

Mercury and HAP Metals Measurement with the Xact CEMS

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May 8, 2014*



What Is The Xact?



- **Multi-Metals CEMS**
- **Based on X-ray Fluorescence Analysis (XRF) and beta-gauge type reel-to-reel tape drive technology**
- **Can measure up to 24 metals simultaneously including Cr, As, Cd, Hg, and Pb**

Xact: History and Accomplishments

**Over 10 Years
Experience with
HAP Metals
CEMS**

**EPA Method 301
Validated for
Multi-Metals**

**EPA Site
Certified**



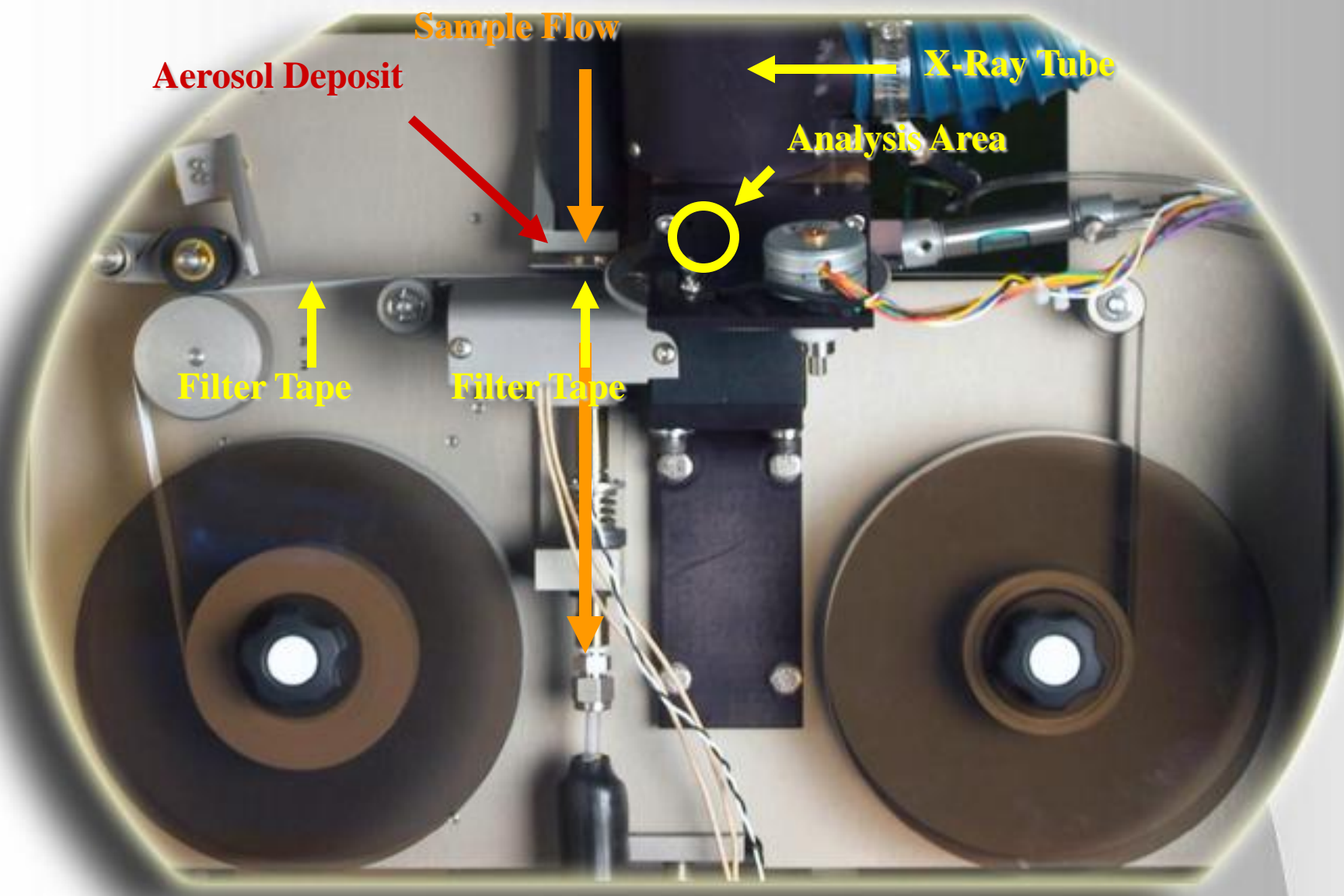
**AMP EPA
Approved**

**~6 Years On-
Stack Operations
on Hazardous
Waste Incinerator**

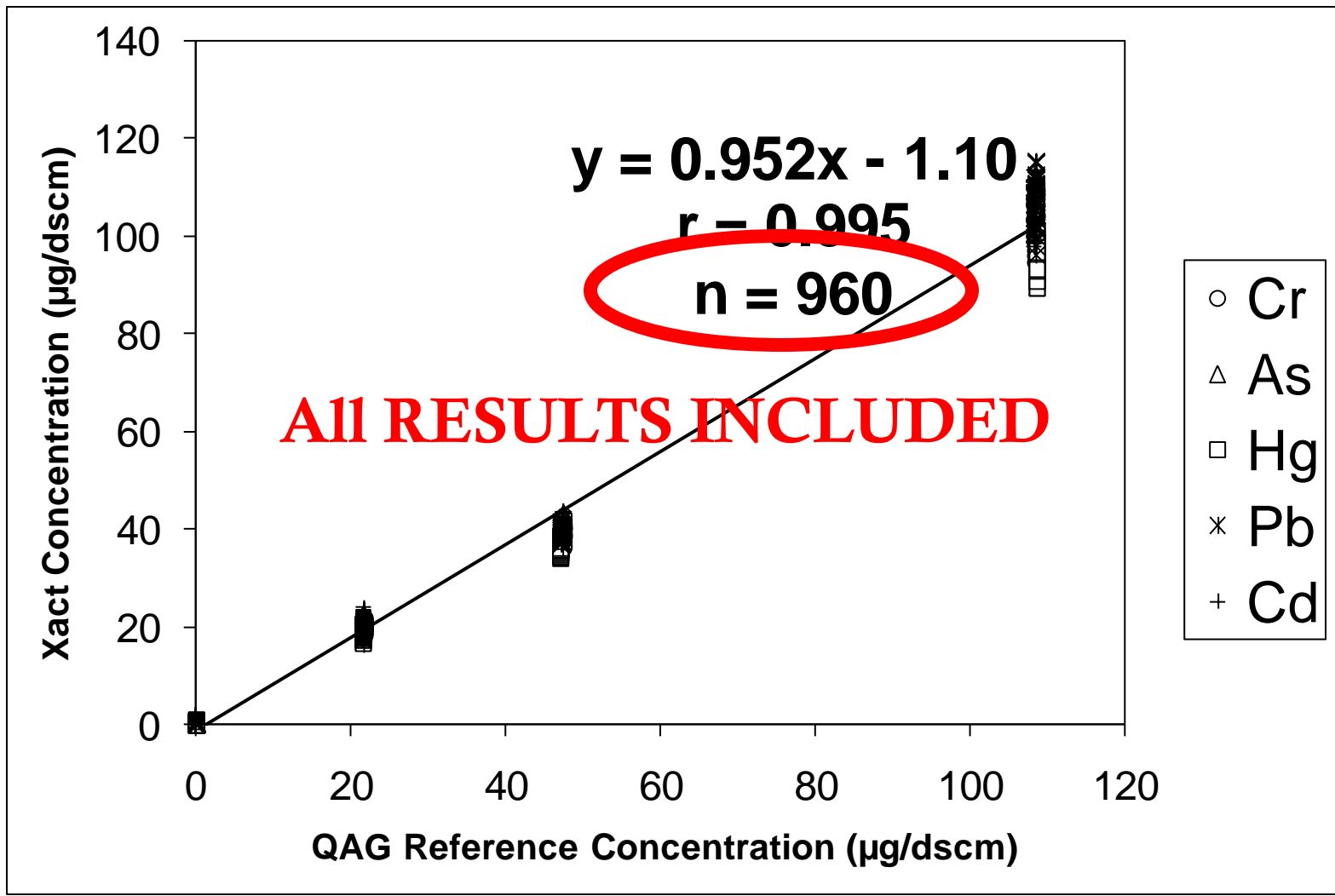
**Passed Hg
CEMS RATA**

**May 2007 – EPA Clean Air
Excellence Award**

