

Fixed Gauges
Inspection Checklist

Attachment 2.6-7 Vermont Department of Health Radioactive Materials Program Supervisory Accompaniment Inspection Checklist								
Fixed Gauges								
Licensee:		License No.:						
Licensee Contact: Telephone Number: Email Address: Last Inspection Date: Priority:								
Location (Authorized Use or Storage):		Inspection Date:						
Inspector:								
Inspection Procedure(s) used: 83822, 87124, 86740								
Type of Inspection: <table style="width: 100%;"><tr><td><input type="checkbox"/> Announced</td><td><input type="checkbox"/> Unannounced</td></tr><tr><td><input type="checkbox"/> Initial</td><td><input type="checkbox"/> Routine</td></tr><tr><td colspan="2"><input type="checkbox"/> Other:</td></tr></table>			<input type="checkbox"/> Announced	<input type="checkbox"/> Unannounced	<input type="checkbox"/> Initial	<input type="checkbox"/> Routine	<input type="checkbox"/> Other:	
<input type="checkbox"/> Announced	<input type="checkbox"/> Unannounced							
<input type="checkbox"/> Initial	<input type="checkbox"/> Routine							
<input type="checkbox"/> Other:								
<p>Please note, if you record notes on the exact location of a source that exceeds 10 percent of a Category 2 quantity, the model number, possession limits, or actual inventory, the notes should be controlled in accordance with NRC Regulatory Information Summary 2005-031.</p> <p><u>Inspection Objectives:</u></p> <ul style="list-style-type: none">• To determine if licensed activities are being conducted in a manner that will protect the health and safety of workers and the general public.• To determine if licensed activities are being conducted in accordance with Vermont Department of Health regulations. <p><u>Focus Elements:</u></p> <ol style="list-style-type: none">1. Security and Control of Licensed Materials2. Shielding of Licensed Materials3. Comprehensive Safety Measures4. Radiation Dosimetry Programs5. Radiation Instrumentation and Surveys6. Radiation Safety Training and Practices7. Management Oversight and Program Scope8. Licensed Activities Performed by Contracted Personnel								
Amendments and Program Changes (Review from last license renewal)								
Amendment #:	Date:	Amendment Item(s):						
Notes:								

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Organization	
Briefly describe the licensee's organizational structure pertaining to licensed activities.	
Organizational structure meets requirements as identified on license.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Radiation Safety Officer (RSO) identified on license. [L/C] Performs duties required of RSO. [NUREG Volume 4, § 8.7.1, L/C] To whom does the RSO report? _____ Has there been a change in the RSO? If yes, was the license amended? Has there been a change in the licensee contact person for the Department?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Identify and record all individuals in attendance at entrance meeting: Individual 1: Individual 2: Individual 3: Individual 4:	
Scope of Licensee Program	
Location of gauges identified on license. Has the mailing address or place of use changed? Has ownership changed? Was the Department notified? List the location(s) of radioactive sources/devices and identify location of inspection. List individuals interviewed at permanent and/or temporary jobsites during the inspection (**indicates those individuals in attendance at exit meeting.) Individual 1: Individual 2: Individual 3: Individual 4:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Briefly describe the licensed material program (who, what, when, how). Note: Request a copy of the licensee's most recent inventory of radioactive material.	

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Manufacturer	Model #	Serial #	Isotope	Date of Last Leak Test	Receipt Date	Transfer Date

Fixed gauges are secured and used, consistent with manufacturer’s recommendations or conditions of authorized use listed on the license? [L/C] ☐ Yes ☐ No

Manufacturer’s/distributor’s manuals for operation and maintenance for each type of fixed gauge in use are available? ☐ Yes ☐ No

Management Oversight

Management supports ALARA. [**10 CFR 20.1101**] ☐ Yes ☐ No

Management supports RSO efforts. ☐ Yes ☐ No

Are radiation protection annual audits being performed? [**10 CFR 20.1101**] ☐ Yes ☐ No

Who conducts audits? _____

Scope of audit (areas of the program licensee reviewed):

Audits are conducted at intervals not exceeding 12 months. ☐ Yes ☐ No

Audits and review records of the licensee program are being maintained. [**10 CFR 20.2102**] ☐ Yes ☐ No

Note: These records must be kept for three years after they are made.

