

4.0 RADIATION SAFETY PROGRAM

4.1 Policy and Purpose

The purpose of the radiation safety program is to provide a structure and organization which ensures continuing implementation of the radiation safety policy throughout the Company. The objectives of this program are:

- To make every reasonable effort to maintain radiation exposures, and releases of radioactive material in effluents to unrestricted areas As Low As is Reasonably Achievable (ALARA).
- To ensure control of the possession and use of "Sources of Radiation" , to minimize, insofar as practicable, hazards to personnel and loss of property arising from the use of such materials
- To ensure compliance with all Federal, State and local laws covering the use of such materials, machines and devices.

4.2 Overview

R. E. Pierson Construction Co., Inc. Radiation Safety Program includes the following elements:

- Designation of a Radiation Safety Officer (RSO) with the authority to oversee all radiation safety program elements.
- Development of an effective training program for all approved radioactive material users.
- Development of an effective monitoring system to insure compliance with the program.

4.3 Policy

All authorized gauge users and transporters will comply with the conditions set in the Radiation Safety Program.

4.4 Purpose

The Radiation Safety Program is designed to minimize the risk of injury or illness associated with exposure to ionizing radiation by keeping doses as low as reasonably achievable (ALARA policy).

4.5 Scope

The Program applies to all employees who work with or transport portable nuclear moisture/density gauges.

4.6 Procedures

Authorized gauge users and transporters

- Operators and transporters of portable nuclear moisture/density gauges will be approved by the RSO.
- See appendix A for Authorized gauge users and transporters.

Some of the overall goals of the radiation safety program are:

- a) Protecting the general public and environment from unnecessary exposure to radiation
- b) Proper training and instruction to workers includes:
 - 1) The ALARA program and personnel radiation monitoring
 - 2) Safely and securely operating the gauge at the worksite
 - 3) Workers knowledge of emergency procedures and radiation detection equipment
 - 4) Safely and securely transporting gauges
 - 5) Maintenance and leak tests
- c) Inventory and disposal recordkeeping
- d) Self-reporting, corrections and enforcement of the program
- e) Annual Audits and inspections

The Radiation Safety Officer will carry out the duties and enforce the conditions of the license including:

The Annual Audit

An annual audit of the gauge safety program will be conducted, as well as checking, reviewing and correcting any deficiencies. All copies of audits will be retained. The RSO will conduct periodic internal inspections, including in person observations of worker actions with gauges during transport and transportation.

Organization & Scope of Program

Ensure that the original conditions and information on the license stays current, or when needed, file for timely amendments including address changes, new ownership (in advance), bankruptcies, and notice of a new and properly trained RSO.

Review the license to ensure that gauge models match and source quantities have not been exceeded and will ensure that the Sealed Source and Device (SSD) Certificate or Sheet for each type of gauge are on file.

Check to make sure that manufacturer operation & maintenance manuals are on hand for each type of gauge and make sure the gauges are used for the way they are intended.

Radiation Survey Instruments

Make sure the company owns a radiation survey meter. In the event of an accident it will be used to detect the location of a dislodged source, determine the Transport Index of a damaged gauge or determine the radiation levels around a storage area. It will also be used to determine if the gauge sliding block is malfunctioning.

Make sure the survey meter meets the criteria of the regulatory agency. Typically this requires a survey meter that is able to detect gamma radiation and be recalibrated annually.

Survey meter calibration records shall be kept on file.

Gauge Inventory

Complete an inventory of gauges every 6 months. Keep an inventory sheet attached to a clipboard and place it at the storage area with the date of the next inventory. Complete a hands-on inventory of each gauge and keep the completed document on file.

Keep a receipt for each gauge in inventory that shows the date each gauge was obtained and entered into your inventory?

Personnel Radiation Protection

Provide personnel dosimetry to all gauge employees.

The dosimetry, typically in the form of a film badge, TLD (Thermoluminescent Dosimeter), or OSL (Optically Stimulated Luminescence) ensures that ALARA practices are being met and also creates a record that documents employees are receiving minimal exposure levels. Make sure that ALARA considerations (time, distance & shielding) are being taught and practiced and incorporated into the Radiation Protection Program.

