STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the matter of:	)	Permit No.	AC 53-206244 PSD-FL-183
Wheelabrator Environmental Systems Inc.,	)		
	)	ASP No.	94-I-01
Petitioner.	)		

ORDER ON REQUEST FOR ALTERNATE PROCEDURES AND REQUIREMENTS

Pursuant to Rule 62-297.620, Florida Administrative Code (F.A.C.), Wheelabrator Environmental Systems Inc., petitioned for approval to use: (1) EPA Method 26A in lieu of EPA Method 5 for determining particulate; (2) EPA Method 26A in lieu of EPA Method 26 for measuring hydrogen chloride (HCl); (3) EPA Method 26A for measuring ammonia (NH_3); (4) EPA Method 23 for measuring polychlorinated biphenyls (PCBs); (5) the EPA Method described in 40 CFR 266, Appendix IX, Section 3.1 in lieu of EPA Method 108 for measuring arsenic (As); (6) the EPA Method described in 40 CFR 266, Appendix IX, Section 3.1 in lieu of EPA Method 104 for measuring beryllium (Be); and, (7) the EPA Method described in 40 CFR 266, Appendix IX, Section 3.1 in lieu of EPA Method 12 for measuring lead (Pb) emissions from Petitioner's wood/tire/landfill gas fired boiler (AC 53-206244, PSD-FL-183) which is equipped with a spray dryer absorber and a fabric filter at Ridge Generating Station, located in Polk County.

Having considered Petitioner's written request and all supporting documentation, the following Findings of Fact, Conclusions of Law, and Order are entered:

FINDINGS OF FACT

1. On July 29, 1994, Petitioner specifically requested approval to use EPA Method 26A as the compliance verification procedure for simultaneously determining particulate, hydrogen chloride (HCl), and ammonia (NH_3) emissions from the affected emission unit at Ridge Generating Station (AC 05-206894 and PSD-FL-183) using a single sampling train. [Exhibit 1]

2. As justification for the use of EPA Method 26A for the measurement of particulate, hydrogen chloride (HCl), and ammonia (NH_3), Petitioner stated, "...basis for this request is to set forth an approved FDEP procedure for ammonia sampling. The approval of this request would allow WESI/WRE to combine three separate sampling

trains without a loss in accuracy or precision of the individual methods for particulate, hydrogen chloride and ammonia." [Exhibit 2]

3. Section 1.1 of EPA Method 26A: "Determination of hydrogen halide and halogen emissions from stationary sources - isokinetic method", describes the applicability of the method as, "...This method collects the emission sample isokinetically and is therefore particularly suited for sampling sources such as those controlled by wet scrubbers, emitting acid particulate matter..."

4. Currently, there is no method available which is approved by EPA for the measurement of ammonia (NH_3) emissions from stationary sources.

5. The proposed method for ammonia has been field validated pursuant to EPA Method 301 on a municipal waste boiler which was equipped with a spray dryer absorber and a multi-module fabric filter. [Exhibit 1]

6. On July 29, 1994, Petitioner specifically requested approval to use EPA Method 23 as the compliance verification procedure for simultaneously determining emissions of polychlorinated dibenzo-p-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) and polychlorinated biphenyls (PCBs) from the affected emission unit at Ridge Generating Station (AC 05-206894 and PSD-FL-183) using a single sampling train. [Exhibit 1]

7. As justification for the use of EPA Method 23, Petitioner stated, "...The Method 23 sampling and analysis for PCDD's/PCDF's would not be compromised in any way as the sample is fully extracted in accordance with the method and then split to accomplish the PCDD/PCDF and PCB analyses on the respective split sample." [Exhibit 1]

8. Petitioner further stated, "The basis for this request is to utilize an approved EPA test methodology which has been extensively developed and validated at similar sources (ie., boilers and industrial furnaces) in order to provide lower detection limits, increased accuracy and improved precision for use in submitting the most accurate data to the FDEP. A second basis for this request is to set forth an approved FDEP procedure for PCB sampling. The approval of this request would allow WESI/WRE to combine two separate sampling trains without loss in accuracy or precision of the individual methods for PCDD/PCDF and PCB." [Exhibit 2]

9. Currently, there is no method available which is approved by EPA for the measurement of polychlorinated biphenyl (PCB) emissions from stationary sources.

10. On July 29, 1994, Petitioner specifically requested approval to use the EPA Method, "Methodology for the determination of metals emissions in exhaust gases from hazardous waste

incineration and similar combustion processes" described in Section 3.1 of 40 CFR 266, Appendix IX as the compliance verification procedure for simulataneously determining emissions of arsenic (As), beryllium (Be), lead (Pb), cadmium (Cd), total chromium (Cr), and zinc (Zn) from the affected emission unit at Ridge Generating Station (AC 05-206894 and PSD-FL-183) using a single sampling train. [Exhibit 1]

11. As justification for the use of the EPA Method described in Section 3.1 of 40 CFR 266, Appendix IX, Petitioner stated, "The approval of this request would allow WESI/WRE to combine four separate sampling trains with an increase in the accuracy and precision of the individual methods for arsenic, beryllium and lead. The use of this sampling train would provide detection limits of nanogram/milliliter versus detection limits of microgram/milliliter utilizing the EPA Method 12, 104 and 108 sampling trains."

12. The applicability section of the method described in section 3.1.1.1 in 40 CFR 266, Appendix IX states, "This method is being developed for the determination of total chromium (Cr), cadmium (Cd), arsenic (As), nickel (Ni), manganese (Mn), beryllium (Be), copper (Cu), Zinc (Zn), lead (Pb), selenium (Se), phosphorous (P), thallium (Tl), silver (Ag), antimony (Sb), barium (Ba), and mercury (Hg) stack emissions from hazardous waste incinerators and similar combustion processes."

CONCLUSIONS OF LAW

1. The Department has jurisdiction to consider Petitioner's request pursuant to Section 403.061, Florida Statutes (F.S.), and Rule 62-297.620, F.A.C.

2. Pursuant to Rule 62-297.340(2), F.A.C., the Department may require Petitioner to conduct compliance tests that identify the nature and quantity of pollutant emission, if, after investigation, it is believed that any applicable emission standard or condition of a permit is being violated.

3. Petitioner has provided reasonable justification that the use of EPA Method 26A will be adequate to verify compliance with the particulate and hydrogen chloride (HCl) emission limiting standards and to measure ammonia (NH_3) emissions from the affected emission unit.

4. Petitioner has provided reasonable justification that EPA Method 23 will be an adequate compliance verification procedure for the measurement of polychlorinated biphenyl (PCB) emissions from the affected emission unit.

5. Petitioner has provided reasonable justification that the EPA Method described in Section 3.1 of 40 CFR 266, Appendix IX will be adequate to verify compliance with the beryllium (Be), and lead

(Pb) emission limiting standards and for the measurement of arsenic (As) emissions from the affected emission unit.

ORDER

Having considered Petitioner's written request and supporting documentation, it is hereby ordered that:

1. Petitioner's request to use EPA Method 26A in lieu of EPA Method 5 for the measurement of particulate is granted;

2. Petitioner's request to use EPA Method 26A in lieu of EPA Method 26 for the measurement of hydrogen chloride (HCl) is granted;

3. Petitioner's proposed procedure for the sampling and analysis of ammonia (NH_3) based on EPA Method 26A is granted;

4. Petitioner's request to use EPA Method 26A sampling train for the simultaneous collection of samples to quantify particulate, hydrogen chloride (HCl), and ammonia (NH_3) emissions is granted;

5. Petitioner's proposed procedure for the sampling and analysis of polychlorinated biphenyls (PCBs) based on EPA Method 23 is granted;

6. Petitioner's request to use EPA Method 23 sampling train for the simultaneous collection of samples to quantify emissions of polychlorinated dibenzo-p-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) and polychlorinated biphenyl (PCB) is granted;

7. Petitioner's request to use the EPA method described in Section 3.1 of 40 CFR 266, Appendix IX in lieu of EPA Method 108 is granted;

8. Petitioner's request to use the EPA method described in Section 3.1 of 40 CFR 266, Appendix IX in lieu of EPA Method 104 is granted;

9. Petitioner's request to use the EPA method described in Section 3.1 of 40 CFR 266, Appendix IX in lieu of EPA Method 12 is granted;

10. Petitioner's request to use a single sampling train described in Section 3.1 of 40 CFR 266, Appendix IX for the simultaneous collection of arsenic (As), beryllium (Be), lead (Pb), cadmium (Cd), total chromium (Cr), and zinc (Zn) emissions is granted; and,

11. The Department retains the right to require Petitioner to conduct EPA Method 5, EPA Method 26, EPA Method 108, EPA Method 104, and EPA Method 12 if, after investigation, it is believed that the use of any of these methods is necessary to more accurately measure

particulate, hydrogen chloride (HCl), arsenic (As), beryllium (Be), and lead (Pb) emissions respectively and to assess the compliance status of the emission unit.