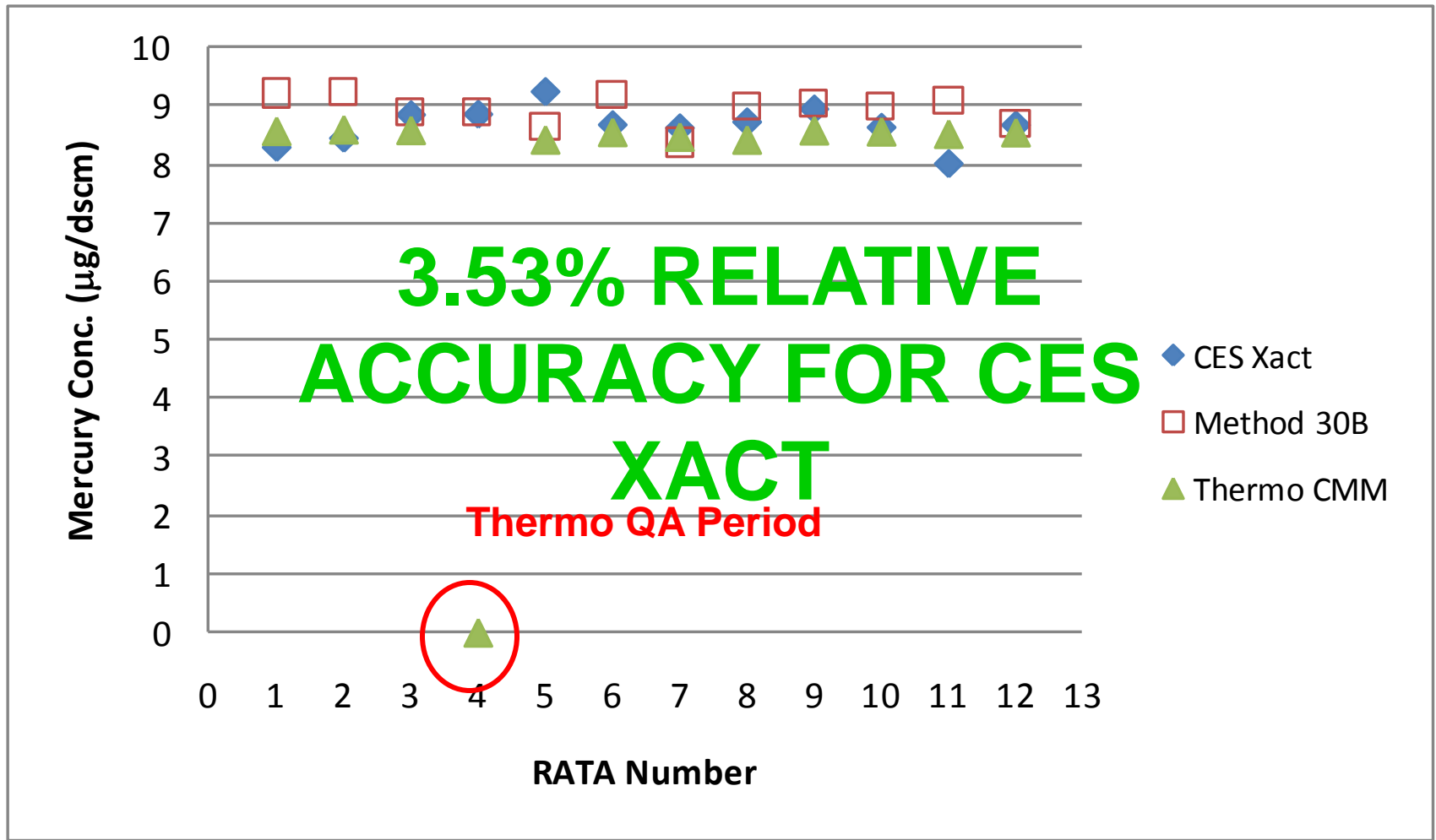
XACT SAMPLING AND ANALYSIS



M301 Validation on Hazardous Waste Incinerator



Hg Measurement on a Coal Fired Power Plant



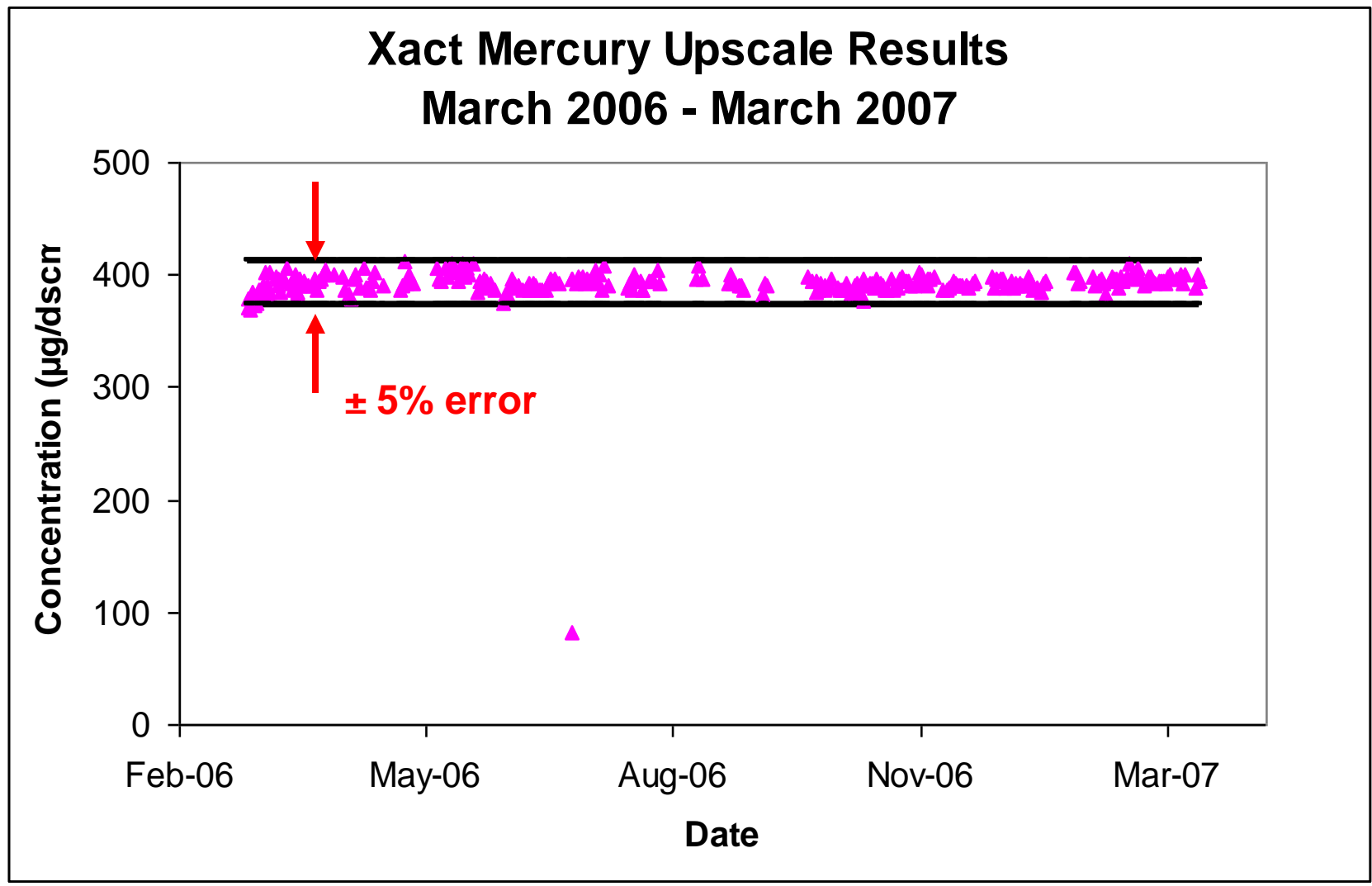
Additional Mercury Monitoring Experience with the Xact

