ADVANCED INDUSTRIAL RESOURCES

BOILER MACT COMPLIANCE TEST REPORT
NO. 9 BOILER
(NORTH & SOUTH STACKS)
AT
ESCANABA PAPER COMPANY
ESCANABA, MICHIGAN
PROJECT ID: KR- 9563

PREPARED FOR:

VERSO

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Test Date:
SEPTEMBER 1-2, 2016

1.0 INTRODUCTION

1.1 SUMMARY OF TEST PROGRAM

The Verso Corporation operates The Escanaba Paper Company (EPC) pulp and paper mill in Escanaba, Michigan. Processes at the facility include the No. 9 Boiler. The facility is operated under the Michigan Department of Environmental Quality (MDEQ) issued Renewable Operating Permit (ROP) Number MI-ROP-A0884-2016. The No. 9 Boiler is also subject to the operational and emission limits established under 40 CFR 63 Subpart DDDDD – *NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*.

This document describes the test report for establishing compliance with the applicable emissions limits set-forth in the referenced NESHAP guidance as well as establishing source and control device operational limitations and ranges.

Testing was conducted on the No. 9 Boiler exhaust stacks (North & South) to quantify the emissions of particulate matter (total filterable), carbon monoxide, hydrogen chloride, and mercury.

The field sampling portion of the test program was conducted on September 1-2, 2016, in accordance with the site-specific Test Plan submitted to the MDEQ. All test methods and procedures were performed by Advanced Industrial Resources, Inc. (*AIR*) in accordance with approved USEPA Methods (i.e., 40 CFR 60 Appendix A Methods 1, 2, 3a, 4, 5, 10, 19, 26A, and 30B).

1.2 KEY PERSONNEL

The key personnel who coordinated the test program and their telephone numbers are:

Paula LaFleur, Escanaba Paper Company	906-233-2603
Derek Stephens, *QSTI I-IV*, Advanced Industrial Resources	404-843-2100
Scott Wilson, Advanced Industrial Resources	800-224-5007

2.0 PLANT AND SAMPLING LOCATION DESCRIPTIONS

2.1 PROCESS & CONTROL EQUIPMENT DESCRIPTION

Escanaba Paper Company operates a pulp and paper mill in Escanaba, Michigan. Processes at the facility include the No. 9 Boiler.

The No. 9 Boiler (EU9B03) is a Babcock & Wilcox boiler rated for 250,000 pounds of steam per hour (approximately 360 million BTU per hour heat input) that provides steam for mill processes and steam turbine-generators for producing electricity. The No. 9 boiler burns primarily wood residue and natural gas, but is also permitted to burn paper cores. Emissions from the No. 9 Boiler are controlled by a multi-clone and two (2) wet scrubbers and are vented to the atmosphere from two (2) separate but identical stacks identified as the North and South stacks. The boiler utilizes an oxygen trim system to maintain optimum air to fuel ratios. For purposes of Boiler MACT compliance, the No. 9 Boiler is in the *hybrid suspension/grate burners designed to burn wet biomass/bio-based solid* subcategory. Table 2-1 summarizes the applicable Boiler MACT emissions limits and operating parameters associated with No. 9 Boiler.

Table 2-1
Boiler No. 9 Summary of Applicable Emissions Limits and Operating Parameters

Pollutant	Emissions Limit[a]	Control Device	Operating Parameter
Filterable PM	0.44 lb/MMBtu heat input	Multi-Cyclone, Wet Scrubbers	Scrubber liquid flow and differential pressure
Carbon Monoxide (CO)	3,500 ppmvd @ 3% O_2[b],[c]	N/A	Oxygen trim system set point
Mercury (Hg)	5.7E-06 lb/MMBtu heat input	Multi-Cyclone, Wet Scrubbers	Mercury (Hg) input loading to boiler
Hydrogen Chloride (HCl)	2.2E-02 lb/MMBtu heat input	N/A	Hydrogen chloride (HCl) input loading to boiler
All	N/A	N/A	Operating Load (as steam flow rate

(a) Emissions limits are for boilers under the subcategory of ***hybrid suspension/grate burners designed to burn wet biomass/bio-based solids.***
(b) Parts per million by volume, dry basis, corrected to 3% oxygen concentration on a three (3)-run average.

The applicable operating limits and compliance methodology for each parameter are summarized in Table 2-2. Operating limits are set through Initial Performance Testing and can be modified based on subsequent testing.

