

VE ENGINEERING



VE Engineering Inc.
503 Bridge Street, Suite 212
New Cumberland, Pennsylvania 17070
Phone: (717) 774-5260
Fax: (717) 774-5269
www.veengineeringinc.com

March 6, 2007

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

37-30633-01

Re: Reply to a Notice of Violation - Inspection 03035700/2006001
VE Engineering, Inc., Pennsylvania Department of
Transportation, Project SR 6220, Section A12, North of
State College, Pennsylvania, and Notice of Violation

Gentlemen:

Enclosed is our response to the two violations of the NRC requirements citing that our activities on the subject project were not conducted in full compliance with NRC requirements. It is our understanding that you found VE Engineering, Inc. to be in full compliance during Mr. Ronald G. Rolph's safety inspection on December 4, 2006. If you have any questions concerning this response, please contact our New Cumberland Office at (717) 774-5260.

Sincerely,

A handwritten signature in black ink, appearing to read 'Barbara L. Posner'.

Barbara L. Posner
President

Enclosures
cc: Regional Administrator, Region 1

2007 MAR 12 AM 10:33
RECEIVED
REGION 1

NMSS/RGNI MATERIALS-004

March 6, 2007

REPLY TO NOTICE OF VIOLATION

VE Engineering, Inc.
New Cumberland, PA

Docket No. 03035700
License No. 37-30633-01

- A. Condition 15 of NRC License #37-30633-01 requires, in part, that the licensee conduct a physical inventory every six months. No physical inventory was performed from October 11, 2005, to September 22, 2006, a period greater than six months.
- 1) The reason for the violation was the fact that the Construction Project was on hold due to the pyretic acid problem of the excavated rock and that no physical work had been performed on this project. Consequently, the Troxler Densometers were also idle during the period from October 11, 2005, to the inspection on September 22, 2006. Our field personnel we had in the soils trailer often had no reason to open the locked cabinet that contained the two cases, which were also locked and contained each of the two Troxler Densometers. They observed the locked cabinet almost daily, but never documented the same.
 - 2) Immediate corrective action taken and the results achieved are that the field nuclear density operators were reminded and instructed to perform a physical inventory of the portable gauges every six months or more often. The inventory was performed and so documented on October 7, 2006, by Mr. John Seely, our project manager. Subsequent physical inventories have been performed. Please refer to the attached "Nuclear Gauge Log".
 - 3) Steps taken to avoid further violations involve Mr. John Seely performing the physical inventory of the portable gauges every three months. A form was provided by Mr. Seely to document the same, and he keeps a calendar to remind him of the inventory date every three months.
 - 4) Full compliance was achieved on October 7, 2006.
- B. 10 CFR 20.1101(c) requires that the licensee shall periodically (at least annually) review the radiation protection program content and implementation. Specifically, the RSO stated that they have NOT performed a program review since their license was issued on April 18, 2001, a period greater than one year.

- 1) The reason for the violation was that our RSO was NOT fulfilling his duties by reviewing the radiation protection program content and its implementation.
- 2) Consequently, our RSO Manager, Mr. Mansour Rejali, has been reprimanded and required to review the Code of Federal Regulations (CFR), review the radiation protection program, and document the same twice annually. In addition, two of our professional engineers, Mr. W. Andrew Bitner, P.E., Vice President, and Mr. Larry D. Hoffman, P.E. will be taking the Radiation Safety Officer Training on March 15, 2007.
- 3) The corrective steps taken to avoid future violations will be a six-month review of the RSO duties and all documented activities by the RSO as related to the requirements of the Regulations and his duties in reviewing the radiation protection program every six months.
- 4) Full compliance was achieved on March 5, 2007, when the attached Radiation Protection Program was reviewed by Ms. Barbara Posner, Mr. W. Andrew Bitner, P.E., Vice President, and Mr. Mansour Rejali. This Radiation Protection Program will be in the hands of each of our nuclear gauge operators within the week. If this is not satisfactory, please contact Mr. Bitner at (717) 774-5260 in our New Cumberland, Pennsylvania, office.

VE ENGINEERING, INC.



503 Bridge Street, Suite 212
New Cumberland, Pennsylvania 17070
Phone: (717) 774-5260
Fax: (866) 283-5698
www.veengineeringinc.com

Fax

Company: Nuclear Material Safety Branch

To: Mr. Ron Ralph

From: Maxx Rejali

Fax: 610-337-5269

Pages: 2

Phone: 610 337 5347

Date: December 20, 2006

RE: Leak Test Certificate

CC:

Urgent For Review Please Comment Please Reply Please Recycle

Good Morning Ron,

Please see attached leak Test Certificate for the Gage (33483) @ State College job site.