PETITION FOR ADMINISTRATIVE REVIEW

1. A person whose substantial interests are affected by the Department's decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 21 days of receipt of this Order. The petitioner shall mail a copy of the petition to the applicant at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

2. The petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, and the Department File Number;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by each petitioner, if any;

(e) A statement of facts which each petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes each petitioner contends require reversal or modification of the Department's action or proposed action; and,

(g) A statement of the relief sought by each petitioner, stating precisely the action each petitioner wants the Department to take with respect to the Department's action or proposed action.

3. If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Order. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform with the requirements specified above and be filed (received) within 21 days of receipt of this notice in the Office of General Counsel at 2600 Blair Stone

Road, Tallahassee, Florida 32399-2400. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

4. This Order constitutes final agency action unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 62-103.070, F.A.C. Upon timely filing of a petition or a request for an extension of time, this Order will not be effective until further Order of the Department.

RIGHT TO APPEAL

Any party to this Order has the right to seek judicial review of the Order pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and, by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date the Notice of Agency Action is filed with the Clerk of the Department.

DONE AND ORDERED this 17 day of February, 1995 in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Howard L Rhodes

HOWARD L. RHODES
Director
Division of Air Resources Management
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2600 Blair Stone Road
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July 29, 1994

RECEIVED
AUG 1 1994
Emissions Monitoring

RECEIVED
Bureau of
Air Regulation

Mr. Michael Harley, P.E., DEE
Florida Department of Environmental Protection
Emissions Monitoring Section
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: **Alternate Sampling Procedure Request for Compliance Emissions Tests at Ridge Generating Station - AC 53-206244**

Dear Mr. Harley,

In accordance with Rule 17-297.620 F.A.C., Wheelabrator Ridge Energy, Inc. (WRE) is requesting approval of alternate sampling procedures for use during compliance emissions testing at Ridge Generating Station - AC 53-206244. The approval is requested in order to utilize methodologies which will result in lower detection limits for metals emissions as well as set forth procedures for performing PCB and NH_3 sampling for which there are no FDEP approved methods. The approval of the following methodologies will allow for a combination of sampling trains which will not affect the Quality Assurance/Quality Control requirements of any one method.

The following alternate sampling procedure approvals are requested for use during the Comprehensive Compliance Emissions Test Program to be performed at Ridge Generating Station, Auburndale, Polk County, Florida.

1. WRE requests approval to perform EPA Method 26A for particulate and hydrogen chloride sampling. Additionally, WRE requests a modification to the method to allow for the analysis of an aliquot of the .1 N H_2SO_4 impinger reagent for ammonia by ion specific electrode.

   A detailed description of the sampling and analytical procedures for the EPA Method 26A sampling train as it would be utilized at WRE is attached. Also enclosed is the EPA Method 301 ammonia validation report prepared by ENTROPY, Inc. which verifies that the ion specific electrode analyses of the .1 N H_2SO_4 reagent of the Method 26A sampling train provides valid results. There is no alteration of the Method 26A sampling train for obtaining ammonia, only an additional analysis of an aliquot of the .1 N H_2SO_4.

2. WRE requests approval to perform EPA Method 23 for PCDD/PCDF and PCB sampling. The only modification to this method would be to include the impinger reagent/catch/rinse in the analyses of the PCBs.

Exhibit 1

A detailed description of the sampling and analytical procedures for the EPA Method 23 sampling train as it would be utilized at WRE is attached. The Method 23 sampling and analysis for PCDD's/PCDF's would not be compromised in any way as the sample is fully extracted in accordance with the method and then split to accomplish the PCDD/PCDF and PCB analyses on the respective split sample. The PCB standards are added to the appropriate extract for analysis in accordance with EPA Method 680. Detection limits of .02 - .04 nanograms for PCDDs/PCDFs and .06 nanograms for PCBs are expected from this sampling train.

3. WRE requests approval to perform the method in 40 CFR 266, Appendix IX, Section 3.1 for arsenic, beryllium and lead sampling. There is no modification to this method. The sampling and analysis for arsenic, beryllium and lead would be performed along with cadmium, total chromium and zinc (as zinc oxide) in a single sampling train.

   A detailed description of the sampling and analytical procedures for the 40 CFR 266, Appendix IX, Section 3.1 method sampling train as it would be utilized at WRE is attached. The use of this sampling train would provide detection limits of nanogram/milliliter versus detection limits of microgram/milliliter utilizing the EPA Method 12, 104 and 108 sampling trains.

As stated in your July 11, 1994 letter, you are requesting guidance from the EPA concerning the PCB and ammonia sampling and analytical procedures. If I can be of any assistance in supplying further documentation, or if you would like to meet to discuss the requests outlined in this letter, please do not hesitate to call me at 800-682-0026.

WRE appreciates the effort from the FDEP in finalizing the sampling and analytical procedures for the compliance testing at Ridge Generating Station.

Sincerely,

John P. Goodwin
Environmental Engineer

Attachments

cc: G. Aguinaga
T. Porter
D. Raymond
B. Rudd
R. Williams

JPG060

EPA Method 26A
Particulate, Hydrogen Chloride, and Ammonia

Sample Collection. Samples will be withdrawn isokinetically from the source using an EPA Method 26A combined sampling train. The sampling train will consist of a glass nozzle, a heated glass probe with a type S pitot tube attached, a filter, five chilled impingers, and a metering console. The particulate sample will be collected on a Pallflex 2500QAT-UP quartz filter maintained at a temperature of 248°F ± 25°F. The first and second impingers will each contain 100 ml of 0.1 N H_2SO_4, the third and fourth will each contain 100 mL of 0.1 N sodium hydroxide (NaOH), and the fifth will contain preweighed silica gel.

Sample Recovery. The filter will be removed from the filter holder and placed in a 250 mL glass jar. The H_2SO_4 and NaOH reagents will be returned to the original 1,000 mL and 500 mL glass jars, weighed, the weight recorded on the labels , and the liquid levels marked. The silica gel will be returned to the original tared container, weighed, and the weight recorded on the label. The volume of water vapor condensed in the impingers and the volume of water vapor collected in the silica gel will be summed and entered into moisture content calculations.

The nozzle, probe, and front half of the filter holder will be rinsed with acetone into a 500 mL glass jar. The back half of the filter holder and the first and second impingers along with the connecting glassware will be rinsed with DI water into the glass jar containing the H_2SO_4 reagent. The third and fourth impingers along with the connecting glassware will be rinsed with DI water into the glass jar containing the NaOH reagent.

Sample Analysis. EPA Method 5 analytical procedures will be used to analyze the filter and front half acetone rinse for particulate. An aliquot of the H_2SO_4 reagent and associated DI water rinse will be analyzed for hydrogen chloride using ion chromatography as outlined in the method. An aliquot of the H_2SO_4 reagent and associated DI water rinse will be analyzed for ammonia using ion-specific electrode.