Make sure that if a worker declared her pregnancy she was limited to a maximum of 500 mrem for the term of the pregnancy. Make sure embryo/fetus dose records were kept on file.

Make sure all exposure, survey, monitoring and evaluation records kept on file.

Public Dose

Take steps to protect the general public (non-gauge workers) from exposure to radiation. Ensure that exposure levels to the general public are below 100mrem in a year or 2mrem in any 1 hour. Make sure that gauges are stored in a manner to keep doses to the public below 100mrem in a year.

Conduct a survey or evaluation of public access areas around the storage area to ensure that exposure levels are below 100mrem per year.

Monitor any gauge additions or changes to the storage area, security or use of the surrounding areas that would necessitate a new survey or evaluation. Monitor public access area radiation levels to determine if any areas have exceeded 2mrem in any one hour.

Make sure that gauges are stored in a manner that prevents unauthorized use or removal.

Keep storage survey and evaluation records on file.

Operating & Emergency Procedures

Company Radiation Safety Officer: Paul Russell

Radiation Safety Officer work # 856.769.8244

Radiation Safety Officer mobile # 609.743.1283

Radiation Safety Officer home # 609.743.1283

Regulatory Agency Emergency # (Day) _____

(Night) _____

Police/Fire # 911

Gauge Manufacturer Emergency Response # _____

NRC 24hr Emergency Response # 301-816-5100

USDOT 24hr Emergency Response # 800-424-8802

The USDOT # should only be used in the event of a transport accident where the gauge is involved in a fire, breakage or suspected contamination. Don't call if the accident only resulted in damage to the gauge case.

In the event of a missing gauge immediately contact the Radiation Safety Officer, who will in turn immediately contact the regulatory agency.

In the event of a stolen gauge, and if the theft just occurred, call the police immediately with the details. Then call the Radiation Safety Officer, who will in turn call the regulatory agency. If you can't immediately reach the Radiation Safety Officer, call the regulatory agency.

In the event of physical damage to the gauge at the worksite:

- a) First, if there are any serious injuries, immediately contact fire and rescue. Then attend to those injured in the accident.
- b) If the gauge is involved in a fire immediately contact the fire department and keep all individuals away from the gauge and up-wind of the smoke stream.
- c) Secure and control the area by keeping individuals at least 15 feet away from the gauge. Stop all unauthorized entries to the area.
- d) Although contamination from a damaged gauge is not likely, do not allow any individuals suspected of contamination or radiation exposure to leave the area. Direct emergency response individuals to these individuals.
- e) If any vehicle or construction equipment was involved keep it at the site until it can be determined if it was contaminated.
- f) Gather facts.
- g) Do not touch or move the gauge. Is the source rod extended? Visually inspect the gauge to determine if the end of the source rod is still attached. If it is still retracted inside the gauge inspect the housing of the gauge. Is the base of the gauge cracked or damaged?
- h) Call the RSO, and if necessary, the regulatory agency. Have the following information ready:

- 1) Give your name, company and mobile telephone number.
- 2) Location and description of the incident.
- 3) What type of gauge was involved and what type and quantities of sources were involved. Quantities are typically:
 - a) Cesium 137, 8-10 millicuries, sealed source
 - b) Americium 241, 40-50 millicuries, sealed source
- 4) How the gauge was damaged, e.g. vehicle.

i) If a radiation survey meter is on hand and you are authorized and competent to do so, take a reading of the gauge at one meter (one yard) away. The reading should be $< .08$ millirem. A reading at the base of the gauge where the source rod is extended should be < 20 millirem. A significantly higher reading is an indication that the sliding block is ajar. A reading of $< .01$ might be an indication that the source rod has broken off. Give the details to the RSO and await instructions.

j) Workers using the gauge below 3 feet of the surface must have specific emergency procedures training.

k) Many licensees prepare an emergency response kit. This kit would typically include:

- a. A leak test kit
- b. Latex gloves
- c. 100 feet of rope to cordon off a 15 feet radius area
- d. A radiation survey meter (keep it calibrated on an annual basis)
- e. Packaging tape

l) Licensee RSO or Management must make necessary notifications to the regulatory agency.

