

**Proposed Material License Amendments**

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**ITEM 5 Material to be Possessed**

*{No Changes}*

**ITEM 6 Purpose(s) for which licensed material will be used**

*{No Changes}*

**ITEM 7 Individual Responsible for Radiation Safety Program**

**Radiation Safety Officer (RSO): Nicholas S. Hutchinson**

*{Training Experience and Background detailed in previous amendment}*

**Duties and Responsibilities of RSO**

The RSO has independent authority to stop operations that he/she considers unsafe. The RSO has the commitment from management to spend sufficient time and fulfill certain duties and responsibilities to ensure radioactive materials are used by authorized individuals in a safe manner.

As the licensee, TES is responsible for the radiation safety program and for the actions of its employees. TES will verify periodically (by annual audits) that our licensed activities are being conducted in compliance with the NRC's regulations and the terms and conditions of our license.

The 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 and quantities of byproduct material listed on the license.
2. Individuals using gauges: are properly trained, receive refresher training at least annually, are familiar with the company's operating and emergency procedures, Department of Transportation (DOT) requirements, changes in regulatory requirements, and deficiencies identified during annual audits.
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 not in use.
5. Proper authorities are notified in case of accident, damage to gauges, fire, or theft.

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6. Audits are performed at least annually to ensure that (a) the licensee is abiding by the NRC and DOT regulations and terms and conditions of the license, (b) the licensee's radiation protection program content and implementation program achieve occupational doses and doses to members of the public that are ALARA, and (c) the licensee maintains records with all required information (e.g. records of personnel exposure, receipt & transfer, disposal, gauge user training, etc.) 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 number 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 the NRC (and other authorities, as appropriate), within required time limits.
10. Licenced material is transported in accordance with all applicable DOT requirements.
11. Licensed material is disposed of properly.
12. The RSO has up-to-date copies of NRC regulations, reviews new or amended NRC regulations, and revises license procedures, as needed to comply with NRC regulations.
13. The licence is amended whenever there are changes in licensed activities, responsible individuals, or information / commitments provided to the NRC in the licensing process.

### **ITEM 8 Training**

TES commits that, before an individual is permitted to use a gauge, the individual (a) will have successfully completed a radiation safety course conducted the gauge manufacturer or other qualified entity, (b) will have received copies of, and been trained in, the applicant's operating and emergency procedures, and (c) will have been designated as an authorized user by the RSO. Records of these qualifications are to be maintained for a minimum of three years after the individual terminates employment.

TES also commits that a refresher training course will be provided by the RSO (or other qualified instructor) to all gauge users at intervals not to exceed one year. The refresher training shall include reviewing (a) operating and emergency procedures, (b) DOT requirements, (c) changes in applicable regulations or license conditions, and (d) deficiencies identified during the performance of annual audits of the radiations safety program. Records of the annual refresher training shall

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include the date of training, list of attendees, and topics covered, and shall be maintained for a minimum of three years.

### **ITEM 9 Facilities and Equipment**

*{Detailed in previous amendment – Please refer to attached sketch “Nuclear Gauge Storage Location” for new proposed location of the gauge storage area.}*

### **ITEM 10 Radiation Safety Program**

As the licensee, TES is responsible for the radiation safety program at all facilities and for the actions of all its employees. TES will verify periodically (e.g. by annual audits) that our licensed activities are being conducted in compliance with the NRC’s regulations and the term and conditions of our license.

TES understands that it is very important to document all activities conducted under our license to demonstrate regulatory compliance. Records showing activities conducted under our NRC license will be evidence of our efforts to be in compliance. During NRC inspections, TES will need to provide records of receipt & transfer, disposal of licensed material, results of field audits, and information upon which the RSO relied in designating users.

#### **10.1 Personnel Monitoring Program**

TES commits to monitoring exposure to gauge users with personal monitoring badges when they are using gauges. The monitoring equipment will consist of TLD whole body badges, and will be processed by a properly certified supplier. Monitoring badges will be exchanged once every three months. When not in use, the badges shall be stored in an area that should not subject them to radiation exposure.