Troxler Electronic Laboratories, Inc.
 3008 Cornwallis Rd., P.O. Box 12057
 Research Triangle Park, NC 27709
 Tel: (877) 876-9537 Fax: (919) 485-2250
 License: NC 032-0182-1

JOHN SEELY
 V.E. ENGINEERING
 9 SKILLING ROAD LL4
 HUNT VALLEY, MD 21031

LEAK TEST CERTIFICATE

DEVICE:

Model: 3440 Serial No: 33483

SEALED SOURCES:

Serial No.	Measure Date	Nuclide	GBq	mCi
750-9021	01/31/2002	CS-137	0.296	8
47-29325	08/06/1999	AM-241:BE	1.48	40

LEAK TEST ANALYSIS:

Sample collected on: 12/12/2006
 Sample analyzed on: 12/18/2006 at 12:46:00 PM
 Analyzed by: HARRY P. PENDLETON, JR.

	ALPHA	BETA-GAMMA
Conversion factor (cpm/Bq)	1.28E+01	2.02E+01
Background measurement (cpm)	0	27
Sample measurement (cpm)	0	34
Activity (Bq)	< MDA	< MDA
Min. Detectable Activity (Bq)	4.1E-01	1.3E+00

This certifies that the leak test results are:

Less than 185 Bq (0.005 uCi) Greater than 185 Bq (0.005 uCi)



Emergency Procedures

These emergency instructions apply whenever a nuclear gauge is involved in an event that might cause damage to the source or its shielding or prevent the return of the source to the shielded position (e.g. when the gauge is struck by a piece of equipment, is contained in a vehicle involved in an accident or involved in a fire).

Gauge User or Operator:

- 1) Immediately cordon off the area around the gauge (approximately 15 foot radius) and prevent unauthorized personnel from entering the area to minimize personnel exposure. The gauge operator should stand by outside the cordoned area and maintain constant surveillance of the gauge until emergency response personnel arrive.
- 2) Detain any equipment or vehicle involved in the accident and the operator until it is determined that no contamination is present. Gauge users and other potentially contaminated personnel should not leave the scene until they have been checked for contamination by emergency response personnel.
- 3) Notify appropriate emergency response personnel (e.g. the licensee's Radiation Safety Officer, NRC or State officials) as soon as possible.

RSO and Licensee Management:

- 1) Evaluate the condition of the gauge. Determine if the source is present and if they are in the shielded position (if applicable). If the source is out of the gauge they must be located immediately.
- 2) Arrange for a radiation survey to be conducted as soon as possible by a knowledgeable person using appropriate radiation detection instrumentation. This person could be a licensee employee or a consultant competent in the use of radiation survey meters. The Troxler gauge operation manual contains a radiation profile chart which gives the normal radiation levels near the gauge. The radiation survey readings can be compared to the radiation profile for the gauge contained in the gauge operation manual to determine if the readings are normal.
- 3) Make necessary notifications to State and local authorities as well as the NRC. Even if not required to do so, you may report any incident to the

NRC's Emergency Operations Center at 1 301 816 5100, which is staffed 24 hours a day and accepts collect calls. NRC notification is required when gauges containing

licensed material are lost or stolen, when gauges are damaged or involved in incidents that result in doses in excess of **10 CFR 20.2203 (Radiation Levels)** limits, and when it becomes apparent that attempts to recover a source stuck below the surface will be unsuccessful. NRC reporting requirements and timeframes are found in **10 CFR 20.2201 (Reports of Theft)**

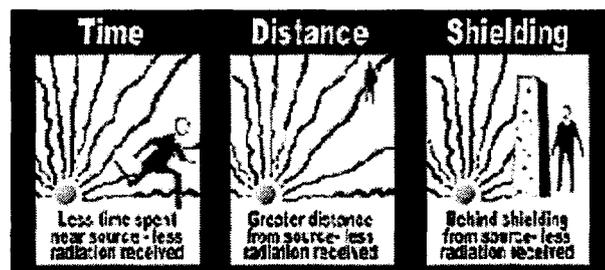
Radiation Dose Limits

The federal government has set standards for how much radiation can be received safely. The limit for whole body radiation for persons working in occupations that involve radiation exposure is **5000 millirem** per year. To put this value in perspective, the average American receives about 360 mrem a year from natural background radiation.

Protection from Radiation Sources

The radioactive material in portable gauges is in the form of sealed sources; therefore, there is negligible chance of internal exposure or contamination from working with a nuclear gauge. The primary concern is external exposure. The fundamental principle in radiation protection is that all radiation exposures should be maintained as low as reasonably achievable. This is referred to as the ALARA principle.

The three key factors which influence an individual's radiation dose from a given source are time, distance and shielding. Control of these factors, therefore, is the key to keeping radiation dose ALARA.



Time: The most direct way to reduce radiation dose is to reduce the time spent working with or in the vicinity of radiation sources. If the exposure time is cut in half, the dose will be reduced by the same fraction.

