

REINHOLD ENVIRONMENTAL Ltd.



2012 APC Round Table & Expo Presentation

July 16-17, 2012, in Baltimore, MD / Hosted by Duke Energy, Entergy,
FirstEnergy, Southern Company & TVA

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PM Monitoring vs. Stack Testing for MATS Compliance

Reinhold Environmental
2012 APC Round Table
July 17, 2012
2:45 pm to 3:45 pm



§63.10000 General Compliance

- (c)(1)(iv) Continuous performance options for PM
 - (A) PM CPMS
 - (B) PM CEMS
 - Quarterly performance testing

§63.10010 (h) & §63.10021(c)

- PM CPMS – particulate matter continuous parameter monitoring system
 - Uses a PM monitor to demonstrate compliance with an operating limit, not the emission limit
 - PM monitor is not certified
 - Operating limit is
 - Site specific
 - Reset annually
 - Highest 1-hr average PM monitor reading during your initial and annual performance test
 - Compliance is based on a 30-day rolling average of all valid hourly PM monitor readings excluding SU and SD

§63.10010(i) & §63.10021(b)

- PM CEMS – particulate matter continuous emission monitoring system
 - Uses a PM monitor to demonstrate compliance with the emission limit (0.030 lb/mmBtu or ~ 29 mg/wscm)
 - Certify PM CEMS according to PS-11
 - Operate & maintain PM CEMS according to Procedure 2
 - Annual RRA; every third year an RCA
 - Compliance is based on a 30-day rolling average of all valid hourly PM CEM readings excluding SU and SD
 - Can use PM CEMS for initial performance test

§63.10021(d)

- Quarterly performance test
 - Traditional 3-run stack test done each quarter
 - Operate unit at maximum normal operating load – 90 to 110% of design capacity
 - Submit test reports in EPA's ERT file format w/in 60 days
 - Applies to HCl is not using HCl CEMS or SO₂ CEMS

Which to Choose?

Quarterly Testing

- No equipment to buy
- Lots of planning/organizing
- Three 1-hr snapshots

PM Monitor

- Equipment to buy & install
- Little planning after install
- 30-day average
- PM CEMS – can replace COMS

PM CEMS or PM CPMS

PM CEMS

- Direct compliance w/ PM emission limit
- Certified to PS-11
- Rigorous, expensive correlation test to MATS M₅
- O&M – Procedure 2
- Always 0.030 limit
- 30-day rolling average

PM CPMS

- Demonstrate compliance w/ operating limit (< EL)
- Uncertified
- No correlation to RM, just take monitor output as is
- Site specific monitoring plan
- Annual reset operating limit
- 30-day rolling average



PM CPMS Advantage

- Avoids PS-11 correlation test
- PS-11 correlation test is
 - Expensive and time consuming
 - Difficult and stressful for plant operations
 - Potentially harmful to equipment
 - But, has been done successfully and without incident many, many times
- Individual utilities and EPRI are working on new and better approaches to the correlation test