Leak Tests

Make sure each sealed source on each gauge leak will be tested on time (per the time interval stated on the license) every six (6) months and make sure the leak test was performed per the descriptions and requirements of the regulatory agency and the license.

Make sure all gauges have a current leak test before being removed from storage.

Make sure leak test results are kept on file. Leak test shall be included when transferring gauges to other licensees.

If the gauge is found to be “leaking”, typically a finding in excess of 0.005 microcuries you will be instructed to pull the gauge out of service for further analyses.

Maintenance of Gauges

Make sure the gauges are routinely cleaned and lubricated per the manufacturer’s procedures, thereby allowing optimum safety and performance. Make sure that the source rod is not removed during cleaning.

Transportation

Make sure that only undamaged, manufacturer-provided and approved, Type A package gauge cases are used during every transport of a gauge. Type “A” Package test results for every different type of gauge case in use shall be kept on file.

A “Certificate of Competent Authority” shall be kept on file for each different type of source used in the gauge. (This will satisfy the requirement for documenting special form certificates. These special form certificates can be obtained through the manufacturer and can usually be downloaded off their website).

Make sure that every gauge case displays 2 Radioactive II labels that **legibly** show the Transport Index (TI), source types & activities, and hazard class (7).

Each gauge case shall display a Type A package label denoting UN3332, “Radioactive Material”, “Special Form” and “RQ” requirements.

Gauge cases will be closed and locked for every transport.

An applicable bill of lading and emergency response sheets are to be used during every shipment.

Shipping papers shall contain the proper entries: (Shipping name (Radioactive Materials), Hazard Class (7), UN ID Number (3332), Total Quantity (number of gauges), Package Type (Type A), Nuclides (Cesium137 and/or Am241), RQ (if necessary), Description (Radioactive Material), Special Form, Activity (in Becquerels and Millicuries), Yellow II labels, Transport Index (TI), Shipper’s name, Certification and signature, Emergency Response Telephone number, Cargo Aircraft Only label.

Gauge cases shall be secured against movement during transport, and double, independent, locked cables, chains or other security devices are to be used during transport.

Instruct the workers to have the gauge concealed while transported in a vehicle.

All qualified transport incidents are to be reported to the USDOT.

Notification & Reports

Make notifications of any lost or stolen gauges and make appropriate reports.

Report any overexposures or high radiation levels and note the causes and take corrective actions.

In the event of any of the above occurrences contact the NRC Emergency Operations Center at 301-816-5100 as well as the Agreement State, if appropriate.

Posting & Labeling

Post or make available certain documents and/or posters for public viewing. Keep all originals under lock and key and only post copies of the documents and posters. Post the “Notice to Employees” poster in an area accessible to all employees.

Recordkeeping for Decommissioning

Be aware that regulatory agencies require a minimum of 60 days notice before terminating the license and transferring or disposing of all gauges. Maintain all decommissioning, transfer and disposal documents on file.

Bulletins & Information Notices

Go to www.nrc.gov to sign up for NRC Bulletins, Information Notices and NMSS Newsletters. Do the same for your Agreement State.

Make sure that appropriate training and actions are taken in response to these notices.

Special License Conditions or Issues

Review any special license conditions or issues pertaining to your license (e.g., non-routine maintenance).

Deficiencies Identified in Audit and Corrective Actions Planned

Deficiencies or oversights during the year shall be investigated, and corrective actions taken to rectify the issue.

Evaluation of Other Factors

Ensure that Senior Management is constructively involved and informed about the radiation safety program.

Senior Management will assure that the RSO has sufficient time to perform Radiation Safety Duties.

Senior Management will assure that the RSO has sufficient staff to support the Radiation Safety Program.

5.0 RESPONSIBILITY

5.1 Management Responsibility

Management is vital to achieving safe and compliant operations. Consistent compliance with regulations provides reasonable assurance that licensed activities will be conducted safely. Management refers to a senior-level manager who has responsibility for overseeing licensed activities.