Distance: Distance is one of the most effective means to reduce dose thanks to basic principles of geometry. When the working distance from a point radiation source is increased by a factor of two, the dose received from that source will be reduced by a factor of four. This is referred to as the inverse square law, i.e., the radiation intensity from a point source decreases with the square of the distance from the source.

Shielding: Shielding is any material used to reduce the intensity of radiation by absorbing or attenuating the radiation coming from the source. Nuclear gauges have a significant amount of shielding already built in to protect the operator.

VE ENGINEERING, INC.



VE Engineering, Inc.

503 Bridge Street, Suite 212
New Cumberland, Pennsylvania 17070
Phone: (717) 774-5260
Fax: (866) 283-5698
www.veengineeringinc.com

Returning Damaged Gauges

Since all of our gauges are manufactured by Troxler Electronic Laboratories is necessary to return a gauge that has been damaged to Troxler for repair or disposal, the following procedure must be followed.

- 1) Conduct a standard wipe test of the gauge to verify the sources are not leaking and provide the test results to Troxler.
- 2) Send photographs showing the damage, especially damage affecting the shielding of the radioactive sources, to the attention of the **Troxler RSO**. If the damage is extensive or the gauge cannot be shipped in the original shipping case, Troxler will provide assistance or directions for packaging and shipment.
- 3) Upon review of the leak test results and photographs by the Troxler RSO, a Returned Goods Authorization (RGA) number will be issued for return of the gauge to Troxler.

VE ENGINEERING, INC.



VE Engineering, Inc.

503 Bridge Street, Suite 212
New Cumberland, Pennsylvania 17070
Phone: (717) 774-5260
Fax: (866) 283-5698
www.veengineeringinc.com

MEMO

Homeland security is on the minds of everyone these days. Undoubtedly you have read stories in the newspapers or watched reports on television about the possibility of radioactive materials being used for illicit purposes. The sources in portable gauges are sealed in stainless steel capsules that would be difficult to breach and cause radioactive contamination. Further, the relatively small amount of radioactive material would not represent a major hazard if spread over a large area.

What does this have to do with you and your gauge? Well, during the period from January 1996 to October 2000 there were 156 reported thefts of nuclear gauges according to statistics maintained by the U.S. Nuclear Regulatory Commission. Only 40% of the stolen gauges were ever recovered. Most of the thefts occurred while gauges were stored in vehicles parked in areas away from the work site, often when the vehicle was parked at a private residence. NRC's analysis indicates that many gauges were stolen from trucks even when the gauges were secured with chains. Frequently, the gauges were locked in an open truck bed, readily visible to the public. Sometimes the entire vehicle was stolen along with the gauge. Because of the heightened concern about homeland security, all nuclear gauge thefts are being turned over to the FBI for investigation.

So, what we can do to keep your gauge more secure during transport and field operations, to avoid regulatory violations and fines?

The following is the additions to VE Engineering operations of our Nuclear Gauges

- 1) **Maintain control and constant visual surveillance of nuclear gauges.** This is the most fundamental responsibility of the gauge operator. Things can happen to gauges when you turn your back or leave a gauge unattended - even for a few moments
- 2) **Reduce the visibility of the gauge.** You should have the gauge in its manufacture approved box for transporting. On the open truck the gauge should be chained and secured at all times with tail gate closed and latch on.
- 3) **Do not park vehicles in areas vulnerable to theft.** Unfortunately thefts can occur almost anytime and anywhere.
- 4) **Never leave the keys inside a vehicle when the vehicle is unattended**

5) **Use a steering wheel lock when the vehicle is parked.** In some cases, preventing the theft of the vehicle is the key to preventing the loss of a portable gauge.

6) **Store the gauge at a permanent or temporary storage facility whenever the gauge is not in use.** You should make sure that any storage location is very secure. All radiation protection rules must be followed as well, e.g., posting the area with Caution Radioactive Material signs.

VE Engineering, Inc. will make spot checks to make sure that all operators are aware of and understand the proper procedures for the physical security of gauges and hold the operators accountable. We will hold annual meeting every new construction session with all gauge operators at the beginning of each construction season and review our company's security procedures.

