

Tennessee Valley Authority  
Regulatory Submittal for Kingston Fossil Plant

Documents submitted:  
Corrective Action Plan for January 2010 Air Audit

Date Submitted:  
06/03/2010

Submitted to whom  
Leo Francendese

Concurrence

Received      Not Applicable

TVA

Steve McCracken  
Dennis Yankee  
R.L. Pope PVI  
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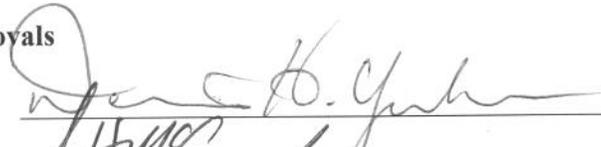
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Jacobs

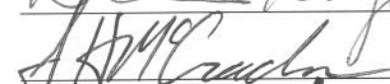
Steve Richardson  
Julie Pfeffer

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Approvals

TVA 

Date 6/3/10

TVA 

Date 6/3/10

EPA 

Date 6/3/10

*consulted w/ TDEC*

cc:

- Anda Ray, TVA
- Barbara Scott, TDEC
- Leo Francendese, EPA
- Dennis Yankee, TVA
- Kathryn Nash, TVA
- Cynthia Anderson, TVA
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- Tim Russ, TVA
- EDM
- Julie Pfeffer, Jacobs
- Steve Richardson, Jacobs
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- Greg Signer, TVA
- KIF Incident Document Control
- Katie Kline, TVA
- Gretchen Wahl, Jacobs
- Dannena Bowman, EPA
- Jeff Gary, Jacobs
- Robert Pullen, Jacobs

RE: Francendese to McCracken: Evaluation of the Perimeter Air Monitoring Strategy and Identification of Corrective Actions at the TVA Kingston Fly Ash Release Time-Critical Removal Action : January 25, 2010

Mr. Francendese,

The referenced document required that TVA address six specific issues associated with the rejection of laboratory analyses for PM2.5 and PM10 for samples collected between September and December 2009. The issues were identified in a program audit conducted by EPA Region IV SEDS. The issues are listed below along with TVA's response.

- 1 *TVA will submit an investigative report regarding this incident.*  
A Root Cause Analysis was conducted by a team of personnel from January 20-27, 2010. The team was led by Senior Manager Danny Stone. The team determined inappropriate actions, associated causes, failed administrative barriers, and then determined corrective actions to prevent recurrence. The team's report appears as Attachment 1.
- 2 *EPA audit staff will participate in TVA's QA weekly conference calls with its analytical laboratories.*  
The opportunity to participate in TVA's QA weekly conference calls with its analytical laboratories was provided to EPA Region IV SEDS, and Greg Noah began participating on February 22, 2010.
- 3 *EPA audit staff will conduct audits of TVA contract laboratories on a periodic basis.*  
EPA SEDS has begun to audit TVA's contract laboratories. TVA's QA contractor ESI has observed an EPA audit was conducted at Intermountain Labs on March 2-3, and at Test America-Nashville on April 20.
- 4 *EPA will conduct periodic independent sampling and performance audits of TVA's air monitoring network.*  
TVA has participated in logistics discussions with EPA and its Science and Ecosystem Support Division contractor regarding the independent sampling activity.
- 5 *TVA will submit a Corrective Action Plan and schedule for accelerating the validation of raw data in order that it can be released for review on a more timely basis.*  
TVA has developed and implemented a Corrective Action Plan addressing each of the issues identified during the audit which have negatively impacted the delivery of data. Recognizing that significant QA activities must be completed before data is released, the plan that appears as Attachment 2 to this document addresses the timeliness issues.
- 6 *TVA will submit a Corrective Action Plan for upgrading its perimeter stations to include additional TEOM monitors.*  
Discussions between EPA and TVA following the audit resulted in a consensus decision that changing the primary airborne particulate monitoring activity to a continuous method would better address the DQO of dust control monitoring and eliminate the potential delays and QA issues inherent in shipping filters to an offsite laboratory. Attachment 3 is a summary of the points in that discussion and a timeline for the implementation of the continuous monitoring strategy.

