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AIR EMISSION

PERMIT NO. 23GS-93-0T-1

FOR A

PRESSURE SENSITIVE TAPE AND LABEL MANUFACTURING PLANT

AND

AIR POLLUTION CONTROL EQUIPMENT

g to Minnesota Statutes Chapters 115 and 116 and Minneso
, 7005 and 7010

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PRESSURE SENSITIVE TAPE AND LABEL MANUFACTURING PLANT

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AIR POLLUTION CONTROL EQUIPMENT

According to Minnesota Statutes Chapters 115 and 116 and Minnesota Rules Chapters 7001, 7005 and 7010

3M COMPANY
P.O. Box 33331
St. Paul, Minnesota 55133-3331

(hereinafter Permittee) is issued an Air Emission Permit by the Minnesota Pollution Control Agency (hereinafter Agency) for its stationary source located at:

Tape Manufacturing Division Plant
751 Mendota Avenue
St. Paul, Ramsey County, Minnesota

The permit authorizes modification and operation of the stationary source and air pollution control equipment under the conditions set forth herein.

This permit is effective for a term of five years starting on the date issued by the Commissioner.

DATED: March 4, 1993

Charles W. Williams
Commissioner
Minnesota Pollution Control Agency

Table of Contents for Air Emission Permit No. 23GS-93-OT-1

1.0 FACILITY DESCRIPTION

The facility description is intended to detail the general size, capacity and performance of each emission unit and piece of pollution control equipment needed to meet the emission limits for this stationary source. Section 2.0 Special Conditions shall identify any portions of this facility description that are an enforceable part of this permit.

1.1 Overview

1.1.1 Description of the Stationary Source

The St. Paul Tape Manufacturing Division Plant, 3M's original tape plant, was built in the 1940's. The stationary source currently uses 18 of the original 21 tape coating lines to produce over 2000 different products, predominately classified as pressure sensitive tape and label products. In 1990, 3M installed one thermal oxidizer and one catalytic oxidizer (which, due to operational problems, is sometimes run as a thermal oxidizer with some added benefit due to the catalyst), voluntarily, as part of the 3M Pollution Prevention Plus Program. Captured emissions from all of the coating line ovens are vented to the oxidizers or boilers. 3M estimates the volatile organic compound (VOC) capture efficiency for the coating lines to be approximately 68 percent, and the destruction efficiency for the oxidizers to be approximately 95 percent.

The stationary source has 18 coaters with associated drying ovens, 6 mogul rooms, and 5 churn rooms. The diagram of the stationary source (attachment 1) shows the equipment layout and is for illustrative purposes only.

1.1.2 Applicability of Federal Rules

Pursuant to the Minnesota State Implementation Plan, this permit is a construction permit which establishes federally enforceable conditions. The authorization to commence all physical or operational changes allowed under this permit will expire five years after the date of permit issuance.

The actual combined VOC emissions from the stationary source are set at 4596 tons per year. This is the mean of actual VOC emissions for the stationary source for the two years prior to permit issuance. The permit allows various physical and operational changes authorized by this permit for the next five years by limiting the post-modification potential to emit for the stationary source to the current actual emission baseline level of 4596 tons per year.

The physical or operational changes authorized by this permit will not result in a significant net emission increase for VOC at the stationary source through the following special conditions and permit limits:

2.2 Emission Limits
2.4.2 Operation and Monitoring of Air Pollution Control Equipment
2.4.5 Operation and Monitoring of Boilers
2.4.6 Recordkeeping and Emission Calculations
2.5 Compliance Demonstration

Emission changes in other pollutants will be dealt with through applicable state and federal regulations.

1.2 Physical and Operational Changes

The physical and operational changes authorized under this permit become part of the stationary source.

1.3 Emission Units and Pollution Control Equipment

On the date this permit is issued by the MPCA, the emission units, air pollution control equipment and monitoring equipment at the stationary source described above include the following:

1.3.1 Emission Point No. 1 Facility I.D. 24ZZ

The emission units listed here can be either vented to the thermal oxidizer or they may be vented out the individual stacks listed for that emission unit.

Emission Unit -	1. Type:	3A LAB, Oven and coater
	Mfr.:	3M
	Date of Installation:	1955
Stack Parameters -	I.D.:	22A
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	26,450 at 128°F
Emission Unit -	2. Type:	4A Oven and coater
	Mfr.:	3M
	Date of Installation:	1943
Stack Parameters -	I.D.:	22B
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	24,167 at 120°F
Emission Unit -	3. Type:	5A LAB, Oven and coater
	Mfr.:	3M
	Date of Installation:	1951
Stack Parameters -	I.D.:	22C
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	26,666 at 129°F
Emission Unit -	4. Type:	1B Oven
	Mfr.:	3M
	Date of Installation:	1951
Stack Parameters -	I.D.:	22H
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	24,417 at 126°F

Emission Unit -	5. Type:	2B Oven third zone
	Mfr.:	3M
	Date of Installation:	1951
Stack Parameters -	I.D.:	22J
	Height:	39 feet
	Inside Exit Diameter:	1.2 feet
	Flow Rate, acfm:	3,977 at 140F
Emission Unit -	6. Type:	2B Pan exhaust
	Mfr.:	3M
	Date of Installation:	1951
Stack Parameters -	I.D.:	22K
	Height:	41 feet
	Inside Exit Diameter:	1.5 feet
	Flow Rate, acfm:	1,537 at 68°F
Emission Unit -	7. Type:	3B Oven
	Mfr.:	3M
	Date of Installation:	1954
Stack Parameters -	I.D.:	22L
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	25,917 at 162°F
Emission Unit -	8. Type:	3B LAB dryer
	Mfr.:	3M
	Date of Installation:	1954
Stack Parameters -	I.D.:	22M
	Height:	41 feet
	Inside Exit Diameter:	1.5 feet
	Flow Rate, acfm:	1,000 at 68°F
Emission Unit -	9. Type:	4B Oven
	Mfr.:	3M
	Date of Installation:	1953
Stack Parameters -	I.D.:	22N
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	24,792 at 135°F
Emission Unit -	10. Type:	4B Jet dryer
	Mfr.:	3M
	Date of Installation:	1953
Stack Parameters -	I.D.:	220
	Height:	40 feet
	Inside Exit Diameter:	1.5 feet
	Flow Rate, acfm:	5,000 at 200°F

Emission Unit -	11a. Type:	1C Oven and coater
	Mfr.:	3M
	Date of Installation:	1966
	11b. Type:	1C Primer and LAB
	Mfr.:	3M
	Date of Installation:	1966
Stack Parameters -	I.D.:	23A
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	13,290 at 147°F
Emission Unit -	12a. Type:	2C Oven and coater
	Mfr.:	3M
	Date of Installation:	1952
	12b. Type:	2C Primer dryer
	Mfr.:	3M
	Date of Installation:	1961
Stack Parameters -	I.D.:	23B
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	21,509 at 167°F
Emission Unit -	13. Type:	2C Jet dryer
	Mfr.:	3M
	Date of Installation:	1961
Stack Parameters -	I.D.:	23C
	Height:	44 feet
	Inside Exit Diameter:	1.5 feet
	Flow Rate, acfm:	7,329 at 200°F
Emission Unit -	14. Type:	3C Oven and coater
	Mfr.:	3M
	Date of Installation:	1951
Stack Parameters -	I.D.:	23D
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	23,208 at 155°F
Emission Unit -	15. Type:	3C Primer jet dryer
	Mfr.:	Aer Overley
	Date of Installation:	1951
Stack Parameters -	I.D.:	23E
	Height:	44 feet
	Inside Exit Diameter:	1.5
	Flow Rate, acfm:	2,531 at 200°F

Emission Unit - 16. Type: 3C LAB dryer
Mfr.: 3M
Date of Installation: 1951

Stack Parameters - I.D.: 23F
Height: 44 feet
Inside Exit Diameter: 1.5 feet
Flow Rate, acfm: 875 at 200°F

Emission Unit - 17a. Type: 4C Oven and coater
Mfr.: 3M
Date of Installation: 1951

Emission Unit - 17b. Type: 4C LAB
Mfr.: 3M
Date of Installation: 1951

Emission Unit - 17c. Type: 4C LAB dryer
Mfr.: 3M
Date of Installation: 1951

Stack Parameters - I.D.: 23G
Height: 109 feet
Inside Exit Diameter: 3 feet
Flow Rate, acfm: 20,396 at 112°F

Emission Unit - 18. Type: 4C Primer dryer
Mfr.: 3M
Date of Installation: 1965

Stack Parameters - I.D.: 23H
Height: 44 feet
Inside Exit Diameter: 1.5 feet
Flow Rate, acfm: 1,082 at 175°F

Emission Unit - 19. Type: 1D Oven
Mfr.: 3M
Date of Installation: 1949

Stack Parameters - I.D.: 23K
Height: 109 feet
Inside Exit Diameter: 3 feet
Flow Rate, acfm: 14,030 at 113°F

Emission Unit - 20. Type: 2D Oven
Mfr.: 3M
Date of Installation: 1949

Stack Parameters - I.D.: 23M
Height: 109 feet
Inside Exit Diameter: 3 feet
Flow Rate, acfm: 23,875 at 175°F