Appendix H

Operating, Emergency, and Security Procedures

Operating Procedures

- If personnel dosimetry is provided:
 - Always wear your assigned National Voluntary Laboratory Accreditation Program (NVAP) approved thermoluminescent dosimeter (TLD), optical stimulated dosimeter (OSL), or film badge when using the portable gauge;
 - Never wear another person's TLD, OSL, or film badge;
 - Never store your TLD, OSL, or film badge near the portable gauge.
- Before removing the portable gauge from its place of storage, ensure that, where applicable, each portable gauge sealed source is in the fully shielded position and that in portable gauges with a movable rod containing a sealed source, the source rod is locked (e.g., keyed lock, padlock, mechanical control) in the shielded position. Place the portable gauge in the transport case and lock the case.
- Use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal whenever the portable gauges are not under the licensee's control and constant surveillance (i.e., in storage). Guidance regarding this requirement is discussed below in the "Security Procedures" section of this Appendix.
- Sign out the portable gauge in a log book (that remains at the storage location) including the date(s) of use, name(s) of the authorized users who will be responsible for the portable gauge, and the temporary job site(s) where the portable gauge will be used.
- Block and brace the portable gauge to prevent movement during transport and lock the portable gauge in or to the vehicle. Follow all applicable Department of Transportation (DOT) requirements when transporting the portable gauge.
- Use the portable gauge according to the manufacturer's instructions and recommendations.
- Do not touch the unshielded source rod with your fingers, hands, or any part of your body.
- Do not place hands, fingers, feet, or other body parts in the radiation field from an unshielded source.
- Unless absolutely necessary, do not look under the portable gauge when the source rod is being lowered into the ground. If you must look under the portable gauge to align the source rod with the hole, follow the manufacturer's procedures to minimize radiation exposure.
- After completing each measurement in which the source is unshielded, immediately return the source to the shielded position.

- Always maintain constant surveillance and immediate control of the portable gauge when it is not in storage. At job sites, do not walk away from the portable gauge when it is left on the ground. Take action necessary to protect the portable gauge and yourself from danger of moving heavy equipment.
- When the portable gauge is not in use at a temporary job site, place the portable gauge in a secured storage location with two independent physical controls. Examples of two independent physical controls are: (1) securing the portable gauge in a locked storage facility located in a separate secured area in a warehouse; (2) securing the portable gauge inside a locked van and secured to the vehicle with a steel cable; (3) or storing the portable gauge inside a locked, nonremovable box and further securing the box with a steel cable or chain. If chains or cables are used as a method of providing security, one of the two chains or cables used, should be substantially more robust and more difficult to cut than the other. Simply having two chains or cables with locks would not satisfy the security rule unless each chain and lock combination were physically robust enough to provide both a deterrence and a reasonable delay mechanism.
- Always keep unauthorized persons away from the portable gauge.
- Perform routine cleaning and maintenance according to the manufacturer's instructions and recommendations.
- Before transporting the portable gauge, ensure that, where applicable, each portable gauge source is in the fully shielded position. Ensure that in portable gauges with a movable source rod, the source rod is locked in the shielded position (e.g., keyed lock, padlock, mechanical control). Place the portable gauge in the transport case and lock the case. Block and brace the case to prevent movement during transportation. Lock the case in or to the vehicle, preferably in a closed compartment.
- Return the portable gauge to its proper locked storage location at the end of the work shift.
- Log the portable gauge into the daily use log when it is returned to storage.
- If portable gauges are used for measurements with the unshielded source extended more than 3 feet beneath the surface, use piping, tubing, or other casing material to line the hole from the lowest depth to 12 inches above the surface. If the piping, tubing, or other casing material cannot extend 12 inches above the surface, cap the hole liner or take other steps to ensure that the hole is free of debris (and it is unlikely that debris will re-enter the cased hole) so that the unshielded source can move freely (e.g., use a dummy probe to verify that the hole is free of obstructions).
- After making changes affecting the portable gauge storage area (e.g., changing the location of portable gauges within the storage area, removing shielding, adding portable gauges, changing the occupancy of adjacent areas, moving the storage area to a new location), reevaluate compliance with public dose limits and ensure proper security of portable gauges.

Emergency Procedures

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

- Immediately secure the area and keep people at least 15 feet away from the portable gauge until the situation is assessed and radiation levels are known. However, perform first aid for any injured individuals and remove them from the area only when medically safe to do so.
- If any heavy equipment is involved, detain the equipment and operator until it is determined there is no contamination present.
- Portable gauge users and other potentially contaminated individuals should not leave the scene until emergency assistance arrives.
- Notify the following persons, in the order listed below, of the situation:

NAME ¹	WORK PHONE NUMBER ¹	HOME PHONE NUMBER ¹
<u>MAXX REJALI</u>	<u>410 785 6547</u>	
<u>JOHN SOELY</u>	<u>410 785 6547</u>	

Follow the directions provided by the person contacted above.

RSO and Licensee Management

- Arrange for a radiation survey to be conducted as soon as possible by a knowledgeable person using appropriate radiation detection instrumentation. This person could be a licensee employee using a survey meter located at the job site or a consultant. To accurately assess the radiation danger or potential contamination, it is essential that the person performing the survey be competent in the use of the survey meter.
- If portable gauges are used for measurements with the unshielded source extended more than 3 feet below the surface, contact persons listed on the emergency procedures need to know the steps to be followed to retrieve a stuck source and to convey those steps to the staff on site.
- Make necessary and timely notifications to local authorities as well as to NRC as

¹ Fill in with (and update, as needed) the names and telephone numbers of appropriate personnel (e.g., the RSO or other knowledgeable licensee staff, licensee's consultant, portable gauge manufacturer) to be contacted in the event of an emergency.

