

## SECTION 5.11

### FLOOR MONITOR CHECK-OUT

#### 1.0 Purpose

To describe the procedure for operational check-out of floor monitors.

#### 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 2221, Ludlum Instrument Corporation; or equivalent.
- ✓ Proportional detector: Model 43-37, Ludlum Instrument Company; or equivalent.
- ✓ Floor monitor cart: model 239-1, Ludlum Instrument Company; or equivalent.
- ✓ Cable: C-C; or other connectors, as applicable.
- ✓ Record forms.
- ✓ Check source.

The floor monitor is used only for qualitative determinations and locating areas of surface contamination. It is not used as a measuring device.

##### 3.2 Procedure for Operation and Operational Check out in the Alpha Mode

3.2.1 Attach the detector to the ratemeter-scaler.

3.2.2 Turn on instrument, check batteries, and replace if necessary.

3.2.3 Set threshold to 100 (10.0 mV).

3.2.4 Set the high voltage to the detector-specific level. Operating voltage is determined based on plateau curves that are prepared once a year. Files are

kept in the instrument room. The voltage will usually be about 1250 V (see 3.3 of Section 5.6).

- 3.2.5 Attach P-10 gas supply and detector outlet hoses to flow meters. Refer to operating manual.
- 3.2.6 Turn on main bottle valve and adjust flow rate to approximately 100 cc/min. Allow to purge for 10 minutes.
- 3.2.7 Decrease flow rate to 40-60 cc/min and purge for at least 20 minutes.
- 3.2.8 Place an alpha check source beneath the detector. Note source count rate.
- 3.2.9 Note source count rate 2 minutes later. If count rate varies by greater than  $\pm 10\%$  continue purging and checking until the rate is stabilized. If second count is within  $\pm 10\%$  of first count, unit is adequately purged and ready for use. Record both purge check values on the Instrument Operational Check-out Form (Figure B-1 or equivalent). Record the acceptable check source response range as  $\pm 10\%$  of the second source count. Document floor monitor head configuration and source placement or use jig/spacers to reproduce source-to-detector distance and solid angles for subsequent operational check-outs.

**NOTE:** This check source and form are to accompany the instrument to the field survey site.

- 3.2.10 Remove source and record background count rate on the Instrument Operational Check-out Form (Figure B-1 or equivalent). Background response provides indication of detector contamination. Background response also is used to bound both a *priori* and *post-priori* scan MDCs.
- 3.2.11 Turn on speaker unit and check audible response, with and without headphones connected.
- 3.2.12 When initially checking out equipment on-site, at the start of each workday, midday (if site logistics permit for the check source), and end of the workday, perform a one-minute background count followed by a one-minute check source count. Record both values on the Instrument Operational Check-Out Form (Figure B-1 or equivalent) and compare with acceptable response ranges.
- 3.2.13 If operation in "static" mode is necessary, disconnect hoses from the detector and turn off main gas valve. If continuous flow is to be used, the flow rate may remain at approximately 40 cc/min.

- 3.2.14 Unit should maintain a purge for approximately two (2) hours following purging. Recheck source response about every 15 minutes while operating in static mode. If count rate drops by more than 25%, repurge detector.

**NOTE:** Remove the gas tank and detector head from floor monitor before transporting. Appropriate shipping papers must accompany the P-10 gas during transport (see Section 10.0).

### 3.3 Procedure for Operation and Operational Check-out in the Alpha-Beta Mode

- 3.3.1 Attach the detector to the ratemeter-scaler.
- 3.3.2 Turn on, check batteries, and replace if necessary.
- 3.3.3 Set threshold to 100 (10.0mV).
- 3.3.4 Set the high voltage to the detector-specific level. Operating voltage is determined based on plateau curves that are prepared once a year. Files are kept in the instrument room. The voltage will usually be about 1750 V (see 3.3 of Section 5.6).
- 3.3.5 Attach P-10 gas supply and detector outlet hoses to flow meters. Refer to operating manual for specific instructions.
- 3.3.6 Turn on main bottle valve and adjust flow rates to approximately 100 cc/min. Allow to purge for 10 minutes.
- 3.3.7 Decrease flow rate to 40-60 cc/min and purge for at least 20 minutes.
- 3.3.8 Place a beta check source beneath the detector. Note source count rate.
- 3.3.9 Note source count rate 2 minutes later. If count rate varies by greater than  $\pm 10\%$  continue purging and checking until the rate is stabilized. If second count is within  $\pm 10\%$  of first count, unit is adequately purged and ready for use. Record both purge check values on the Instrument Operational Check-out Form (Figure B-1 or equivalent). Record the acceptable check source response range as  $\pm 10\%$  of the second source count. Document floor head configuration and source placement or use jig/spacers to reproduce source-to-detector distance and solid angle for subsequent operational check-outs.

**NOTE:** This check source and form are to accompany the instrument to the field survey site.

- 3.3.10 Remove source and record background count rate on the Instrument Operation Check-out Form (Figure B-1 or equivalent). Background response

provides indication of detector contamination. Background response also is used to calculate both a priori and post priori scan MCDs.

- 3.3.11 Turn on speaker unit and check audible response with and without headphones attached.
- 3.3.12 When initially checking out equipment on-site, at the start of each workday, midday (if site logistics permit for the check source), and end of the workday, perform a one-minute background count followed by a one-minute check source count. Record both values on the Instrument Operational Check-Out Form (Figure B-1 or equivalent) and compare with acceptable response ranges.
- 3.3.13 If operation in "static" mode is necessary, disconnect hoses from the detector and turn off main gas valve. If a continuous flow is to be used, the flow rate may remain at approximately 40 cc/min.
- 3.3.14 Unit should maintain a purge for approximately two hours following purging. Recheck source response about every 15 minutes. If count rate drops by more than 25%, repurge detector.

**NOTE:** Remove the gas tank and detector head from floor monitor before transporting. Appropriate shipping papers must accompany the P-10 gas during transport (see Section 10.0).