, we plan to borrow the survey instrument available at the Michigan State Police Post, in Negaunee, Michigan.

3. Leak-Testing

The R.S.O. is also to perform leak tests on the gauge at intervals not to exceed twelve (12) months. The leak test will be performed using the manufacturer's instructions and a personnel monitoring device will be employed. The leak test will be performed using a Leak Test Kit Model 3880 supplied by Troxler Radiation Monitoring Services, Division of Troxler Electronic Laboratories, Inc., P.O. Box 12057, Research Triangle Park, North Carolina 27709. Results of the tests will be returned to us and kept on file.

4. Inventories

A physical inventory, at intervals not to exceed 6 months, will be conducted to account for all sealed sources and devices and possessed under this license.

5. Maintenance

Any periodic maintenance will always be performed with the radioactive source in the safe shielded position in accordance with manufacturer's directions or recommendations. During any maintenance a personnel monitoring device shall be worn. No maintenance will be performed in which the radioactive source is removed from the gauge. For this type of maintenance, the gauge will be returned to the manufacturer or will be performed by authorized personnel.

6. Transportation of Devices to Field Locations

See Item 9B, Transportation of Equipment

7. Operating and Emergency Procedures

a. See Appendix H-1, (enclosed), for our Standard Operating and Emergency Procedures. A copy of this will be with the gauge at all times, and will be reviewed by all operators before using gauge.

b. As stated in Item 6, typically the gauge will not be lowered into the ground more than 3 feet. Most tests will be taken at the surface or up to 3 feet below, but there may be occasional tests taken in trenches or other excavated areas more than 3 feet below ground level. In these areas to prevent collapse of the trench, a trench box will be used or 1 on 1 or flatter slopes will be constructed. If the trench does collapse, the gauge will be dug out by hand to prevent damage to the gauge and/or sources.

8. Annual Audit of Radiation Safety Program

We will conduct audits as described in Appendix I of Policy and Guidance Directive PG 2-07 (Rev. 0), dated September 1994. The audits will be preformed by Kurt B. Taavola, Marquette County Road Commission's R.S.O., a copy of his Troxler Nuclear Gauge Training Certificate is attached.

9. Financial Assurance and Record-keeping for Decommissioning

We will restrict the possession of licensed materials to quantities below the minimum level specified in 10 CFR 30.35(d) for establishing financial assurance for decommissioning. We also will maintain records important for decommissioning, these records include information related to spills, leaking sources, or other unusual incidents that involve the spread of contamination. The records will be kept on file with other Gauge files at the M.C.R.C. office.

Item 11. WASTE MANAGEMENT

Disposal of the gauge will be by transfer to another facility specifically licensed for the material; or returned to the gauge manufacturer. Records of transfer will be maintained on file.

APPENDIX C

DUTIES AND RESPONSIBILITIES OF THE RADIATION SAFETY OFFICER

The Radiation Safety Officer (RSO) is responsible for implementing the radiation safety program and ensuring that radiation safety activities are performed in accordance with approved procedures and regulatory requirements.

The RSO's duties and responsibilities include ensuring that:

1. licensed material possessed by the licensee is limited to the kinds (e.g., cesium-137 as a sealed source) and quantities of byproduct material listed on the license;

2. individuals using gauges: are properly trained; receive refresher training at least annually to include participation in a "dry run" of emergency procedures and review of operating and emergency procedures, Department of Transportation (DOT) requirements, all changes in regulatory requirements, and deficiencies identified during annual audits; and are designated by the RSO;

3. personnel monitoring devices are used as required and reports of personnel exposure are reviewed in a timely manner;

4. gauges are properly secured against unauthorized removal at all times when gauges are not in use;

5. proper authorities are notified in case of accident, damage to gauges, fire, or theft;

6. audits are performed at least annually to ensure that (a) the licensee is abiding by NRC and DOT regulations and the terms and conditions of the license (e.g., periodic leak tests, inventories, use limited to trained, approved users), (b) the licensee's radiation protection program content and implementation achieve occupational doses and doses to members of the public that are ALARA (see 10 CFR 20.1101), and (c) the licensee maintains required records with all required information (e.g., records of personnel exposure; receipt, transfer, and disposal of licensed material; gauge user training) sufficient to comply with NRC requirements:

7. results of audits, identification of deficiencies, and recommendations for change are documented (and maintained for at least 3 years), provided to management for review, and prompt action is taken to correct deficiencies;

8. audit results and corrective actions are communicated to all personnel who use licensed material (regardless of their location or the license under which they normally work);

9. all incidents, accidents, and personnel exposure to radiation in excess of ALARA or Part 20 limits are investigated and reported to NRC and

other authorities, as appropriate, within required time limits;

10. licensed material is transported in accordance with all applicable DOT requirements;

11. licensed material is disposed of properly;

12. he/she has up-to-date copies of NRC's regulations, reviews new or amended NRC regulations, and revises licensee procedures, as needed, to comply with NRC regulations;

13. the license is amended whenever there are changes in: licensed activities, responsible individuals, or information or commitments provided to NRC in the licensing process.

APPENDIX H-1

STANDARD OPERATING AND EMERGENCY PROCEDURES

Operating Procedures

1. Before removing the gauge from its place of storage, check to make sure that the gauge source rod is in the shielded, locked position, then relock the transport case.

2. Sign the gauge out in the log book including the date of use, job number, location of temporary job site where the gauge will be used, and name of the authorized user who will be responsible for the gauge. (Each gauge has its own log book)

3. Never leave the gauge unattended while in your custody.

4. Follow all applicable Department of Transportation (DOT) requirements when transporting the gauge including securing the gauge in the vehicle, and also having at all times during transport a properly completed Bill of Lading, "Type A" Package Certificate, Source Certificate, and a copy our operating and emergency procedures.

5. Do not touch the source rod with your fingers, hands, or any part of your body and always make sure the source rod is in the shielded position after each mesurement is made.

6. Always wear your assigned thermoluminescent dosimeter (TLD) or film badge when using the gauge.

7. Never wear another person's TLD or film badge.

8. Never store your TLD or film badge near the gauge.

9. Always keep unauthorized persons away from the area where the gauge is to be used.

10. Always maintain constant surveillance and immediate control of the gauge when it is not in storage.

11. To assist operators of vehicles and heavy equipment in seeing gauges at construction sites, "stake and flag" each gauge, and do not leave gauge unattended.

12. Never look under the gauge when the source rod is being lowered into the ground.

13. After each measurement, always return the source to the shielded position and lock it there.

14. When the gauge is not in use at a temporary job site, place the gauge in a secured storage location (locked in vehicle).

15. Return the gauge to its proper storage location at the end of the work shift.

16. When the gauge is returned to storage, sign the gauge back in on the log book. Make sure gauge and storage room are both locked.

Emergency Procedures

If the source fails to return to the shielded position (e.g., as a result of being damaged) or if any other emergency or unusual situation arises (e.g., the gauge is struck by a moving vehicle, is dropped, or is in a vehicle involved in an accident):

1. Immediately secure the area around the gauge, an area of 15 feet in radius from the gauge must be sealed or cordoned off;

2. Prevent unauthorized personnel from entering the secured area;

3. If any heavy equipment is involved, detain the equipment until it is determined there is no contamination present;

4. The instrument in question is never to be left **UNATTENDED**;

5. At the earliest possible time, when the situation is under control, you must contact Kurt B. Taavola, at (906)486-4491 Ext. 201(work) or cell # 362-3032 or (906)475-7412 (home). Describe the present conditions and follow the instructions of the Radiation Safety Officer.

a. The Radiation Safety Officer will arrange for a survey to be conducted as soon as possible by contacting the Michigan State Police, in Negaunee, Michigan.

b. The R.S.O. will also make necessary notifications to local authorities as well as the NRC as required.

6. In the event that a gauge is lost or stolen, the Radiation Safety Officer listed above is to be notified **immediately**.

N.R.C. (24 hr. Operation Center)
***301-816-5100**
***If Gauge is lost or stolen call this #**

APPENDIX H-1

STANDARD OPERATING AND EMERGENCY PROCEDURES

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3. Never leave the gauge unattended while in your custody.

4. Follow all applicable Department of Transportation (DOT) requirements when transporting the gauge including securing the gauge in the vehicle, and also having at all times during transport a properly completed Bill of Lading, "Type A" Package Certificate, Source Certificate, and a copy our operating and emergency procedures.

5. Do not touch the source rod with your fingers, hands, or any part of your body and always make sure the source rod is in the shielded position after each mesurement is made.