Emission Unit -	21. Type:	3D Oven
	Mfr.:	3M
	Date of Installation:	1949
Stack Parameters -	I.D.:	23O
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	24,083 at 118°F
Emission Unit -	22. Type:	3D Primer dryer
	Mfr.:	3M
	Date of Installation:	1960
Stack Parameters -	I.D.:	23P
	Height:	31 feet
	Inside Exit Diameter:	1.2 feet
	Flow Rate, acfm:	1,980 at 200°F
Emission Unit -	23. Type:	4D Oven
	Mfr.:	3M
	Date of Installation:	1950
Stack Parameters -	I.D.:	23Q
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	23,625 at 107°F
Emission Unit -	24. Type:	5D Oven
	Mfr.:	3M
	Date of Installation:	1949
Stack Parameters -	I.D.:	23S
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	18,306 at 233°F
Emission Unit -	25. Type:	5D Alkabizer/Saturant
	Mfr.:	3M
	Date of Installation:	1949
Stack Parameters -	I.D.:	23T
	Height:	34 feet
	Inside Exit Size:	1.75′ x 2.0′
	Flow Rate, acfm:	3,400 at 68°F
Emission Unit -	26. Type:	5D LAB
	Mfr.:	3M
	Date of Installation:	1949
Stack Parameters -	I.D.:	23U
	Height:	39 feet
	Inside Exit Size:	1.0′ x 1.2′
	Flow Rate, acfm:	1,200 at 68°F

Emission Unit -	27. Type:	5D LAB oven
	Mfr.:	3M
	Date of Installation:	1949
Stack Parameters -	I.D.:	23V
	Height:	43 feet
	Inside Exit Size:	1.0′ x 1.5′
	Flow Rate, acfm:	3,400 at 68°F
Emission Unit -	28. Type:	8F foamer
	Mfr.:	3M
	Date of Installation:	pre-1976
Stack Parameters -	I.D.:	24J
	Height:	55 feet
	Inside Exit Diameter:	1.33′ x 1.33′
	Flow Rate, acfm:	6,705 at 130°F
Emission Unit -	29. Type:	19X oven
	Mfr.:	3M
	Date of Installation:	early 1970's
Stack Parameters -	I.D.:	200
	Height:	119 feet
	Inside Exit Diameter:	2.5 feet
	Flow Rate, acfm:	12,500 at 200°F
Control Equipment -	Type:	Regenerative thermal oxidizer
	Mfr.:	REECO
	Model:	188TER RETHERM
	Auxiliary Fuel:	Natural gas
	Inlet Gas Temperature:	150 to 255°F
	Number of Burners:	6
	Burner Rating:	14 million Btu/hr each
	Heat Exchange Material:	Ceramic saddles
	Minimum Retention Time:	1 second
	Design Destruction Efficiency:	95 percent
	Maximum Inlet Capacity:	5600 lbs/hr solvent
	Minimum Operating Temperature:	1300°F
Monitoring Equipment -	Type:	Temperature monitor with hardcopy readout
Control Equipment Stack Parameters -	Height:	70 feet above grade
	Inside Exit Diameter:	13 feet
	Flow Rate, acfm:	428,000 at 380°F (270,000 scfm)

1.3.2 Emission Point No. 2 Facility I.D. 23ZZ

The emission units listed here can be either vented to the catalytic oxidizer or they may be vented out the individual stacks listed for that emission unit.

Emission Unit -	1. Type:	5B Oven
	Mfr.:	3M
	Date of Installation:	1949
Stack Parameters -	I.D.:	22P
	Height:	109 feet
	Inside Exit Diameter:	3 feet
	Flow Rate, acfm:	19,700 at 153°F
Emission Unit -	2. Type:	5B Primer
	Mfr.:	3M
	Date of Installation:	1949
Stack Parameters -	I.D.:	22Q
	Height:	39 feet
	Inside Exit Diameter:	0.8 feet
	Flow Rate, acfm:	1,000 at 68°F
Emission Unit -	3. Type:	5B LAB
	Mfr.:	3M
	Date of Installation:	1949
Stack Parameters -	I.D.:	22R
	Height:	39 feet
	Inside Exit Diameter:	0.8 feet
	Flow Rate, acfm:	500 at 68°F
Control Equipment -	Type:	Fluidized bed catalytic oxidizer
	Mfr.:	ARI
	Model:	Econ-Abator, CT20000 SAB-G-NE
	Auxiliary Fuel:	Natural gas
	Minimum Gas Temperature at Inlet to Catalyst Bed:	600°F
	Minimum Gas Temperature at Outlet of Catalyst Bed:	800°F
	Burner Rating:	13 million Btu/hr
	Number of Beds:	1
	Material:	[Proprietary]
	Minimum Retention Time:	1 second
	Design Destruction Efficiency:	95 percent
	Approximate Proposed Loading:	681 lb/hr
	Maximum Catalyst Bed Temperature:	1250°F
Monitoring Equipment -	Type:	Temperature monitor with hardcopy readout at inlet and outlet of catalyst bed

Control Equipment
Stack Parameters - Height: 77 feet above grade
Inside Exit Diameter: 5 feet
Flow Rate, acfm: 43,774 at 680°F
(19,511 scfm)

1.3.3 Emission Point No. 3 Facility I.D. 22D

Emission Unit - Type: A Section churn room
Mfr.: 3M
Date of Installation: 1943

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 56 feet
Inside Exit Diameter: 1.8 feet
Flow Rate, acfm: 8,000 at 68°F

1.3.4 Emission Point No. 4 Facility I.D. 22F

Emission Unit - Type: Solvent recovery room
Mfr.: 3M
Date of Installation: 1976

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 27 feet
Inside Exit Size: 1.3' x 1.7'
Flow Rate, acfm: 5,500 at 68°F

1.3.5 Emission Point No. 5 Facility I.D. 22G

Emission Unit - Type: Mix room exhaust
Mfr.: 3M
Date of Installation: 1976

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 109 feet
Inside Exit Diameter: 3 feet
Flow Rate, acfm: 1,800 at 68°F

1.3.6 Emission Point No. 6 Facility I.D. 22S

Emission Unit - Type: B section air balance east
Mfr.: 3M
Date of Installation: 1990

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 119 feet
Inside Exit Size: 3′ x 5′
Flow Rate, acfm: 20,000 at 68°F

1.3.7 Emission Point No. 7 Facility I.D. 22V

Emission Unit - Type: B section churn room
Mfr.: 3M
Date of Installation: 1943

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 56 feet
Inside Exit Diameter: 1.8 feet
Flow Rate, acfm: 8,000 at 68°F

1.3.8 Emission Point No. 8 Facility I.D. 22W

Emission Unit - Type: B section churn room auxiliary
Mfr.: 3M
Date of Installation: 1943

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 35 feet
Inside Exit Size: 1.1′ x 1.1′
Flow Rate, acfm: 1,200 at 68°F

1.3.9 Emission Point No. 9 Facility I.D. 23J

Emission Unit - Type: C Section churn room
Mfr.: 3M
Date of Installation: 1949

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 56 feet
Inside Exit Diameter: 1.8 feet
Flow Rate, acfm: 9,400 at 68°F

1.3.10 Emission Point No. 10 Facility I.D. 23L

Emission Unit - Type: 1D Alkabize
Mfr.: 3M
Date of Installation: 1949

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 40 feet
Inside Exit Diameter: 1.2 feet
Flow Rate, acfm: 2,082 at 68°F

1.3.11 Emission Point No. 11 Facility I.D. 23Z

Emission Units - a. Type: D Section air balance south
Mfr.: 3M
Date of Installation: 1989 (only room air vent installed)

b. Type: 1D Saturant churns
Mfr.: 3M
Date of Installation: 1949

c. Type: 5D Saturant churns
Mfr.: 3M
Date of Installation: 1949

d. Type: 3D LAB
Mfr.: 3M
Date of Installation: 1949

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 43 feet
Inside Exit Diameter: 1.5 feet
Flow Rate, acfm: 11,000 at 68°F

1.3.12 **Emission Point No. 12** Facility I.D. 23N

Emission Unit -	Type:	2D hopper exhaust
	Mfr.:	3M
Date of Installation:		1949
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	40 feet
Inside Exit Diameter:		0.33 feet
Flow Rate, acfm:		1,100 at 68°F

1.3.13 **Emission Point No. 13** Facility I.D. 23R

Emission Unit -	Type:	4D Primer dryer
	Mfr.:	3M
Date of Installation:		1950
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	39 feet
Inside Exit Diameter:		1.2 feet
Flow Rate, acfm:		1,400 at 68°F

1.3.14 **Emission Point No. 14** Facility I.D. 23W

Emission Unit -	Type:	D Section churn room
	Mfr.:	3M
Date of Installation:		1949
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	THC analyzer
Stack Parameters -	Height:	56 feet
Inside Exit Diameter:		1.8 feet
Flow Rate, acfm:		10,600 at 68°F

1.3.15 **Emission Point No. 15** Facility I.D. 23X

Emission Unit -	Type:	D Section churn room auxiliary
	Mfr.:	3M
Date of Installation:		1991
Control Equipment -	Type:	None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 35 feet
Inside Exit Size: 1.1' x 1.1'
Flow Rate, acfm: 4,000 at 68°F

1.3.16 Emission Point No. 16 Facility I.D. 24U

Emission Unit - Type: 1J Extruder and corona treater
Mfr.: 3M
Date of Installation: 1951

Control Equipment - Type: Cyclone
Mfr.: Unknown
Model: Unknown
Diameter: 3 feet
Height: 4 feet

Monitoring Equipment - Type: None

Stack Parameters - Height: 53 feet
Inside Exit Diameter: 1.5 feet
Flow Rate, acfm: 4,000 at 68°F

1.3.17 Emission Point No. 17 Facility I.D. 24M

Emission Unit - Type: 4J Extruder
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: Cyclone
Mfr.: Unknown
Model: Unknown
Diameter: 8 feet
Height: 42.5 inches

Monitoring Equipment - Type: None

Stack Parameters - Height: 49 feet
Inside Exit Size: 1.2' x 1.5'
Flow Rate, acfm: 10,000 at 68°F

1.3.18 Emission Point No. 18 Facility I.D. 240

Emission Unit - Type: 4J Resin mover
Mfr.: Dynequip
Date of Installation: 1989
Capacity: 3,750 pounds per hour, instantaneous maximum