#### **10.2 Radiation Detection Instruments**

TES will have at least one radiation survey instrument capable of measuring between 0.1 mR/hr and 100 mR/hr. Each survey meter will be calibrated at intervals not to exceed one year.

#### **10.3 Leak Testing**

Leak testing will be performed at intervals not to exceed six months. Leak testing will be performed by the RSO or other qualified staff member. Leak testing will be conducted in accordance with the manufacturer’s recommendations. Analysis of leak test samples will be performed by a properly licensed and qualified laboratory. A record of leak test results will be maintained by TES.

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### **10.4 Inventories**

TES will conduct inventories, at intervals not to exceed six months, to account for all sealed sources and devices received and possessed under the license. Records of the inventories will be maintained for at least three years from the date of the inventory, and will include: the radionuclide and amount of byproduct material in each sealed source, the manufacturer's name, model number, and serial number of each device containing byproduct material, the location of each sealed source and device, and the date of the inventory.

### **10.5 Maintenance**

Maintenance for the gauges will be performed with the radioactive source in the safe shielded position in accordance with the manufacturer's directions or recommendations. Extensive maintenance that requires removal of the source from its shielded position or removal of the source rod from the device will be performed by the gauge manufacturer.

### **10.6 Transportation of Devices to Field Locations**

TES will maintain current copies of applicable DOT regulations and will continue to develop and implement procedures to comply with those requirements. Transportation of the gauges will be as previously discussed in Item 9.

### **10.7 Operating and Emergency Procedures**

TES commits to having and implementing operating and emergency procedures, as described below. TES will provide a copy of the operating and emergency procedures to each authorized user, as well as maintain a copy with each gauge.

#### **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 position and that the gauge itself is locked. Make sure the transport case is locked prior to placing the gauge in a vehicle.
2. Sign the gauge out on the sign out sheet, including initials of user, name of project(s) and project number(s), and time of signout.
3. *Never* leave the gauge unattended while in your custody.
4. Follow all applicable Department of Transportation (DOT) requirements when transporting the gauge.

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5. Do not touch the source rod with your fingers, hands, or any part of your body. Always make sure the source rod is in the shielded position after each measurement is made.
6. Always wear your assigned thermoluminescent dosimeter (TLD) or film badge when using or working around the gauge.
7. Do not use another person's TLD or film badge.
8. Never store your TLD badge near the gauge.
9. Always keep unauthorized persons away from the area where the gauge is to be used.
10. Maintain *constant surveillance* and *immediate control* of the gauge when it is not in storage.
11. Never look under the gauge when the source rod is being lowered into the ground.
12. After each measurement, return the source rod to the shielded position and lock it there.
13. 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).
14. Return the gauge to its proper storage location at the end of the work shift.
15. When the gauge is returned to storage, sign in the gauge on the log sheet. Make sure the gauge and the storage location are securely locked.

### **Emergency Procedures – Gauge Operators**

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), the following procedures should be followed:

1. Immediately secure the area around the gauge to a distance of 15 feet.
2. Prevent unauthorized personnel from entering the secured area by marking off the area of concern.
3. If any heavy equipment is involved, detain the equipment until it is determined that there is no contamination present.

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4. Notify the Radiation Safety Officer (RSO) or other manager of the situation, calling company personnel in the order listed below:

| <u>NAME</u>           | <u>MOBILE PHONE</u> | <u>HOME PHONE</u> |
|-----------------------|---------------------|-------------------|
| Nick Hutchinson (RSO) | 248-249-4265        | 734-913-9418      |
| Jeff Anagnostou       | 248-249-4249        | 734-432-2631      |
| Lami Taweel           | 248-249-4247        |                   |

5. Follow directions provided by the person contacted in Step 4.

**Emergency Procedures – RSO**

The following guidelines should be followed only by authorized individuals (RSOs) responding to an accident involving the gauge:

1. Upon notification, obtain as much information about the accident as possible, such as when and where it occurred, the individual(s) involved, and a description of the event.
2. Collect the emergency response kit and travel to the accident site as quickly as possible. The emergency response kit should include: calibrated survey meter, leak test kit (2), duct tape, plastic sheet/drop cloth, rubber gloves, plastic freezer bags, lead shot (approx. 10 lbs.), radioactive “Yellow II” stickers (2), hand trowel.
3. While remaining at the restricted area perimeter (15 feet), evaluate the extent of the damage to the gauge. Using the survey meter, determine the “background” radiation levels at 25 feet from the damaged gauge. Next, enter the restricted area and survey the device to measure the radiation levels. Visually inspect the gauge to determine if the source rod is bent or broken and if the gauge base is intact.
4. If necessary, contact the radiation safety department at Troxler Electronic Laboratories at 1-877-876-9537 for advice on how to proceed.
5. After surveying the device, it should be evident whether the source at the end of the rod is present. The radiation levels near the gauge should be higher than “background” radiation levels obtained earlier; however, if radiation levels at three feet from the damaged gauge exceed 5 mR/hr, back away from the gauge. Since the survey meter may not detect alpha radiation, the only way to verify the presence of the Am-241:Be source is to inspect the

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gauge base for damage. If the base is not broken apart, it can reasonably be assumed that the Am-241:Be source is still intact within the gauge.

6. With a moist leak test kit swab, wipe the area around the source rod tip, source well, and shutter mechanism. Move to an area 25 feet away from the gauge and survey the swab. Compare the radiation levels from the wipe sample with the "background" radiation levels obtained earlier to determine if any radioactive contamination is present. The leak test swab must then be sent in for an emergency leak test analysis.
7. If an elevated radiation level exists, you must assume that radioactive contamination is present. In such an event, TES is not authorized to recover the device. Therefore, cover the entire area with plastic sheeting to prevent the spread of contamination. Contact Troxler for further assistance.
8. If no radiation levels from the swab are detected, you may remove the device from the site. Wearing rubber gloves, remove the device from the site, and insert the gauge back into the transportation case. Pack lead shot in freezer bags around the damaged gauge to reduce external radiation levels. Survey the case to verify that the highest surface radiation levels are below 50 mR/hr and below 1mR/hr at 3 feet from the package surface. (You may need to replace the Radioactive "Yellow II" stickers if the package Transport Index has changed.)
9. Survey the ground where the device was located to verify that no radioactive contamination is present. If radiation levels in the area exceed "background" levels, cover the area with plastic sheet and await further instructions.
10. Once the gauge is returned to the office, store the gauge in a secure location. Once the leak test results confirm that there is no contamination, the device may be shipped for disposal or repair.
11. Incidents involving licensed material should first be reported to the NRC Region III Office at 1-800-522-3025 within 24 hours of the incident, and then (following their direction) to the NRC Operations Center at (301) 816-5100.

### **10.8 Annual Audit of Radiation Safety Program**

Audits of the radiations safety program will be conducted by the RSO at intervals not to exceed 12 months. The annual audit will consist of:

- Reviewing the radiation safety program to verify compliance with NRC and DOT regulations as well as the terms of the license
- Reviewing the radiation protection program to ensure that doses to employees and the general public are ALARA
- Reviewing records, including personnel exposure, transportation (sign-in/sign-out records), training, inventories, leak testing, etc.
- Reviewing employee field inspection forms to verify that all tasks have been accomplished.
- Verify that any previous deficiencies in the program are corrected.

Annual audit records will be maintained for at least three years after the record is made. TES management will review the documented results of the audit promptly after the audit is performed, and will take prompt action to correct deficiencies identified during the audit, to inform all authorized users of the deficiencies, and the actions management expects the personnel to take to avoid similar deficiencies.

### **10.9 Record Keeping for Decommissioning**

TES commits to 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. Records will be maintained for decommissioning in accordance with 30.35(g) of 10 CFR part 30 which includes maintaining records and information related to spills, leaking sources, or other unusual incidents of contamination. Records will be maintained by TES until the license is terminated.

### **ITEM 11 Waste Management**

Disposal will be by transfer of radioactive material to an appropriate person/entity who is specifically licensed to receive and possess radioactive materials.



# NUCLEAR GAUGE STORAGE LOCATION