STATIONARY SOURCE SAMPLING REPORT

REFERENCE NO. 12283

For

at the

EPA METHOD 301 AMMONIA METHOD VALIDATION TESTING

UNIT NO. 1 STACK

SEPTEMBER 9 THROUGH 11, 1993

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INTRODUCTION

1.1 Outline of Test Program. EPA Method 301 ammonia method validation testing was performed for at their Recovery Facility in on September 9 through 11, 1993. Testing was performed at the unit No. 1 stack to validate sampling and analytical methods for ammonia. The test program was designed according to the criteria of EPA Method 301, "Protocol for the Field Validation of Emission Concentrations from Stationary Sources." This method includes procedures for determining the bias and precision of the measured concentrations.

Six repetitions of quadruplicately located concurrent EPA Method 5 trains modified to capture ammonia were used. Four EPA Method 5 probe and impinger assemblies were built into a single unit that allowed for simultaneous sampling through a single port at a single point. Ammonia was quantified by Ion Specific Electrode (ISE) analytical techniques.

The sampling train consisted of a heated glass probe, a filter, four chilled impingers, and a metering console. The first three impingers each contained 100 mL of 0.1N sulfiric acid (H_2SO_4) and the fourth contained preweighed silica gel. The results of the testing show the train is suitable for measuring ammonia emissions and that the amount of ammonia captured in the probe and on the filter is insignificant.

Table 1-1 is a test log which presents the test dates and run numbers.

TABLE 1-1
UNIT NO. 1 STACK TEST LOG

Test Date	Run Numbers Concurrent Train 1	 2	 3	 4
9/09	1-MNH3-1A*	1-MNH3-1B	1-MNH3-1C*	1-MNH3-1D
9/09	1-MNH3-2A*	1-MNH3-2B	1-MNH3-2C*	1-MNH3-2D
9/09	1-MNH3-3A*	1-MNH3-3B	1-MNH3-3C*	1-MNH3-3D
9/10	1-MNH3-4A*	1-MNH3-4B	1-MNH3-4C*	1-MNH3-4D
9/10	1-MNH3-5A*	1-MNH3-5B	1-MNH3-5C*	1-MNH3-5D
9/10	1-MNH3-6A*	1-MNH3-6B	1-MNH3-6C*	1-MNH3-6D
9/10	1-MNH3-7A*	1-MNH3-7B	1-MNH3-7C*	1-MNH3-7D
9/10	1-MNH3-8A*	1-MNH3-8B	1-MNH3-8C*	1-MNH3-8D
9/11	1-MNH3-9A*	1-MNH3-9B	1-MNH3-9C*	1-MNH3-9D

* Spiked trains

1.2 Test Participants. Table 1-2 lists the personnel involved in the test program.

TABLE 1-2
TEST PARTICIPANTS

Entropy, Inc.	Herb Dixon Project Manager
	David Brintle Project Supervisor
	Joe Winslow Sampling Team Leader
	Danny Speer Sampling Team Leader
	Jeff Coppedge Laboratory Technician

SUMMARY OF RESULTS

2.1 Presentation. Table 2-1 presents the pertinent bias and precision calculations. The ammonia results were calculated using only the impinger fractions since previous experience has shown no detectable ammonia in the fronthalf rinse or on the filter. Detailed test results for ammonia concentrations and the matrix spike recovery efficiencies are presented in Appendix A. Field and analytical data are given in Appendix B.

2.2.1 Aborted Runs. Run 1-MNH3-7 was aborted due to a failed posttest leak check on the "D" sample train. Runs 1-MNH3-1 and 1-MNH3-6 were aborted due to various sampling problems.

2.2.2 Precision. The relative standard deviation is 7% for both the spiked and unspiked samples for the impingers analyses. The acceptable range is ±50%. Therefore, the precision for the impingers analyses is acceptable.

2.2.3 Bias. The calculated bias for the analyses of the impingers is 0.174. The bias is not statistically significant. Based on the t-test criteria, a correction factor is not necessary because the bias is not statistically significant. The calculated correction factor would be 1.05. The acceptable range for the correction factor is 0.7 to 1.3.

2.2.4 Breakthrough. Breakthrough is defined as the percentage of the total impingers catch that is found in the third impinger. The highest ammonia breakthrough to the third impinger was 0.7% on sample 1-MNH3-1C, indicating that the sampling train efficiently captured ammonia. Additionally, the highest ammonia breakthrough to the second impinger was 1.1% on sample 1-MNH3-9B, indicating that the sampling train efficiently captured ammonia if only two impingers are used.

TABLE 2-1

BIAS AND PRECISION CALCULATIONS

ANALYTE SPIKING: QUAD TRAINS

ENTER VALUE OF SPIKED LEVEL (CS)= 3.650

	SPIKED SAMPLES		UNSPIKED SAMPLES					
RUN #	A	C	B	D	A-C	(A-C)^2	B-D	(B-D)^2
2	8.03	7.65	3.62	3.80	0.38	0.14	-0.18	0.03
3	11.97	10.38	7.32	6.66	1.59	2.53	0.66	0.44
4	9.90	10.28	6.34	6.03	-0.38	0.14	0.31	0.10
5	6.05	7.47	3.61	3.51	-1.42	2.02	0.10	0.01
8	11.01	11.30	6.93	6.93	-0.29	0.08	0.00	0.00
9	7.84	7.21	4.73	3.72	0.63	0.40	1.01	1.02

AVERAGE: Sm= 9.09 Mm= 5.27

STANDARD DEVIATION:

SPIKED SDs= 0.67 ✓

UNSPIKED SDu= 0.36 ✓

RELATIVE STD RSDs= 7% (acceptable) ✓

RELATIVE STD RSDu= 7% (acceptable) ✓

BIAS:

B= 0.174166 ✓

STD OF MEAN SDm= 0.759 ✓

t-VALUE= 0.230

CRITICAL t-VALUE= 2.201
(n=12, alpha=95%)

Bias not statistically significant, CF not needed.

CORRECTION FACTOR=1.047716 (Acceptable)

TABLE 2-1

BIAS AND PRECISION CALCULATIONS

ANALYTE SPIKING: QUAD TRAINS

ENTER VALUE OF SPIKED LEVEL (CS)= 3.650

	SPIKED SAMPLES		UNSPIKED SAMPLES					
RUN #	A	C	B	D	A-C	(A-C)^2	B-D	(B-D)^2
2	8.03	7.65	3.62	3.80	0.38	0.14	-0.18	0.03
3	11.97	10.38	7.32	6.66	1.59	2.53	0.66	0.44
4	9.90	10.28	6.34	6.03	-0.38	0.14	0.31	0.10
5	6.05	7.47	3.61	3.51	-1.42	2.02	0.10	0.01
8	11.01	11.30	6.93	6.93	-0.29	0.08	0.00	0.00
9	7.84	7.21	4.73	3.72	0.63	0.40	1.01	1.02

AVERAGE: Sm= 9.09 Mm= 5.27

STANDARD DEVIATION:

SPIKED SDs= 0.67

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STD OF MEAN SDm= 0.759

t-VALUE= 0.230

CRITICAL t-VALUE= 2.201
(n=12, alpha=95%)

Bias not statistically significant, CF not needed.

CORRECTION FACTOR=1.047716 (Acceptable)

PROCESS DESCRIPTION AND OPERATION

3.1 General

The is owned and operated by The facility contains three independent Martin GmbH reverse reciprocating stoker type boilers. Each boiler has a design rated capacity of 400 TPD for a total plant capacity of 1200 TPD. The facility is designed to generate 35.7 MegaWatts of power. Municipal waste is dumped on the tipping floor and then transferred to the refuse holding pit where one of two refuse cranes feed three chutes leading to each waterwall furnace. A ram-type feeder pushes the refuse on to the grate of the reciprocating stoker, where refuse is burned.