Control Equipment -	Type:	Fabric filter
	Mfr.:	MikroPul
	Model:	B-8
	Air to Cloth Ratio:	6 to 1
	Bag Material:	Polyester
	Normal Operating Pressure Drop Range:	0.5 to 6 inches water
Monitoring Equipment -	Type:	Pressure drop gage
Stack Parameters -	Height:	49 feet
	Inside Exit Diameter:	6 inches
	Flow Rate, acfm:	500 at 68°F

1.3.19 Emission Point No. 19 Facility I.D. 24Y

Emission Unit -	Type:	5J Extruder
	Mfr.:	3M
	Date of Installation:	1962
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	62 feet
	Inside Exit Diameter:	1.33 feet
	Flow Rate, acfm:	1,600 at 68°F

1.3.20 Emission Point No. 20 Facility I.D. 24X

Emission Unit -	Type:	5J Blender
	Mfr.:	3M
	Date of Installation:	1962
	Capacity:	4,750 pounds per hour
Control Equipment -	Type:	Fabric filter
	Mfr.:	MikroPul
	Model:	48 C6
	Air to Cloth Ratio:	4.8 to 1
	Bag Material:	Polyester
	Normal Operating Pressure Drop Range:	To be determined
Monitoring Equipment -	Type:	Pressure drop gage
Stack Parameters -	Height:	48.5 feet
	Inside Exit Diameter:	1 foot
	Flow Rate, acfm:	1,600 at 68°F

1.3.21 **Emission Point No. 21** Facility I.D. 24V

Emission Unit -	Type:	L Calendar
	Mfr.:	3M
	Date of Installation:	1960
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	53 feet
	Inside Exit Diameter:	1.92' x 2.67'
	Flow Rate, acfm:	3,300 at 68°F

1.3.22 **Emission Point No. 22** Facility I.D. 24W

Emission Unit -	Type:	L Calender banbury
	Mfr.:	3M
	Date of Installation:	1960
	Capacity:	2,250 pounds per hour
Control Equipment -	Type:	Fabric filter
	Mfr.:	Torit
	Model:	8PP-21586-00
	Air to Cloth Ratio:	14 to 1
	Bag Material:	Polyester
	Normal Operating Pressure Drop Range:	0.5 to 6
Monitoring Equipment -	Type:	Pressure drop gage
Stack Parameters -	Height:	48 feet
	Inside Exit Size:	1' x 1'
	Flow Rate, acfm:	800 at 68°F

1.3.23 **Emission Point No. 23** Facility I.D. 24AA

Emission Unit -	Type:	Z Calender
	Mfr.:	3M
	Date of Installation:	1950's
	Capacity:	1,875 pounds per hour
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	64 feet
	Inside Exit Size:	1.92' x 2.83'
	Flow Rate, acfm:	10,000 at 68°F

1.3.24 Emission Point No. 24 Facility I.D. 24AB

Emission Unit -	Type:	Z Calender premix exhaust
	Mfr.:	3M
	Date of Installation:	1950's
	Capacity:	2,000 pounds per hour
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	73 feet
	Inside Exit Diameter:	2 feet
	Flow Rate, acfm:	8,000 at 68°F

1.3.25 Emission Point No. 25 Facility I.D. 24AC

Emission Unit -	Type:	Z Calender lead weighing station
	Mfr.:	3M
	Date of Installation:	1966
	Capacity:	600 pounds per hour
Control Equipment -	Type:	Fabric filter
	Mfr.:	American Air Filter
	Model:	Type H, Model G, Size B3-50
	Filter Type:	Continuous roll
	Bag Material:	Woven glass fiber
Monitoring Equipment -	Type:	Pressure drop gage
Stack Parameters -	Height:	49 feet
	Inside Exit Size:	1.17' x 1.92'
	Flow Rate, acfm:	2,100 at 68°F

1.3.26 Emission Point No. 26 Facility I.D. 24Z

Emission Unit -	Type:	Z Calender resin mover
	Mfr.:	Whirl Air
	Date of Installation:	1966
	Capacity:	124,000 pounds per hour, instantaneous maximum
Control Equipment -	Type:	Fabric filter
	Mfr.:	MikroPul
	Model:	B-8
	Air to Cloth Ratio:	6 to 1
	Bag Material:	Polyester
	Normal Operating Pressure Drop Range:	0.5 to 6
Monitoring Equipment -	Type:	Pressure drop gage

Stack Parameters - Height: 49 feet
Inside Exit Diameter: 0.5 feet
Flow Rate, acfm: 500 at 68°F

1.3.27 **Emission Point No. 27** Facility I.D. 26A

Emission Unit - Type: Mogul room #1
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 35 feet
Inside Exit Size: 1.0' x 2.25'
Flow Rate, acfm: 3,400 at 68°F

1.3.28 **Emission Point No. 28** Facility I.D. 26C

Emission Unit - Type: Mogul room #2
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 35 feet
Inside Exit Size: 1.5'x 1.83'
Flow Rate, acfm: 3,400 at 68°F

1.3.29 **Emission Point No. 29** Facility I.D. 26E

Emission Unit - Type: Mogul room #3
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 35 feet
Inside Exit Size: 1.5' x 2.0'
Flow Rate, acfm: 3,400 at 68°F

1.3.30 **Emission Point No. 30** Facility I.D. 26G

Emission Unit - Type: Mogul room #4
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 35 feet
Inside Exit Size: 1.42' x 2.0'
Flow Rate, acfm: 3,400 at 68°F

1.3.31 **Emission Point No. 31** Facility I.D. 26I

Emission Unit - Type: Mogul room #5
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 35 feet
Inside Exit Size: 1.5' x 2.0'
Flow Rate, acfm: 3,400 at 68°F

1.3.32 **Emission Point No. 32** Facility I.D. 26K

Emission Unit - Type: Mogul room #6
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 40 feet
Inside Exit Size: 1.5' x 1.83'
Flow Rate, acfm: 3,400 at 68°F

1.3.33 **Emission Point No. 33** Facility I.D. 18A

Emission Unit - Type: Building 18 churn room
Mfr.: 3M
Date of Installation: 1943

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 51.5 feet
Inside Exit Size: 2.6' x 2.3'
Flow Rate, acfm: 7,900 at 68°F

1.3.34 Emission Point No. 34 Facility I.D. 20B

Emission Unit - Type: 4F Foamer
Mfr.: 3M
Date of Installation: 1969
Fuel: Natural gas
Heat Input Rating: 2.07 million Btu/hr

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 127 feet
Inside Exit Size: 1.5' x 2.17'
Flow Rate, acfm: 7,900 at 68°F

1.3.35 Emission Point No. 35 Facility I.D. 20C

Emission Unit - Type: 4F Head exhaust
Mfr.: 3M
Date of Installation: 1969

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 127 feet
Inside Exit Size: 1.17' x 1.25'
Flow Rate, acfm: 830 at 68°F

1.3.36 Emission Point No. 36 Facility I.D. 20G

Emission Unit - Type: 19X bay exhaust
Mfr.: 3M
Date of Installation: 1956

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 143 feet
Inside Exit Diameter: 2.17 feet
Flow Rate, acfm: 1,000 at 68°F

1.3.37 **Emission Point No. 37** Facility I.D. 20J

Emission Unit -	Type:	11X Main exhaust
	Mfr.:	3M
	Date of Installation:	1954
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	116 feet
	Inside Exit Size:	2.1' x 2.7'
	Flow Rate, acfm:	11,000 at 68°F

1.3.38 **Emission Point No. 38** Facility I.D. 20K

Emission Unit -	Type:	11X Hood
	Mfr.:	3M
	Date of Installation:	1954
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	120 feet
	Inside Exit Size:	0.8' x 1.25'
	Flow Rate, acfm:	2,600 at 68°F

1.3.39 **Emission Point No. 39** Facility I.D. 20L

Emission Unit -	Type:	11X Catalyst conveyor system
	Mfr.:	Dynamic Air
	Date of Installation:	1954
Control Equipment -	Type:	Fabric filter
	Mfr.:	Dynamic Air
	Model:	60A-9
	Air to Cloth Ratio:	10 to 1
	Bag Material:	Polyester
	Normal Operating Pressure Drop Range:	0.5 to 6 inches water
Monitoring Equipment -	Type:	Pressure drop gage
Stack Parameters -	Height:	109 feet
	Inside Exit Diameter:	0.5 feet
	Flow Rate, acfm:	708 at 84°F

1.3.40 Emission Point No. 40 Facility I.D. 20M

Emission Unit -	Type:	11X Resin tank
	Mfr.:	3M
	Date of Installation:	1954
Control Equipment -	Type:	Fabric filter (furnace type)
	Mfr.:	In-line Dust Filter
	Model:	FARR 30/30
Monitoring Equipment -	Type:	Pressure drop gage
Stack Parameters -	Height:	114 feet
	Inside Exit Size:	1.6' x 1.5'
	Flow Rate, acfm:	2903 at 100°F

1.3.41 Emission Point No. 41 Facility I.D. 20Q

Emission Units -	a. Type:	Rubber mills
	Mfr.:	3M
	Date of Installation:	1950's
	Control Equipment:	None
	b. Type:	Rubber Talcker
	Mfr.:	3M
	Date of Installation:	1950's
	Control Equipment:	Cyclone
	c. Type:	Rubber granulator
	Mfr.:	3M
	Date of Installation:	1950's
	Control Equipment:	Fabric filter
	d. Type:	Rubber Granulator bag dump
	Mfr.:	3M
	Date of Installation:	1950's
	Control Equipment:	Fabric filter
	e. Type:	Rubber granulator bag dump conveyor feeder
	Mfr.:	3M
	Date of Installation:	1950's
	Control Equipment:	Cyclone
	f. Type:	Rubber mill area exhaust
	Mfr.:	3M
	Date of Installation:	1950's
	Control Equipment:	None
Control Equipment -	Unit served:	Rubber talcker
	Type:	Cyclone
	Mfr.:	Taylor Stiles and Co.