**PERSONAL INFORMATION WAS REMOVED
BY NRC. NO COPY OF THIS INFORMATION
WAS RETAINED BY THE NRC.**

required. (Even if it is not required, you may report *any* incident to NRC by calling NRC's Emergency Operations Center at (301) 816-5100, which is staffed 24 hours a day and accepts collect calls.) NRC notification is required when portable gauges containing licensed material are lost or stolen, when portable gauges are damaged or involved in incidents that result in doses in excess of 10 CFR Part 20.2203 limits, and when it becomes apparent that attempts to recover a sealed source stuck below the surface will be unsuccessful.

- Reports to NRC must be made within the reporting time frames specified by the regulations.
- Reporting requirements to NRC are found in 10 CFR Parts 20.2201-2203 and 10 CFR Part 30.50.

Security Procedures

NRC regulations require a portable gauge licensee to use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal whenever the portable gauge is **not** under the control and constant surveillance by the licensee.

Note: The NRC staff interprets "control and maintain constant surveillance" of portable gauges to mean being immediately present or remaining in close proximity to the portable gauge so as to be able to prevent unauthorized removal of the portable gauge.

The objective of the security guidance is to reduce the opportunity for unauthorized removal and/or theft by providing a delay and deterrent mechanism. By following this guidance, it will become more difficult and time-consuming to defeat security measures.

The following security requirements apply to portable gauge licensees regardless of the location, situation, and activities involving the portable gauge. **The security requirements apply to: (1) storage on vehicles; (2) storage at temporary facilities (e.g., residence, hotel, job site trailer); and (3) storage at permanent facilities.** At all times, licensees are required to either maintain control and constant surveillance of the portable gauge when in use and, at a minimum, use two independent physical controls to secure the portable gauge from unauthorized removal while in storage. The physical controls used must be designed and constructed of materials suitable for securing the portable gauge from unauthorized removal, and both physical controls must be defeated in order for the portable gauge to be removed. The construction and design of the physical controls used must be such that they will deter theft by requiring a more determined effort to remove the portable gauge. The security procedures used must ensure that the two physical barriers chosen clearly increase the deterrence value over that of a single barrier and the two physical barriers would make unauthorized removal of the portable gauge more difficult.

Using two chains is not the preferred method. To provide adequate security licensees

are encouraged to use other combinations. The security rule permits the usage of two chains under certain circumstances in order to allow licensees flexibility; however, having two chains with locks would not satisfy the NRC's requirement unless **each** chain and lock combination used is physically robust enough to provide **both** a deterrence, and a reasonable delay mechanism. When two chains or cables are used, the second chain or cable should be substantially more robust and more difficult to cut than the first chain or cable.

If possible, the licensee should consider storing their portable gauges inside a locked facility or other non-portable structure overnight, instead of storage in a vehicle.

As long as the licensee maintains constant control and surveillance while transporting the portable gauges, the licensee need only to comply with the DOT requirements for transportation (e.g., placarding, labeling, shipping papers, blocking and bracing). However, if the licensee leaves the vehicle and portable gauge unattended (e.g., while visiting a gas station, restaurant, store), the licensee needs to ensure that the portable gauge is secured by two independent controls in order to comply with the requirements of 10 CFR Part 30.34(i)

While transporting a portable gauge, a licensee should not modify the transportation case if it is being used as the Type A container for transporting the device. This includes, but is not limited to, drilling holes to mount the case to the vehicle or to mount brackets or other devices used for securing the case to the vehicle. In order to maintain its approval as a Type A shipping container, the modified package must be re-evaluated by any of the methods described in 49 CFR Part 178.350 or 173.461(a). The re-evaluation must be documented and maintained on file in accordance with DOT regulations.

Physical controls used may include, but are not limited to, a metal chain with a lock, a steel cable with a lock, a secured enclosure, a locked tool box, a locked camper, a locked trailer, a locked trunk of a car, inside a locked vehicle, a locked shelter, a secured fenced-in area, a locked garage, a locked non-portable cabinet, a locked room, or a secured building. To assist licensees, some common scenarios are illustrated and examples of two independent physical controls are provided below.

Securing a Portable Gauge at a Licensed Facility

Long term storage of a portable gauge is usually at a permanent facility listed in the license or license application. Routine storage of a portable gauge in a vehicle or at temporary or permanent residential quarters is usually reviewed and may be authorized by NRC or the applicable Agreement State during the licensing process. In accordance with NRC security regulations, when a portable gauge is stored at a licensed facility, the licensee would be specifically required to use a minimum of two independent physical controls to secure the gauge.