A furnace lime injection system is available to reduce acid gas emissions. Flue gases exiting the economizer are directed to a spray dryer absorber (SDA). Lime slurry is added to the effluent to reduce acid gas emissions. Upon exiting the SDA, flue gases flow through a multi-module fabric filter (FF) for particulate emission control. The flue gases exiting the fabric filter flow through the stack to the atmosphere.

3.2 Source Air Flow

Figure 3-1 is an air flow schematic which shows the passage of flue gases exhausted from the boilers.

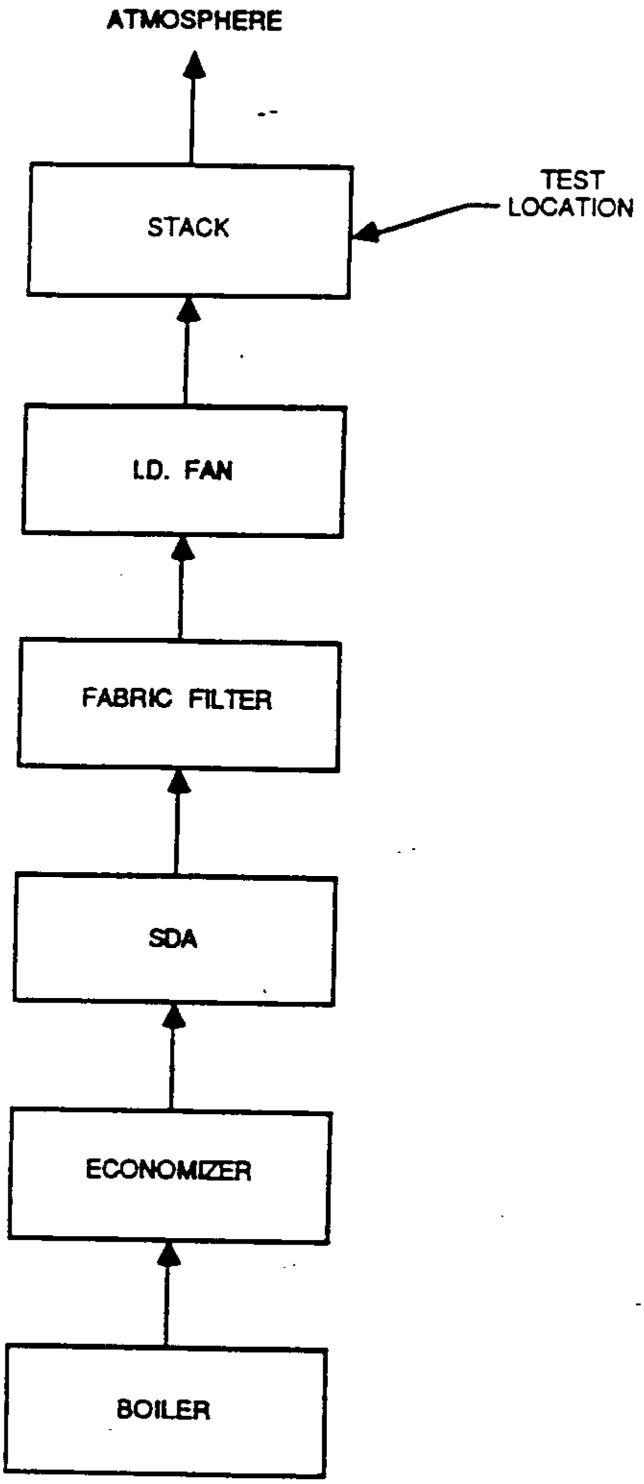


FIGURE 3-1. UNIT NOS. 1, 2, AND 3 AIR FLOW SCHEMATIC.

SAMPLING AND ANALYTICAL PROCEDURES

4.1 General. All sampling procedures were those recommended by the United States Environmental Protection Agency and the

This section provides brief descriptions of the sampling and analytical procedures. Detailed descriptions of the procedures are provided in Appendix E.

4.2 Emissions Determinations. Ammonia concentrations were determined by using a modified EPA Method 5 type train. Four EPA Method 5 probe and impinger assemblies were built into a single unit that allowed for simultaneous sampling through a single port.

Sample Collection. Each sampling train consisted of a heated glass probe, a filter, four chilled impingers, and a metering console. The first three impingers each contained 100 mL of 0.1N H_2SO_4, and the fourth contained preweighed silica gel.

Two of the four simultaneous trains (the first impinger of trains A and C) were spiked with ammonia for each run. Proper spiking levels were determined by previous experience.

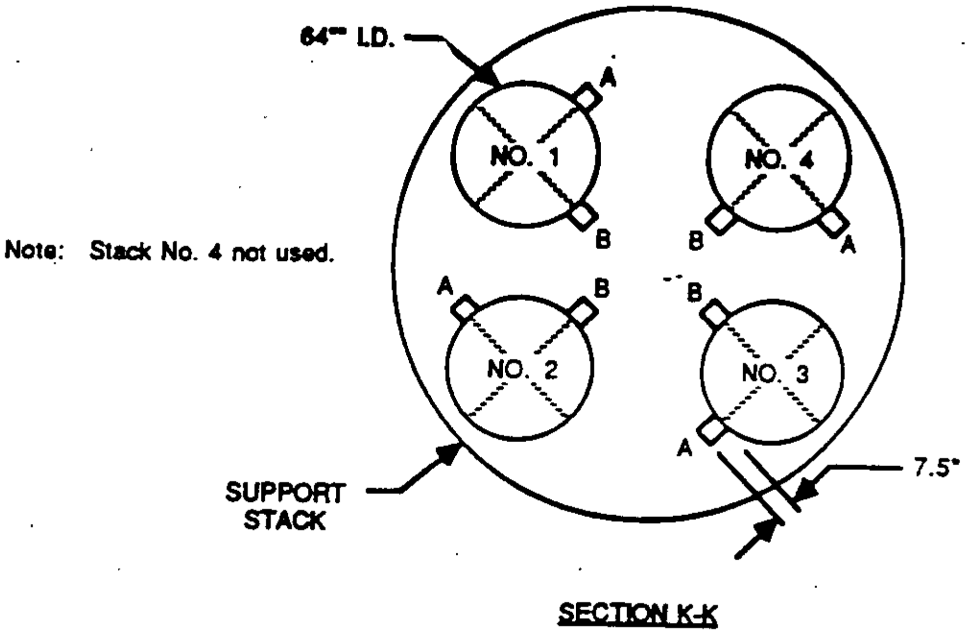
Single point sampling was conducted at a single point within the stack for 60 minutes.

Sample Recovery. The filter was removed from the filter holder and placed in a 250 mL glass jar. The 0.1N H_2SO_4 reagents were returned to their original 1000 mL glass jars, weighed, the weight recorded on the labels, and the liquid levels marked. The silica gel was returned to the original tared container, weighed, and the weight recorded on the label.

The probe and fronthalf of the filter holder were rinsed with 0.1N H_2SO_4 into a 500 mL glass jar. The backhalf of the filter holder and first impinger were rinsed with DI water into the glass jar containing the reagent from the first impinger. The second impinger was rinsed with DI water into the glass jar containing the second impinger reagent. The third impinger was rinsed with DI water into the glass jar containing the third impinger reagent.

