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February 4, 2009

Environmental Protection Agency
EPA Docket Center, Mailcode: 6102T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attention: Docket ID No. EPA-HQ-OAR-2006-0640

Dear Sir or Madam:

The Interstate Natural Gas Association of America (INGAA), a trade association of the interstate natural gas pipeline industry, submits these comments on U.S. EPA's proposed rule, *Performance Specification and Quality Assurance Requirements for Continuous Parameter Monitoring Systems and Amendments to Standards of Performance for New Stationary Sources; National Emission Standards for Hazardous Air Pollutants; and National Emission Standards for Hazardous Air Pollutants for Source Categories*. The proposed rule was published in the Federal Register on October 9, 2008 at 73 FR 59956 – 60005. A subsequent notice at 73 FR 73629 extended the comment deadline to February 5, 2009.

INGAA is interested in this proposal and providing these comments because INGAA members operate equipment that requires continuous parameter monitoring systems (CPMS) for compliance assurance. The proposed requirements in 40 CFR 60, Appendix B, Performance Specification 17 (PS 17) and 40 CFR 60, Appendix F, Procedure 4 (Procedure 4) will affect INGAA member operations. INGAA comments below discuss our concern that unnecessarily stringent audit requirements will result in unwarranted operational costs, and alternative requirements should be included for simple measurements such as temperature that have been reduced to standard practice over many years of use.

INGAA member companies transport more than 90 percent of the nation's natural gas, through some 180,000 miles of interstate natural gas pipelines. INGAA member companies operate over 6,000 stationary natural gas-fired spark ignition reciprocating internal combustion engines (RICE) and 1,000 stationary natural gas-fired combustion turbines, which are installed at compressor stations along the pipelines to transport natural gas to residential, commercial, industrial and electric utility customers. INGAA member companies have a history of working with the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) on Part 60 and Part 63 standards that affect equipment used in natural gas transmission and storage, including stationary RICE and combustion turbines, and dehydration units in natural gas transmission and storage to remove moisture. Representatives from INGAA member companies served on the Federal Advisory Committee, known as the Coordinating Committee, established for the Industrial Combustion Coordinated Rulemaking (ICCR) for the development of combustion standards. INGAA members served as Chair of the RICE Work Group under ICCR, as a member of the Combustion Turbine MACT Work Group, and as a member of the Boilers/Process Heaters Work Group. In supporting the development of MACT standards and New Source Performance Standard (NSPS), INGAA members have provided data and input integral to the technical foundation of these important regulations.

The Proposed Rule models requirements after those required for Continuous Emission Monitoring Systems (CEMS). The current version of Appendix B to 40 CFR 60 includes performance specifications for CEMS (i.e., for NOx, CO, etc.) and Appendix F provides quality assurance (QA) procedures for CEMS. Appendix B addresses the procedures used to validate a CEMS and Appendix F provides ongoing QA requirements, including the frequency for repeating Appendix B procedures. The Proposed Rule would amend Appendix B by adding PS 17, and amend Appendix F, primarily through the addition of Procedure 4. Other changes are proposed to Part 60 and Part 63 General Provisions and some subparts to ensure consistency and address CPMS criteria that differ from the current rules. INGAA is concerned that the CEMS legacy procedures introduce unwarranted burden for parameter monitoring, because parameter measurements such as temperature are based on established, robust, and relatively simplistic and proven technologies while CEMS are more complex. INGAA's comments below discuss our primary concerns that include:

- Quality assurance and quality control (QA / QC) procedures in Procedure 4 and PS 17 that are modeled after specifications and audit frequencies for CEMS would introduce significant burden without commensurate benefit.
- CEMS-type QA/QC procedures are not appropriate for CPMS that use well-established and robust technologies (e.g., temperature measurement) due to inherent technological differences between CEMS and CPMS. In addition, parameter compliance ranges for CPMS are typically broad when compared to relatively narrow emission compliance requirements associated with CEMS.
- The technological and compliance differences warrant alternative approaches for CPMS QA/QC. For example, much less frequent audits are warranted for inherently stable and established technologies like temperature measurement, especially when the CPMS is documenting compliance within a broad operating range.