Examples of two independent physical controls used by to secure a portable gauge when stored at a licensed facility are --

1. The portable gauge or transportation case containing the portable gauge is stored inside a locked storage shed within a secured outdoor area, such as a fenced parking area with a locked gate;
2. The portable gauge or transportation case containing the portable gauge is stored in a room with a locked door within a secured building for which the licensee controls access by lock and key or by a security guard;
3. The portable gauge or transportation case containing the portable gauge is stored inside a locked, non-portable cabinet inside a room with a locked door, if the building is not secured;
4. The portable gauge or transportation case containing the portable gauge is stored in a separate secured area inside a secured mini-warehouse or storage facility; or
5. The portable gauge or transportation case containing the portable gauge is physically secured to the inside structure of a secured mini-warehouse or storage facility.

Securing a Portable Gauge in a Vehicle

Regulations in 10 CFR Part 71 requires that licensees who transport licensed material, or who may offer such material to a carrier for transport, must comply with the applicable requirements of the United States Department of Transportation (DOT) that are found in 49 CFR Parts 170 through 189.

Licensees commonly use a chain and a padlock to secure a portable gauge in its transportation case to the open bed of a pickup truck, while using the vehicle for storage. Because the transportation case is portable, a theft could occur if the chain is cut and the transportation case with the portable gauge is taken. If a licensee simply loops the chain through the handles of the transportation case, a thief could open the transportation case and take the portable gauge without removing the chain or the case. Similarly, because the transportation case is also portable, it must be protected by two independent physical controls if the portable gauge is inside. A lock on the transportation case, or a lock on the portable gauge source rod handle, is not sufficient because both the case and the gauge are portable.

A vehicle may be used for storage, however, it is recommended by NRC and DOT that this practice only be used for short periods of time or when a portable gauge is in transit. A portable gauge should only be kept in a vehicle overnight if it is not

practicable to provide temporary storage in a permanent structure. When a portable gauge is being stored in a vehicle, the licensee is specifically required to use a minimum of two independent physical controls to secure the portable gauge.

Examples of two such independent physical controls approved by NRC to secure portable gauges in this situation are --

1. The locked transportation case containing the portable gauge is physically secured to a vehicle with brackets, and a chain or steel cable (attached to the vehicle) is wrapped around the transportation case such that the case can not be opened unless the chain or cable is removed. In this example, the locked transportation case would count as one control because the brackets would prevent easy removal of the case. The chain or cable looped only through the transportation case handle is not acceptable;
2. The portable gauge or transportation case containing the portable gauge is stored in a box physically attached to a vehicle, and the box is secured with (1) two independent locks; (2) two separate chains or steel cables attached independently to the vehicle in such a manner that the box cannot be opened without the removal of the chains or cables; or (3) one lock and one chain or steel cable is attached to the vehicle in such a manner that the box cannot be opened without the removal of the chain or cable; or
3. The portable gauge or transportation case containing the portable gauge is stored in a locked trunk, camper shell, van, or other similar enclosure and is physically secured to the vehicle by a chain or steel cable in such a manner that one would not be able to open the case or remove the portable gauge without removal of the chain or cable.

Securing a Portable Gauge at a Temporary Jobsite or at Locations Other Than a Licensed Facility

When a job conducted requires storage of a portable gauge at a temporary jobsite or at a location other than a licensed facility, the licensee should use a permanent structure for storage, if practicable to do so. When storing a portable gauge in temporary or permanent residential quarters, the licensee should limit access by storing the gauge in a separate room away from residents and other members of the public. The licensee must also meet the radiation exposure limits specified in 10 CFR Part 20. When a portable gauge is stored at a temporary jobsite or at a location other than an authorized facility, the licensee is required to use a minimum of two independent physical controls to secure the portable gauge.

Examples of two independent physical controls to secure portable gauges at these locations are --

1. At a temporary job site, the portable gauge or transportation case containing the

portable gauge is stored inside a locked building or in a locked non-portable structure (e.g., construction trailer, sea container, etc.), and is physically secured by a chain or steel cable to a non-portable structure in such a manner that an individual would not be able to open the transportation case or remove the portable gauge without removing the chain or cable. A lock on the transportation case or a lock on the portable gauge source rod handle would not be sufficient because the case and the portable gauge are portable;

2. The portable gauge or transportation case containing the portable gauge is stored inside a locked room within temporary or permanent residential quarters, and is physically secured by a chain or steel cable to a permanent or non-portable structure (e.g., large metal drain pipe, support column, etc.) such that an individual would not be able to open the transportation case or remove the portable gauge without removing the chain or cable;

3. The portable gauge or transportation case containing the portable gauge is stored in a locked garage, and is within a locked vehicle or is physically secured by a chain or steel cable to the vehicle in such a manner that an individual would not be able to open the transportation case or remove the portable gauge without removing the chain or cable; or

4. The portable gauge or transportation case containing the portable gauge is stored in a locked garage, and is within a locked enclosure or is physically secured by a chain or steel cable to a permanent or non-portable structure in such a manner that an individual would not be able to open the transportation case or remove the portable gauge without removing the chain or cable.

