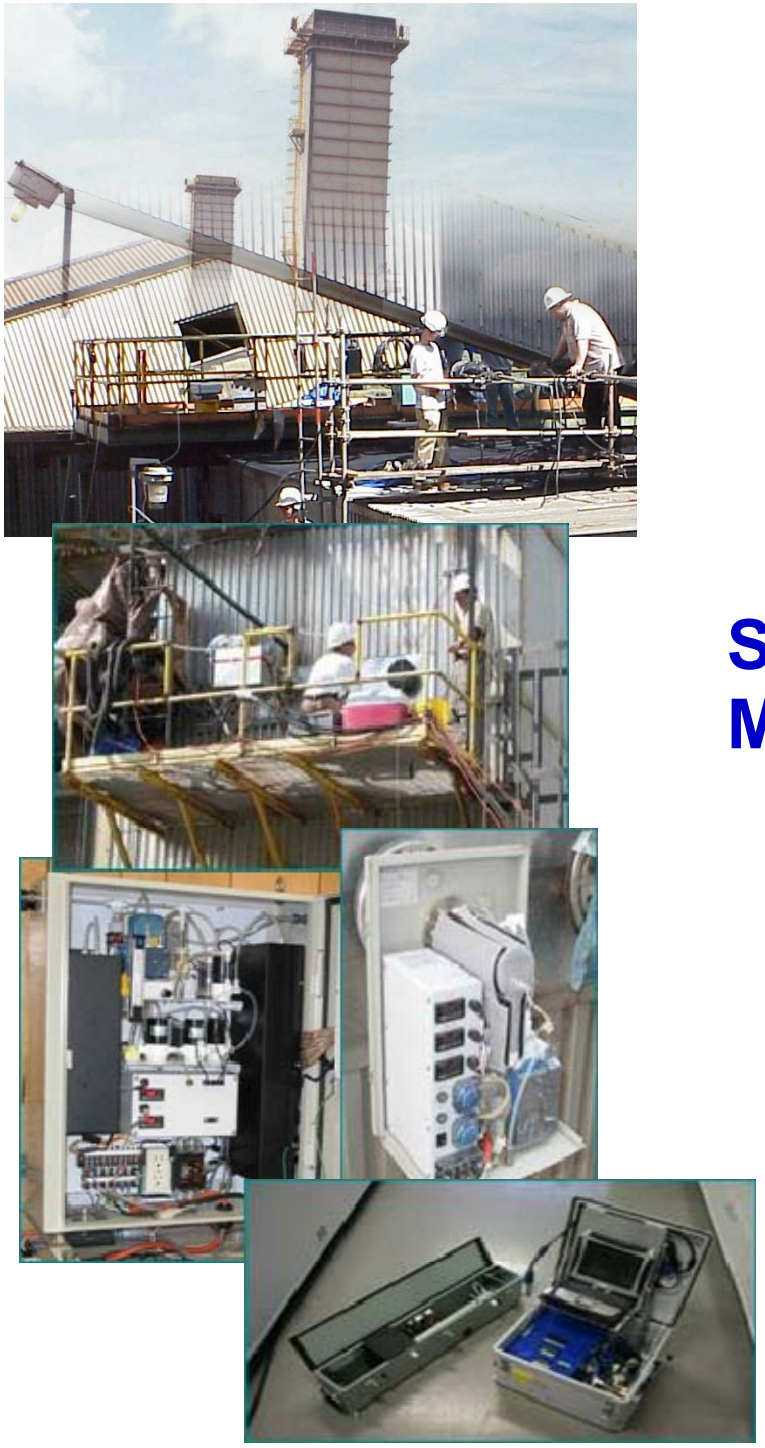


EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Status of Continuous Mercury Monitoring (CMM) Implementation