Sample Analysis. Each impinger was analyzed separately by ISE for

(continued on page 4-3)



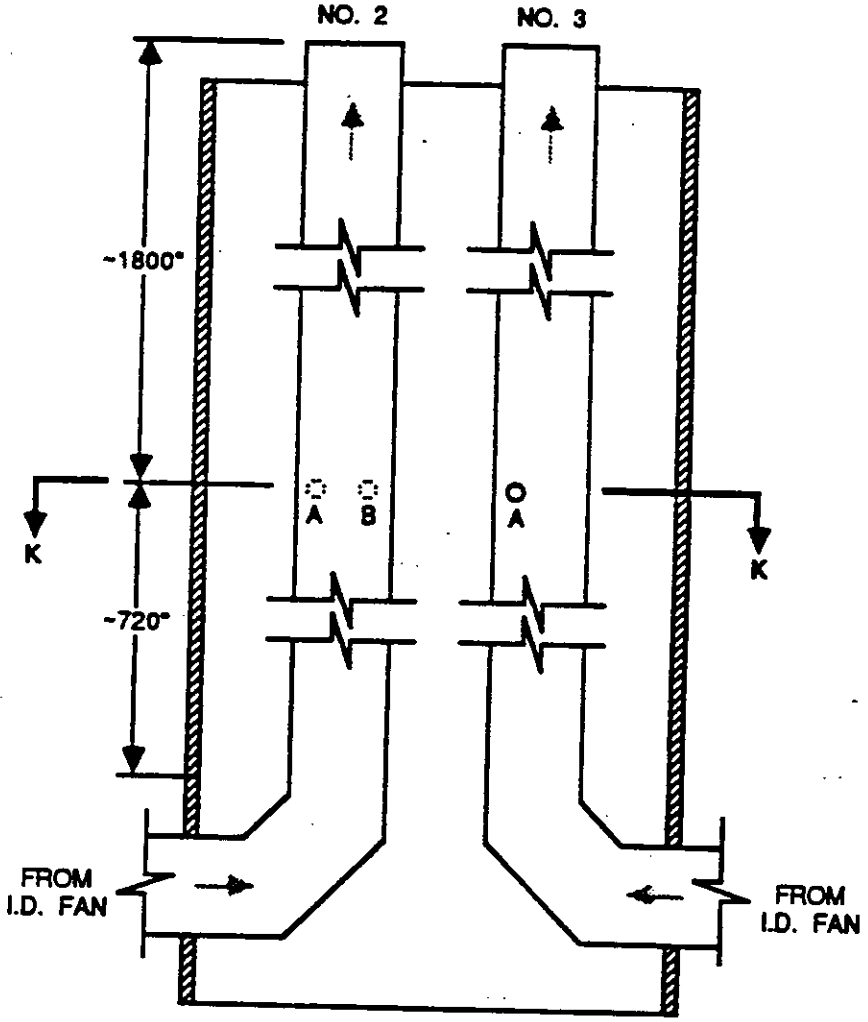


FIGURE 4-2. UNIT NOS. 1, 2, AND 3 STACK TEST LOCATION.

ammonia. The filter was resuspended in the fronthalf 0.1N H_2SO_4 rinse and analyzed for ammonia.

Field samples were analyzed onsite. A calibration curve was generated prior to the analyses. Any sample with a concentration below that of the lowest standard on the curve was reported as less than the lowest standard.

4.3 Equipment Calibration. Pertinent calibration data are provided in Appendix C.

QUALITY ASSURANCE/QUALITY CONTROL

5.1 General. Entropy Environmentalists Inc. (EEI) is committed to the continued implementation of a Quality Assurance Program to assure the quality of sampling and analytical procedures of environmental measurement data. The Quality Assurance measures taken during this test project equals or exceeds the minimum QA/QC recommendations as set forth by the U.S. Environmental Protection Agency (EPA) for a particular method.

The following sections outline the QA program implemented by EEI to justify the validity of test procedures. As applicable, the QA system for the various test programs addresses the following areas:

- ▲ Preventive Maintenance & Equipment Calibration
- ▲ QA Sample Processing
- ▲ Analytical Instrument Calibration
- ▲ Blanks and Spiked Samples
- ▲ Internal/External System Checks
- ▲ Data Reduction & Validation
- ▲ QA/QC Summary

5.2 Preventive Maintenance and Equipment Calibration. An effective preventive maintenance program decreases downtime and thus increases data completeness and quality. Pretest and posttest equipment calibrations are conducted in a manner and at a frequency which meets or exceeds U.S. EPA specifications.

Each item transported to the field is inspected to detect equipment problems which may originate during periods of storage. All equipment returning from the field is cleaned, repaired, reconditioned, and recalibrated as necessary. Routine maintenance on equipment (dry gas meters, pumps, Magnehelics, manometers, pitot tubes, and nozzles) is carried out periodically for leaks, corrosion, dents, or any other damage. Table 5-1 shows the activities for equipment calibration.

TABLE 5-1

IN-HOUSE EQUIPMENT CALIBRATION

Apparatus	Calibration Method And Frequency	Specifications	Corrective Action
Type S Pitot Tubes	Standards contained in EPA Method 2. Visual inspection prior to shipment to test site and again prior to each day of testing.	Coefficient of 0.84 ± 0.02	Refurbish or recalibrate.

(continued next page)

TABLE 5-1 (continued)

IN-HOUSE EQUIPMENT CALIBRATION

Apparatus	Calibration Method And Frequency	Specifications	Corrective Action
Manometers	Leak checked before and after each field use.		Adjust or replace.
Magnehelic Gauges	Initially calibrated over full range.	0-10" water column	
	After each field use, checked against inclined manometer at average settings encountered during testing.	Within ± 5%	Repair and Recalibrate.
Thermometers -Impinger -Dry Gas Meter -Filter Box	After purchase and prior to each field use, using ASTM mercury-in-glass thermometer.	Imp = ± 2°F DGM = ± 5.4°F FB = ± 5.4°F	Adjust, determine correction factor, or reject.
Thermocouple/ Potentiometer	After purchase. 3-point (ice bath, boiling water, and hot oil) using ASTM mercury-in-glass thermometer.	± 1.5% of absolute temperature.	Adjust, determine correction factor, or reject.
	Before and after each field use, compared to ASTM mercury-in-glass thermometer at ambient conditions.		
Dry Gas Meter and Orifice	Full calibration (every 6 months) over wide range of orifice settings to obtain calibration factor (isokinetic meterbox).	DGM = ± 0.02 from avg.coeff. for each run. Orifice = ± 0.20 from average ΔH@ for each run.	Adjust or replace.
	10-minute quick calibration before sending to test site and again prior to each day of field use (isokinetic).	± 3% of full. ± 5% of full.	Use if no backup. Do not use.
	Posttest (at average delta H and highest vacuum encountered during testing) to determine if meter gamma has changed (isokinetic).	± 5% of full calibration. Gamma (initial or recalibration) that yields the lowest sample volume for the testing is used for calculations.	Recalibrate or replace.
	Full calibration w/spirometer before/after each field use (nonisokinetic meterbox).	± 5% of pretest, .02 from average coeff. from each run	Recalibrate.
Dry Gas Meter Transfer Standard	Annual calibrations conducted in triplicate using EPA wet test meter. Calibrations conducted at 7 flow rates from 0.25 to 1.40 cfm.	± 2% of average factor for each calibration run.	Adjust and recalibrate.
Barometer	Before and after each field use against an aneroid barometer.	± 0.1" mercury.	Adjust to agree.
	Reference barometer adjusted for elevation differences.		
Probe Nozzle	Average of 5 I.D. measurements using a micrometer. Visual inspection before and after each field use.	Difference between high and low measurement ≤ 0.004"	Repair and recalibrate.

5.3 Sample Processing. Entropy employs systems which ensure the integrity of an environmental sample from the time of acquisition, through analysis, and ultimately to proper disposal. These systems are necessary to allow valid conclusions to be drawn from analytical results separated in time and space from the sampling operation. In addition, these systems recognize that samples are occasionally of value even after analytical results have been reported.

Samples are collected, transported, and stored in clean containers which are constructed of materials inert to the analytical matrix. Containers are used which allow air tight seals. When necessary, containers are employed which prevent photochemical reactions. All sample containers are labeled with the following information:

- ▲ Unique source identifier
- ▲ Sample run identifier
- ▲ Analyte identifier
- ▲ Sample matrix identifier
- ▲ Sample analyst identifier

Additional information relating to the sample is recorded on the data sheet for the sampling run that afforded the subject sample. Accordingly, the sampling data sheet contains all the information listed above, plus the date and time the sample was acquired and supplemental information such as observations pertinent to the quality of the sample. For condensed samples, e.g., samples in liquid media, the sample levels are marked on the outside of the container; this mark is used to indicate sample loss, and as such, may serve as a reference in adjusting results accordingly.