Table 2-2
Boiler No. 9 Summary of Operating Limits

Parameter	Compliance Methodology[a][b]	Operating Limit[c]
Oxygen Content[c]	Conduct initial and annual performance testing for CO. Operate the oxygen trim system set no lower than the lowest hourly average oxygen concentration measured during the most recent CO performance test.	2%
Differential Pressure	Conduct initial and annual performance testing for filterable PM. Maintain the 30-day rolling differential pressure at or above the value corresponding to the lowest one (1)-hour average pressure drop measured during the most recent performance test.	North – 6" H_2O; South – 4" H_2O
Scrubber Flow	Conduct initial and annual performance testing for filterable PM. Maintain the 30-day rolling average liquid flow rate at or above the lowest one (1)-hour average liquid flow rate measured during the most recent performance test.	North – 1201 gpm; South – 1234 gpm
Operating Load	Conduct initial and annual performance testing for filterable PM, CO, Hg, and HCl. Maintain the operating load such that the 30-day rolling average steam flow rate does not exceed 110% of the highest hourly average operating load recorded during the most recent performance test.	252 KPPH (max. avg. steam flow); 277 KPPH (110% of max. avg. steam flow)
HCl Input Loading	Maintain HCl loading at or below the level established during the performance test with maximum HCl loading as established during the initial performance test.	7.66E-03 lbs HCl/mmBTU heat input
Hg Input Loading	Maintain Hg loading at or below the level established during the performance test with maximum HCl loading as established during the initial performance test.	9.77E-07 lbs Hg/mmBTU heat input

(a) Per Boiler MACT, if performance tests for a given pollutant for at least two (2) consecutive years show that your emissions are at or below 75% of the emissions limit for the pollutant, and if there are no changes in the operation of the individual boiler or air pollution control equipment that could increase emissions, performance test frequency for the pollutant may be decreased to once every three (3) years.

(b) As described in the Alternative Monitoring Approval located at Appendix I, operating limits do not apply when Boiler No. 9 is combusting natural gas only.

(c) Boiler MACT does not specifically address oxygen trim system range requirements. EPC will assign the set point based on performance testing.

2.2 SAMPLING LOCATION

The sampling locations on the No. 9 Bark Boiler North and South exhaust stacks are located at least 4.3 equivalent diameters downstream from the nearest flow disturbance and at least 5.7 equivalent diameters upstream from the stack exhaust. The exhaust stacks from the No. 9 Boiler each have circular cross-sections with internal diameters of 84.0 inches. Each stack has two sampling ports oriented 90 degrees to one another in a plane perpendicular to the exhaust flow direction. A schematic diagram of the sampling locations is presented in Appendix D. Twenty-four (24) sampling points (twelve points per port) were used for USEPA Methods 2, 4, 5, and 26A sampling, in accordance with USEPA Method 1 requirements. Twelve (12) sampling points (six points per port) were used for USEPA Method 30B in accordance to Section 8.1 of Method 30B.

The No.9 Boiler North and South stacks are not expected to be stratified with regard CO, O_2, or CO_2 emission concentrations; however, due to continuous inherent fluctuations in stack gas concentrations, the absence of stratification could not be proven. Therefore, the stacks were traversed using 12 points within one cross-section throughout testing while conducting Methods 3A and 10.

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3.0 SUMMARY AND DISCUSSION OF TEST RESULTS

3.1 OBJECTIVES

The purpose of the testing was to establish compliance with the applicable emissions limits set-forth in the referenced NESHAP as well as to establish source and control device operational limits on the No. 9 Boiler. Testing was conducted under two (2) separate operating conditions – while firing bark and gas (Condition #1) and firing bark only (Condition #2). Condition #1 was intended to maximize the boiler loading, demonstrate compliance with the Boiler MACT CO limit, and establish the minimum of O_2 trim set-point. Condition #2 was intended to demonstrate compliance with the Boiler MACT limits for PM, Hg, and HCl while burning the maximum pollutant loading fuel mixture as well as to establish the minimum scrubber flow rates and differential pressures on the No. 9 North and South scrubbers.

3.2 FIELD TEST CHANGES, PROBLEMS, OR ITEMS OF NOTE

The testing was conducted in accordance with the Site-Specific Test Protocol submitted to the MDEQ. No problems were encountered during testing that required deviation from the planned test protocol.