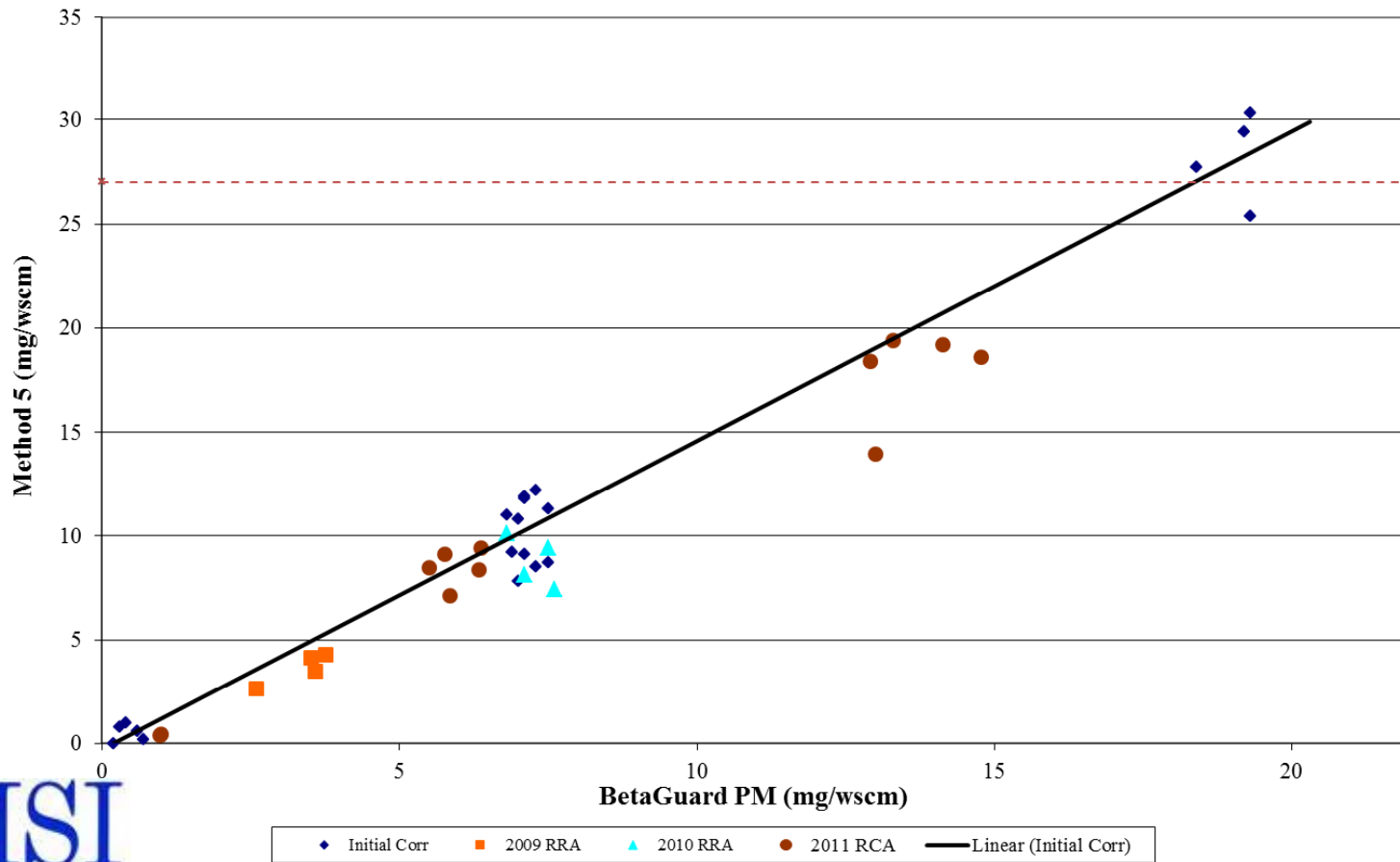


PM CEMS Advantage

- Can use certified PM CEMS for initial performance test
 - 30-day average
- 30-day compliance to emission limit ($\sim 25\text{-}30$ mg/wscm), not a value that could be much lower than the emission limit
- Reduces constraints on plant operations
- Can remove COMS