Sincerely

  
Steve McCracken

**Attachment 1**

**Summary of Root Cause Analysis for Air Audit Finding**

# KINGSTON ASH RECOVERY PROJECT

## Particulate Matter Test Data Problems September 2009 – January 2010

A root cause analysis team in Environment and Technology addressed the recent problem with air monitoring data at the Kingston Ash Recovery Project. Based on interviews conducted at the site, it was determined that a portion of the particulate monitoring data (PM 2.5 and PM 10) from mid-September 2009 to mid-January 2010 did not meet strict quality criteria and was therefore of limited use. Although the problem was the result of inadequate controls at a contracted laboratory, the cause analysis process identified several areas where improved management and administrative controls are needed.

The findings of the root cause analysis team can be broadly ranked as follows:

1. TVA failed to effectively establish the required air analytical methods for PM 2.5 and PM 10.
2. TVA did not utilize proper expertise in developing and reviewing bids nor in selecting a lab for PM 2.5 and PM 10 analysis.
3. TVA did not employ appropriate Risk Management.
4. TVA did not take action to obtain quality data in a timely manner.

**Root Cause: Ineffective change management in air monitoring and laboratory analysis responsibilities; specifically, regarding project work control and management planning during the transition from emergency response to more long-term monitoring.**

Short-term and long-term corrective actions are identified and now in place to prevent the occurrence of a similar incident. Management commitment includes immediate implementation of the following:

### **Short-Term Corrective Action (STCA)**

- Establish interim QA measures for emergency purchase of laboratory services.
- Utilize TVA's FPG Corrective Action Program to address late delivery of PM 2.5 data from air laboratory.
- Review hard copy of preliminary data before electronic deliverable data package.
- Request bids for new air lab services for PM 2.5 / PM 10.
- Assign ownership of all environmental data processes including, but not limited to, air sampling analysis, reporting, risk management, and archival.

### **Long-Term Corrective Action (LTCA)**

- Establish work controls that include identification, planning/risk management, approval, implementation, evaluation of results, and corrective action as required.
- Establish organizational Roles and Responsibilities to help ensure that pertinent information is transmitted and properly coordinated within procedures/processes.

## Attachment 2

### Corrective Action Plan for Accelerating the Validation of Raw Data

1. Review and modify existing processes and procedures.
  - a. The Data Management Plan provides process descriptions that are capable of providing validated data within 30 days. No changes are needed here.
  - b. Additional Air SOPs are needed and identified in the table below to support improved management and coordination of sample collection. Pending their implementation, additional reviews by project management and QA oversight staff have been implemented to ensure prompt and accurate submittal of samples to air laboratories.
2. Additional resources have been assigned to expedite data validation and to assist contract laboratories in implementing EDD and other data management expectations for the project. Since the January 11<sup>th</sup> audit by EPA, QA oversight has increased by 25%. For example:
  - a. QA oversight is provided to ~70% of all air filter sample change outs and a QA or project management review of all sample shipment documentation is performed prior to shipping.
  - b. Similarly, two chemists were dispatched to assist a lab struggling with EDD specifications and completing acceptable data packages.
3. Laboratories that repeatedly cannot achieve expectations for timely or quality delivery of data have had new samples redirected to other laboratories pending resolution of problems. Additional laboratory contracts continue to be implemented to ensure sufficient resource are available to support the project's data needs.
4. Develop a metric that monitors the processing of data within the expected time frame. In subsequent discussions with EPA, it was determined that 30 days would be the target for a "more timely" release of data. A measuring system for when data becomes available outside of TVA is problematic due as the status and confidence in data may change several times during the review and validation process. TVA and its QA and laboratory subcontractors continue to search for a better system of tracking the "timeliness" of data. Pending development of a better marker, TVA continues to rely on weekly teleconferences (now attended by regulators as well) and the weekly QA summary of completed data packages reported by ESI to identify potential barriers and issues to this critical project need.
5. While not part of onsite project management decision making, TVA's Environmental Compliance and Modeling Support at Muscle Shoals provides technical support, as appropriate, for Kingston TVA's delivery of site related air data to EPA's AQS system. Organizationally, this support is provided thru the onsite environmental project management unit leader under the site specific ICS structure. Specifically the point of contact in this chain of command is Dennis Yankee with TVA