	Model:	16-4V-CW
	Diameter:	20 inches
	Height:	3.5 feet
Monitoring Equipment -	Type:	None
Control Equipment -	Unit Served:	Rubber granulator
	Type:	Fabric filter
	Mfr.:	Dynequip
	Model:	DF-58-46-380
	Air to Cloth Ratio:	6.6 to 1
	Bag Material:	Polyester
	Normal Operating Pressure Drop Range:	0.5 to 6 inches water
Monitoring Equipment -	Type:	Pressure drop gage on fabric filter
Control Equipment -	Unit Served:	Rubber granulator bag dump
	Type:	Fabric filter
	Mfr.:	Dynequip
	Model:	BD-1
	Air to Cloth Ratio:	2.7 to 1
	Bag Material:	Paper
	Normal Operating Pressure Drop Range:	0.5 to 6 inches water
Monitoring Equipment -	Type:	Pressure drop gage on fabric filter
Stack Parameters -	Height:	119 feet
	Inside Exit Size:	3' x 5'
	Flow Rate, acfm:	26,000 at 68°F

1.3.42 Emission Point No. 42 Facility I.D. 22E

Emission Unit -	Type:	A section LAB room
	Mfr.:	3M
	Date of Installation:	1950's
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	THC analyzer
Stack Parameters -	Height:	119 feet
	Inside Exit Size:	3' x 5'
	Flow Rate, acfm:	1,200 at 68°F

1.3.43 Emission Point No. 43 Facility I.D. 22I

Emission Unit -	Type:	2B Oven purge vent
	Mfr.:	3M
	Date of Installation:	1951

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 29 feet
Inside Exit Diameter: 0.7 feet
Flow Rate, acfm: 2,500 at 140°F

1.3.44 Emission Point No. 44 Facility I.D. 22T

Emission Unit - a. Type: 1B LAB dryer
Mfr.: 3M
Date of Installation: 1951

b. Type: 3B Primer
Mfr.: 3M
Date of Installation: 1954

c. Type: 3B Primer dryer
Mfr.: 3M
Date of Installation: 1954

d. Type: 3B LAB
Mfr.: 3M
Date of Installation: 1954

e. Type: 4B Primer
Mfr.: 3M
Date of Installation: 1953

f. Type: B Section air balance west
Mfr.: 3M
Date of Installation: 1990 (only room air vent installed)

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 40 feet
Inside Exit Diameter: 2.5 feet
Flow Rate, acfm: 20,000 at 68°F

1.3.45 Emission Point No. 45 Facility I.D. 22U

Emission Unit - Type: B Section air balance south
Mfr.: 3M
Date of Installation: 1982 (only room air vent installed)

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 37 feet
Inside Exit Diameter: 1.8 feet
Flow Rate, acfm: 10,000 at 68°F

1.3.46 Emission Point No. 46 Facility I.D. 23Y

Emission Unit - a. Type: D Section air balance north
Mfr.: 3M
Date of Installation: 1989 (only room air vent installed)

b. Type: 1D Saturant
Mfr.: 3M
Date of Installation: 1949

c. Type: 3D LAB
Mfr.: 3M
Date of Installation: 1949

d. Type: 1D Alkabize and saturant
Mfr.: 3M
Date of installation: 1949

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 43 feet
Inside Exit Diameter: 1.5 feet
Flow Rate, acfm: 11,000 at 68°F

1.3.47 Emission Point No. 47 Facility I.D. 24F

Emission Unit - Type: Spray room exhaust
Mfr.: 3M
Date of Installation: pre-1980

Control Equipment - Type: Paint filters
Number: 18

Monitoring Equipment - Type: Pressure drop gage

Stack Parameters - Height: 45 feet
Inside Exit Diameter: 2.8 feet
Flow Rate, acfm: 10,000 at 68°F

1.3.48 Emission Point No. 48 Facility I.D. 24G

Emission Unit - Type: Spray room exhaust
Mfr.: 3M
Date of Installation: pre-1980

Control Equipment - Type: See emission point no. 47, the filters are shared between the two exhausts

Monitoring Equipment - Type:

Stack Parameters - Height: 45 feet
Inside Exit Diameter: 2.8 feet
Flow Rate, acfm: 10,000 at 68°F

1.3.49 Emission Point No. 49 Facility I.D. 24P

Emission Unit - Type: 4J Desiccant dryer exhaust
Mfr.: Dynequip
Date of Installation: 1989

Control Equipment - Type: Fabric filter
Mfr.: Universal Dynamics Corporation
Model: CYC-2P11
Air to Cloth Ratio: 3 to 1
Bag Material: Paper
Normal Operating Pressure Drop Range: To be determined

Monitoring Equipment - Type: Pressure drop gage

Stack Parameters - Height: 32 feet
Inside Exit Diameter: 0.25 feet
Flow Rate, acfm: 395 at 68°F

1.3.50 Emission Point No. 50 Facility I.D. 24Q

Emission Unit - Type: 4J Resin mover exhaust
Mfr.: Dynequip
Date of Installation: 1989

Control Equipment - Type: Fabric filter
Mfr.: MikroPul
Model: 7-6-220
Air to Cloth Ratio: 3 to 1
Bag Material: Polyester
Normal Operating Pressure Drop Range: 0.5 to 6

Monitoring Equipment - Type: Pressure drop gage

Stack Parameters - Height: 27 feet
Inside Exit Diameter: 0.167 feet
Flow Rate, acfm: 150 at 68°F

1.3.51 **Emission Point No. 51** Facility I.D. 24R

Emission Unit - Type: Welding bench
Mfr.: 3M
Date of Installation: pre-1960

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 17 feet
Inside Exit Size: 1.25' x 3.92'
Flow Rate, acfm: 2,087 at 68°F

1.3.52 **Emission Point No. 52** Facility I.D. 24S

Emission Unit - Type: 1J Dryer
Mfr.: 3M
Date of Installation: 1951

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 47 feet
Inside Exit Diameter: 1 foot
Flow Rate, acfm: 200 at 68°F

1.3.53 **Emission Point No. 53** Facility I.D. 24T

Emission Unit - Type: 1J Dryer
Mfr.: 3M
Date of Installation: 1951

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 47 feet
Inside Exit Diameter: 1 foot
Flow Rate, acfm: 200 at 68°F

1.3.54 **Emission Point No. 54** Facility I.D. 26N

Emission Unit - Type: Building 26 solvent wash room
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 37 feet
Inside Exit Size: 1.67' x 2.0'
Flow Rate, acfm: 6,700 at 68°F

1.3.55 Emission Point No. 55 Facility I.D. 260

Emission Unit - Type: Building 26 solvent wash room
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: THC analyzer

Stack Parameters - Height: 37 feet
Inside Exit Size: 1.67' x 2.0'
Flow Rate, acfm: 4,500 at 68°F

1.3.56 Emission Point No. 56 Facility I.D. 26W

Emission Unit - Type: Welding bench
Mfr.: 3M
Date of Installation: pre-1970

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 25 feet
Inside Exit Size: 1.33' x 1.5'
Flow Rate, acfm: 2,000 at 68°F

1.3.57 Emission Point No. 57 Facility I.D. 50A

Emission Unit - Type: Tank farm building ventilation
Mfr.: 3M
Date of Installation: 1951

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 20 feet
Inside Exit Size: 1.5 feet
Flow Rate, acfm: 2,500 at 68°F

1.3.58 **Emission Point No. 58** Facility I.D. 50B

Emission Unit - Type: Tank farm building ventilation
Mfr.: 3M
Date of Installation: 1951

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 20 feet
Inside Exit Size: 1.5 feet
Flow Rate, acfm: 2,500 at 68°F

1.3.59 **Emission Point No. 59** Facility I.D. 50C

Emission Unit - Type: Tank farm building ventilation
Mfr.: 3M
Date of Installation: 1951

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 20 feet
Inside Exit Size: 1.5 feet
Flow Rate, acfm: 2,500 at 68°F

1.3.60 **Emission Point No. 60** Facility I.D. 50D

Emission Unit - Type: Tank farm building ventilation
Mfr.: 3M
Date of Installation: 1951

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 20 feet
Inside Exit Size: 1.5 feet
Flow Rate, acfm: 2,500 at 68°F

1.3.61 **Emission Point No. 61** Facility I.D. 50E

Emission Unit - Type: Tank farm building ventilation
Mfr.: 3M
Date of Installation: 1951

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 20 feet
Inside Exit Size: 1.5 feet
Flow Rate, acfm: 2,500 at 68°F

1.3.62 Emission Point No. 62 Facility I.D. 51A

Emission Unit - Type: Red label storage exhaust
Mfr.: 3M
Date of Installation: 1972

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 22.5 feet
Inside Exit Size: 1.08' x 1.58'
Flow Rate, acfm: 3,500 at 68°F

1.3.63 Emission Point No. 63 Facility I.D. 51B

Emission Unit - Type: Red label storage exhaust
Mfr.: 3M
Date of Installation: 1972

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 19.5 feet
Inside Exit Size: 4.0' x 3.5'
Flow Rate, acfm: 5,500 at 68°F

1.3.64 Emission Point No. 64 Facility I.D. 51D

Emission Unit - Type: Red label storage exhaust
Mfr.: 3M
Date of Installation: 1972

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 25.6 feet
Inside Exit Size: 1.75' x 2.42'
Flow Rate, acfm: 7,700 at 68°F

1.3.65 **Emission Point No. 65** Facility I.D. 51E

Emission Unit - Type: Red label storage exhaust
Mfr.: 3M
Date of Installation: 1972

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 19.5 feet
Inside Exit Size: 4.0′ x 3.5′
Flow Rate, acfm: 5,700 at 68°F

1.3.66 **Emission Point No. 66** Facility I.D. 51F

Emission Unit - Type: Red label storage exhaust
Mfr.: 3M
Date of Installation: 1972

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 22.5 feet
Inside Exit Size: 1.08′ x 1.58′
Flow Rate, acfm: 3,500 at 68°F