Comments follow that provide additional detail.

1. <u>Parameter monitoring technologies are inherently different than CEMS, and this should be considered in PS 17 and Procedure 4 requirements</u>.

The Proposed Rule includes requirements for CPMS for temperature, pressure, flow (gaseous, liquid, and solid), pH, and conductivity. INGAA members have a wealth of experience measuring the first three parameters, and CPMS for the latter two are not common for natural gas systems. For temperature, pressure, and flow, the measurement principles have been applied for years in the natural gas industry as part of standard process monitors. In fact, flow measurement, which can include temperature and pressure measurement, is a primary requirement and expertise associated with the transport and delivery of natural gas. These measurements are well-established practices and the sensor technologies are established and relatively simplistic in comparison to the technological basis for CEMS.

Temperature, pressure and flow measurement are based on established technologies, hardware that has been used in a multitude of applications, and based on established principles. For example, thermocouple use is ubiquitous and a thermocouple provides a linear response to temperature. For example, gas water heaters and furnaces use thermocouples to ensure safe operation and typically function properly for years without operator intervention. Thermocouples are robust and stable over time – and this is completely different than the operational principles and historical record for CEMS. In addition, thermocouple "inaccuracy" is typically due to sudden and significant failure and a gradual "drift" failure mechanism is not common. Measurement inaccuracy is typically based on sensor or component (e.g., wiring) failure that results in significant and obvious errors. CEMS can slowly drift beyond desired accuracy targets and the resulting QA/QC procedures are designed to address this phenomenon. Accounting for typical failure modes should be considered in the QA/QC procedure. Similarly, gas flow measurement is typically based on established principles and relationships that are at the core of undergraduate engineering fluid dynamics courses, with flow based on simplistic temperature and pressure measurement.

On the other hand, CEMS technologies are more complicated. In many cases, the CEMS signal is actually a *nonlinear* function of the gas concentration being measured. However, the CEMS and associated QA/QC include practices such as multi-point calibration to "fit" a linear response over a relatively narrow electronic signal bandwidth. For these CEMS, data quality is integrally tied to frequent operator intervention or automatic systems that ensure (via calibration) the relational integrity of gas concentration to electric signal output on a short term basis. In addition, CEMS electronic components and peripheral systems that extract and deliver the exhaust sample to the CEMS instrument are subject to error and more frequent failure than for simplistic temperature or pressure measurement devices. The characteristic CEMS quality control issues are not inherent to CPMS. Thus, the functional and technological basis is very different for CEM *systems* and simple CPMS measurements. This has not been adequately considered in the Proposed Rule.

Despite important technological differences, the Proposed Rule models some of the QA/QC requirements on CEMS requirements from existing 40 CFR 60 Appendix B or F. For example, at 73 FR 59978, the preamble discussion on accuracy audit frequency indicates that most existing rules that specify audit frequency require annual calibration. In addition,

> "The information provided by industry in its responses to the CPMS survey indicated that the typical calibration frequency for most CPMS is once per year."

Calibrations and quality checks for pH are an exception and are required more frequently. The preamble then indicates,

> "Procedure 4 would require quarterly accuracy audits. This frequency is comparable to the audit frequencies required for CEMS specified in many part 60, 61, and 63 standards, and we believe that quarterly accuracy assessments are warranted for CPMS to ensure that monitoring data are accurate."

EPA provides no other basis for its conclusion that quarterly assessments are warranted or that annual or less frequent audits introduce measurement integrity concerns. Instead, a "more is better" philosophy appears to be espoused without technical merit. As noted above, due solely to the complexity and inherent measurements errors characteristic of *emission measurement systems*, comparatively simple and technologically established parameter measurements warrant less frequent QA/QC checks than CEMS. EPA should revise the proposed rule to provide alternative approaches and less frequent accuracy assessments. This issue is discussed further in Comment 2, where another important difference between CEMS and CPMS is noted: the compliance margin or compliance window for emissions limits versus operating parameters. Comment 3 then discusses alternative QA/QC approaches that EPA should add to the rule for CPMS.

