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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
 - 5.1.1. In a fresh air environment turn on the GasTech 95 Series Personal Oxygen Monitor by sliding the Power Switch toward the sensor, fig. 1.
 - 5.1.2. 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 except 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