1.3.67 **Emission Point No. 67** Facility I.D. 51J

Emission Unit - Type: 4J Resin Mover
Mfr.: Dynequip
Date of Installation: 1989

Control Equipment - Type: Fabric filter
Mfr.: MikroPul
Model: 12-8-160
Air to Cloth Ratio: 6.2 to 1
Bag Material: Polyester
Normal Operating Pressure Drop Range: To be determined

Monitoring Equipment - Type: Pressure drop gage

Stack Parameters - Height: 55 feet
Inside Exit Diameter: 0.5 feet
Flow Rate, acfm: 700 at 68°F

1.3.68 Emission Point No. 68 Facility I.D. 51K

Emission Unit -	Type:	Z-Calender resin mover
	Mfr.:	Whirl Air
Date of Installation:		1966
Control Equipment -	Type:	Fabric filter
	Mfr.:	Whirl Air
Air to Cloth Ratio:		6 to 1
Bag Material:		Polyester
Normal Operating Pressure Drop Range:		To be determined
Monitoring Equipment -	Type:	Pressure drop gage
Stack Parameters -	Height:	55 feet
Inside Exit Diameter:		0.5 feet
Flow Rate, acfm:		500 at 68°F

1.3.69 Emission Point No. 69 Facility I.D. 67A

Emission Unit -	Type:	Z-Calender car unloading resin mover
	Mfr.:	Whirl Air
Date of Installation:		1966
Control Equipment -	Type:	Fabric filter
	Mfr.:	Whirl Air
Air to Cloth Ratio:		6 to 1
Bag Material:		Polyester
Normal Operating Pressure Drop Range:		To be determined
Monitoring Equipment -	Type:	Pressure drop gage
Stack Parameters -	Height:	46.5 feet
Inside Exit Diameter:		0.5 feet
Flow Rate, acfm:		500 at 68°F

1.3.70 Emission Point No. 70 Facility I.D. 1

Emission Unit -	1. Type:	Boiler no. 1
	Mfr.:	Springfield
Date of Installation:		Pre-1967
Fuel:		Natural gas and/or no. 6 fuel oil
Heat Input Rating:		51 million Btu/hr
Maximum Steam Generation Rate:		40,000 lb/hr
	2. Type:	Boiler no. 2
	Mfr.:	Springfield
Date of Installation:		Pre-1967
Fuel:		Natural gas and/or no. 6 fuel oil
Heat Input Rating:		51 million Btu/hr
Maximum Steam Generation Rate:		40,000 lb/hr

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 166 feet
Inside Exit Diameter: 7 feet
Flow Rate, acfm: 17,350 at 320°F

1.3.71 **Emission Point No. 71** Facility I.D. 4

Emission Unit - Type: Boiler no. 4
Mfr.: Cleaver-Brooks
Date of Installation: Pre 1967
Fuel: Natural gas and/or no. 6 fuel oil
Solvent laden air from coater ovens 3A, 4A, and 5A is used as combustion air
Heat Input Rating: 76 million Btu/hr
Maximum Steam Generation Rate: 60,000 lb/hr

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 120 feet
Inside Exit Diameter: 4.5 feet
Flow Rate, acfm: 21,948 at 494°F

1.3.72 **Emission Point No. 72** Facility I.D. 5

Emission Unit - Type: Boiler no. 5
Mfr.: Cleaver-Brooks
Date of Installation: Pre-1967
Fuel: Natural gas and/or no. 6 fuel oil
Solvent laden air from coater ovens 3A, 4A, and 5A is used as combustion air
Heat Input Rating: 76 million Btu/hr
Maximum Steam Generation Rate: 60,000 lb/hr

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Height: 127 feet
Inside Exit Diameter: 4.0 feet
Flow Rate, acfm: 21,100 at 480°F

1.3.73 Emission Point No. 73 Facility I.D. 6

Emission Unit -	Type:	Boiler no. 6
	Mfr.:	Bros
	Date of Installation:	Pre-1967
	Fuel:	Natural gas and/or no. 6 fuel oil Solvent laden air from coater ovens 3A, 4A, and 5A is used as combustion air
	Heat Input Rating:	63 million Btu/hr
	Maximum Steam Generation Rate:	50,000 lb/hr
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Height:	128 feet
	Inside Exit Diameter:	4.8 feet
	Flow Rate, acfm:	26,900 at 598°F

1.3.74 Emission Point No. 74 Facility I.D. Tank no. 8

Emission Unit -	Type:	Tank
	Contents:	Adhesive solution (toluene, xylene, butanol)
	Date of Installation:	Mid 1950s
	Diameter:	11 feet
	Volume:	10,000 gallons
	Throughput:	42,822 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Conservation vent

1.3.75 Emission Point No. 75 Facility I.D. Tank no. 9

Emission Unit -	Type:	Tank
	Contents:	Heptane
	Date of Installation:	Mid 1950s
	Diameter:	14 feet
	Volume:	20,000 gallons
	Throughput:	221,687 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Conservation vent

1.3.76 Emission Point No. 76 Facility I.D. Tank no. 10

Emission Unit -	Type:	Tank
	Contents:	Mineral spirits
	Date of Installation:	Mid 1950s
	Diameter:	14 feet
	Volume:	20,000 gallons
	Throughput:	100,420 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Conservation vent

1.3.77 Emission Point No. 77 Facility I.D. Tank no. 11

Emission Unit -	Type:	Tank
	Contents:	Empty
	Date of Installation:	Mid 1950s
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Conservation vent

1.3.78 Emission Point No. 78 Facility I.D. Tank no. 12

Emission Unit -	Type:	Tank
	Contents:	Heptane
	Date of Installation:	Mid 1950s
	Diameter:	12 feet
	Volume:	20,000 gallons
	Throughput:	573,861 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Conservation vent

1.3.79 Emission Point No. 79 Facility I.D. Tank no. 13

Emission Unit -	Type:	Tank
	Contents:	Heptane
	Date of Installation:	Mid 1950s
	Diameter:	12 feet
	Volume:	20,000 gallons
	Throughput:	573,861 gallons

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Type: Conservation vent

1.3.80 Emission Point No. 80 Facility I.D. Tank no. 14

Emission Unit - Type: Tank
Contents: Toluene
Date of Installation: Mid 1950s
Diameter: 12 feet
Volume: 20,000 gallons
Throughput: 113,692 gallons

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Type: Conservation vent

1.3.81 Emission Point No. 81 Facility I.D. Tank no. 15

Emission Unit - Type: Tank
Contents: Ethanol
Date of Installation: Mid 1950s
Diameter: 12 feet
Volume: 20,000 gallons
Throughput: 38,000 gallons

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Type: Conservation vent

1.3.82 Emission Point No. 82 Facility I.D. Tank no. 16

Emission Unit - Type: Tank
Contents: Methyl Ethyl Ketone
Date of Installation: Mid 1950s
Diameter: 12 feet
Volume: 20,000 gallons
Throughput: 26,098 gallons

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Type: Conservation vent

1.3.83 Emission Point No. 83 Facility I.D. Underground Tank No. 1

Emission Unit -	Type:	Underground tank
	Contents:	Heptane
	Date of Installation:	Mid-1950's
	Volume:	20,000 gallons
	Throughput:	584,178 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Not applicable

1.3.84 Emission Point No. 84 Facility I.D. Underground Tank No. 2

Emission Unit -	Type:	Underground tank
	Contents:	Xylene
	Date of Installation:	Mid-1950's
	Volume:	10,000 gallons
	Throughput:	40,370 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Not applicable

1.3.85 Emission Point No. 85 Facility I.D. Underground Tank No. 3

Emission Unit -	Type:	Underground tank
	Contents:	Ethyl acetate
	Date of Installation:	Mid-1950's
	Volume:	12,000 gallons
	Throughput:	178,205 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Not applicable

1.3.86 Emission Point No. 86 Facility I.D. Underground Tank No. 4

Emission Unit -	Type:	Underground tank
	Contents:	Ethyl acetate
	Date of Installation:	Mid-1950's
	Volume:	10,000 gallons
	Throughput:	6,781 gallons

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Type: Not applicable

1.3.87 Emission Point No. 87 Facility I.D. Underground Tank No. 5

Emission Unit - Type: Underground tank
Contents: Ethyl acetate
Date of Installation: Mid-1950's
Volume: 10,000 gallons
Throughput: 465,890 gallons

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Type: Not applicable

1.3.88 Emission Point No. 88 Facility I.D. Underground Tank No. 6

Emission Unit - Type: Underground tank
Contents: Heptane
Date of Installation: Mid-1950's
Volume: 10,000 gallons
Throughput: 2,836 gallons

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Type: Not applicable

1.3.89 Emission Point No. 89 Facility I.D. Tank No. 1

Emission Unit - Type: Tank, inside Building 51
Contents: Heptane
Date of Installation: Mid-1950's
Diameter: 7.5 feet
Volume: 3,800 gallons
Throughput: 31,890 gallons

Control Equipment - Type: None

Monitoring Equipment - Type: None

Stack Parameters - Type: Not applicable

1.3.90 Emission Point No. 90 Facility I.D. Tank No. 2

Emission Unit -	Type:	Tank, inside Building 51
	Contents:	Empty
	Date of Installation:	Mid-1950's
	Diameter:	7.5 feet
	Volume:	3,000 gallons
	Throughput:	None
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Not applicable

1.3.91 Emission Point No. 91 Facility I.D. Tank No. 3

Emission Unit -	Type:	Tank, inside Building 51
	Contents:	Heptane
	Date of Installation:	Mid-1950's
	Diameter:	7.5 feet
	Volume:	3,800 gallons
	Throughput:	84,712 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Not applicable

1.3.92 Emission Point No. 92 Facility I.D. Tank No. 4

Emission Unit -	Type:	Tank, inside Building 51
	Contents:	Mineral spirits
	Date of Installation:	Mid-1950's
	Diameter:	7.5 feet
	Volume:	3,800 gallons
	Throughput:	33,000 gallons
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Not applicable

