APPENDIX IV-3

TESTING PROCEDURES

The Alaska Department of Environmental Conservation source testing procedures for particulate matter and sulfur dioxide are no longer in use. The procedures for these and all other testing activities are in the Federal Test Procedures, located in 40 CFR 60, Appendix A - Reference Methods and Appendix B - Performance Specifications. Because of the length and frequent changing of those regulations, they have not been reproduced in this appendix. A copy of the current edition may be reviewed from the ADEC Library in Juneau or from the U.S. Environmental Protection Agency.

Alaska Air Quality Visible Emissions Evaluation Procedures

The determination of visible emissions of exhaust gases to the ambient air shall be performed according to the procedures specified in Method 9 of Appendix A to 40 CFR 60, with the followng exceptions:

- Determination performed under nighttime conditions does not require conformance with the observer position requirements relative to the sun.

- Observers performing visible emission determinations under night conditions must succes fully pass the Method 9 certification test administered during night conditions.

- Visible emissions of exhaust gases from wood-fired heating devices shall be observed at the point of greatest visible emission regardless of the presence of condensed water vapor.

SOURCE TEST REPORTS

Source test reports must be submitted in accordance to the following "source sampling report format".

TC4/tc

SOURCE SAMPLING REPORT FORMAT

Results of the performance test shall be submitted to the agency by the facility representative within forty-five (45) days of the completion of the field work. The report must include, but not be limited to, the following:

1. Information as shown in the Source Test Report Outline

2. Certification by the test team leader that the sampling and analytical procedures, and data presented in the report are authentic and accurate.

3. Certification by a responsible representative of the testing firm (preferably by a professional engineer) that all the testing details and conclusions are accurate and valid.

4. Certification on the process rate sheet by the facility representative of facility operations during the performance test. (See Number 8 below and Sections E.3-5 in Source Test Report Outline)

5. Data sheets that meet the approval of the reviewing agency prior to use should be used to record data. All applicable blanks should be filled in.

6. All calculations must be made using the applicable equations as shown in the Federal Register. An example calculation should be shown for one run.

7. Final results must be presented in English and metric units and contain two significant digits for each run. Values may be rounded off to three significant digits after the calculation of each equation and to two digits for the final results or all digits may be carried in the computer and only rounded to two significant digits for the final results. All rounding off of numbers will be performed in accordance with the ASTM 380-76 procedures.

8. The detail of section E.3 and E.4 (Source Test Report Outline) must be sufficient to document how the process and control device was operating during the test . This must include production rate, type of raw material, fuel and products and characterization of the gas stream to the control device. Critical control device parameters must also be reported, including pressure drop, flow rates, make-up water rates, recycle water solids content for scrubbers; voltages, currents, spark rates and rapping cycle times for electrostatic precipiators; pressure drop and cleaning cycles for baghouses.

9. The quality assurance procedures in item G.6. (Source Testing Outline) refer to the Quality Assurance Handbook, Vol. III, Stationary Source Specific Methods (EPA 600/4-77-027b).

SOURCE TEST REPORT OUTLINE

A. Cover

1. Plant name and location
2. Source sampled
3. Testing company or agency, name and address

B. Certification

1. Certification by team leader
2. Certification by reviewer (e.g., P.E.)

C. Introduction

1. Test purpose
2. Test location, type of process
3. Test dates
4. Pollutants tested
5. Observers' names (industry and agency)
6. Any other important background information

D. Summary of Results

1. Emission results
2. Process data, as related to determination of compliance
3. Allowable emissions
4. Description of collected samples
5. Visible emission summary (particulate tests)
6. Discussion of errors and quality assurance procedures

E. Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Process and control device operating parameters during the test, including comparison to normal operations
4. Representativeness of raw materials and products during the test as compared to normal operation
5. Process startups, shutdowns, and other operational changes during tests (time of start and stop)

F. Sampling and Analysis Procedures

1. Sampling port location and dimensioned cross-section
2. Sampling point description, including labeling system
3. Sampling train description
4. Brief description of sampling procedures, with discussion of deviations from standard methods
5. Brief description of analytical procedures, with discussion of deviations from standard methods

DRY GAS METER AND ORIFICE CALIBRATION LOG

Meter Box No. ____________________

Dry Gas Meter Identification ____________________

Date ____________________

Barometric Pressure, Pb ____________________ In. HG

Technician ____________________

Orifice Manometer Setting, ΔH, in H_2O	Gas Volume Wet Test Meter V_w, ft^3	Gas Volume Dry Gas Meter V_d, ft^3	Temperature: Wet Test Meter t_w, °F	Temperature: Dry Gas Meter Inlet t_{di}, °F	Temperature: Dry Gas Meter Outlet t_{do}, °F	Temperature: Dry Gas Meter Average t_d, °F	Time θ min.	γ	ΔH@
	5								
	5								
	10								
	10								
	10								
	10								
							Average		

Calculations

ΔH	$\frac{\Delta H}{13.6}$	γ: $\frac{V_w P_b (t_d + 460)}{V_d (P_b + \Delta H/13.6)(t_w + 460)}$	ΔH@: $\frac{0.0317\ \Delta H}{P_b (t_d + 460)} \left[\frac{(t_w + 460)\theta}{V_w}\right]^2$
		( )( )( ) / ( )( )( ) =	0.0317 ( ) / ( )( ) [ ]^2 =
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γ = Ratio of accuracy of wet test meter to dry test meter. Tolerance = ±0.01

ΔH@ = Orifice pressure differential that gives 0.75 cfm of air at 70°F and 29.92 inches of mercury, in. H_2O. Tolerance = ±0.15

PITOT TUBE IDENTIFICATION NUMBER: _____ DATE: _____

CALIBRATED BY: _____

	"A" SIDE CALIBRATION			
RUN NO.	Δp_{std} cm H_2O (in. H_2O)	$\Delta p_{(s)}$ cm H_2O (in. H_2O)	$C_{p(s)}$	DEVIATION $C_{p(s)} - \bar{C}_p(A)$
1				
2				
3				
		$\bar{C}_p$ (SIDE A)		

	"B" SIDE CALIBRATION			
RUN NO.	Δp_{std} cm H_2O (in. H_2O)	$\Delta p_{(s)}$ cm H_2O (in. H_2O)	$C_{p(s)}$	DEVIATION $C_{p(s)} - \bar{C}_p(B)$
1				
2				
3				
		$\bar{C}_p$ (SIDE B)		

$$\text{AVERAGE DEVIATION} = \sigma\,(\text{A OR B}) = \frac{\sum_{1}^{3} \left| C_{p(s)} - \bar{C}_p(\text{A OR B}) \right|}{3} \leftarrow \text{MUST BE} \leq 0.01$$

$$\left| \bar{C}_p\,(\text{SIDE A}) - \bar{C}_p\,(\text{SIDE B}) \right| \leftarrow \text{MUST BE} \leq 0.01$$

Figure 2-9. Pitot tube calibration data.

G. Appendix

1. Complete results with example calculations
2. Raw field data (original, not computer printouts)
3. Laboratory report, with chain of custody
4. Raw production data, signed by plant official
5. Test log
6. Calibration and quality assurance procedures and results
7. Project participants and titles
8. Related correspondence
9. Standard procedures
10. Photos of the test location

Include a copy of the following documents:

1. Pitot tube calibration sheet
2. Dry gas meter and orifice calibration log