Items of note include the following:

1) Condition #1 North Run 1 M5/26A post-test leak check was determined to be 0.023 cfm @ 9" Hg, exceeding the allowed leakage rate of 0.020 cfm @ maximum vacuum measured during test run. MDEQ representative on-site, observing test, approved this test run and did not require an additional test run to be conducted.
2) Condition #1 North Run 2 M5/26A isokinetics were determined to be 89.4% which is below the acceptable range of 90-110%. Sub-isokinetic sampling (< 90%) results in a theoretical over-estimation of emissions reporting; therefore, because the emissions were determined to be well below the applicable emission standard, the 'Average' results reported are based on Runs 1-3. Note that Condition #2 (Runs 4-6)was the test designed to demonstrate compliance with

HCl limits at maximum pollutant loading to the boiler. All QA parameters were acceptable for Condition #2.

3) Condition #1 Run 1 Method 30B was not able to be completed due to high moisture in the gas stream causing sample flow blockage. For ensuing runs the test team employed a moisture shield at the end of the in-stack Method 30B traps in an effort to prevent water droplets from becoming entrained in the Method 30B traps.
4) Condition #2 North Run 7 Train A M30B trap (24613) was broken upon recovering sample from stack train; therefore, only one (1) sorbent section was able to be analyzed resulting in Relative Deviation (%RD) and Spike Recovery (% R) criteria to not be met. See lab report.
5) Other Method 30B runs not meeting the necessary QA acceptance criteria included North Run 3, North Run 4, South Run 2, and South Run 3.
6) Condition #1 Method 30B 'Average' results based on Run 2 only.
7) Condition #2 Method 30B 'Average' results based on Runs 5 & 6 since Runs 4 & 7 did not meet the method required QA acceptance criteria. Note that Condition #2 (Runs 4-7) was the test designed to demonstrate compliance with Hg limits at maximum pollutant loading to the boiler.

3.3 PRESENTATION OF TEST RESULTS

Emission rates and concentrations are summarized and compared to referenced NESHAP limits in Table 3-1. Complete emissions data are presented in Appendix A and Reduced and tabulated data from the field-testing is included in Appendix B. The calculations and nomenclature used to reduce the data are presented in Appendix C. Actual raw field data sheets are presented in Appendix D. Laboratory reports and custody records are presented in Appendix E.

TABLE 3-1: BMACT Results Summary - No. 9 Boiler

Source	Operating Condition	Pollutant	Average Measured	Allowable	Units	% of Allowable
No. 9 Boiler	**Condition 1** (Bark & Gas)	PM	0.13	0.44	lb / MMBtu	**31%**
		CO	1906	3500	ppm @ 3% O2	**54%**
		HCl	< 3.4E-03	2.2E-02	lb / MMBtu	**< 16%**
		Hg	6.6E-07	5.7E-06	lb / MMBtu	**12%**
	Condition 2 (Bark only)	PM	0.18	0.44	lb / MMBtu	**41%**
		CO	833	3500	ppm @ 3% O2	**24%**
		HCl	< 8.6E-05	2.2E-02	lb / MMBtu	**< 0.4%**
		Hg	1.3E-06	5.7E-06	lb / MMBtu	**22%**

3.4 PROCESS OPERATION DATA

All essential process and control device monitoring equipment was operating and data was being recorded throughout the test periods. Data collected is presented in Appendix G and includes heat input rates per fuel type, control device operating parameters and steam production rates.

3.5 CMS PERFORMANCE EVALUATIONS

3.5.1 Monitoring Equipment

The Escanaba Paper Company is required by 40 CFR 63.7525 and 40 CFR 63.8(e) to conduct performance evaluations on the continuous monitoring system (CMS) equipment used to demonstrate compliance with the operating limits in Table 2-2.

The CMS equipment, including performance and equipment specifications and data collection, is detailed in Tables 3-1.