Were deficiencies found in the program during the last two self-audits? ☐ Yes ☐ No

If yes, have the deficiencies been corrected?
Note: The inspector should look for repeat deficiencies. ☐ Yes ☐ No

Audit records were reviewed by Department inspector. ☐ Yes ☐ No

Performance Evaluation Factors (PEF)

Senior management is involved with radiation safety program and RSO oversight. ☐ Yes ☐ No

The RSO has sufficient time to perform his/her radiation safety duties. ☐ Yes ☐ No

The licensee has sufficient staffing for their program. ☐ Yes ☐ No

Adequate audits are being implemented. ☐ Yes ☐ No

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Inspection History	
Item(s) of violation cited at last inspection.	
Previous violation(s) properly corrected. If no, list those violations with an explanation.	<input type="checkbox"/> Yes <input type="checkbox"/> No
List recommendations given at last inspection.	
Did licensee address previous recommendation(s)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Staff Training Program	
Training course for gauge users provided by manufacturer.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the licensee have an equivalent course approved by the Department? [NUREG Volume 4, § 8.7.2, 10 CFR 30.33]	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, who is the trainer/instructor? _____	
Subjects/Topics covered:	
Did the course exam consist of 25-50 questions/closed book and a passing grade of 70% or above?	<input type="checkbox"/> Yes <input type="checkbox"/> No
All trained authorized users have been approved in writing by the RSO. [L/C] Note: Attach list of authorized users.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Documentation of training for authorized users is available for Department review.	<input type="checkbox"/> Yes <input type="checkbox"/> No
During Department inspection, inspector observed users performing routine maintenance on the gauges.	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, briefly describe who was interviewed and what was observed.	
Inspector observed gauges being used.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are individuals authorized to perform non-routine maintenance on gauges?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, list the individual(s) and review the documented training and procedures used.	
Are there written operating and emergency procedures?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the gauge user know what to do in case of an emergency?	<input type="checkbox"/> Yes <input type="checkbox"/> No

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Have there been any emergencies since the last inspection?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, was the Department notified?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do users have a copy of NUREG-1556 Volume 4 Appendix L and the operating and emergency procedures available to them?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Posting	
Fixed gauge locations are properly posted? [10 CFR 20.1902]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Note: Required if reading is > 5 mR/hr at 30 cm from gauge surface.	
“Caution, Radioactive Material” signs are posted where required. [10 CFR 20.1902]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is there a warning signal at or near the gauge to indicate that the shutter is open? [L/C]	<input type="checkbox"/> Yes <input type="checkbox"/> No
“Notice to Employees” is posted in an appropriate area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Rules and license are posted, or a posting indicating where these documents can be reviewed? [10 CFR 19.11]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Labeling	
Gauge device labels are attached and legible with symbols, isotope, activity, “Caution, Radioactive Material,” etc.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Authorized users have available a copy of the licensee’s “Lock Out” procedures? [NUREG 1556, Volume 4, Section 8.10.6]	<input type="checkbox"/> Yes <input type="checkbox"/> No
“Lock Out” warning signs are posted at all entryways where it is possible to be exposed.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Leak Tests	
Leak test performed on each sealed source at six-month intervals or as specified in SSD certificate? [10 CFR 31.5]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Test kit model number: _____ Kit manufacturer: _____	
The Department inspector observed or requested a demonstration of a user taking a leak test sample?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Records of leak tests are maintained for three years from the date they were created. [10 CFR 31.5]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Licensee performs own leak test. [10 CFR 31.5]	<input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, are procedures followed as described in NUREG-1556, Volume 4, Appendix I?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Leak test results are reported in becquerels or microcuries.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Report of leaking source made since last inspection?	<input type="checkbox"/> Yes <input type="checkbox"/> No