DOE/NETL Mercury Control Technology Conference

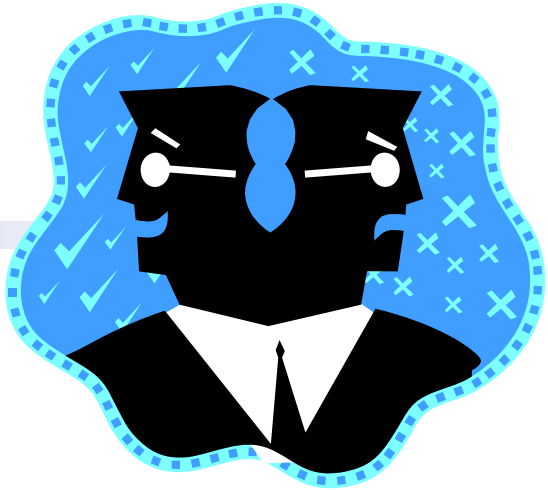
December 12, 2007

Chuck Dene
Project Manager, IEC & CEMS
650-855-2425 or cdene@epri.com

Clean Air Mercury Rule (CAMR) Monitoring Requirements

- Mercury pounds tracking commences January 1, 2010
- Requires monitoring commence no later than January 1, 2009
  - NIST traceability is postponed until January 1, 2010
- Most orders placed, about half shipped
  - Over 600 CMMs, ~200 Appendix K
- Completing NIST Traceability still key issue to be resolved

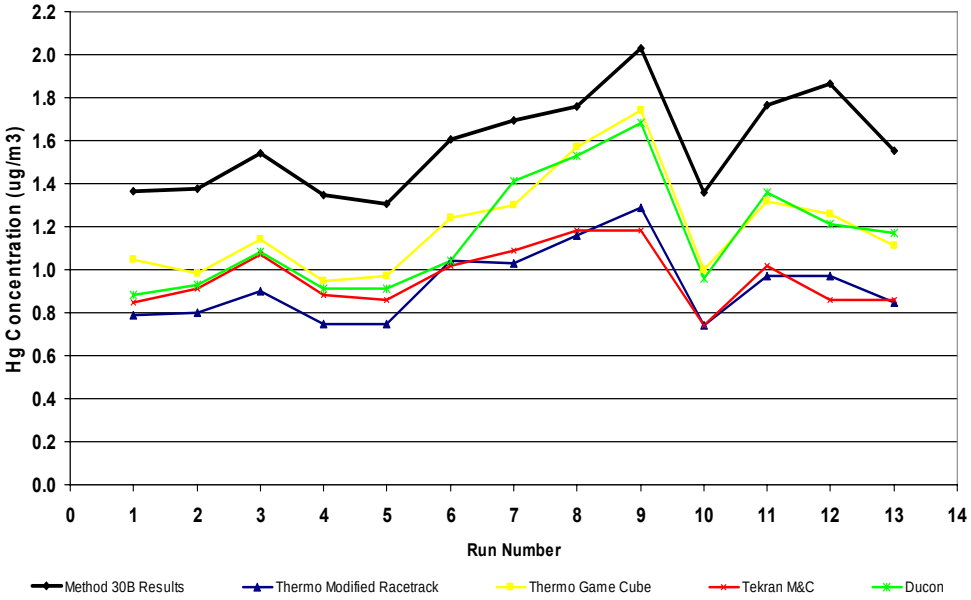
EPRI Summary Assessment



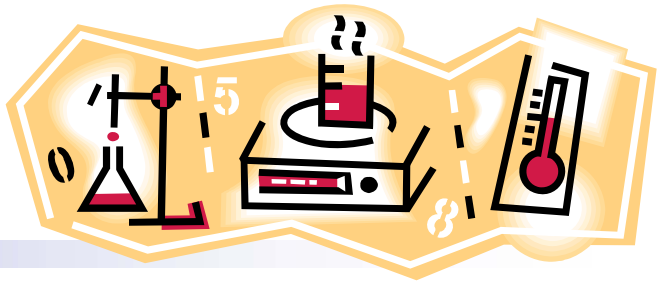
- **CMMs**
  - They work, even at 0.5 µg/m^3
  - Reliability TBD with experience
  - EPA & industry need understand/accept complexity
    - Years to get NOx/SO_2 CEMS-type reliability
    - Need correspondingly appropriate missing data rules and industry resource allocation
- **Appendix K**
  - Proven in field for low-moderate sulfur coal
  - Concern about use with high sulfur coal
    - Spike loss is warning sign
  - Recommended for very low Hg emissions
- **Calibration and QA/QC remain a major issue**