6. Always wear your assigned thermoluminescent dosimeter (TLD) or film badge when using the gauge.

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N.R.C. (24 hr. Operation Center)
***301-816-5100**
***If Gauge is lost or stolen call this #**

TROXLER ELECTRONIC LABORATORIES, INC.

HEREBY CERTIFIES THAT

KURT B. TAAVOLA

of

WASHTENAW COUNTY ROAD COMM.

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. *Radioactivity 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. E. Nunley
INSTRUCTOR

08-23-88
DATE

W. F. Troxler
PRESIDENT

№ 23839

SURFACE MOISTURE-DENSITY GAUGES

For Compaction Control of Soil, Aggregate, Asphalt, and Concrete

A PROVEN PERFORMER: The number one gauge in the world for over a decade. More **3400-B Series** gauges are in field use than any other gauge ever produced. DEPEND ON IT!

The **Model 3411-B** contains a micro computer which holds all calibration constants and algorithms necessary to compute and display directly: wet density, moisture, dry density, percent moisture, and percent compaction in either kilograms per cubic meter or pounds per cubic foot, as chosen by the operator. The **Model 3411-B** eliminates the error in wet density due to the presence of hydrogen in the measured sample. This correction was not available in earlier gauge models. Also provided is a means of compensating the moisture measurement for chemically-bound hydrogen present in the measured material, but not in the form of water.

The **Model 3401-B** offers the customer a high-quality instrument at an attractive price. (A simple calculation is made by the gauge operator and measurement results are determined by the use of computer-derived calibration tables.) The **Model 3401-B** can easily be converted into a **Model 3411-B** by change of modules.

FIELD TESTED: Project-proven all over the world. Whatever the material, you can count on a **3400-B Series** gauge. These lightweight gauges are easily carried to project test sites and will perform day after day in every type of environment.

ASTM APPROVED: **3400-B Series** gauges meet or exceed all applicable ASTM standards.

RAPID RESULTS: Results on site when you need them, not hours later. Results may be obtained in less than one minute. **3400-B** Gauges ensure that end result project specifications are met and that payment penalties are eliminated.

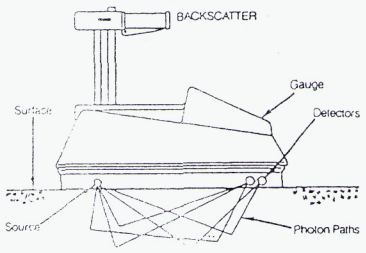
TRAINING AND LICENSING: Training of **Troxler** gauge operators in basic health physics, regulation compliance, and in field application is provided throughout the United States and through approved **Troxler** representatives worldwide. Certification following successful completion of **Troxler** courses is widely accepted for licensing.

SUPPORT AFTER SALE: Long-term support is provided by five service facilities in the United States, one in West Germany, and by **Troxler's** worldwide network of over fifty representatives.

TROXLER
Troxler Electronic Laboratories, Inc. Subsidiary: Troxler International, Ltd.
3008 Cornwallis Road
Post Office Box 12057
Research Triangle Park, North Carolina 27709 U.S.A.
Telephone: 919-549-8661
Telex: 6844902 TROXL-UW
Cable: Troxelec
FAX: 919-549-0761

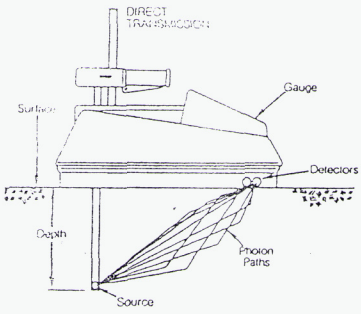
PRINCIPLE OF OPERATION

DENSITY TEST MODES: The 3400-B Series offers two test modes for measuring the density of construction materials. The operator may choose either Backscatter or Direct Transmission, depending upon the material and the thickness of the lift to be tested.



BACKSCATTER: The Backscatter method is nondestructive and may be performed rapidly. Both the gamma source and detectors remain on the surface. Gamma rays enter the material and those scattered back into the detectors are counted. Backscatter is generally insensitive to changes in density below 9 cm, which limits its use to thin lifts of material. Backscatter is recommended primarily for use on asphaltic concrete.

