PS1 SAMPLER CALIBRATION INSTRUCTIONS

SECTION I - ADMINISTRATIVE DATA

1. **Sampler ID** – Unique ID of sampler (e.g. serial number or MMCN number)
2. **Location** – Camp or location of calibration
3. **Country** – Country in which location or camp is located.
4. **Operation** – Name of operation ongoing in the area of the sample [e.g. Operation Allied Force (OAF), etc] if applicable
5. **Calibration Date** – Date calibration was conducted
6. **Julian Day** – Corresponding year specific Julian day calibration was conducted. The database can be used to calculate the Julian day of the year.
7. **Operator** – Name of person conducting the calibration.
8. **Ambient Temperature (Ta)** - Ambient temperature at the time of calibration in °C
9. **Ambient Pressure (Pa)** - Atmospheric pressure at the time of calibration in inches of mercury (in Hg)
10. **Orifice Calibration SN** – The serial number of the calibration orifice
12. **Intercept (Boc)** – Slope of Orifice Calibration curve.
13. **Correlation Coefficient (Roc)** – Slope of Orifice Calibration curve.
14. **Calibration Notes** – General notes on the calibration

SECTION II – SAMPLER CALIBRATION DATA

16. **Reading** – Calibration reading number predetermined to be (1, 2, 3, 4, 5, and 6).
17. **Magnehelic Reading** - Magnehelic reading from sampler, predetermined to be (5, 10, 15, 20, 25, and 30)
18. **Manometer Reading (Horifice)** - Manometer reading from the calibration orifice for each magnehelic flow setting in inches of water
19. **Qstd (X-Axis)** - derived from the orifice calibration relationship using the following equation:

\[
Q_{std} = \sqrt{\frac{\text{Manometer} \times \frac{Pa \times 25.4}{760} \times \frac{298}{Ta + 273}}{Moc}} - Boc
\]

20. **Mstd (Y-Axis)** - Magnehelic reading corrected to standard temperature and pressure using the following equation:

\[
M_{std} = \sqrt{\frac{\text{Magnehelic} \times \frac{Pa \times 25.4}{760} \times \frac{298}{Ta + 273}}{Moc}}
\]

**Conduct linear regression of Qstd (X-axis) and Mstd (Y-Axis), either by using regression worksheet, calculator or spreadsheet to obtain sampler calibration:**

Slope (Msc), Intercept (Bsc) and Correlation Coefficient (Rsc) if \(Rsc < 0.98\) calibration must be redone.

21. **Q'std (Derived Flow)** - Standard flow calculated using the following equation:

\[
Q'_{std} = \frac{(M_{std} - Bsc)}{Msc}
\]

22. **%Deviation** - Percent deviation from \(Q'_{std}\) and \(Q_{std}\) Orifice

\[
\%Deviation = \frac{(Q_{std} - Q'_{std})}{Q'_{std}} \times 100
\]

If % deviation is greater than 4% calibration must be redone.

23. **Slope (Msc)** – Sampler calibration slope derived from linear regression
24. **Intercept (Bsc)** – Sampler calibration intercept derived from linear regression
25. **Correlation (Rsc)** – Correlation coeff of calibration

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