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Facilities, Materials, and Equipment	
<p>Describe use and storage area(s):</p> <p style="margin-left: 40px;">Same as described in license. [L/C]</p> <p style="margin-left: 40px;">Radioactive material, not in storage, is secured against unauthorized removal from an unrestricted area. [10 CFR 20.1802]</p> <p style="margin-left: 40px;">Adequate controls in place to prevent unauthorized access to radioactive materials that are in storage. [10 CFR 20.1801]</p> <p style="margin-left: 40px;">Survey meters are required. [L/C]</p> <p style="margin-left: 40px;">Does licensee have a survey meter available? [10 CFR 20.1501]</p> <p style="margin-left: 40px;">Surveys are performed to ensure that public dose will not exceed 100 mrem/year. [10 CFR 20.1301]</p> <p style="margin-left: 40px;">Survey records are kept for three years from date they are made. [10 CFR 20.1301]</p> <p style="margin-left: 40px;">Instruments calibrations are done at intervals not exceeding 12 months. [NUREG-1556, Volume 4]</p> <p style="margin-left: 40px;">Calibration reports are kept for three years from the date they are made.</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
Radiation Protection Procedures	
<p>Fixed gauges are used in accordance with their SSD certification.</p> <p>Operating and emergency procedures are posted for each type of fixed gauge. [NUREG-1556, Volume 4 § 8.10.6]</p> <p>Workers have an adequate understanding of the procedures and the rules for the safe use of radioactive materials and working in the vicinity of the fixed gauges.</p> <p style="margin-left: 40px;">The user understands the operating and emergency procedures manuals?</p> <p style="margin-left: 40px;">Any changes in operating and emergency procedures since the last inspection?</p> <p style="margin-left: 40px;">Were changes authorized by the Department?</p> <p style="margin-left: 40px;">If yes, describe the changes:</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
Receipt and Transfer of Radioactive Materials	
<p>Describe how fixed gauges are received, including who installs them.</p> <p style="margin-top: 20px;">The licensee has package receipt procedures in place?</p>	<p></p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>

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Transfer of radioactive material is authorized? [10 CFR 30.41]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Records of receipts, transfers, and disposals of licensee's radioactive material are maintained for three years? [10 CFR 30.51]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Independent Survey Measurements by the Department Inspector	
Inspector performed independent confirmatory measurements. If yes, record: Highest radiation level in an unrestricted area: _____ mR/hr Highest radiation level at 30 cm from a storage cabinet: _____ mR/hr Highest radiation level at 10 cm from device surface: _____ mR/hr Reading at external surface of transport container: _____ mR/hr Inspector's survey instrument(s) used: Mfg./Make: Model #: Serial #: Last calibration date:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Licensee survey instrument (if available): Mfg./Make: Model #: Serial #: Last calibration date: Describe inspector instrument readings as compared to licensee instrument readings. Radiation levels in all unrestricted areas do not exceed 2 mrem in any one hour or 100 mrem/year.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Personnel Monitoring	
Is dosimetry provided to workers? <input type="checkbox"/> Film <input type="checkbox"/> TLD <input type="checkbox"/> OSL <input type="checkbox"/> Other Frequency of dosimetry reports? <input type="checkbox"/> Monthly <input type="checkbox"/> Quarterly Dosimetry supplier: _____ Supplier NVLAP certified? [10 CFR 20.1501]	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No

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<p>Monitoring results reviewed by licensee:</p> <p style="padding-left: 40px;"><input type="checkbox"/> Monthly <input type="checkbox"/> Quarterly <input type="checkbox"/> Annually</p> <p>Personnel occupational dose records are maintained?</p> <p style="padding-left: 40px;">Monitoring results are reported in Sv or rem. [10 CFR 20.2101]</p> <p>Inspector reviewed personnel monitoring records, from _____ to _____.</p> <p style="padding-left: 40px;">Maximum DDE: _____ mSv _____ mR</p> <p style="padding-left: 80px;"><input type="checkbox"/> Month <input type="checkbox"/> Quarter <input type="checkbox"/> Annual</p> <p style="padding-left: 40px;">Maximum SDE: _____ mSv _____ mR</p> <p style="padding-left: 80px;"><input type="checkbox"/> Month <input type="checkbox"/> Quarter <input type="checkbox"/> Annual</p> <p>Did any worker's occupational dose exceed regulatory limits? [10 CFR 20.1201]</p> <p>Is licensee retaining records of personnel occupational dose? [10 CFR 20.2104] Note: Licensee must keep records until department terminates license.</p> <p>Is public access to gauges controlled in a manner that keeps the doses below 2 mrem in any one hour and 100 mrem/year? [NUREG-1556, Volume 4 § 8.10.5]</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
Instructions to Workers	
<p>Training is provided to all individuals who are likely to receive an occupational dose >100 mrem/year.</p> <p style="padding-left: 40px;">Monitored personnel are kept informed of their occupational exposures. [10 CFR 19.12]</p> <p style="padding-left: 40px;">Workers are provided refresher training as needed.</p> <p>Required monitoring records are maintained for three years. [10 CFR 20.2102]</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
Notifications and Reports	
<p>Does the licensee provide all gauge users with an annual written report of their radiation exposure? [10 CFR 19.13]</p> <p style="padding-left: 40px;">The occupational radiation exposure reports are maintained?</p> <p>At termination of employment, are exposure records available to workers upon request? [10 CFR 19.13]</p> <p>Incidents since the last inspection</p> <p style="padding-left: 40px;">Has any licensed material been lost or stolen? [10 CFR 20.2201]</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>