Table 3-1
Boiler No. 9 Performance and Equipment Specifications

Equipment	Type	Sample Interface	Parametric Signal Analyzer	Manufacturer Specified Accuracy	Monitor Range/ Output	Data Collection and Reduction Systems
Oxygen Meter	Rosemount 3000/3008 Probe	Zirconia electrochemical cell positioned in the boiler	0 - 10%, 4-20 mA signal	0.1% of oxygen or 3% of reading (whichever is greater)	Calibrated range: 0 - 10% O_2 4-20 mA (max range 25% O_2)	Data is collected in a DCS system. PI software is used to reduce and manage the data from the DCS system.
#2 Scrubber dP Transducer	Rosemount 1151HP4S22	Pressure taps on scrubber inlet and outlet	0–20" H_2O, 4-20 mA signal	±0.25% of calibrated range	Calibrated range: 0-20" H_2O 4-20 mA (max range 150" H_20)	Data is collected in a DCS system. PI software is used to reduce and manage the data from the DCS system.
#3 Scrubber dP Transducer	Rosemount 1151HP4S22	Pressure taps on scrubber inlet and outlet	0–20" H_2O, 4-20 mA signal	±0.25% of calibrated range	Calibrated range: 0-20 "H_2O/ 4-20 mA (max range 150" H_20)	Data is collected in a DCS system. PI software is used to reduce and manage the data from the DCS system.
North Scrubber Flow Meter	Yokogawa AA1-PSA-AIDH/BR/HAL	Magnetic flow meter on water recirc line from scrubber	4-20 mA signal, 0-2500 GPM	±0.5% of rate	Calibrated Range: 0-2500 GPM/4-20 mA (max range 2891.3 GPM)	Data is collected in a DCS system. PI software is used to reduce and manage the data from the DCS system.

Equipment	Type	Sample Interface	Parametric Signal Analyzer	Manufacturer Specified Accuracy	Monitor Range/ Output	Data Collection and Reduction Systems
South Scrubber Flow Meter	Yokogawa AXF150CE 1AL1LCA1 121BFF1	Magnetic flow meter on water recirc line from scrubber	4-20 mA signal, 0-2500 GPM	±0.35% of rate	Calibrated range: 0-2500 GPM/4-20 mA (Max range 2800 GPM)	Data is collected in a DCS system. PI software is used to reduce and manage the data from the DCS system.
Steam Flow Meter	Rosemount MDL3051S 1CD3A3F12 A1AB3D2E 5L4M5	Coplanar differential pressure in steam line to distribution header	0-250" H_2O, 4-20 mA signal, 0-360 KPPH	0.025% of span	0-250" H_2O, 4-20 mA, 0-350 KPPH	Data is collected in a DCS system. PI software is used to reduce and manage the data from the DCS system.

3.5.2 Evaluation Program Objective

The purpose of the CMS performance evaluation is to validate the continuous monitoring system data as required by 40 CFR 63.8(e)(3)(i) and 40 CFR 63.7525. Performance specifications typically include all the procedures for determining whether a particular CMS is capable of providing reliable measurements. In the absence of performance specifications, the monitors specified in 40 CFR 63.7525 are required to be installed, calibrated, certified, operated and maintained in accordance with the manufacturer's specifications. Consequently, the CMS performance evaluations consisted of the following the manufacturer calibration procedures and any other procedure(s) to document that the monitors meet the performance audit calibration acceptance criteria as specified in Table 3-2.

Table 3-2
Boiler No. 9 CMS Calibration Frequency and Calibration Acceptance Criteria

Measurement Type	Instrument Type	Calibration Frequency	Calibration Acceptance Criteria
Oxygen Meter	Rosemount 3000/3008 Probe	Annual (Performance Evaluation)	Minimum tolerance of +/- 0.2% O_2
#2 Scrubber dP Transducer	Rosemount 1151HP4S22	Annual (Performance Evaluation)	Minimum tolerance of ½-inch of water or 1% of pressure monitoring system operating range (whichever is less)
#3 Scrubber dP Transducer	Rosemount 1151HP4S22	Annual (Performance Evaluation)	Minimum gauge tolerance of ½-inch of water or 1% of pressure monitoring system operating range (whichever is less)
North Scrubber Flow Meter	Yokogawa AA1-PSA-AIDH/BR/HAL	Annual (Performance Evaluation)	Flow sensor with minimum tolerance of 2% of design flow rate
South Scrubber Flow Meter	Yokogawa AXF150CE1AL1LCA11 21BFF1	Annual (Performance Evaluation)	Flow sensor with minimum tolerance of 2% of design flow rate
Steam Flow Meter	Rosemount MDL3051S1CD3A3F12 A1AB3D2E5L4M5	Performance Evaluation During Scheduled Boiler Outage	Flow sensor with minimum tolerance of 2% of design flow rate

3.5.3 Performance Evaluation Schedule

The CMS performance evaluations consisted of equipment calibration checks in the weeks prior to the performance testing. Results of performance evaluations conducted on the oxygen sensor, scrubber dP monitors, scrubber flow meters, and steam flow meter are included in Appendix H.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

Emission rate testing was performed on the No. 9 Power Boiler exhaust in accordance with 40 *CFR* 60 Appendix A. Specifically:

- EPA Method 1 was used for the qualification of the location of sampling ports and for the determination of the number and positions of stack traverse points, as applicable to sample traverses for Method 2.