DIRECT TRANSMISSION: Direct Transmission is a pseudo non-destructive test which places the gamma source into the material by means of a punched access hole. Gamma rays are transmitted from the source through



the material to be measured to the detectors located on the surface. The average density of the lift of material is determined. *Direct Transmission allows the operator to choose the depth of measurement and greatly reduces errors resulting from surface roughness and chemical composition of the test material.* Gauge precision is also improved. Direct Transmission is used primarily for testing medium to thick lifts of soil, stone, and asphalt.

MOISTURE: The moisture measurement is nondestructive, with the neutron source and detector both located on the surface of the test material. Fast neutrons enter the material and thermalization occurs after a series of collisions between the neutrons and hydrogen atoms present in the test material. The helium-3 detector, located in the gauge, detects the thermalized neutrons.

SPECIFICATIONS

MEASUREMENT SPECIFICATIONS

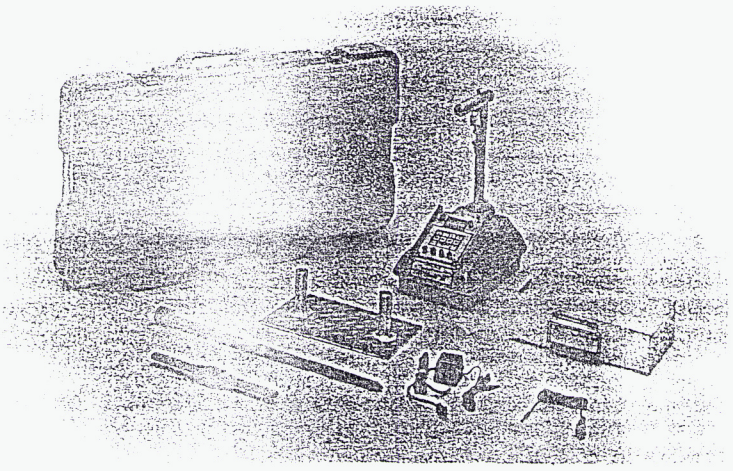
BACKSCATTER DENSITY	FAST 15 sec.	Count Time NORMAL 1 min.	SLOW 4 min.	
Precision at 2000 kg/m³	16.6	8.30	4.15	± kg/m³
(125 pcf)	(1.04	0.52	0.26	± pcf)
Depth of Measurement	100 mm (4 inches)			

DIRECT TRANSMISSION DENSITY

Precision at 2000 kg/m³	9.38	4.69	2.35	± kg/m³
(125 pcf)	(0.59	0.29	0.15	± pcf)
Depth of Measurement	50 mm (2-12 inches)			

MOISTURE

Precision at 250 kg/m³	11.0	5.50	2.75	± kg/m³
(17.5 pcf)	(0.69	0.34	0.17	± pcf)
Depth of Measurement at 250 kg/m³ (17.5 pcf)	15 mm (6 inches)			



RADIOLOGICAL SPECIFICATIONS

Gamma source	8 ± 1 mCi Cesium-137, TEL A-102112
Neutron source	40 ± 10% mCi Americium-241:Beryllium with 70,000 N/sec. yield, TEL A-102451
Source encapsulation	Stainless steel doubly encapsulated
Shielding	Tungsten and lead
Surface dose rate	15 mrem/hour max., neutron and gamma
Source rod construction	Stainless steel, 55 C Rockwell hardness
Shipping class	DOT 7A, TYPE A, Yellow II Label 0.4 Transport Index
Source seal	Cs-137, SPECIAL FORM Certificate
domestic and international	GB:SFC 140
Shipment	Am-241, SPECIAL FORM Certificate GB:SFC 7

ELECTRICAL SPECIFICATIONS

Temperature stability	± 0.005% ± 0.0002%/°C
Accuracy	± 0.01%/°C
Battery	40 watt-hours
Battery recharge time	14 hours
Charge source	110/220V, 50-60Hz *or* 12-14 VDC (negative ground)

MECHANICAL SPECIFICATIONS

Gauge base and top	aluminum casting
Vibration test	2.5 mm (0.1 inches) at 12.5 Hz
Operating temp.: Ambient	-10 to 70° (14 to 158°F)
Source	175°C (347°F)
Storage temp.	-55 to 85°C (-67 to 185°F)
Gauge size (excluding handles)	368 x 229 x 183 mm (14.5 x 9.0 x 7.2 inches)
Gauge height (excluding handles)	495 mm (19.5 inches) or 395 mm (15.5 inches)
Weight	16 kg (36 pounds)
Shipping weight	37.2 kg (82 pounds) with transport case

ACCESSORIES

Supplied with Gauge: Scraper plate/drill rod guide; Drill rod; Drill rod removal tool; 110/220V, 50-60 Hz charger; 12-14 VDC charger; Reference Standard; Manual; Calibration table; and Heavy-duty shipping case.