§ 20.2201 Reports of theft or loss of licensed material.

(a) *Telephone reports.* (1) Each licensee shall report by telephone as follows:

(i) Immediately after its occurrence becomes known to the licensee, any lost, stolen, or missing licensed material in an aggregate quantity equal to or greater than 1,000 times the quantity specified in appendix C to part 20 under such circumstances that it appears to the licensee that an exposure could result to persons in unrestricted areas; or

(ii) Within 30 days after the occurrence of any lost, stolen, or missing licensed material becomes known to the licensee, all licensed material in a quantity greater than 10 times the quantity specified in appendix C to part 20 that is still missing at this time.

(2) Reports must be made as follows:

(i) Licensees having an installed Emergency Notification System shall make the reports to the NRC Operations Center in accordance with § 50.72 of this chapter, and

(ii) All other licensees shall make reports by telephone to the NRC Operations Center (301)-816-5100.

(b) *Written reports.* (1) Each licensee required to make a report under paragraph (a) of this section shall, within 30 days after making the telephone report, make a written report setting forth the following information:

(i) A description of the licensed material involved, including kind, quantity, and chemical and physical form; and

(ii) A description of the circumstances under which the loss or theft occurred; and

(iii) A statement of disposition, or probable disposition, of the licensed material involved; and

(iv) Exposures of individuals to radiation, circumstances under which the exposures occurred, and the possible total effective dose equivalent to persons in unrestricted areas; and

(v) Actions that have been taken, or will be taken, to recover the material; and

(vi) Procedures or measures that have been, or will be, adopted to ensure against a recurrence of the loss or theft of licensed material.

(2) Reports must be made as follows:

(i) For holders of an operating license for a nuclear power plant, the events included in paragraph (b) of this section must be reported in accordance with the procedures described in § 50.73(b), (c), (d), (e), and (g) of this chapter and must include the information required in paragraph (b)(1) of this section, and

(ii) All other licensees shall make reports to the Administrator of the appropriate NRC Regional Office listed in appendix D to part 20.

(c) A duplicate report is not required under paragraph (b) of this section if the licensee is also required to submit a report pursuant to §§ 30.55(c), 40.64(c), 50.72, 50.73, 70.52, 73.27(b), 73.67(e)(3)(vii), 73.67(g)(3)(iii), 73.71, or § 150.19(c) of this chapter.

(d) Subsequent to filing the written report, the licensee shall also report any additional substantive information on the loss or theft within 30 days after the licensee learns of such information.

(e) The licensee shall prepare any report filed with the Commission pursuant to this section so that names of individuals who may have received exposure to radiation are stated in a separate and detachable part of the report.

[56 FR 23406, May 21, 1991, as amended at 58 FR 69220, Dec. 30, 1993; 60 FR 20186, Apr. 25, 1995; 66 FR 64738, Dec. 14, 2001; 67 FR 3585, Jan. 25, 2002]

§ 20.2203 Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the constraints or limits.

(a) *Reportable events.* In addition to the notification required by § 20.2202, each licensee shall submit a written report within 30 days after learning of any of the following occurrences:

- (1) Any incident for which notification is required by § 20.2202; or
- (2) Doses in excess of any of the following:
 - (i) The occupational dose limits for adults in § 20.1201; or
 - (ii) The occupational dose limits for a minor in § 20.1207; or
 - (iii) The limits for an embryo/fetus of a declared pregnant woman in § 20.1208; or
 - (iv) The limits for an individual member of the public in § 20.1301; or
 - (v) Any applicable limit in the license; or
 - (vi) The ALARA constraints for air emissions established under § 20.1101(d); or
- (3) Levels of radiation or concentrations of radioactive material in--
 - (i) A restricted area in excess of any applicable limit in the license; or
 - (ii) An unrestricted area in excess of 10 times any applicable limit set forth in this part or in the license (whether or not involving exposure of any individual in excess of the limits in § 20.1301); or
- (4) For licensees subject to the provisions of EPA's generally applicable environmental radiation standards in 40 CFR part 1, levels of radiation or releases of radioactive material in excess of those standards, or of license conditions related to those standards.

(b) *Contents of reports.* (1) Each report required by paragraph (a) of this section must describe the extent of exposure of individuals to radiation and radioactive material, including, as appropriate:

- (i) Estimates of each individual's dose; and
- (ii) The levels of radiation and concentrations of radioactive material involved; and
- (iii) The cause of the elevated exposures, dose rates, or concentrations; and
- (iv) Corrective steps taken or planned to ensure against a recurrence, including the schedule for achieving conformance with applicable limits, ALARA constraints, generally applicable environmental standards, and associated license conditions.