2. <u>The compliance criteria and available margins or ranges should be considered when identifying parameter monitoring system QA/QC requirements</u>.

Basing CPMS requirements and accuracy audit frequency on CEMS requirements is also flawed because the nature of the compliance requirements is often very different for CEMS than for CPMS. This should be considered when establishing QA/QC criteria and the need and frequency for operator intervention to calibrate or audit the system.

CEMS are used to assure emissions compliance and compliance margins are typically relatively small under at least some operating conditions. For example, a typical full load emissions compliance margin may be on the order of 10 or 20% of the level of the standard or less. Parameter monitoring may be associated with very broad operating parameter compliance windows.

For example, some gas transmission RICE are subject to the RICE MACT, 40 CFR 63, Subpart ZZZZ, which requires a catalyst inlet temperature CPMS for affected equipment. For a lean burn engine, the allowed operating range is 450 ^{o}F to 1350 ^{o}F. If the CPMS full scale range is 1500 ^{o}F and the typical catalyst inlet temperature is 800 ^{o}F at high load (a fairly typical temperature), the temperature reading could be in error by 20% of full scale and still not introduce an error that impacts compliance with the allowed operating limit. Such an error is very unlikely for temperature measurement, but this discussion is provided for illustrative purposes. If the 800 ^{o}F reading is in error by a few percent, it has no meaningful impact on compliance status. Thus, INGAA believes that broader compliance windows for CPMS required to assure operating limit compliance should be considered when defining test frequency.

3. Due to inherent technological and compliance differences, CPMS procedures for ongoing "audits" should include alternatives to the current proposal and be less frequent than CEMS requirements.

As discussed above, the technology and compliance determination principles are very different for CEMS than for CPMS. In addition, parameter measurement technologies (e.g., for temperature) are used in a multitude of residential, commercial and industrial applications are are proven and robust. Thus, INGAA believes that the quarterly accuracy audit requirement stipulated in Procedure 4 is not appropriate for temperature, pressure, or flow CPMS. In addition, the rigor associated with procedures such as ASTM E-220 for thermocouple accuracy audits is not warranted. Alternatives should be allowed, and this comment discusses some approaches for consideration. Ultimately, definition of these provisions may require EPA to solicit additional input or comment, and INGAA can provide additional input if needed.

INGAA believes that the CEMS paradigm of quarterly accuracy checks is inappropriate for temperature, pressure, or flow CPMS and the rule should include alternative approaches that more appropriately address technology performance and compliance objectives for CPMS. Some example approaches include:

- If dual sensors are used and validated in the initial CPMS performance test, then subsequent audits should *not* be required unless the measured difference between the two sensors exceeds a reasonable threshold. This threshold should consider the compliance margin and allowed range for the operating parameter in question. An example application for a Subpart ZZZZ source is discussed to illustrate:

  - The initial performance test will establish a difference between the two sensors. If subsequent measurements do not change by more than a considerable margin (e.g., 10% of full scale), then a subsequent calibration should not be required unless the allowed margin (10% of full scale in this example) results in an error that approaches a defined boundary based on the allowed compliance window (e.g., within 5% of the upper or lower end of the allowed temperature range from Subpart ZZZZ). For a lean burn engine subject to Subpart ZZZZ, the operating limit is 450 to 1350 ^oF. If full scale is 1500 ^oF, 10% of FS is 150 ^oF and 5% of FS is 75 ^oF. If the typical and "correct" measured value is 800 ^oF, an error of 10% FS would result in a measured value of 650 to 950 ^oF, which is well within the bounds of allowed operation – even if the allowed performance window is narrowed by 5% FS to 525 – 1275 ^oF.

  The percentages and temperature values presented here are for illustration only and EPA may prefer other standards. However, INGAA believes that this conceptual approach for CPMS should be allowed when redundant sensors are used and the sensors indicate reasonable performance within the bounds of the compliance window.

