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C-A OPERATIONS PROCEDURES MANUAL

8.36.3 Calibration of the GasTech 95 Series Personal Oxygen Monitor

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Attachments

Hand Processed Changes

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Approved: _____ *Signature on File* _____
Collider-Accelerator Department Chairman Date

A. Etkin

8.36.3 Calibration of the GasTech 95 Series Personal Oxygen Monitor

1. Purpose

1.1 This procedure details the process to be used to calibrate the GasTech 95 Series Personal Oxygen Monitor.

2. Responsibilities

2.1 The C-A Gas Monitor Calibrator shall annually set the zero of the GasTech 95 Series Personal Oxygen Monitor. In addition, the check of helium sensitivity shall be performed.

2.2 The C-A Gas Monitor Calibrator shall record all data on the GasTech 95 Series Personal Oxygen Monitor Calibration Record Sheet [[C-A-OPM-ATT 8.36.3.a](#)], record data in the calibration database, and attach updated calibration label.

3. Prerequisites

3.1 Oxygen Monitor Zero Kit containing:

3.1.1 Cylinder of Nitrogen or Helium gas (>99.99% Pure).

3.1.2 Regulator with flow meter set to a rate of 0.5 LPM for cylinder in 3.1.1

3.1.3 Calibration adapter for the GasTech 95 Series Personal Oxygen Monitor

3.1.4 Non-adsorbent tubing

3.2 Helium Sensitivity Check Kit containing:

3.2.1 Cylinder of 10% He balance air mixture (analyzed to 2%)

3.2.2 Fixed Flow Regulator with flow rate of 0.5 LPM for cylinder in 3.2.1

4. Precautions

4.1 This procedure shall be performed in a ventilated location with an exhaust to the outside.

5. Procedures

5.1 Normalize sensor readings to fresh air by

5.1.2 In a fresh air environment turn on the GasTech 95 Series Personal Oxygen

5.1.3 Monitor by sliding the Power Switch toward the sensor, fig. 1.

5.1.4 Press and hold the Span [S] button for approximately five seconds, until PASS is displayed, to allow the monitor to set the span for the Oxygen readings [20.9%].

5.2 Assemble the calibration kit for the GasTech 95 Series Personal Oxygen Monitor by

5.2.1 Snap the adapter over the sensor area, fig 1, the gas inlet should extend to the right across the top of the monitor.

5.2.2 Attach the tubing to the Calibration adapter.

5.2.3 Attach the regulator to the cylinder of Nitrogen or Helium gas.

5.2.4 Attach the tubing to the regulator output.

- 5.3 To set the span reading [zero Oxygen reading]
 - 5.3.1 Assemble the calibration kit as per 5.2.
 - 5.3.2 Flow gas for ~ 2 min.
 - 5.3.3 With the GasTech 95 Series Personal Oxygen Monitor on, press and hold the Zero button until PASS is displayed.
 - 5.3.4 Turn off the gas flow and remove the adapter.
 - 5.3.5 Wait 90 seconds and normalize sensor readings as per 5.1.

- 5.4 To perform the check of helium sensitivity
 - 5.4.1 Normalize sensor readings as per 5.1.
 - 5.4.2 Assemble the calibration kit as per 5.2 excerpt use the 10% Helium in air mixture [18.8% Oxygen] cylinder instead of the calibration gas cylinder.
 - 5.4.3 Flow gas for ~ 2 min.
 - 5.4.4 Record the Oxygen reading on the calibration record sheet.

- 5.5 To verify the alarm settings
 - 5.5.1 With the GasTech 95 Series Personal Oxygen Monitor on, press the Zero and Span to display the low alarm [19.5%]
 - 5.5.2 Repeat 5.5.1 to display the high alarm [23.5%]
 - 5.5.3 Repeat 5.5.1 to display alarm delay [3]
 - 5.5.4 Repeat 5.5.1 to return to normal display
 - 5.5.5 To adjust a setting, use the Zero to decrease and the Span to increase the value.

- 5.6 Verify that in fresh air the Oxygen reading is 20.9% \pm 0.1%

- 5.7 Upon successful completion of this procedure, attach a new calibration label and record appropriate data in the calibration database. Calibration labels are available through BNL Stock Number S-33844, or equivalent.
 - 5.7.1 Upon failure of any steps within this procedure, document failure on record sheet, repair GAS monitor as per manufacturers instruction, and re-perform calibration procedure.

6. **Documentation**

- 6.1 Calibration database records shall be maintained for a minimum of three (3) years.

7. **References**

- 7.1 The GasTech 95 Series Personal Oxygen Monitor Operator's Guide
- 7.2 C-A-OPM 13.8.2, "Calibration".

8. **Attachments**

- 8.1 [C-A-OPM-ATT 8.36.3.a "GasTech 95 Series Personal Oxygen Monitor Calibration Record Sheet"](#).

Fig. 1

