# Gauge Area Surveys

REGULATION: 10 CFR 20.1501

Area radiation surveys serve three primary safety functions which are to:

1. Create a basis for assessing public dose estimates
2. Verify area dose rates do not allow individuals to receive more than 2 mRem (0.02 mSv/hr) of accumulated dose in any one hour
3. Verify there is no contamination present

# When are Gauge Area Surveys Required?

Area radiation surveys are required whenever non-routine operations are performed. Non-routine operations include the following list of activities:

- Installation of a Gauge
- Initial Survey
- Relocation
- Removal from Service
- Dismantling
- Alignment
- Replacement
- Disposal of Sealed Source
- Non-Routine Maintenance & Repair Activities Related to the Radiological Safety of the Gauge
- Gauge Failure Investigation
- Surrounding Area Changes
- Gauge Storage Area
- Shipping Radioactive Material/Gauges
- Emergencies

# Who is Authorized to Perform Surveys?

- Any time an area survey is required as identified in the list just shown, it must be performed by a trained person who works for a company that is specifically authorized by the NRC or Agreement State.
- Gauge operators; however, are encouraged to have one or more survey meters on hand where trained users can also conduct unofficial surveys or spot checks to verify radiation fields are all normal and that no anomalies exist.

# Performing a Gauge Area Survey

# Elements of a Good Survey

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208-206-3203
U.S. NRC License # 11-35111-01

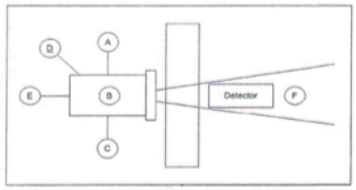
**Radiation Field Survey and Gross Contamination Survey**

| | | | |
|---|---|---|---|
| Manufacturer: | Thermo Fisher | Survey Meter: | S.E. International |
| Model: | 5203 | Model: | Inspector + |
| Serial Number: | XXXX | Serial Number: | XXXX |
| Isotope: | Cs-137 | Cal Date: | 11/16/2018 |
| Activity: | 1000 mCi | Cal Due Date: | 11/16/2019 |
| | | Background: | .02 |

**Gross Contamination Check:** PASS ✓ FAIL
**Shutter Check:** PASS ✓ FAIL

**Radiation Field Survey:**

A: 0.715 mR/hr
B: 1.01 mR/hr
C: 1.24 mR/hr
D: 1.40 mR/hr
E: 0.705 mR/hr
F: Could not reach




**Notes**There is a chain running through the eyebolt on top of the source holder and attached to a beam above to prevent source holder from falling to the ground.

Member of Public Dose Calculation: Gauge is located very high and is inaccessible. Dose rate is at background.

Occupational Dose Calculation: 10 min X 2 times/yr X 1.4 = .47 mR/yr dose.

Signature: Date: 4/25/2019
Surveyed and Certified by Jon O'Rullian

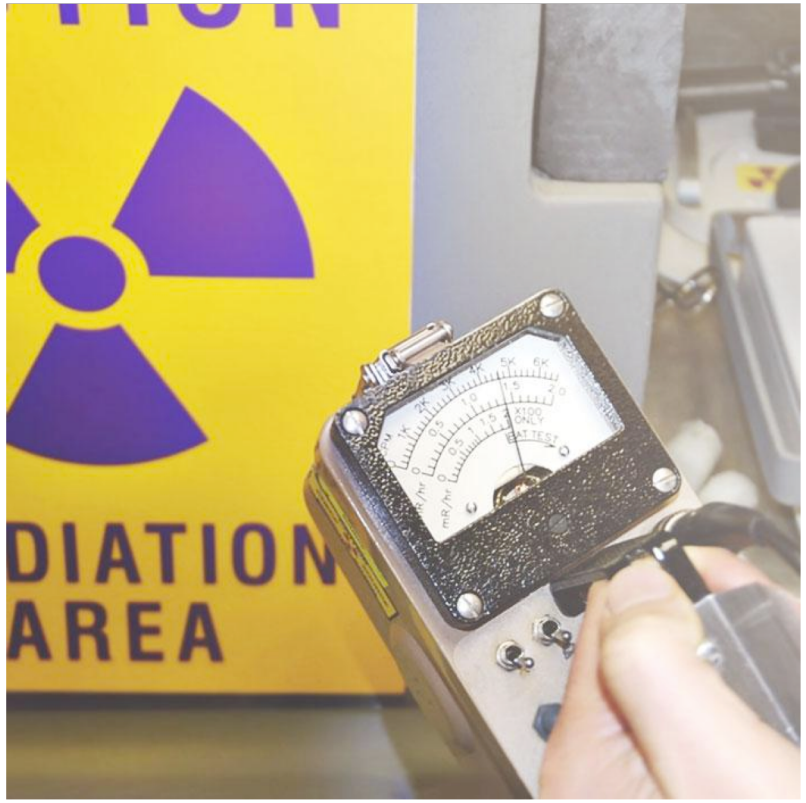
A good survey report should include the following elements:

1. Area or gauge description. Gauge descriptions should include make, model, serial number, isotope and activity.
2. Survey meter information including make, model, serial number, calibration date and next calibration due date
3. A diagram of the area, points where a measurement were taken and their respective values
4. Notes describing conditions or any abnormalities
5. An occupational dose calculation based upon the highest reading
6. Identification and signature of surveyor including which organization they belong to
7. Date of the survey

# Records Storage Requirements

- Licensees are required to maintain records of official survey results and store them for **3 years** after the record is made (10 CFR 20.1501).
- If the survey results are used in the assessment of individual dose equivalents in lieu of personnel dosimetry, the licensee must maintain and store the records until termination of the license (10 CFR 2103).

# Conclusion




- Radiation surveys are the only way operators can be certain they are compliant with regulations and more importantly ensuring the radiation levels are safe.
- The RSO has direct responsibility to ensure all radiation levels remain safe at all times independent of who conducts the survey.

This completes this section.
Proceed to the next one when you are ready.

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