(2) Each report filed pursuant to paragraph (a) of this section must include for each occupationally overexposed¹ individual: the name, Social Security account number, and date of birth. The report must be prepared so that this information is stated in a separate and detachable part of the report and must be clearly labeled "Privacy Act Information: Not for Public Disclosure."

(c) For holders of an operating license for a nuclear power plant, the occurrences included in paragraph (a) of this section must be reported in accordance with the procedures described in § 50.73(b), (c), (d), (e), and (g) of this chapter and must also include the information required by paragraph (b) of this section. Occurrences reported in accordance with § 50.73 of this chapter need not be reported by a duplicate report under paragraph (a) of this section.

(d) All licensees, other than those holding an operating license for a nuclear power plant, who make reports under paragraph (a) of this section shall submit the report in writing either by mail addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; by hand delivery to the NRC's offices at 11555 Rockville Pike, Rockville, Maryland; or, where practicable, by electronic submission, for example, Electronic Information Exchange, or CD-ROM. Electronic submissions must be made in a manner that enables the NRC to receive, read, authenticate, distribute, and archive the submission, and process and retrieve it a single page at a time. Detailed guidance on making electronic submissions can be obtained by visiting the NRC's Web site at <http://www.nrc.gov/site-help/eie.html>, by calling (301) 415-6030, by e-mail to EIE@nrc.gov, or by writing the Office of Information Services, U.S. Nuclear

Regulatory Commission, Washington, DC 20555-0001. A copy should be sent to the appropriate NRC Regional Office listed in appendix D to this part.

[56 FR 23406, May 21, 1991, as amended at 60 FR 20186, Apr. 25, 1995; 61 FR 65127, Dec. 10, 1996; 68 FR 14309, Mar. 25, 2003; 68 FR 58802, Oct. 10, 2003; 70 FR 69421, Nov. 16, 2005]

¹ With respect to the limit for the embryo-fetus (§ 20.1208), the identifiers should be those of the declared pregnant woman.



**TROXLER NUCLEAR GAUGE EMERGENCY RESPONSE INFORMATION
REQUIRED FOR TRANSPORTATION**

(Reference: DOT P5800.5 ERG93, and 49 CFR)

Call Troxler Electronic Laboratories, Inc, at (919) 549-9539 for Emergency Assistance

1. PROPER SHIPPING NAME:

- ◆ RADIOACTIVE MATERIAL, TYPE A PACKAGE, SPECIAL FORM, 7, UN3332

POTENTIAL HAZARDS

2. HEALTH HAZARDS

- ◆ Radiation presents minimal risk to lives of persons during transportation accidents.
- ◆ Undamaged packages are safe; damaged packages or materials released from packages can cause external radiation hazards. Contamination is not suspected.
- ◆ Packages (cartons, boxes, drums, articles, etc.) identified as "Type A" by marking on packages or by shipping papers contain non-life endangering amounts. Radioactive sources may be released if packages are damaged in moderately severe accidents.
- ◆ Packages (large and small, usually metal) identified as "Type B" by marking on packages or by shipping papers contain potentially life-endangering amounts. Because of design, evaluation, and testing of packages, life-endangering releases are not expected in accidents except those of utmost severity.
- ◆ Commonly available instruments can detect most of these materials.
- ◆ Water from cargo fire control is not expected to cause pollution.

3. FIRE OR EXPLOSION

- ◆ Packagings can be consumed without content loss from sealed source capsule.
- ◆ Radioactive source capsules and Type B packages are designed to withstand temperatures of 1475 °F (800 °C).

EMERGENCY ACTION

4. IMMEDIATE PRECAUTIONS

- ◆ Priority response actions may be performed before taking radiation measurements.
- ◆ Priorities are life saving, control of fire and other hazards, and first aid.
- ◆ Isolate hazard area and deny entry. Notify Radiation Authority of accident conditions.
- ◆ Delay final cleanup until instruction or advice of Radiation Authority.
- ◆ Positive pressure self-contained breathing apparatus (SCBA) and structural firefighter's protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.

5. FIRE

- ◆ Do not move damaged packages; move undamaged packages out of fire zone.
- ◆ Small Fires: Dry chemical, CO₂ water spray or regular foam.
- ◆ Large Fires: Water spray, fog (flooding amounts)

6. SPILL OR LEAK

- ◆ Do not touch damaged packages or spilled material.
- ◆ Slightly damaged or damp outer surfaces seldom indicate failure of inner container.
- ◆ If source is identified as being out of package, stay away and await advice from Radiation Authority.

7. FIRST AID

- ◆ Use first aid treatment according to the nature of the injury.
- ◆ Persons exposed to special form sources are not likely to be contaminated with radioactive material.