1.3.93 Emission Point No. 93 Facility I.D. Tank No. 5

Emission Unit -	Type:	Tank, inside Building 51
	Contents:	Empty
	Date of Installation:	Mid-1950's

	Volume:	10,000 gallons
	Throughput:	None
Control Equipment -	Type:	None
Monitoring Equipment -	Type:	None
Stack Parameters -	Type:	Not applicable

1.4 Definitions & Abbreviations

Definition of terms and abbreviations used in this permit may be found in Minn. Rules pts. 7005.0100 and 7005.0110 respectively and as defined below:

CO:	Carbon Monoxide
Division Manager:	The Division Manager of the Air Quality Division
Emission Point:	The stack, chimney, vent or other functionally equivalent opening whereby emissions are exhausted to the atmosphere.
FTIR:	Fourier Transform Infra Red
gr/dscf:	grains per dry standard cubic foot
HC:	Hydrocarbons
MPCA:	Minnesota Pollution Control Agency
New Source Performance Standard (NSPS):	Standards contained in 40 CFR 60
NO_x:	Nitrogen Oxides
Pb:	Lead
PM:	Particulate Matter
PM-10:	Particulate Matter less than 10 um in size
SO_2:	Sulfur Dioxide
TSP:	Total Suspended Particulates
U.S. EPA:	United States Environmental Protection Agency
VOC:	Volatile Organic Compounds are defined as any organic compounds which participate in atmospheric photochemical reactions. That means any organic compound others than those specified by the U.S. EPA as having negligible

photochemical reactivity. Accordingly the definition does not include:

A. Methane
B. Ethane
C. 1,1,1-Trichloroethane (Methyl Chloroform)
D. Trichlorotrifluoroethane (Freon 113, CFC-113)
E. Methylene Chloride
F. Trichlorofluoromethane (CFC-11)
G. Dichlorodifluoromethane (CFC-12)
H. Chlorodifluoromethane (CFC-22)
I. Trifluoromethane (FC-23)
J. Dichlorotetrafluoroethane (CFC-114)
K. Chloropentafluoroethane (CFC-115)
L. Dichlorotrifluoroethane (HCFC-129)
M. Dichlorotrifluoroethane (HCFC 123)
N. Tetrafluoroethane (HFC 134A)
O. Dichlorofuoroethane (HCFC 141B)
P. Chlorodifluoroethane (HCFC 142B)
Q. 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)
R. Pentafluoroethane (HFC-125)
S. 1,1,2,2-tetrafluoroethane (HFC-134)
T. 1,1,1-trifluoroethane (HFC-143A)
U. 1,1-difluoroethane (HFC-152A)
V. Any other compound listed in Table 1, as amended, of the U.S. EPA's recommended Policy on VOCs, Federal Register, Vol. 42, page 35314, July 8, 1977; or
W. any other compound determined by the U.S. EPA to be negligibly photochemically reactive. These determinations are published in the Federal Register.

2.0 SPECIAL CONDITIONS

The Permittee shall comply with the following special conditions in order to attain, maintain and demonstrate compliance with applicable Minnesota and federal statutes, federal regulations and Minnesota rules.

2.1 Ambient Standards

The Permittee shall comply with Minn. Rules pts. 7005.0010-7005.0080, State Ambient Air Quality Standards, and with National Primary and Secondary Ambient Air Quality Standards, 40 CFR Part 50. Thus, this permit does not authorize any physical or operational change that may cause or contribute to a violation of such standards.

2.2 Emission Limits

2.2.1 Criteria Pollutants

2.2.1.1 Table A

The Permittee shall not discharge into the atmosphere pollutants in excess of the limits listed in Table A.

2.2.1.2 Emission Cap

Prior to issuance of this permit, the Permittee voluntarily reduced its uncontrolled VOC emissions from approximately 10,600 tons per year to an actual emission baseline of 4596 tons per year. This baseline will now comprise a cap on the Permittee's emissions, applicable on a rolling annual basis, thereby limiting its future potential to emit and avoiding PSD review for the various physical and operational changes contemplated by this permit. Thus, the Permittee may not use the difference between its former uncontrolled emissions (10,600 tons per year) and its current potential emissions (4596 tons per year) to net out of any requirement of 40 CFR 52.21, Prevention of Significant Deterioration (PSD).

2.2.1.3 Change in Emission Cap

The emission limit established in section 2.2.1.1 of this permit for VOCs from Emission Point Nos. 1-17, 19, 27-33, 36, 42-48, 54, 55, 57-61, and 62-66 shall not be relaxed unless and until the Permittee has obtained a PSD permit authorizing the relaxation. [See 40 CFR 52.21(r)(4)]

2.2.2 Non-criteria Pollutants

For non-criteria pollutant(s) the Permittee is hereby notified that the Agency is in the process of developing rules relating to non-criteria pollutant (air toxics) emissions and the permit may be modified to be consistent with the new rules as long as those new rules are more stringent than the limits and conditions contained in this permit.

2.2.3 Noise

The Permittee shall comply with the noise standards set forth in Minn. Rules pts. 7010.0010 to 7010.0080 at all times during the operation of all emissions units.

2.3 Modification

2.3.1 Authority to Make Physical or Operational Changes

The Permittee is authorized to make the physical or operational changes, or changes deemed consistent with those physical or operational changes, described in section 2.3.4 of this permit without applying for or obtaining a new permit or amendment to this permit, provided that the VOC emissions from the stationary source will not exceed the emission limitations in section 2.2.1.1

after the physical or operational change. Construction of physical or operational changes authorized by this permit may commence no later than five years after the date of permit issuance.

If the Permittee wishes to make physical or operational changes that are not deemed to be consistent with the physical or operational changes allowed in section 2.3.4 of this permit, the Permittee must first apply for and obtain a permit or permit amendment as provided in applicable Minnesota and federal rules.

2.3.2 Notice Before Actual Construction of Physical or Operational Changes

1. At least 10 days before beginning actual construction of each physical or operational change authorized by section 2.3.4 (excluding items listed in part 3. of this condition and in 2.3.4 part 12), the Permittee shall provide written notice to the MPCA Air Quality Division, Permit Unit 1, Supervisor. This notice shall:

   (a) describe the physical or operational change;

   (b) identify on the layout diagram (Attachment 1) of the stationary source what unit(s) the physical or operational change will affect;

   (c) identify the schedule for constructing or implementing the physical or operational change;

   (d) provide a statement of whether or not any New Source Performance Standard (NSPS) is applicable to the physical or operational change and the reason why the NSPS does or does not apply;

   (e) provide emission calculations for all criteria pollutants except VOC which demonstrate that the physical or operational change will not result in a significant net emission increase of any criteria pollutant; and

   (f) provide a certification that the physical or operational change will not result in emissions greater than authorized by section 2.2.1.1. of this permit. See Special Condition 2.10.

2. If the Permittee wishes to undertake a physical or operational change not listed in section 2.3.4 of this permit which the Permittee believes is consistent with the changes authorized in section 2.3.4., the Permittee shall provide a written notice to the MPCA Air Quality Division, Permit Unit 1 Supervisor, which includes all the information listed in this section under part 1(a) through 1(f) and a justification in order for the Agency to make a determination regarding authorization. This notice shall be received by the Agency at least 15 working days before beginning actual construction of each physical or operational change authorized by this part. The MPCA Air Quality Division has 45 days from receipt of the written notice to notify the Permittee that the proposed change is not consistent with the changes authorized by part 2.3.4. The Permittee shall cease construction or operation of the proposed change upon receipt of such notice from the Agency.

The Permittee may not resume construction or operation of this change until receiving written permission from the Air Quality Division Manager. The Permittee assumes the risk of losing any investment it makes toward implementing the change prior to the end of the 45 day period. The Agency will not consider the possibility of the Permitee suffering financial loss due to such investment when deciding wether to approve or deny a change. The Permittee also assumes liability for any violation resulting from beginning actual construction and/or operation on a change prior to the end of the 45 day period.

3. The physical and operational changes described below may commence immediately upon issuance of this permit. No notice prior to commencement of construction is required.
    a. Upgrade tension controls and drive mechanisms on 2B coating line.
    b. Install Programmable Logic Controller on 2B coating line.
    c. Update tension controls and electrical on 5B coating line.

2.3.3 Notice After Commencing Operation of Physical or Operational Change

Within two weeks after commencing operation of each physical or operational change (excluding items listed in 2.3.4 part 12), the Permittee shall provide written notice to the Supervisor of the Compliance Determination Unit of the MPCA Air Quality Division. This notice shall: (1) reference the notice of actual construction of the physical or operational change provided under section 2.3.2; (2) verify that the physical or operational change was completed as described in the original notification; and (3) state the date of initial start up of the physical or operational change. Initial startup means the setting in operation for any purpose of the emission unit which has undergone a physical or operational change.

2.3.4 Description of Physical or Operational Changes Authorized by This Permit

Physical or operational changes authorized by this permit are listed below.

Changes to coaters:

1. Updating drive mechanisms and electrical components

2. Updating machine and tension controls

3. Updating oven temperature controls

4. Updating web transport idlers

5. Traming machines

6. Changing coating mechanism and including caliper gauging (coating mechanisms which may be introduced are die coating, hot-melt die coating, knife coating, non-contact coating and roll coating)

7. Modifying coaters to allow quick changeovers (this may include converting "on-line" setups to "off-line")

8. Replacing or updating laminators with power laminators

9. Replacing or updating steering with chase steering

10. Replacing or updating liner unwinds with dual liner unwinds

11. Replacing or upgrading coater ovens

12. Routine changeovers including the following:
    a. replacing drive mechanisms
    b. replacing machine and tension controls
    c. replacing oven temperature controls
    d. replacing web transport idlers.

