QA/QC Requirements for Opacity Monitors

EPRI 2013 CEMS User Group Conference
Raleigh, NC – May 8, 2013

By Dru Sanders
RMB Consulting & Research, Inc.

QA/QC for COMS

- Currently No Federal Requirement for Ongoing QA/QC Requirements for COMS
- Requirements Vary From State to State
- COMS QA/QC Originally Proposed (Method 203) – 1992
- EPA Decided to Completely Redraft Method – 2001
- Re-proposed as Procedure 3 (App. F, Part 60) – 2003

QA/QC for COMS

- Procedure 3 Published In Federal Register as Direct Final Rule on 2/14/2012
- Compliance Required Beginning 4/16/2012
- EPA Withdraws Rule Due to Adverse Comments
- Anticipated That EPA Would Reissue Procedure 3 in 2013
- Presentation Should Provide Overview of Requirements & Level of Effort For Compliance

Proposed Procedure 3

- **Quality Assurance Requirements for Continuous Opacity Monitoring Systems (COMS) at Stationary Sources**
- **"Applies to COMS used to demonstrate continuous compliance with opacity standards in federally enforceable regulations"**
  - **Concern for State regulations with blanket Part 60 Appendix F references**

Proposed Procedure 3

- **Performance Specification 1 (PS-1) References – May Be a Concern for Pre-2001 COMS**
- **Daily, Quarterly & Annual QA Requirements**
  - **Daily Zero/Upscale Drift and Status Indicator Checks**
  - **Quarterly Optical Alignment Check, Zero Compensation Check, and Calibration Error Test (Filter Audit)**
  - **Annual Zero Alignment Check**
- **Data Capture Requirements**

Daily QA/QC

- **Daily Calibration Drift Test**
  - **Zero and upscale calibration**
  - **Out-of-control if CE > 4.0%**
- **Daily Status Indicator Check**
  - **Data invalid if indicators are “illuminated”**
  - **Initiate corrective action**

Quarterly QA/QC

- **Optical Alignment Check**
  - **Stack temperature ± 50% typical operating temperature**
  - **Out-of-control if alignment > 3% opacity**
  - **Data validation**
- **Zero Compensation Check**
  - **Out-of-control if zero compensation > 4% opacity**

Quarterly QA/QC

- **Calibration Error Test**
  - **References PS-1 procedures**
  - **Three (3) nonconsecutive readings for each of the three (3) filters**
  - **Filters calibrated every six (6) months**
  - **Out-of-control if CE > 3% opacity**
- **May Request Semi-Annual Test Frequency For Quarterly Audits**

Annual QA/QC

- **Primary Zero Alignment Check**
  - **Off stack or on stack**
  - **On stack clear path demonstration**
  - **Out-of-control if zero alignment error > 2% opacity**
  - **Off stack zero alignment check required at least once every three (3) years**

Annual QA/QC

- **Alternate Zero Alignment Check**
  - **Use external COMS specific zero-jig**
  - **Record initial zero-jig response, then conduct zero alignment procedure**
  - **If zero-jig is adjusted, must conduct an off stack zero alignment check**

QA/QC Corrective Action

- **Revise Procedures or Repair/Replace COMS, If COMS Fails:**
  - **Two consecutive annual audits**
  - **Two consecutive quarterly audits**
  - **Five consecutive daily checks**

Data Capture Requirements

- **Must Capture Data For At Least 95% of the Operating Hours Per Calendar Quarter (Section 10.4(4))**
  - **Out-of-control data not used**
  - **Excludes downtime associated with required QA/QC procedures**
- **40 CFR 60.13(h)(1)**
  - **6-minute avg. calculated from 36 or more equally spaced data points**

Temporary COMS Replacement

- **May Use Temporary COMS Replacement**
  - **COMS ASTM D 6216 certified**
  - **Limited to 720 hours (30 days) per year**
  - **May not install a second temporary COMS**
  - **Complete full PS-1 certification after 720 hours**

Temporary COMS Replacement

- **Temporary COMS Test Requirements**
  - **Off-stack clear path assessment**
  - **Optical alignment check**
  - **7-day calibration drift test (Abbreviated)**
    - **Conducted within 24-hr period & no more than one (1) calibration every three (3) hours, and**
    - **Not less than one (1) calibration every 25 hours**
  - **Calibration error test**

Corrective Action Requirements

- **Rule Identifies Five (5) Maintenance Classes**
  - **Routine/Preventive Maintenance**
  - **Measurement Non-Critical Repairs**
  - **Primary Measurement Light Source**
  - **Measurement Critical Repairs**
  - **Measurement Critical Repairs (Not Optics)**
- **Part 75 Diagnostic Test Concept**

Corrective Action Example

- **Primary Light Source Repair Requires:**
  - **Daily Calibration Drift Test**
  - **Fault Indicator Check**
  - **Optical Alignment Check**
  - **Zero Alignment Check**
  - **Calibration Error Check**

Recertification Requirements

- **Rebuild or Substantially Refurbish COMS**
  - **Replace "major sub-assembly or lesser sub-assemblies with different revision levels…"**
- **Change To, or Addition of COMS Components Which May Affect MCOC Performance Parameters**
- **Complete PS-1 Certification**

General Requirements

- **Develop Written QA Plan**
- **Written Procedures Available for Inspection**
- **Quarterly Data Assessment Report (DAR)**
  - **References DAR in Procedure 1**
  - **Monitor availability**
  - **QA/QC test results**
  - **Corrective actions taken**

Procedure 3 Issues

- 720 Operating Hours (30 Days) – Clarify to 720 Unit Operating Hours
- Monitor Availability Requirements
- Disconnect Between Hourly Availability & 6-minute Average Requirements
- No Conditionally Valid Data Procedures
- PS-1 References