## **CORRECTIVE ACTION PLAN: REALTIME FEM AMBIENT AIR MONITORING**

### Background

The objective of the monitoring outlined in the AAMP is to measure airborne particulates in the adjacent community and to provide operational information for site dust control measures during the remediation efforts. The project implemented a filter-based determination of ambient levels of PM<sub>10</sub> and PM<sub>2.5</sub> in February and March 2009. The filter-based method was chosen as a monitoring scheme because it met the requirements of the site QAPP and it could be implemented quickly. The network was constructed of six sampling stations at the perimeter of the spill area. Filters are prepared at the gravimetric laboratory and shipped to the site. The filters are distributed to the sampling instruments and a measured volume of ambient air is drawn through each filter. The filters are returned to the laboratory for the post weights to be determined. A particulate concentration is calculated from the change in mass and the volume sampled. The monitoring method has as advantages; a long history of success, widespread use, available equipment, relatively low capital cost, and Federal Reference Method designation. The method has as disadvantages; significant lag time between sample collection and result determination, labor intensiveness, laboratory costs, and adherence to strict QA practices in the laboratory.

### Current Assessment

Recent experience with a laboratory not proficient in the method has illustrated the potential impact realized from ignoring the strict QA practices required by the method. The labs inability to deliver complete and error-free data packages compounded the issue by delaying recognition of poor data quality. A significant number of data points has been invalidated. The effect of the poor data quality has been mitigated somewhat by the simultaneous measurements by different monitoring technologies in the same area. The event has prompted the reexamination of the methodology employed to monitor the ambient air quality as an assessment of the effectiveness of dust control activities.

### Solution

The monitoring network should be reequipped with instruments that offer realtime results reporting of particulate matter. The instruments would replace existing filter based samplers operated by TVA. The instruments would be Federal Equivalent Methods that would meet the quality assurance requirements of the AAMP and the site QAPP, eliminate the multiple potential failure points inherent in a filter-based measurement program, and provide realtime feedback on dust control activities. Three instruments that meet the requirements were evaluated; the TEOM 1400 and Sharp 5030 from Thermo Electron and the BAM 1020 from Met One. The BAM 1020 was found to meet project needs most closely. Some adjustments to the network are indicated to take advantage of the data gathered to date and facilitate the operability of the network.

- The TEOMs operated by TDEC at PS07 and PS10 will continue to be utilized
- Reconfigure the current TVA TEOM to measure PM<sub>10</sub> and move it from PS07 to PS09
- PS06 has been eliminated from the network, as it is in close proximity to PS07, results closely agree with those of PS07, and there are virtually no southeast winds to influence the sampler.
- BAM 1020s measuring PM<sub>2.5</sub> will be operated at PS05, PS07, PS08 and PS09 to replace existing filter based methods. One FRM filter method sampler will continue to be

operated at PS07 for approximately six months to demonstrate correlation of the FEM network.

- PS13 has been established at the north end of the Northern Embayment (Berkshire Slough) with a BAM 1020 measuring PM2.5.
- The use of high volume samplers for the determination of metals would be continued at PS07, as well as the personnel type pumps used to collect samples for silica analysis.

Tentative Schedule for transition to FEM network

	Schedule	Complete date/ Status
Determine Appropriate technology	2/4/10	2/4/10
Issue RFP for FRM instruments	2/4/10	2/4/10
Award contract for 4ea FEM PM2.5 Instruments	2/12/10	3/10/10
Initiate project for automatic data collection	2/12/10	3/23/10
Delivery of 1 <sup>st</sup> FEM	3/12/10	4/8/10
1 <sup>st</sup> FEM operational; PS13	3/19/10	4/15/10
2nd FEM operational; PS05	3/26/10	5/17/10
3rd FEM operational; PS08	3/26/10	5/17/10
4th FEM operational; PS09	3/26/10	5/21/10
5th FEM operational; PS07	3/26/10	5/24/10
Complete and test automatic data collection network	3/22/10	Projected 6/11/10