Changes to other emission units:

13. Replacing or upgrading churns, moguls or storage devices

Changes to oxidizers:

14. Control equipment process upgrades

2.3.5 Enforceability of Notifications

The proposed actions described in the notifications received by the Agency pursuant to sections 2.3.2 and 2.3.3 of this permit will become an enforceable part of this permit upon receipt by the Agency. The Permittee shall comply with the terms and conditions of the notice, unless the Agency disapproves the proposed action, in which case the Permittee shall cease contruction or operation of the change until they obtain an amendment to this permit authorizing the action.

2.3.6 Physical or Operational Changes Subject to Nev Source Performance Standards

If any physical or operational change results in an increase in the emission rate (in kg/hr) to the atmosphere of any pollutant from the affected facility to which a New Source Performance Standard (NSPS) applies, the Permittee must comply with all applicable parts of the NSPS and the General Provisions in 40 CFR 60 Subp. A. The determination of whether or not there has been an increase in emissions to the atmosphere shall be based on a comparison of the emission rate at maximum capacity just prior to the physical or operational change to the emission rate at maximum capacity just after the physical or operational change.

2.4 Operational Requirements

The Permittee shall meet the following operational requirements. Records of any operational parameters that are recorded as directed below shall be retained for at least five years, after which time this period may be extended as advised in writing by the Division Manager.

2.4.1 Shutdowns and Breakdowns

2.4.1.1 Shutdown

In accordance with Minn. Rules pt. 7005.1880, subp. 1, the Permittee shall notify the Commissioner at least 24 hours in advance of a shutdown of any control equipment and/or process equipment which may cause an increase in emission of any air pollutants or contaminants except as provided in special condition 2.4.1.2. of this permit. At this time, the Permittee shall report to the Commissioner the cause of the shutdown and its estimated duration. The Permittee shall again notify the Commissioner when the shutdown is over. In no event may such an event be used to justify an exceedance of the emissions cap in section 2.2.1.1 of this permit.

2.4.1.2 Shutdown Notification Exemption

The Permittee need not notify the Commissioner of the shutdown of control equipment if the shutdown is occurring on Saturday, Sunday or a holiday.

2.4.1.3 Breakdown

In accordance with Minn. Rules pt. 7005.1880, subp. 2, the Permittee shall notify the Commissioner immediately of a breakdown of more than one hour duration of any control equipment and/or process equipment which may cause an increase in the emission of any air pollutant or contaminants. At this time or as soon thereafter as possible, the Permittee shall report to the Commissioner the cause of the breakdown and its estimated duration. The Permittee shall notify the Commissioner when the breakdown is over. Immediately shall mean as soon as is reasonably possible after giving consideration to damage to the stationary source and personnel safety. In no event may such an event be used to justify an exceedance of the emission cap in section 2.2.1.1 of this permit.

2.4.1.4 Operation Changes

In accordance with Minn. Rules pt. 7005.1880, subp. 3, in any shutdown or breakdown covered by sections 2.4.1.1 or 2.4.1.3, the Permittee shall immediately take all practical steps to prevent or reduce any adverse impact on air quality which may result. Immediately shall mean as soon as is reasonably possible after giving consideration to damage to the stationary source and personnel safety. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air contaminants. No affected stationary source which has an unreasonable breakdown frequency of control equipment shall be permitted to operate. Nothing in this section shall permit the operation of an affected facility which may cause an immediate public health hazard.

2.4.1.5 Monitoring Equipment

In accordance with Minn. Rules pt. 7005.1880, subp. 4, the Permittee shall notify the Commissioner of any breakdown or malfunction of any continuous monitoring system or monitoring device. If the breakdown or malfunction lasts more than four hours, the Permittee must notify the Commissioner by 4:30 p.m. of the business day following the start of the breakdown or malfunction.

This notification shall be made in accordance with Special Condition 2.4.1.6 of this permit.

2.4.1.6 Notification of Shutdowns and Breakdowns

The Permittee shall notify the Commissioner of any shutdown or breakdown by telephone. During daytime hours (8-4:30) call (612)296-7300. During off-hours call (612)296-7300 and leave a recorded message with the following information:

1. Date and time of call.
2. Company and stationary source name and location.
3 Your name, title and telephone number.
4. Date and time of shutdown or breakdown.
5. Equipment failure and reason.
6. Potential environmental impacts and what steps are or will be taken to address them.
7. Estimated duration of shutdown or breakdown.

If this is an emergency, call (612)296-8100.

2.4.2 Operation and Monitoring of Air Pollution Control Equipment

2.4.2.1 Operation of Air Pollution Control Equipment

1. Operation of all air pollution control equipment shall be in accordance with all permit conditions. The Permittee shall conduct all necessary maintenance and make all necessary attempts to keep all pollution control equipment in proper operating condition at all times.

2. If it is necessary to shutdown equipment or a breakdown occurs, the Permittee shall comply with all conditions of section 2.3.1 Shutdowns and Breakdowns.

3. All air pollution control equipment for this stationary source, except the thermal oxidizer serving Emission Point No. 1 and the 5B oxidizer serving Emission Point No. 2, shall be operated at all times.

4. The oxidizer serving Emission Point No. 1 (the REECO) shall be operated at all times unless the VOC emissions for the day(s) the REECO is not operating are less than 30,600 pounds per day and one or more of the following conditions are met:

   a. The REECO oxidizer is experiencing unforeseen operational problems (breakdowns).

   b. Preventative maintenance is being performed on the oxidizer, and the shutdown for the maintenance lasts no more than 12 hours.

   c. The day(s) the REECO will be shutdown is (are) Saturday, Sunday or a holiday and there are four or fewer coaters operating (excluding 5B if it is being controlled by the 5B oxidizer). If more than four coaters are operating (excluding 5B if it is being controlled by the 5B oxidizer), the REECO oxidizer must be operating.

5. The oxidizer serving Emission Point No. 2 shall be operated at all times that the 5B oven, primer or LAB is operating except that the 5B oxidizer may be shutdown during operation of the 5B oven, primer or LAB if one or more of the following conditions are met:

   a. The 5B oxidizer is experiencing unforeseen operational problems (breakdowns).

   b. Preventative maintenance is being performed on the oxidizer, and the shutdown for the maintenance lasts no more than 12 hours.

   c. The day(s) the 5B oxidizer will be shutdown is (are) Saturday, Sunday or a holiday and there are four or fewer coaters operating.

2.4.2.2 Operational Requirements for Air Pollution Control Equipment and Boilers

During operation of the stationary source and air pollution control equipment, the Permittee shall:

1. maintain a minimum operating temperature of 1300°F, as a three-hour average, in the thermal oxidizer serving Emission Point No. 1;

2. for the thermal oxidizer serving Emission Point No. 1, maintain a minimum retention time of the combustion gases of one second;

3. shall maintain a minimum operating temperature of 1200°F, as a three hour average in the 5B oxidizer;

4. for the 5B oxidizer serving Emission Point No. 2, maintain a minimum retention time of the combustion gases of 1 second;

5. maintain a minimum operating temperature of 1500°F in each of boilers 4, 5 and 6;

6. capture at least 68 percent by weight (or other percentage as determined through testing in Table E and changes made according to Attachment 3) of all VOC input to the equipment listed in emission point nos. 1 and 2 and vent it to either the thermal oxidizer controlling Emission Point No. 1 or the 5B oxidizer controlling Emission Point No. 2;

7. destroy at least 95 percent by weight (or other percentage as determined through testing in Table E and changes made according to Attachment 3) of all VOC vented to the oxidizer serving Emission Point No. 1;

8. destroy at least 95 percent by weight (or other percentage as determined through testing in Table E and changes made according to Attachment 3) of all VOC vented to the oxidizer serving Emission Point No. 2;

9. destroy at least 95 percent by weight (or other percentage as determined through testing in Table E and changes made according to Attachment 3) of all VOC vented to the boilers;

10. maintain the direction of the airflow at all openings to all coating, churn and mogul rooms into the coating, churn and mogul rooms, respectively;

11. if the direction of the airflow at any opening to any coating, churn or mogul room is not into the respective room, the Permittee shall perform all necessary actions to return the direction of the air flow into the coating, churn, or mogul room;

12. maintain the face velocity across all openings to all coating rooms at least at 200 feet per minute;

13. maintain the pressure drop across each filter within the range listed for that filter in the facility description section of this permit.

2.4.2.3 Monitoring Requirements for Air Pollution Control Equipment

1. The monitoring equipment for air pollution control equipment for this stationary source shall be operated at all times except during routine maintenance of the monitoring equipment or the air pollution control equipment. Such operation shall be in accordance with all permit conditions.

2. The Permittee shall operate all monitoring equipment for air pollution control equipment so as to maintain 95 percent up-time (including routine maintenance of the monitoring equipment or air pollution control equipment) based on quarterly reporting periods.

3. The Permittee shall conduct all necessary maintenance and make all necessary actions to keep all monitoring equipment for air pollution control equipment in proper operating condition at all times.

4. If all the following necessary monitoring equipment does not currently exist or is not currently operational at the stationary source, the Permittee must install or make repairs within 60 days of issuance of this permit. As a minimum, monitoring equipment shall include:

   a. a temperature measuring device with hardcopy readout that continuously measures the operating temperature of the thermal oxidizer serving Emission Point No. 1;

   b. a temperature measuring device with hardcopy readout that continuously measures the operating temperature of the oxidizer serving Emission Point No. 2;

c. monitoring devices that will continuously indicate the direction of the air flow at all entrances and exits to each coating, churn and mogul room;

d. a device to measure the flow of natural gas to each of the oxidizers controlling emission point nos. 1 and 2;

e. gages to measure the pressure drop across each filter.

2.4.3 Operation and Maintenance Plan

A complete and accurate table of contents of the operation and maintenance plan shall be submitted to the Division Manager within 60 days of the date of issuance of this permit. Upon receipt of the table of contents, the plan is an enforceable part of this permit. The plan shall be available on site for review by the Agency at any time after the submittal of the table of contents. The plan shall not be a copy of the equipment manufacturer's manual. It shall be a detailed plan prepared by the Permittee for this specific stationary source. The complete plan shall include as a minimum, the following information.