- 750 MW Source burning Lignite/PRB Blend (60/40 and 80/20) Equipped with ESP and Wet FGD Controls
- Testing during mercury controls - Brominated Powder Activated Carbon and EMO (separately and in combination)
- Sampling done downstream of a single ESP module
- Side by side sampling with speciated Method 30B at various times each day
- Test length – about 2 weeks

Method 30B Comparison

Fuel Conditions	Time	Hg Controls	Method 30B Hg ($\mu\text{g}/\text{dscm}$)	Xact Hg ($\mu\text{g}/\text{dscm}$)	Percent Difference
60% Lignite 40% PRB	10/3/2012 11:45	Baseline	24.57	22.59	-8.1%
	10/3/2012 14:45	EMO Only	14.85	15.33	3.2%
	10/3/2012 16:45	EMO Only	16.30	15.83	-2.9%
	10/5/2012 12:15	EMO & PAC	9.25	10.09	9.0%
	10/5/2012 16:15	EMO & PAC	11.52	12.74	10.6%
	10/5/2012 17:45	EMO & PAC	4.05	5.88	45.2%
	10/6/2012 10:45	Baseline	24.03	24.55	2.2%
	10/6/2012 13:45	EMO & PAC	11.14	12.34	10.8%
	10/6/2012 15:45	EMO & PAC	5.74	7.97	38.8%
	10/6/2012 18:45	EMO & PAC	13.92	15.72	13.0%
80% Lignite 20 % PRB	10/9/2012 10:15	Baseline	28.14	25.07	-10.9%
	10/9/2012 12:15	PAC Only	19.01	19.26	1.3%
	10/9/2012 16:15	PAC Only	7.00	7.34	4.9%
	10/10/2012 10:30	Baseline	23.19	23.98	3.4%
	10/10/2012 13:45	EMO Only	18.73	20.22	8.0%
	10/10/2012 16:45	EMO Only	20.10	22.10	10.0%
	10/10/2012 19:45	EMO Only	18.60	22.10	18.8%
	10/10/2012 9:00	Baseline	21.57	18.69	-13.4%
	10/11/2012 9:00	Baseline	24.00	23.53	-1.9%
	10/11/2012 10:45	EMO Only	20.52	18.90	-7.9%
	10/11/2012 11:30	EMO Only	21.38	19.55	-8.6%
Average Percent Difference Baseline Conditions					-4.8%
Average Percent Difference with Hg Control					7.6%
Overall Average Percent Difference					6.0%

Long Term Xact Daily Upscale – Analytical Stability



Monitoring Applications of the Xact at CFPP's

- Mercury Monitor for Process Control
 - Compliance monitoring with a sorbent trap
 - Process monitoring with the Xact assures that there are no surprises in the sorbent trap results
 - Xact is stable for periods over a year
 - The Xact is the only Hg CEMS that does not need a mercury generator to assure accuracy
 - No Generator - No NIST Generator comparisons required

- HAP Metals Compliance with MATS
 - Under MATS Rule CFPPs may monitor HAP metals either using PM as a surrogate or by measuring metals directly either with Method 29 or a HAP metals CEMS (under an alternative monitoring petition)
 - HAP Metals monitoring may be preferable for facilities with high PM (relative to the MATS limit) but low HAP metals emissions
 - HAP metals CEMS will assure that there are no surprises during quarterly method 29 stack tests

QUESTIONS?

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