- Even if redundant sensors are not used, a relational history could be established, and a QA/QC plan could include an accuracy audit trigger based on performance. For an example RICE MACT engine, operating history may indicate that full load temperature is typically within a relatively narrow band that would vary slightly – e.g., due to ambient conditions. If this temperature is well within the allowed operating window (i.e., there is a significant compliance margin), additional accuracy audits could be triggered when the historical value varies by a pre-defined amount, rather than requiring frequent accuracy audits when there is no indication of system degradation. This operational record could be developed over a reasonably short time frame on the order of months to avoid the need for frequent audit checks that provide no real value. As noted above, temperature measurement devices are proven and ubiquitous, and long term performance without degradation is the norm rather than the exception. The rule should include QA/QC approaches that acknowledge this fact.

- At most, the accuracy check should be required once per year for temperature, pressure and flow. This is consistent with the preamble discussion of typical procedures. In this case, if: system integrity is intact (i.e., visible inspection requirements are addressed and indicate no problems); anomalous readings do not occur; and, monitoring history indicates consistent CPMS readings, then "skip tests" should be allowed where less frequent calibration audits are required after two successful tests.

In addition to alternative audit procedures, the rule needs to consider the rigor of cited methods. For example, the preamble indicates that temperature audits that compare measurements to a calibrated device are "based on ASTM E 220-07" (e.g., see 73 FR 59965). However, the rule directly cites this ASTM method (e.g., see Table 6 at 73 FR 59993 and Table 2 at 73 FR 60001). The ASTM method is fifteen pages long and includes requirements for thermocouple *manufacturers* that extend beyond operator calibrations based on comparison to a standard. For example, the method includes "verification of the conformance of thermocouple materials to temperature tolerances." Without specific direction, implementing agencies may presume that the array of requirements in the cited methods apply, including procedures that are inappropriate for operators or incredibly burdensome without commensurate benefit. For proven technologies, the rule should allow operator-defined procedures that are "based on" established methods – such as comparison to a calibration standard.

Collectively, these comments request EPA consideration of alternative approaches that consider the proven history of parameter measurement rather than simply following the CEMS legacy or broad and detailed consensus standards. The CEMS approach is not an appropriate model and cited methods may include criteria that are inappropriate for operators or unnecessary for straightforward parameter measurements.

4. <u>Frequent references to "manufacturer" instructions, specifications, or requirements should be eliminated from the rule, especially for common measurements (e.g., temperature) that have been reduced to common practice</u>.

Both PS 17 and Procedure 4 frequently reference manufacturer specifications or instructions regarding measurement of parameters that have been reduced to common practice throughout industry for many years – especially measurements such as temperature, pressure and flow. The rule should *not* rely on manufacturer requirements, because this adds unwarranted operator burden and restrictions, especially when operators will typically have more experience and an established history for CPMS due to process parameter monitoring that has been conducted for many years.

Example references from the Proposed Rule include:

- "You must select the appropriate equipment based on manufacturer's recommendations,…" [73 FR 59986]
- "You must install each sensor of your CPMS in a location that provides representative measurement… taking into account the manufacturer's guidelines, …" [73 FR 59986]
- Regarding records that are required, "(2) Manufacturer's name and model number of the CPMS;…" [73 FR 59990] (The CPMS may have components from several/many manufacturers.)
- For flow based on a differential pressure measurement, "To perform the sensor check, remove the flow constricting device and perform a visual inspection for wear or other deformities based on manufacturer's recommendations." [73 FR 59997]

These *requirements* are inappropriate or may be impossible for operators to fulfill in some cases. This raises unnecessary questions about compliance status. For parameter measurements reduced to common practice, relying on the manufacturer is not warranted and manufacturer directives may not always be available or may not appropriately consider the specific application. EPA should eliminate reference to manufacturer requirements or recommendations with the exception of those that apply to initial performance specifications that are specific to the *sensor* that will be used in the CPMS.