To ensure adequate management involvement, a management representative must sign the NRC License application acknowledging management's commitments and responsibility for the following:

- Radiation safety, security, and control of radioactive materials, and compliance with regulations;
- Completeness and accuracy of the radiation safety records and all information provided to NRC (10 CFR 30.9);
- Knowledge about the contents of the license and application;
- Meticulous compliance with current NRC and Department of Transportation (DOT) regulations and the licensee's operating and emergency procedures;
- Commitment to provide adequate resources (including space, equipment, personnel, time, and, if needed, contractors) to the radiation protection program to ensure that public and workers are protected from radiation hazards and meticulous compliance with regulations is maintained;
- Selection and assignment of a qualified individual to serve as the Radiation Safety Officer (RSO) for licensed activities;
- Obtaining NRC's prior written consent before transferring control of the license; and
- Notifying appropriate NRC Regional Administrator in writing, immediately following filing of petition for voluntary or involuntary bankruptcy.

For information on NRC inspection and enforcement, see the current version of "General Statement of Policy and Procedures for NRC Enforcement Actions," NUREG-1600, and Manual Chapter (MC) 87114, "Fixed and Portable Gauge Programs." NUREG-1600 is available electronically at <<http://www.nrc.gov/OE>>. For hard copies of NUREG-1600 and MC 87114,

5.2 Radiation Safety Officer (RSO) Responsibilities

The RSO's duties and responsibilities typically include ensuring the following:

Recordkeeping File

Designate a file drawer for maintaining all of the documents required for the license. This file drawer should hold all of the original documents and be kept under lock and key.

RSO Training and Your License

The RSO should have the proper training and experience to carry out the position. A minimum training requirement is the completion of the Gauge Safety Certification Class. This class should qualify the individual to perform the duties of the RSO.

Training

The RSO must have practical experience in operating gauges and must introduce and instruct workers to the safety and operational aspects of the gauge.

The RSO will oversee the training required of company employees and will ensure that he/she has received training. Company employees should be trained in all safety and emergency procedures and possess a copy of the company radiation safety program.

Training for the employees should include:

- Gauge safety training
- HAZMAT training
- Annual refreshers

Topics of training include:

- Principles and practices of radiation protection
- Radiation measurement and monitoring
- Biological effects of radiation

It is important for the RSO or a senior gauge operator to spend time with new workers in the basics of gauge safety and operation.

Training courses cover the safe use of gauges. Virtually all gauges use the same mechanics of measurement, specifically, an adjustable source rod that can be lowered for measuring density, and an internal, stationary source for measuring moisture. The only differing aspects of various models are the keypad and software. The RSO must familiarize the worker with the gauge, as well as the specific gauge methodology and applications in use by the company.

The RSO will authorize and ensure that only properly trained individuals will operate the gauges and prepare and transport gauges. All training certificates are to be kept on file.

Personnel Monitoring/Dose Rates

The RSO will ensure that all gauge workers wear a dosimeter for monitoring occupational radiation exposure. Typical annual exposure is less than 100mRem. Train and practice the concepts of ALARA (As Low As Reasonably Achievable) to ensure minimal exposures. When not in use all employee dosimeters should be kept with the control badge, at a distance free from gauge exposure. Store badges in a temperate environment.

The annual dose limit for workers is 5,000mRem. Declared (in writing) pregnant workers are limited to 500mRem for the term of the pregnancy. Workers under the age of 18 are limited to 500mRem/yr (some states limit their exposure to 50mRem).

Storage areas should have limited access to the general public and ensure that public exposure is less than 100mRem/yr or the exposure at 3 feet is less than 0.2mRem/hr. A general rule of 15 feet from a full-time work station should ensure compliance but areas with multiple gauges will need to be evaluated.

Reciprocity

Gauges can only be used within the state under the licensee's regulatory agency. The gauge will be kept at the licensed storage area or approved work site temporary storage. Use in another state will require reciprocity (permission from the NRC or Agreement State).

Storage/Security

When not in use gauges will be stored behind double-locked security that prevents unauthorized access or removal. The RSO must authorize and approve any operators before they can remove gauges from storage. Any gauge and case removed from storage must be inspected and logged out with the operator's name, date, gauge serial number and place of use.