- EPA Method 2 was employed for the determination of the stack gas velocity and volumetric flow rate during stack sampling using the Type "S" Pitot tube.

- EPA Method 3A was used for the calculation of the density and dry molecular weight of the effluent stack gas as well as to determine the oxygen and carbon dioxide concentrations using a calibrated instrumental analyzer.

- EPA Method 4 was used for the determination of moisture content.

- EPA Method 5 was used for the determination of total filterable particulate matter.

- EPA Method 10 was used for the determination of carbon monoxide emission concentrations.

- EPA Method 19 was to determine the heat input of the boiler and was used to report the applicable emissions in the units of lbs/MMBtu.

- EPA Method 26A was used for the determination of hydrogen chloride emissions.

- EPA Method 30B was used for the determination of total vapor phase mercury emissions.

All samples were stored upright in a closed sample box until final laboratory analysis. In order to limit the chain of custody, only essential *AIR* personnel are permitted access to these samples.

5.0 QUALITY ASSURANCE ACTIVITIES

The quality assurance/quality control (QA/QC) measures associated with the sampling and analysis procedures given in the noted EPA reference methodologies, in Subparts A of 40 *CFR* 60 and 40 *CFR 63*, and in the *EPA QA/QC Handbook*, Volume III (EPA 600/R-94/038c) were employed, as applicable. Such measures included, but were not limited to, the procedures detailed below.

5.1 PROBE NOZZLE DIAMETER CHECKS

Probe nozzles were calibrated before field testing by measuring the internal diameter of the nozzle entrance orifice along three different diameters. Each diameter was measured to the nearest 0.001 inch, and all measurements were averaged. The diameters were within the limit of acceptable variation of 0.004".

5.2 PITOT TUBE FACE PLANE ALIGNMENT CHECK

Before field testing, each Type S Pitot tube was examined in order to verify that the face planes of the tube were properly aligned, per Method 2 of 40 *CFR* 60, Appendix A. The external tubing diameter and base-to-face plane distances were measured in order to verify the use of 0.84 as the baseline (isolated) Pitot coefficient. At that time the entire probe assembly (i.e., the sampling probe, nozzle, thermocouple, and Pitot tube) was inspected in order to verify that its components met the interference-free alignment specifications given in EPA Method 2. Because the specifications were met, then the baseline Pitot coefficient was used for the entire probe assembly.

After field testing, the face plane alignment of each Pitot tube was checked. No damage to the tube orifices was noted.

5.3 METERING SYSTEM CALIBRATION

Every three months each dry gas meter (DGM) console is calibrated at five orifice settings according to Method 5 of 40 *CFR* 60, Appendix A. From the calibration data, calculations of the values of Y_m and $\Delta H_@$ are made, and an average of each set of values is obtained. The limit of total variation of Y_m values is ± 0.02, and the limit for $\Delta H_@$ values is ± 0.20.

After field testing, the calibration of the DGM console was checked by performing three calibration runs at a single intermediate orifice setting that is representative of the range used during field-testing. Each DGM was within the limit of acceptable relative variation from Y_m of 5.0%.

5.4 TEMPERATURE GAUGE CALIBRATION

After field testing, the temperature measuring instruments on each sampling train was calibrated against standardized mercury-in-glass reference thermometers. Each indicated temperature was within the limit of acceptable variation between the absolute reference temperature and the absolute indicated temperature of 1.5%.

5.5 GAS ANALYZER CALIBRATION

5.5.1 CALIBRATION GAS CONCENTRATION VERIFICATION

AIR obtained a certificate from the gas manufacturer and confirmed that the documentation included all information required by the Environmental Protection Agency Traceability Protocol No. 1. AIR confirmed that the manufacturer certification was complete and current and that calibration gases certifications had not expired. This documentation was available on-site for inspection during testing and is presented in Appendix E.

5.5.2 MEASUREMENT SYSTEM PREPARATION

AIR assembled, prepared, and preconditioned each measurement system by following the manufacturer's written instructions for preparing and preconditioning each gas analyzer and, as applicable, the other system components. *AIR* made all necessary adjustments to calibrate the analyzers and the data recorders and to achieve the correct sampling rate.