Optional: Troxler I Surface Meter; Radiation Sign Kit; Leak Test Kit; Troxler TLD Film Badge Service; Magnalube Lubricant; Source Rod Pig; and Drill Rod Jack.

international inquiries will be referred to one of our 50 appointed distributors who offer sales, service and training.

Western Branch
Sacramento, CA
(916) 631-0234

Central Branch
Elgin, IL
(312) 695-0900

Rocky Mountain Branch
Denver, CO
(303) 288-3196

Southern Branch
Nashville, TN
(615) 331-8537

Gulf States Branch
Tallahassee, FL
(904) 942-4470

Southwestern Branch
Arlington, TX
(817) 275-9571

Northeastern Branch
Newtown, CT
(203) 426-8880

Baltimore, MD
Repair Facility
(OPENING SOON)

West German Branch
Troxler Electronics, GmbH
Gilchinger Strasse 33
D-8031 Alling near Munich
West Germany
Telefax: (011-49) 8141-80731
Telex: 5270147 TROX D

TROXLER
Troxler Electronic Laboratories, Inc. Subsidiary: Troxler International Ltd.
3008 Cornwallis Road
Post Office Box 12057
Research Triangle Park, North Carolina 27709 U.S.A.
Telephone: 919-549-8661
Telex: 6844902 TROXL-UW
Cable: Troxelec
FAX: 919-549-0761

U. S. NUCLEAR REGULATORY COMMISSION
FY 2010 Annual Materials Fee Invoice
Period 10/1/2009 - 9/30/2010
10 CFR 171.16

Invoice Date	License Anniversary Month	Invoice Number
06/07/2010	June	AM2123-10

MARQUETTE COUNTY ROAD COMM
ATTENTION: RADIATION SAFETY OFFICER
1610 NORTH SECOND STREET
ISHPEMING MI 49849

***** Mark PAYMENT COPY with any billing address changes *****

License/Approval/ Registration/ Certificate Number	Code AA905	Annual Fee Category(s)	Fee Amount
21-26188-01	ANN	3P	$ 3,700.00
		TOTAL:	$ 3,700.00
		TOTAL INVOICE:	$ 3,700.00

If paid by Fedwire see attached Terms and Conditions. If paid by check, make check payable to the NRC (reference Invoice no.) and mail to:

U.S. Nuclear Regulatory Commission <=== This PO Box address is
Accounts Receivable Team <=== for receipt of payments
P.O. Box 979051 <=== only.
St. Louis, MO 63197-9000

For terms and conditions see attached.
Payment must be received within 30 days of the date of this invoice to avoid late charges.
Questions: call 301/415-7554

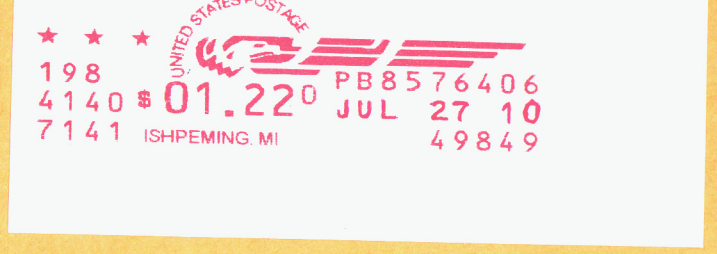
Marquette County Road Commission

32076

USNUC
US NUCLEAR REG COMM
32076

Invoice Number	Invoice Date	Original Invoice Amount	Discounts Taken	P0029446	Net Paid Amount	6/21/2010 Net Check Amount
AM2123-10	6/7/2010	$3,700.00	$0.00		$3,700.00	$3,700.00

6/7/2010 $3,700.00 $0.00 $3,700.00 $3,700.00



MARQUETTE COUNTY ROAD COMMISSION

1610 N. Second Street
Ishpeming, MI, 49849

To: Materials Licensing Branch
US Nuclear Regulatory Commission
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352