For transport from the field to the laboratory, samples are stored in sealed containers and secured in a fashion which minimizes movement and thus prevents breakage of containers. Containers used for transporting glass are packed with foam. Samples which require chilling are kept cold until analyzed.

Samples remain in the custody of the sampler, from acquisition until conveyance to the sample custodian. All custody transfers are signed for and documented on a record of custody form, which remains with the sample until turned over to the custodian.

Analytical data are identified in a manner identical to that of the sampling data. Accordingly, all data generated from the analysis of samples are documented with the following information:

- ▲ Source identifier
- ▲ Sample run identifier
- ▲ Analyte identifier
- ▲ Sample matrix identifier
- ▲ Analyst identifier
- ▲ Analysis date

Portions of samples remaining after analysis are returned to their original sample containers. These samples are stored in designated storage areas until their destruction is authorized.

5.4 Instrument Calibration. Instrument calibration is one of the most important functions in generating precise and accurate quality data. A listing of major in-house instrumentation and the corresponding Quality Assurance program is given in Table 5-2.

All of the contract laboratories involved in the analytical testing for the test program maintained rigorous QA programs for instrument calibration.

TABLE 5-2

IN-HOUSE INSTRUMENT CALIBRATION

Apparatus	Calibration Method And Frequency	Corrective Specifications	Action
Analytical & Top Loading Balance	Daily and monthly checks with a series of class S weights.	± 1 mg of class S weights.	Adjust or repair.
	Balance serviced annually by a qualified service representative and checked with a series of NBS weights.		
Gas Chromatograph	3-point calibration curve at the expected range.		
	Duplicate injection of the sample until ± 5% variation is achieved.		
	Calibration repeated at the end of each test series.		
HPLC/Ion Chromatograph	Calibrations conducted at the beginning, after the first injection, and after the second injection.		
Fisher Accument 925 pH/Selective Ion Meter	5- point calibration prior to analyzing the samples for the specific ions.		

5.5 Blanks and Spikes. Field blanks, method blanks, trip blanks, lab-proof blanks and filter blanks are obtained, digested and analyzed when applicable. The blanks reflect the background contamination obtained from the various sources during the sampling and analysis. Thus, data adjustment or correction can be made accordingly.

In most cases, it is not necessary to digest and analyze the method blanks, reagent blanks or the lab-proof blanks unless the field blank shows a high level of contamination. If a high level of contamination is present, it is imperative to individually analyze the above blanks to help determine the cause of contamination.

Spiked samples are used to check on the performance of a routine analysis or the recovery efficiency of a method. During spiking, a known amount of stock solutions of the substance of interest is added to the sample prior to sample extraction, digestion, and analysis.

5.6 Internal/External System Audit Checks. System and performance audits are routine elements of all Entropy QA/QC programs.

Internal Systems Audit: The following sampling equipment checks were conducted prior to sample collection.

- All sampling equipment was thoroughly checked to ensure clean and operable components.
- Equipment was inspected for possible damage from shipment.
- The oil manometers or Magnehelic gauges were leveled and zeroed.
- The temperature measurement systems were checked for damage and operability by measuring the ambient temperature.

Performance Audits: Performance audits of the laboratory are conducted prior to the processing of any compliance samples for analysis. Audit materials typically include samples available from the EPA prior to new source testing. Also, samples of known concentration are specially prepared in-house or obtained from the EPA for Internal QA checks.

External Systems Audits: Entropy is subject to a system audit each time a test is conducted for any Air Pollution Control agency. This procedure entails an EPA observer on-site to do qualitative evaluation of performance to demonstrate compliance with the applicable regulations.

5.7 Data Reduction and Validation. The test team leader is responsible for reviewing and validating data as they are acquired. Each team leader has extensive knowledge of sampling methodology and the characteristics of the process being measured and is capable of evaluating the accuracy, representativeness, and completeness of raw data on-site, where action to replace inadequate data can be taken immediately.

Data obtained during calibrations and test runs are recorded on standardized forms which are checked twice for completeness and accuracy by the QA Director or his designated representative. Data reduction and consistency are achieved by using the standardized forms and using Entropy's in-house computer facilities.

5.8 QA/QC Summary. All chemicals used were American Chemical Society (ACS), High Performance Liquid Chromatography (HPLC), or pesticide grade. The deionized, distilled water utilized met or exceeded the American Society for Testing and Materials (ASTM) specifications for Type-I reagent water. Pretest and posttest leak checks were conducted on each sampling train.

Ammonia

Calibration Curve: Three standards containing known amounts of ammonia were prepared and analyzed. Linear regression was performed on the standards to produce a curve. No standard deviated more than 7.1% from the curve.

Blanks and Spikes: Reagent blanks of 0.1N H_2SO_4 were injected with each set of samples. Each "A" and "C" sample of the quad train was spiked with a known amount of ammonia. Percent recovery was determined to be 100% (+/- 20%) for each spike.

EPA Method 23: PCDD/PCDF and PCB

Sample Collection. Samples for polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans (PCDD/PCDF) and polychlorinated biphenyls (PCB) will be withdrawn isokinetically from the source using an EPA Method 23 sampling train. The sampling train will consist of a nickel-plated stainless steel nozzle, a heated borosilicate glass probe, a Whatman EPM2000 glass filter maintained at a temperature of 248°F ± 25°F, a water-cooled condenser, a sorbent trap containing XAD-2 resin, five chilled impingers and a metering console.

The water-cooled condenser and sorbent trap are arranged in a manner that allows the condensate to drain vertically through the trap. Gas entering the trap will be maintained at or below 68°F. The first impinger (optional knockout) will remain empty, the second and third impingers will each contain 100 mL of DI water, the fourth will remain empty, and the fifth will contain preweighed silica gel. Sealing greases will not be used on any portion of the sample train.

Sample Train Component Preparation.

Glassware. All glass parts of the sample train including the sorbent trap, will be precleaned before sampling according to the following procedures.

1. Soak in hot soapy water (Alconox) at 50°C or higher
2. Rinse three times with tap water
3. Rinse three times with DI water
4. Rinse three times with pesticide grade acetone
5. Rinse three times with pesticide grade methanol/methylene chloride
6. Bake at 450°F for 2 hours
7. Cap with Teflon tape or methylene chloride rinsed aluminum foil

The glassware will be capped with precleaned foil or Teflon tape until sample train assembly. Following sample recovery, the glassware will be reused at the same sampling location.

XAD-2 Resin. The XAD-2 resin is purchased precleaned from Supelco Chromatography Products. The sorbent trap will be charged with 20 to 30 grams of the precleaned resin. Care will be taken to ensure the resin is kept at temperatures below 120°F before and after sample collection to prevent resin decomposition. The period between charging the trap and use in the field will be as brief as possible and will not be allowed to exceed 14 days.

Sample Recovery. Recovery of the samples and assembly of the sample trains for reuse will be conducted in the dust-free environment of the sample recovery and field laboratory. The DI water reagent will be returned to the original 1,000 mL amber glass jar, weighed, the weight recorded on the label, and the liquid level marked. The volume of water vapor condensed in the impingers and the volume of water vapor collected in the XAD-2 resin and silica gel will be summed and entered into moisture content calculations.

The sample-exposed components of the sampling train up to the XAD-2 cartridge will be rinsed with acetone, methylene chloride, toluene, and finally with acetone (which will be discarded). The impingers will be rinsed with acetone and methylene chloride into a 500 mL amber glass jar. All samples will be stored at 40°F until analyzed. Sample containers from a typical run will include:

Container 1	Filter(s)
Container 2	Rinses of nozzle, probe, and front half of filter holder
Container 3	XAD-2 cartridge and resin
Container 4	Impinger contents
Container 5	Rinses of back half of filter holder, transfer line, and condenser
Container 6	Silica gel

Blanks of each solvent lot used at the test site will also be saved for potential analysis. Depending on the particulate loading and/or the flue gas moisture content, the actual number of containers from each sample run may vary.