Gauges can never be left unattended at the work site. Gauges left in vehicles should be double-locked and concealed with appropriate bill of lading and emergency response sheets left on the driver's seat.

Gauges cannot be left unsupervised with 3rd party gauge service personnel. If you have an individual from a gauge service company visit your facility to calibrate, service or repair your gauges you must have one of your authorized gauge operators accompany the individual at all times. They cannot be left alone with your gauges nor can they be left alone in the secured storage areas of the gauges. The service individual is not employed by your company and you have not transferred the gauge to their ownership.

You cannot let the individual remove a gauge to take to their vehicle without supervision. If a gauge is removed from storage you must adhere to all requirements of the radiation safety program.

If you are in possession of radionuclide quantities of concern (Risk Significant Radioactive Material aka RSRM) you are not allowed to let 3rd party individuals access the gauges unless they have regulatory background clearance. Look in the Appendices/Attachments for the NRC Notice.

Leak Testing

Gauges should be leak tested for contamination every 6 months and documentation placed on file.

Inventory

Hands on gauge inventory will be taken every 6 months and documentation kept on file.

Gauge maintenance

Licenses only allow for general maintenance on gauges, including removal of dirt, clays and debris from the area directly inside the base plate and from the source rod. You must have a special license to remove a source rod. Removal can only be performed by a licensed service facility.

Gauge transport

Gauges transported in a vehicle must be by a trained and authorized company employee. Gauges must be properly double-locked, blocked and braced from movement, and concealed. The driver should have immediate access to a bill of lading and emergency response sheet.

Gauges turned over to a common carrier will include the properly completed bill of lading. Always check the identification of common carrier personnel.

Gauges prepared and turned over to an air cargo company will have the required dangerous goods documentation.

Emergency procedures

Gauge workers will be trained in aspects of emergency precautions and emergency response. In the event of damage at the work site the gauge operator will respond in the following order:

- a. Attend to anyone that may have been injured.
- b. Determine the location of radioactive sources (typically the source rod)
- c. Take control and deny access to the area (15 feet in all directions)
- d. If a vehicle is involved keep it on site until it is determined that it is not contaminated
- e. Gather details about accident and damage – if possible, perform radiation survey
- f. Stay at the site but contact RSO with details
- g. If necessary, the RSO will contact the regulatory agency, manufacturer and police
- h. The RSO will give guidance on whether to move the gauge or;
- i. The RSO should travel to the site with a radiation survey meter

In the event of damage in an auto accident:

- a. Attend to injuries
- b. Deny access
- c. Gather details
- d. Contact the RSO and/or emergency response number
- e. Wait for instructions or arrival of emergency response

In the event of theft:

- a. Contact the RSO
- b. Call the regulatory agency
- c. Immediately contact the police
- d. Consider issuing a reward through the media

Investigations and corrections

Investigate all unusual occurrences involving the gauge (accident, damage, theft, oversights), determine the cause, identify corrective actions and implement such actions.

Enforcement actions and employee misconduct

Enforce all requirements of the license and stop any activities that are considered unsafe or illegal. Misconduct by any employee should be documented and corrective actions taken.

Self-Reporting

An important requirement of your license is for the RSO to self-report any violations of the gauge safety program or conditions of the license. No one is perfect and your regulatory agency understands this. Self-corrections are an important learning tool.

Self-corrections will show the regulatory agency that you conscientious and committed towards the gauge safety program. Self-corrections rarely subject you to a fine, whereas “hidden” violations are far more likely to result in a fine.

Self-corrections should include a report of the violation and corrective steps to ensure that the violation will not be repeated.

The File Drawer and Original Copies

The RSO should designate a file drawer for maintaining all of the documents required for the license. This file drawer should hold all of the original documents and be kept under lock and key. If you have to remove an original, make a photocopy and immediately return the original to the file.

There is nothing more helpful during an inspection than a neat, tidy, complete and accurate file of all of your records and it will go a long way towards a successful inspection.