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Have there been any occupational overexposures or excessive levels of radiation?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Any other incidents?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Describe the root cause and corrective actions taken for each incident.	
Have all reportable incidents been reported?	<input type="checkbox"/> Yes <input type="checkbox"/> No
The RSO and all authorized users are aware of the Department's emergency telephone number. [Note: The Department's 24-hour emergency number is 802-863-7220.]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Transportation of Radioactive Materials	
Does the licensee make shipments of radioactive material? [49 CFR 173]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are security and all applicable regulations followed? [49 CFR 172]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are shipments made through common carriers? [49 CFR 172]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are shipments transported in private vehicles? [49 CFR 177 & 49 CFR 390-397]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Shipments made since last inspection? If yes, complete the rest of this section.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are devices packaged and shipped according to regulatory procedures? [49 CFR 172-173]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Package type used for shipping: _____ [49 CFR 173.411]	
Package/container meets design requirements. [49 CFR 173.410]	<input type="checkbox"/> Yes <input type="checkbox"/> No
DOT 7A or other authorized packages are used for shipping. [49 CFR 173.415(a)]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Package has two labels (e.g., Yellow-II, TI, nuclide, activity, hazard class, etc.)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Activity per gauge does not exceed A-1 limit. [49 CFR 173.424(b)]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Activity per package does not exceed A-1 limit. [49 CFR 173.424]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Radiation levels at 10 cm from surface of the device read less than 10 mR/hr. [49 CFR 173.424(d)]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Radiation levels at the external surface of the package read less than 2 mR/hr. [49 CFR 173.424(f)]	<input type="checkbox"/> Yes <input type="checkbox"/> No

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<p>All proper shipping requirements are met (shipper's name, RQ, description, hazard class, UN number, etc.)</p> <p>Emergency procedures and response telephone number(s) are available. [49 CFR 172.604]</p> <p>Shipping papers readily available during transportation? [49 CFR 177.817(e)]</p> <p>Special form sources documentation on file.</p> <p>Vehicle placarded as required (Yellow III if TI > 1.0.) [49 CFR 172.504(a)] Note: Only required with Yellow III labels.</p> <p>Proper over-packs used and labeled. [49 CFR 173.25]</p> <p>Driver has HAZMAT training? [49 CFR 172.704]</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>
Security Inspection	
<p>On-site Security Review: If this licensee is authorized for possession of material equal to or exceeding the Category 2 threshold, complete an on-site security review per 10 CFR 37.43.</p> <p>If yes,</p> <p>Licensee Contact Name:</p> <p>Contact Telephone Number:</p> <p>Contact Email Address:</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> N/A</p>
Summary of Observations, Findings, and Conclusions	
<p>Business Operations:</p> <p>Facility – Visit all storage and use locations identified on the application.</p> <p>Radiation Safety Operations.</p> <p>Personnel.</p> <p>Overall Assessment</p> <p>Note: If there is not sufficient information to conclude that licensed material will be used as specified on the license, immediately notify Department supervision.</p>	
License Conditions/Tie-downs	
<p>Were all license conditions reviewed by Department inspector?</p> <p>Are the licensee's activities conducted in accordance with license conditions?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>

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Bulletins and Information Notices	
Is the licensee reviewing the Department bulletins and information notices?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Has the licensee taken appropriate action in response to the bulletins and notices?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Exit Meeting at Conclusion of Inspection	
<div style="display: flex; justify-content: space-between;"><div style="width: 60%;">Identify and list the individuals in attendance:</div><div style="width: 35%;">Date Meeting Conducted:</div></div> <div style="margin-top: 20px;">List those issues discussed at the exit meeting.</div>	
Summary of Violations and Recommendations	