One field blank will be recovered for the test location during the testing program. A field blank is a complete sampling train assembled in the same manner as those that collect samples, except that flue gas is not pulled through the train. The field blank train will be leak-checked the same number of times as a sampling train used during a run. The train will be placed at the sampling location for the duration of one run. The train is then returned to the laboratory and disassembled for recovery using the same procedure used to recover actual samples. The field blank will use a train that has previously been used to collect at least one actual sample from the test site.

Sample Analysis. The filter(s), XAD-2 resin, and acetone, methylene chloride, and toluene rinses up to the XAD-2 will be analyzed for PCDD/PCDF, according to EPA Method 23X. The filter(s), XAD-2 resin, acetone methylene chlorine, DI reagent, and impinger rinses with acetone and methylene chloride will be analyzed for PCB according to EPA Method 680 with high resolution. All extracts from one run will be combined and volume reduced to 1 mL resulting in one extract per run from which an aliquot will be taken for analysis.

40 CFR 266, Appendix IX, Section 3.1
Determination of Metals Emissions

Sample Collection. Samples will be withdrawn isokinetically from the source using a sampling train set-up as outlined in Section 3.1.3.1 of the method. The sampling train will consist of a glass nozzle, a heated glass probe with a type S pitot tube attached, a filter, six chilled impingers, and a metering console. The particulate sample will be collected on a Pallflex 2500QAT-UP quartz filter maintained at a temperature of 248°F ± 25°F. The first and second impingers will each contain 100 mL of 5 percent HNO_3/10 percent H_2O_2, the third will remain empty, the fourth and fifth impingers will each contain 100 mL of 4 percent potassium permanganate ($KMnO_4$)/10 percent sulfuric acid (H_2SO_4), and the sixth will contain preweighed silica gel. Each run will be a minimum of 2 hours in duration and will sample a minimum of 60 dry standard cubic feet.

Sample Recovery. A Teflon spatula and Teflon coated tweezers will be used to remove the filter from the filter holder and place it in a 250 mL glass jar. The reagents will be returned to the original bottles, weighed, the weights recorded on the labels, and the liquid levels marked. The silica gel will be returned to the original container, weighed, and the weight recorded on the label. The volume of water vapor condensed in the impingers and the volume of water vapor collected in the silica gel will be summed and entered into moisture content calculations.

The nozzle, probe, and front half of the filter holder will be rinsed with 100 mL of 0.1N HNO_3 into a 500 mL glass jar. A Teflon probe brush will be used to clean the probe.

The back half of the filter holder and the first and second impingers will be rinse with 100 mL of 0.1N HNO_3 into the 1,000 mL jar containing the HNO_3/H_2O_2 reagent. The third impinger will be rinsed with 100 mL of 0.1 HNO_3 into a 500 mL glass jar. The fourth and fifth impingers will be rinsed with 100 mL of acidified $KMnO_4$ into the 500 mL bottle containing the $KMnO_4/H_2SO_4$ reagent. If necessary, to remove any residual brown deposits, the fourth and fifth impingers will be rinsed with 25 mL of 8N HCl into a 500 mL glass jar containing 200 mL of water.

Sample Analyses. The front half HNO_3 rinses will be evaporated to near dryness in a Teflon beaker. The filter, loose particulate, 3 mL of concentrated HNO_3, and 5 mL of concentrated HF will be added to the beaker. The sample will be digested on a hot plate until brown fumes are evident, indicating the destruction of organic matter. After the addition of concentrated HNO_3, the reagent and impinger rinses will be evaporated to near dryness in a Teflon beaker on a hot plate. After cooling, 3 mL of concentrated HNO_3 and 5 mL of concentrated HF will be added to the beaker and the sample will be fumed on a hot plate to destroy organic residue. The prepared filter and HNO_3/H_2O_2 reagent samples will be combined, brought to a final volume of 100 mL with 10 percent HNO_3, and analyzed for metals with a Perkin Elmer 3030 atomic absorption analyzer using the appropriate SW-846 methods. Metals analysis will include arsenic (As), beryllium (Be), cadmium (Cd), total chromium (Cr), lead (Pb), and zinc (Zn). All metals will be analyzed for the lowest detectable limits. A field blank and reagent blanks will also be analyzed.

Wheelabrator Environmental Systems Inc.

A Wheelabrator Technologies Company
Liberty Lane
Hampton, NH 03842
Phone 603.929.3000

January 6, 1995

Mr. Michael Harley, P.E., DEE
Florida Department of Environmental Protection
Emissions Monitoring Section
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: **Alternate Procedure Request for Compliance Emissions Tests at Ridge Generating Station - AC 53-206244**

Dear Mr. Harley,

This letter serves as a follow up to our January 5 phone conversation during which you expressed the importance of explaining the basis of each individual request for approval of an alternate sampling procedure. This correspondence, in addition to the letters of June 23, July 29 and September 14, 1994 should provide you with the information requested in F.A.C. 17-297.620.

WESI/WRE requests approval of the following alternate procedures for use during Compliance Emissions Tests at Ridge Generating Station, FDEP Permit No. AC 53-206244, Auburndale, Polk County, Florida.

1. WESI/WRE requests approval to perform EPA Method 26A for particulate and hydrogen chloride sampling. The FDEP does not have an approved ammonia test method. Therefore, WESI/WRE requests a modification to EPA Method 26A to allow for the analysis of ammonia in the same sampling train. A detailed description of the sample collection, recovery and analysis, as well as an EPA Method 301 validation test for the ammonia, was enclosed with the July 29, 1994 correspondence.

   The basis for this request is to utilize an approved EPA test methodology which has been extensively developed and validated at similar sources (i.e. Boilers & Industrial Furnaces) for use in submitting the most accurate data to the FDEP. A second basis for this request is to set forth an approved FDEP procedure for ammonia sampling. The approval of this request would allow WESI/WRE to combine three separate sampling trains without a loss in accuracy or precision of the individual methods for particulate, hydrogen chloride and ammonia.

2. The FDEP does not currently have an approved PCB test method. Therefore, WESI/WRE requests approval to perform a modification of EPA Method 23 for PCDD/PCDF to include PCB sampling. The modification would not interfere with the standard EPA Method 23 procedures in that the modification consists of analyzing a separate aliquot of the reagent/catch/rinse for PCB's. A detailed description of the sample collection, recovery and analysis of the EPA Method 23 test, as it would be utilized at WRE, was enclosed with the July 29, 1994 correspondence.

Exhibit 2

The basis for this request is to utilize an approved EPA test methodology which has been extensively developed and validated at similar sources (i.e. Boilers & Industrial Furnaces) in order to provide lower detection limits, increased accuracy and improved precision for use in submitting the most accurate data to the FDEP. A second basis for this request is to set forth an approved FDEP procedure for PCB sampling. The approval of this request would allow WESI/WRE to combine two separate sampling trains without a loss in accuracy or precision of the individual methods for PCDD/PCDF and PCB.

3. WESI/WRE requests approval to perform the EPA Method outlined in 40 CFR 266, Appendix IX, Section 3.1 for arsenic, beryllium and lead sampling in place of EPA Methods 108, 104 and 12 respectively. A detailed description of the sample collection, recovery and analysis of the EPA Method outlined in 40 CFR 266, Appendix IX, Section 3.1 was enclosed with the July 29, 1994 correspondence. The sampling and analysis for arsenic, beryllium and lead would be performed along with cadmium, total chromium and zinc (as zinc oxide) in a single sampling train.

   The basis for this request is to utilize an approved EPA test methodology which has been extensively developed and validated at similar sources (i.e. Boilers & Industrial Furnaces) in order to provide lower detection limits, increased accuracy and improved precision for use in submitting the most accurate data to the FDEP. The approval of this request would allow WESI/WRE to combine four separate sampling trains with an increase in the accuracy and precision of the individual methods for arsenic, beryllium and lead. The use of this sampling train would provide lower detection limits of nanogram/milliliter versus detection limits of microgram/milliliter utilizing the EPA Method 108, 104 and 12 sampling trains.