5. EPA should clarify recordkeeping requirements in regard to electronic records and access.

The Proposed Rule requires records for accuracy audits (and corrective actions) to be retained for five years with the most recent two years of data "on site". EPA should clarify that electronic records are sufficient to meet this requirement, and the "on site" requirement for the first two years could be addressed by a system that includes electronic records housed at a different location as long as the records are accessible electronically from the site where the CPMS is located. If the site is a small area source that does not include a location to house records, then it should be acceptable for records to be accessible at the nearest operating center.

6. EPA should clarify the difference between a "sensor" and the multi-component parameter monitoring "system", including requirements for redundant sensors.

The Proposed Rule should clarify the difference between "sensor" requirements and "system" requirements. For example, redundancy is discussed in the proposal, but the terms sensor and CPMS are not clearly differentiated. EPA should clarify sensor versus system requirements.

A CPMS is comprised of multiple components. For example, a temperature CPMS could include a thermocouple (i.e., the sensor), a thermocouple lead (wiring to transmit the signal), a system board that received the signal, and the data acquisition system that compiles the temperature data. For a redundant system, the dual temperature CPMS would include two sensors and leads, which would likely plug in to a common system board and use a common data acquisition system. Thus, the only duplicate hardware is the sensor and its associated wiring. EPA should clarify this and ensure that sensor versus system requirements are clear, especially as it pertains to redundant sensors.

7. The implementation schedule should be simplified for existing facilities that will need to integrate the new requirements.

Many facilities operate CPMS for Part 60 and Part 63 compliance monitoring and the Proposed Rule specifies implementation timing in §1.3 of PS 17. Subsections 2 and 3 indicate that compliance is required for existing CPMS,

> "(2) At the time you replace or relocate the sensor of an affected CPMS…
>
> (3) At the time you replace the electronic signal modifier or conditioner, transmitter, external power supply, data acquisition system, data recording system, or any other mechanical or electrical component of your CPMS that affects the accuracy, range, or resolution of your CPMS…"

These two conditions are subject to interpretation and could present an unreasonable challenge for operators to ensure compliance. For example, if there is a simple component failure that could be readily addressed with spare hardware to ensure that compliance monitoring continues with little or no interruption, the facility could be out of compliance upon this replacement, unless all the criteria specifically mandated by the Proposed Rule are addressed. This presents an untenable situation and it is not clear why EPA thinks this approach is warranted.

INGAA recommends that compliance schedule certainty be provided for existing facilities with CPMS. To address this, subsections (2) and (3) of Section 1.3 should be deleted. Then, the current subsections (4) and (5) would provide a date certain for compliance for existing facilities with CPMS – i.e., for Title V sources addressed by subsection (4), compliance is required at the time of permit renewal; and, for area sources exempt from Title V addressed by subsection (5), compliance is required within 5 years after the final rule effective date.

8. The proposal should include additional methods for leak checks for pressure and flow rate systems.

PS 17 and Procedure 4 require system leak checks for pressure and flow CPMS which requires application of a pressure source, isolation of the pressurized components, and assurance that pressure does not degrade in the isolated section. For example, Section 8.10 of PS 17 identifies this procedure. The Proposed Rule should be revised to allow other common approaches for leak detection.

Leak checks should allow the use of alternatives such as soap bubble or "snoop" testing of pressure lines that require testing. This is a proven method for locating leaks. In addition, if a leak was identified based on the pressure isolation test in the proposal, the soap bubble method would likely be used to identify the leak location as part of the "corrective action". This speaks to the efficacy, utility, and common application of this method.

The soap bubble method is a proven approach for locating leaks and ensuring system integrity. Without its inclusion in PS 16 and Procedure 4, operators would need to re-engineer the system in some cases to accommodate the proposed test – i.e., add isolation valves and external pressure feed taps to assist in completing the test in the Proposed Rule. This is not warranted when an established alternative procedure is available to ensure system integrity for pressure and flow

CPMS components in pressure service. EPA should add soap bubble or snoop testing of pressure components as an accepted procedure for leak checks to both PS 17 and Procedure 4.

INGAA appreciates the opportunity to comment on this proposed rule. If you have any questions regarding these comments, please contact me at lbeal@ingaa.org or 202-216-5935.

Sincerely,

Lisa Beal
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Interstate Natural Gas Association of America

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