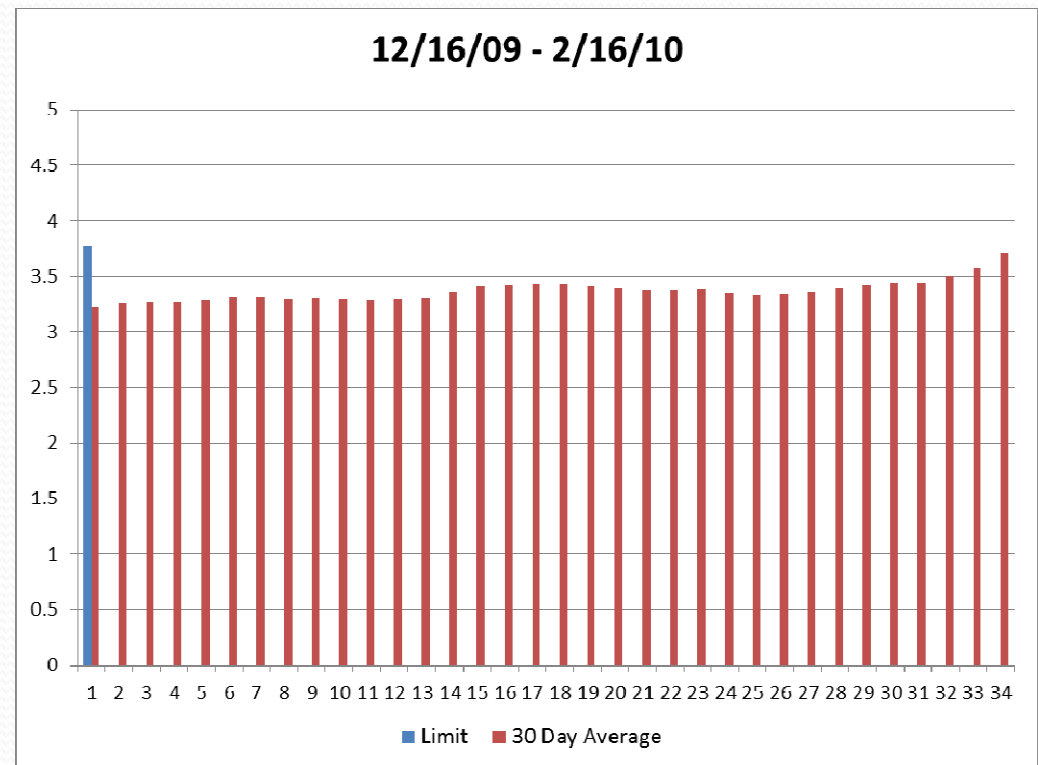
Example PM Monitor

BetaGuard PM Correlation, 2009 RRA, 2010 RRA, & 2011 RCA



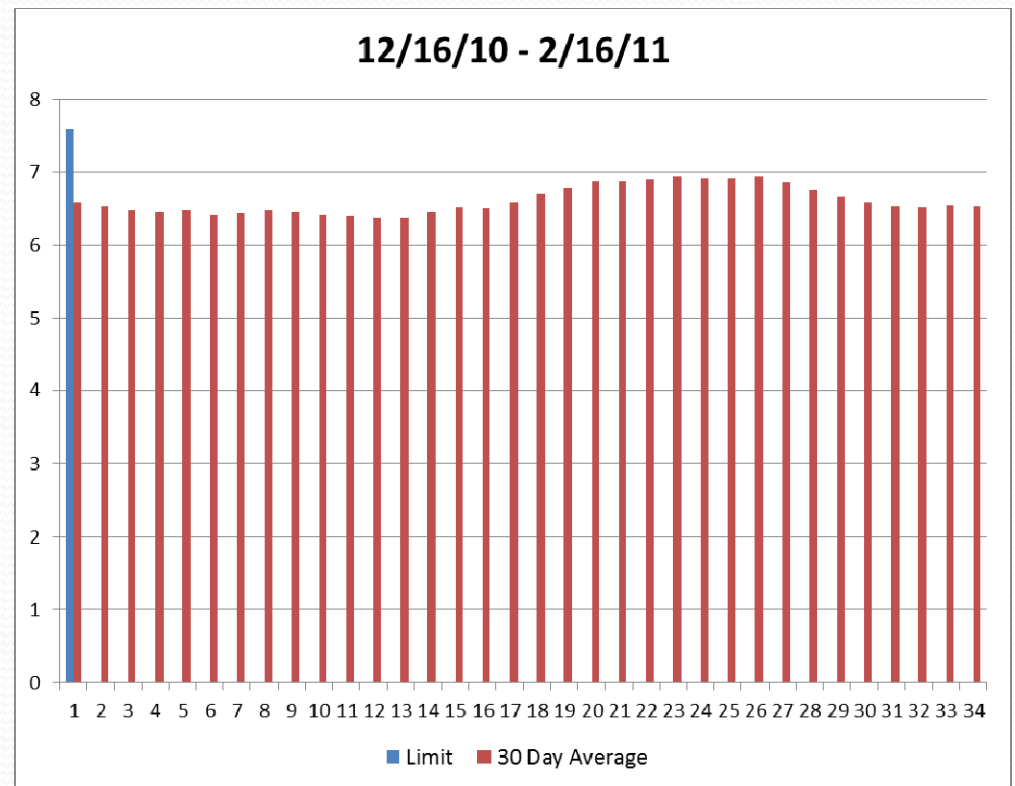
PM CPMS – 12/16/09 to 2/16/10

- Performance test done November 16, 2009
 - 3.59
 - 3.77
 - 3.51



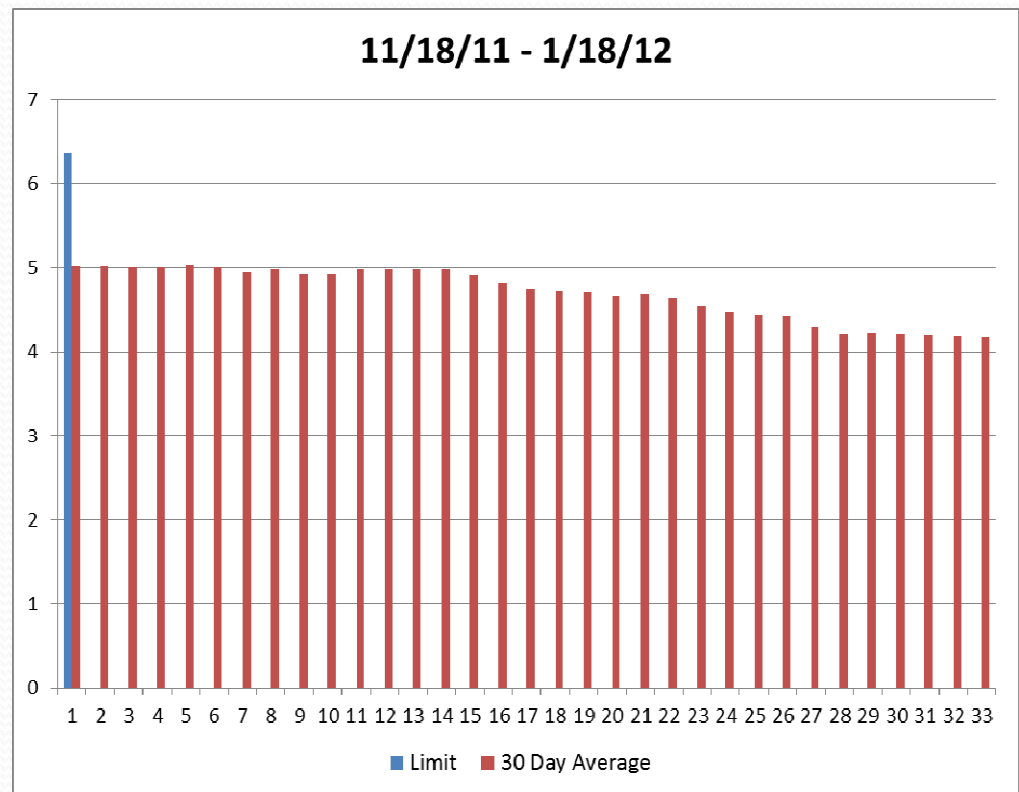
PM CPMS – 12/16/10 to 2/16/11

- Performance test done December 15, 2010
 - 7.6
 - 7.5
 - 7.1



PM CPMS – 11/18/11 to 1/18/12

- Performance test done November 17, 2011
 - 6.37
 - 5.50
 - 5.85





Summary

- Options for PM compliance are frequent stack testing or a PM monitor
- Frequent stack testing is appealing if also stack testing for HCl, but not if have many stacks to cover
- PM monitor is much less labor intensive in the long term although lots of upfront capital cost
- PM monitor is simple to integrate into existing CEMS
- PM CEMS is better option
- If considering PM CPMS option, do the exercise shown above after installing your PM monitor