As you are aware, Ridge Generating Station is equipped with a state of the art air pollution control system consisting of good combustion practices, selective non-catalytic reduction, spray dryer adsorber and a fabric filter baghouse which will result in low emissions of the subject pollutants. It is important, therefore, that the test methods to be utilized at the facility offer the most reliable qualitative and quantitative data possible.

If I can be of any assistance in supplying further documentation, or if you would like to meet to discuss the requests outlined in this letter, please do not hesitate to call me at 800-682-0026.

Sincerely,

John P. Goodwin
Environmental Engineer

cc: G. Aguinaga
T. Porter
D. Raymond
B. Rudd
R. Williams

JPG086

Wheelabrator Ridge Energy Inc.

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Auburndale, FL 33823
Tel 813-665-2255
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January 30, 1995

State of Florida
Department of Environmental Protection
Chief Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RECEIVED
FEB 2 1995
Bureau of Air Regulation

Attn: Mr. Martin Costello

Subject: Ridge Generating Station
Air Construction Permit #AC53-206244/PSD-FL-813
Ammonia Ambient Impact Calculations

Dear Sir:

Attached is a summary of ammonia ambient impacts calculated from the PSD permit application ambient modelling results and actual compliance test ammonia emission rates. This information was requested by you during a December 20, 1994 telephone conversation between yourself, and Gary Aguinaga and Tim Porter of Wheelabrator.

The analyses show that the maximum ammonia ambient impacts are two to three orders of magnitude below the Florida DEP Air Toxic Threat Level. Additionally, the maximum ambient impacts equate to a concentration of 2.2 ppb, an order of magnitude below any levels detectable with current ambient monitoring equipment. Using the currently installed equipment to monitor for ambient ammonia at higher concentrations (i.e. 0-25 ppm) does not appear logical based on the results of the enclosed data. In addition, it is unclear whether the currently installed equipment would be technically capable of accurate measurements, even at higher concentrations, due to the high humidity ambient air being sampled.

In light of this information, the Facility requests that the requirement for ambient ammonia monitoring, as specified in Specific Condition #6 of the subject permit, be waived.

Thank you for your attention in this matter. Should you have any questions or concerns regarding this submittal, please do not hesitate to call Gary Aguinaga at (813) 665-2255.

Sincerely,

Rodney Williams

Rodney Williams
Plant Manager

— Max measured Ambient: ND
— downtime ~50% of time

cc: Gary Aguinaga
B. Soich, DEP-Tampa
T. Porter
M. Killeen
J. Rogers

A WHEELABRATOR TECHNOLOGIES COMPANY

RIDGE GENERATING STATION

AMBIENT AMMONIA IMPACT ANALYSES

Ambient ammonia impacts have been calculated using the PSD permit application ambient modelling results and actual ammonia emission rates from the stack compliance tests. The PSD permit modelling analysis ambient impacts originally are based on a normalized emission rate of 1 gram per second (g/s). A scaling analysis is then performed where pollutant specific ambient impacts are calculated directly by scaling of the ambient impact calculated on 1 g/s normalized emission rate by the actual emission rate of the specific pollutant. The pollutant specific ambient impact calculated by scaling can then be compared directly to the ambient air quality standards or Florida DER Air Toxics No Threat Levels. The scaling analysis is considered a valid approach specifically if the values for stack exit velocity and gas temperature used in the PSD ambient modeling are equivalent or lower than the actual values determined during compliance tests. The lower stack exit velocity and gas temperature used in the PSD modelling results in higher predicted ambient impacts and are considered conservative since ambient impacts would be lower if the compliance test stack parameters were used.

Tables 1-4 summarize the PSD permit application ambient modelling and compliance stack test data including stack parameters and predicted ambient ammonia concentrations. The intent is to demonstrate that actual ammonia ambient impacts from the Ridge Generating Station, using the compliance test results, are lower than impacts predicted in the PSD permit application modelling analysis and consequently significantly below the Air Toxics No Threat Level.

Table 1 shows that the PSD modelling stack exit velocity and temperature are lower than actual values obtained during the compliance test at both full load (100% MCR) and reduced load (75% MCR) conditions. Table 2 summarizes the ammonia emission rates. During compliance testing, the maximum single test run result was 13.8 lbs/hr with a three-test average of 8.13 lbs/hr with boiler at full load or 100% MCR. Comparatively, the maximum ammonia emission rate used in the PSD modelling analysis was 17.8 lbs/hr.

Table 3 summarizes PSD modelling results showing the maximum predicted normalized ambient concentrations using the normalized emission rate of 1 g/s. Ambient impacts were calculated from these normalized concentrations by scaling using the actual maximum single run and average ammonia emission rates from the compliance tests. These scaling results are summarized in Table 4 and compared to the PSD modelling concentrations and Florida DER Air Toxics No Threat Levels. The ambient concentrations for all averaging times calculated from the compliance test results are 2-3 orders of magnitude below the Florida DER No Threat Levels. Since the calculated ambient impacts from the scaling analysis are significantly below the No Threat Levels, it does not appear that an ambient ammonia monitor is necessary to evaluate actual ambient impacts. Further, the predicted maximum ambient ammonia impacts of 1.54 $\mu g/m^3$ associated with the 8-hour averaging period converts to an alternative concentration of 2.2 ppb. This extremely low concentration cannot be measured with any commercially available ambient monitoring equipment.

TABLE 1
RIDGE GENERATING STATION
STACK PARAMETERS

PARAMETER	PSD MODELLING		COMPLIANCE TEST	
	MCR**	75% LOAD	MCR	75% LOAD
Normalized Emission Rate g/s*	1.0	1.0	N/A	N/A
Stack Height, m	99.06	99.06	99.06	99.06
Stack Diameter, m	3.05	3.05	3.05	3.05
Exit Temperature, K	349.8	349.8	386.0	387.0
Exit Velocity, m/s	14.54	10.91	16.04	14.46

* Normalized Emission Rate used for model input. Modelled results are scaled using potential emission rates in the PSD permit application and actual emission rates from Compliance Testing.

** MCR = Maximum Continuous Rating at 100% Load

TABLE 2
NH_3 EMISSION RATES USED FOR CONVERSION TO AMBIENT CONCENTRATIONS

	MCR		75% LOAD	
	#/Hr	g/sec	#/Hr	g/sec
Compliance Test				
Maximum Run	13.8*	1.74	4.24	0.534
Average	8.13*	1.02	4.02	0.506
PSD Permit				
Maximum	17.8	2.24	17.8	2.24

* Denotes values used in scaling analyses.

TABLE 3

PSD MODELLING RESULTS*

PREDICTED MAXIMUM NORMALIZED CONCENTRATIONS

NORMALIZED EMISSION RATE = 1.0 g/s

		NORMALIZED CONCENTRATION - $\mu g/m^3$	
AVERAGE	**RECEPTOR RESOLUTION**	**MCR**	**75% LOAD**
8-Hour	250 m 100 m	0.765 0.884**	1.008
24-Hour	250 m 100 m	0.301 0.319**	0.378
Annual	250 m 100 m	0.030 0.030**	0.036

* Summarized directly from PSD modelling report contained in permit application.

** Denotes values used in final PSD modelling impacts and for compliance test results scaling analyses.

TABLE 4

SCALING RESULTS USING ACTUAL EMISSION RATES

	NH_3 AMBIENT CONCENTRATIONS - $\mu g/m^3$			
	PSD PERMIT APPLICATION	**COMPLIANCE TEST***		**FL DER NO THREAT LEVEL**
AVERAGING TIME		**Highest**	**Average**	
8 Hour	2.0	1.54	0.89	180
24 Hour	0.7	0.55	0.32	43.2
Annual	0.07	0.05	0.029	1.0

* Conservatively calculated using highest single test run and average result from 100% MCR test condition.