RSO Recordkeeping Checklist

These documents and procedures are discussed in the Training Manual.

Specific Gauge License

The Regulations

Employee Training Records

Gauge Safety Class Certification

Gauge Field Training

U.S. DOT Hazardous Materials (HAZMAT) Training

RSO Training

Employee Annual Refresher

Notice to Employees Poster

Personnel Gauge Radiation Exposure Records – Dosimetry Records

Inventory and Gauge Receipt Records

Gauge Receipts

Inventory

Leak Test Reports

Daily Use Logs

Special Form Certificate required by IAEA – Certificate of Competent Authority

Sealed Source and Device (SSD) Sheets

Original License Application Package

Extra Labels

Type "A" Package Test Results

Radiation Safety Program

Annual Audits

Transport Documents

Field Gauge Operating Procedures

Emergency Procedure Documents/Procedures/Plans

Gauge Documents Package for File and Gauge Case

In Summary

- A. The RSO will emphasize the ALARA philosophy to workers, instruct personnel on current procedures and provide guidance on relevant changes to reduce exposures.
- B. The RSO will review dosimetry reports for all monitored personnel to determine if unnecessary exposures are being received. The RSO will investigate within 30 days the cause of any dose considered to be excessive. If warranted, the RSO will take corrective actions to prevent recurrence. A report of each investigation and the actions taken, if any, will be recorded and maintained for inspection purposes.
- C. At least annually, the RSO will conduct a formal review of the radiation protection program's content and implementation. The review will include an evaluation of equipment, procedures, dosimetry records, inspection findings, and incidents. The RSO will assess trends in occupational exposures as an index of the program's success and determine if any modifications to the program are needed. A summary of the results of each annual review, including a description of actions proposed and taken (if any) will be documented by the RSO, discussed with management, and signed and dated by both. A report on each audit will be maintained on file for 3 years from the date of the review.
- D. The RSO will provide written notifications of annual radiation exposures to all monitored personnel and will be available to respond to any questions regarding the exposure reports.

5.3 Nuclear Gauge Operators Responsibility

Operating Procedures

- If personnel dosimetry is provided:
- Always wear your assigned thermoluminescent dosimeter (TLD) or film badge when using the gauge;
- Never wear another person's TLD or film badge;
- Never store your TLD or film badge near the gauge.
- Before removing the gauge from its place of storage, ensure that, where applicable, each gauge source is in the fully shielded position and that in 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 gauge in the transport case and lock the case.
- Sign out the 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 gauge, and the temporary job site(s) where the gauge will be used.
- Block and brace the gauge to prevent movement during transport and lock the gauge in or to the vehicle. Follow all applicable Department of Transportation (DOT) requirements when transporting the gauge.
- Use the 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 gauge when the source rod is being lowered into the ground. If you must look under the 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 gauge when it is not in storage. At job sites, do not walk away from the gauge when it is left on the ground. Take action necessary to protect the gauge and yourself from danger of moving heavy equipment.
- Always keep unauthorized persons away from the gauge.
- Perform routine cleaning and maintenance according to the manufacturer's instructions and recommendations.
- When the gauge is not in use at a temporary job site, place the gauge in a secured storage location (e.g., locked in the trunk of a car or locked in a storage shed).
- Before transporting the gauge, ensure that, where applicable, each gauge source is in the fully shielded position. Ensure that in gauges with a movable source rod, the source rod is locked in the shielded position (e.g., keyed lock, padlock, mechanical control). Place the 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 gauge to its proper locked storage location at the end of the work shift.
- Log the gauge into the daily use log when it is returned to storage.
- If 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 gauge storage area (e.g., changing the location of gauges within the storage area, removing shielding, adding 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 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 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 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.
- 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:

NAME₂ WORK PHONE NUMBER₂ HOME PHONE NUMBER₂

| | | |
|-------|-------|-------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

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, it is essential that the person performing the survey be competent in the use of the survey meter.

- If 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 notifications to local authorities as well as to NRC as 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 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 limits, and when it becomes apparent that attempts to recover a 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 are found in 10 CFR 20.2201-2203 and 10 CFR 30.50.
-