CMM Demonstrations

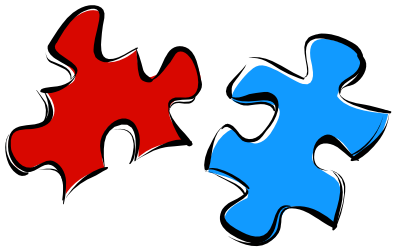
- **Concluded Trimble County Demonstration**
  - **Suppliers greatly improved reliability (1-2 wks to 6-8 mo.)**
  - **Allowed troubleshooting of calibration issues**
  - **Performed a M30B RATA**
- **Methods 30A and 30B became final November 7th**
- **NIST Traceability postponement**
  - **Requires EPA/Industry study be completed on 10-20 Units**



CMM Standards – EPA Task List 2008



1. Develop field certification procedures
   - Address previously shipped calibrators
   - Field QA/QC procedures
2. Laboratory inter-comparison program
   - Assessment of measurement uncertainty
3. Evaluation of compressed gas cylinders
   - Critical option for field certification QA/QC
4. Statistical calculation procedures & spreadsheets for field studies
5. QC procedures for sorbent traps/permeation tubes
   - Exploring other QA/QC options
6. Field certification & traceability protocol of Hg^{+2} calibrators
   - Critical parameter not yet fully addressed by EPA or NIST



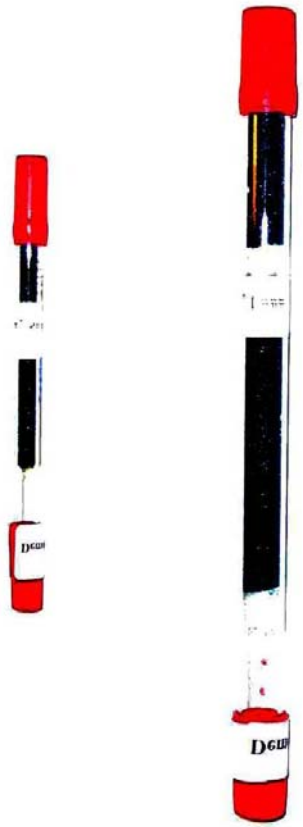
IRM Status – M30A

- **Dynamic Spiking** **waived until 2009**
  - Single Pretest Dynamic Spike of 3 runs
  - 150-200% of native Hg
  - Recover 100% ±10%
  - RSD ≤ 5.0% or ≤ 0.5 µg/m³
- **Stratification** **waived until 2009**
  - Use SO_2 for 2008
- **Interference Check**
  - Only HCl and NO
  - Only done once
- **System Integrity Check**
  - Beginning and end of runs – Repeated between runs optional
  - ± 5.0% of Span
  - Failure disqualifies runs after the last good integrity check

Sorbent Trap Reference Method (M30B)

- Proposed/finalized with IRM
- Follow Appendix K with additional QA
  - Only use 2 section small traps
  - Require "Field Recovery Study"
    - Modeled after Method 18 section 8.4.3
    - Requires 3 paired runs with one trap using spiked front section (40-60% of native Hg)
- Released to testing contractors:

  http://www.epa.gov/ttn/emc/prelim.html



NIST Traceability – Hg^0

- Level 1: NIST–Prime Generator
  - Each vendor sends a generator to NIST
  - NIST performs isotope dilution ICP/MS
  - The generator remains at NIST as the NIST Prime
- Level 2: Vendor–Prime Generator
  - Vendor sends one or more generator(s) to NIST
  - NIST performs nesting analysis vs. NIST Prime
  - Generator(s) returned to vendor as the Vendor Prime
- Level 3: User–Prime Generator for CEM Use
  - Vendor performs nesting analysis vs. Vendor Prime

EPA/Industry study needs to resolve:

- **Certification of shipped calibrators**
- **QA/QC procedures on field installations**

For Latest from EPA, Vendors, and Users

CEM User's Group 2008

Nashville Convention Center
&
Renaissance Hotel & Resort

Nashville, TN

May 14-16, 2008

Co-host: TVA