

SECTION 5.13

COLLIMATED GAMMA SCINTILLATION DETECTOR CHECK-OUT

1.0 Purpose

To describe the procedure for performing the operational check-out of collimated gamma scintillation detectors.

2.0 Responsibilities

- The site coordinator is responsible for assuring that this procedure is implemented.
- Survey Team personnel are responsible for following this procedure.

3.0 Procedure

3.1 Equipment

- ✓ Portable ratemeter-scaler: Model 2200, Ludlum Instrument Co.; or equivalent.
- ✓ Scintillation detector: Model 489-55, Victoreen Instrument Co.; or equivalent.
- ✓ Lead collimator for scintillation detector, approximately 1 cm thick with four 2.5 cm x 7 mm slots at the detector midpoint, ORISE design.
- ✓ Cable: C-MHV; or other connectors, as applicable.
- ✓ Record forms.
- ✓ Check source.

3.2 Instrument/Detector Assembly and Operational Check-out

- 3.2.1 Assemble the scintillation detector/collimator and attach to the ratemeter-scaler.
- 3.2.2 Turn on, check batteries, and replace if necessary.
- 3.2.3 Adjust the high voltage to 900 V and the threshold to 10 mV.
- 3.2.4 Prepare a daily Instrument Operational Check-out Form (Figure B-1 or equivalent). Determine and record the instrument background count rate on the first data line.

3.2.4.1 Position a gamma check source over one of the slots on the collimator. Determine the check source response count rate and $\pm 10\%$ variation of the check source response.

3.2.4.2 Record the check source response count rate on the first data line. Also enter the acceptable range limits for the check source.

NOTE: This same check source and form accompany the instrument to the survey site.

3.3 Site Operational Check-Out

Site operational check-out is performed in accordance with Section 5.1.