5.5.3 ANALYZER CALIBRATION ERROR

After sampling system and analyzer assembly, preparation and calibration, AIR conducted a 3-point analyzer calibration error test before the first run. AIR introduced the low-, mid-, and high-level calibration gases sequentially in direct calibration mode. During the test, AIR made no adjustments to the system except to maintain the correct flow rate. AIR recorded the analyzer's response to each calibration gas and calculated the system calibration error. At each calibration gas level (low, mid, and high) the calibration error was within ± 2.0 percent or 0.5 ppm of the calibration span.

5.5.4 INITIAL SYSTEM BIAS AND CALIBRATION ERROR CHECKS

Before sampling began, AIR determined that the high-level calibration gas best approximated the emissions and used it as the upscale gas. AIR introduced the upscale gas at the probe upstream of all sample conditioning components in system calibration mode. The time it took for the measured concentration to increase to a value that is within 95 percent of the certified gas concentration was recorded. AIR continued to observe the gas concentration reading until it reached a final, stable value and recorded the value.

Next, AIR introduced the low-level gas in system calibration mode and recorded the time required for the concentration response to decrease to a value that was within 5.0 percent of the certified low-range gas concentration.

AIR continued to observe the low-level gas reading until it reached a final, stable value and recorded the result. AIR operated the measurement system at the normal sampling rate during all system bias checks and made only the adjustments necessary to achieve proper calibration gas flow rates at the analyzer. From this data, AIR determined the initial system bias was less than 5% of the calibration span for the low- and high- level gases.

5.5.5 MEASUREMENT SYSTEM RESPONSE TIME

AIR calculated the measurement system response time from the data collected during the Initial System Bias Check.

5.6 INSTRUMENT INTERFENCE RESPONSE

AIR obtained instrument vendor data that demonstrates the interference performance specification is not exceeded as defined in EPA Method 7E Section 13.4. Documentation is provided in Appendix D.

5.7 DATA REDUCTION CHECKS

AIR ran an independent check (using a validated computer program) of the calculations with predetermined data before the field test, and the *AIR* Team Leader conducted spot checks on-site to assure that data was being recorded accurately. After the test, *AIR* checked the data input to assure that the raw data had been transferred to the computer accurately.

5.8 EXTERNAL QUALITY ASSURANCE

5.8.1 TEST PROTOCOL EVALUATION

A Site-Specific Test Protocol (SSTP) was submitted to MDEQ in advance of testing, which provided regulatory personnel the opportunity to review and comment upon the test and quality assurance procedures used in conducting this testing.

5.8.2 ON-SITE TEST EVALUATION

A test schedule was submitted with the Site-Specific Test Protocol and MDEQ personnel were notified of all changes in the schedule. No tests were performed earlier than stated in the original schedule. Therefore, regulatory personnel were afforded the opportunity for on-site evaluation of all test procedures.

6.0 DATA QUALITY OBJECTIVES

The data quality objectives (DQOs) process is generally a seven-step iterative planning approach to ensure development of sampling designs for data collection activities that support decision making. The seven steps are as follows: (1) defining the problem; (2) stating decisions and alternative actions; (3) identifying inputs into the decision; (4) defining the study boundaries; (5) defining statistical parameters, specifying action levels, and developing action logic; (6) specifying acceptable error limits; and (7) selecting resource-effective sampling and analysis plan to meet the performance criteria. The first five steps are primarily focused on identifying qualitative criteria such as the type of data needed and defining how the data will be used. The sixth step defines quantitative criteria and the seventh step is used to develop a data collection design. In regards to emissions sampling, these steps have already been identified for typical monitoring parameters.

Monitoring methods presented in 40 *CFR* 60 Appendix A indicate the following regarding DQOs: Adherence to the requirements of this method will enhance the quality of the data obtained from air pollutant sampling methods. At a minimum, each method provides the following types of information: summary of method; equipment and supplies; reagents and standards; sample collection, preservation, storage, and transportation; quality control; calibration and standardization; analytical procedures, data analysis and calculations; and alternative procedures. These test methods have been designed and tested according to DQOs for emissions testing and analysis. These test methods have been specified and were followed in accordance with the Site-Specific Test Protocol submitted to MDNRE to ensure that DQOs were met for this project.