1. A preventative maintenance program for avoidance of excess emissions which shall include:

   a. identification of the position(s) responsible for inspecting, maintaining and repairing the control equipment (including the thermal and 5B oxidizers) that will be inspected;

   b. the frequency of these inspections or repairs; and

   c. identification and quantities of the replacement parts which will be maintained in inventory for quick replacement.

2. An identification of operating conditions and outlet variables for the control equipment (including the thermal and 5B oxidizers) that will be monitored in order to detect a malfunction or breakdown, the normal operating range of these variables and a description of the method of detecting and informing operating personnel of any malfunction or breakdown, including alarm systems, lights and other indicators.

3. A description of the generic corrective procedures that will be taken in the event of a malfunction or breakdown in order to restore compliance with the applicable emission limitations and permit conditions as expeditiously as possible including, but not limited to, reducing the production rate.

4. A statement(s) of the time period(s) that would be required to safely shut down the stationary source or portion thereof causing excess emissions to the extent necessary to be in compliance with the permit conditions.

5. A description of the records that will be kept to show that the plan is implemented.

2.4.4 Fuel Type and Usage Limitations

1. The Permittee shall limit the type and amount of fuels as specified in Table B.

2. Up to four days per year, the natural gas usage in the thermal oxidizer controlling Emission Point No. 1 may be 1,100,000 cubic feet per day. This allows for startup of the thermal oxidizer.

2.4.5 Recordkeeping

1. The Permittee shall observe and record the following parameters once each operating day:

   a. the amount of natural gas used for the previous 24-hour period in the thermal oxidizer serving Emission Point No. 1;

   b. the amount of natural gas used for the previous 24-hour period in the 5B oxidizer serving Emission Point No. 2;

   c. the direction of the air flow into (or out of) each coating, churn or mogul room according to the monitoring device installed according to Special Condition 2.4.2.3 part 4.c., of this permit;

   d. the pressure drop across each filter.

2. The Permittee shall record the following parameters continuously:

   a. operating temperature of the thermal oxidizer serving Emission Point No. 1;

   b. operating temperature in the oxidizer serving Emission Point No. 2;

3. The Permittee shall keep the following records. These records must be available in one location as soon as the emission calculations are required to be completed according to special condition 2.4.6 part 1. of this permit.

   a. The days during which the thermal oxidizer serving Emission Point No. 1 (the thermal oxidizer) was not operated, the reason the thermal oxidizer was not operated, and the length of time the oxidizer was not operating.

   b. The total VOC emissions for the stationary source for each of the days during which the thermal oxidizer was not operated for more than one hour.

   c. The number of coaters being operated at any one time at the stationary source if the day the thermal oxidizer is shutdown is a Saturday, Sunday, or holiday.

d. The days during which the 5B oxidizer serving Emission Point No. 2 (the 5B oxidizer) was not operated for more than one hour (when 5B coater is operating) and the reason the 5B oxidizer was not operated.

e. The weight of VOC used each day in the equipment described under emission point nos. 47 and 48. This includes VOC contained in all coatings, thinners and clean up material.

4. The Permittee shall record the reason for and duration of all periods when the monitoring equipment for the air pollution control equipment is down unless the emission units that vent to the pollution control equipment are also not operating.

2.4.6 Emission Tracking and Calculation

1. The Permittee shall track VOC emissions and calculate the daily VOC emissions from all emission units at the stationary source except the boilers but the VOC emission generated by the coaters and exhausted through the boilers must be included. Calculations of emissions for Sunday, Monday, Tuesday and Wednesday must be completed no more than 41 hours after the end of the day for which the calculation is being made. Calculations of emissions for Thursday, Friday and Saturday must be completed by 4:30 p.m each Tuesday. Calculations of emissions for holidays must be completed by 4:30 p.m. of the second business day after the end of the holiday. This calculation shall be made in accordance with the methodologies in Attachment 2.

2. Attachment 2 is an enforceable condition of this permit and the Permittee waives any rights to dispute the contents of Attachment 2.

3. The methodologies in Attachment 2 may be changed by the Permittee through a written request from the Permittee to the Agency. After the Agency approves the request, the changes become an enforceable part of this permit.

2.4.7 Reporting

All reports required by this Special Condition shall be postmarked or delivered by the specified date to the Supervisor of the Compliance Determination Unit.

1. The Permittee shall submit a report of the total amount of VOC emissions (in tons), as calculated in Special Condition 2.4.6, for each day of the quarter plus the previous 364 days. These reports are due April 30, July 30, October 30, and January 30 of each year for the preceding quarter.

2. Upon request by the Division Manager, the Permittee shall submit a report of the total amount of VOC emissions (in tons) for any time period specified by the Division Manger. This report shall be postmarked or received by the Division Manager within 72 hours of the receipt of the request by the Permittee.

3. The Permittee shall submit an annual summary of all physical and operational changes during the previous calendar year with a description of the changes. This summary must include equipment removed during the year. This summary is due by January 31 of each year.

4. The Permittee shall notify the MPCA in writing if any VOC emission limit specified in Table A is exceeded. This includes both the 365-day emission limit and the daily emission limit that applies when the thermal oxidizer serving Emission Point No. 1 is not operating. This notification shall be submitted within 24 hours of calculating the exceedance. The notification shall include the cause of the exceedance and a description of any corrective action taken.

5. The Permittee shall notify the MPCA in writing if the amount of natural gas used in the thermal oxidizer controlling Emission Point No. 1 exceeds the limits in Special Condition 2.4.4. This notification shall be submitted within 14 calendar days of the exceedance.

6. The Permittee shall report all three-hour periods during which the average operating temperature of the thermal oxidizer controlling Emission Point No. 1 was 50°F or more below the corresponding minimum temperatures required by Special Condition 2.4.2.2. This notification shall be submitted within 14 calendar days of the excursion.

7. The Permittee shall report all three-hour periods during which the average operating temperature of the 5B oxidizer controlling Emission Point No. 2, was 50°F or more below the corresponding minimum temperature required by Special Condition 2.4.2.2. This notification shall be submitted within 14 calendar days of the excursion.

8. The Permittee shall submit a report if the fuel oil sulfur content exceeds the limit in Table B. This report is due within 14 days of receipt of the subject shipment of oil.

9. The Permittee shall notify the Division Manager if the airflow at any opening to any coating, churn or mogul room is not directed into the coating, churn or mogul room, respectively. This notification shall be received, in writing or by telephone, within 48 hours of the discovery that the air flow was not directed into the room.

10. The Permittee shall report to the Division Manager, each calendar quarter, a calculation of downtime for all monitoring equipment listed in Special Condition 2.4.2.3 part 4., of this permit. This report is due the thirtieth of the month following the monitored quarter.

2.4.8 Mogul Ventilation Changes

The Permittee shall route each of the existing atmospheric vents on moguls 1 through 6, identified by 3M as stack I.D. nos. 26B, 26D, 26F, 26H, 26J, and 26L, into the associated mogul room exhaust vents (emission point nos. 27 through 32). These ventilation changes must be complete on or before the date the CEMS on the mogul room exhaust vents begin operation.

2.4.9 19X Area Enclosure

All doors and windows in the 19X area enclosure shall remain closed at all times except to allow entrance and exit of people and materials.

2.5 Compliance Demonstration

2.5.1 Submittal Schedules

The Permittee is required by parts or Special Conditions of this permit to submit to the Agency reports and/or other documents according to the schedules identified in Table E. All reports shall be submitted to the Supervisor of the Compliance Determination Unit. All submittals to the Agency required by this permit must include a signed statement by the Permittee certifying that the information included is accurate and complete (see Special Condition 2.10).

The Agency may grant extensions of time schedules stated herein if extension requests are submitted in a timely fashion and good cause exists for granting the extension. All extensions must be requested by the Permittee in writing. The request shall specify the reason(s) why the extension is needed. A requested extension shall not be effective until approved by the Division Manager, or Agency.

2.5.2 Required Actions and Submittals

The required compliance actions and submittals are listed in Table E.

2.5.3 Compliance Testing and Recordkeeping Requirements

1. The Permittee shall fulfill the compliance testing and recordkeeping requirements according to the schedules in Table E.

2. The Permittee shall follow the test plan in Attachment 3 for all capture and destruction efficiency testing.

3. Attachment 3 is an enforceable condition of this permit and the Permittee waives any rights to dispute the contents of Attachment 3.

4. The Division Manager may request additional stack testing at any time as allowed by Minn. Rules pt. 7005.1860.

5. The Permittee shall maintain all records which are kept for the purpose of demonstrating compliance with this permit on site for at least five years.

2.5.3.1 Demonstration of Compliance Through Testing

Compliance with emission limits other than VOC will be through stack testing as required by Table E. Upon demonstration of compliance with the NOx, CO and PM emission limits specified under section 2.2 of this permit, the tested emission unit(s) may not be operated under conditions which would result in higher emissions until a test has been completed which demonstrates compliance under the alternative operating conditions and the Permittee has received written authorization from the Division Manager.

2.5.3.2 Failure to Demonstrate Compliance

Upon written notice from the Division Manager that the Permittee has failed to demonstrate compliance with any emission limit specified in Part 2.2 of this permit or operational requirement specified in section 2.4.2.2 of this permit, for which performance testing is the method of determining compliance with the emission limit or operational requirement, the Permittee must schedule and conduct a retest not later than 30 days from the date of notice of noncompliance. The Permittee shall provide 21 days advance notice to the Division Manager of the date of retest.

If the Permittee does not conduct the retest within the 30 days allowed, the Permittee shall not operate the tested emission unit(s) unless written authorization has been received from the Division Manager.

Upon written notice from the Division Manager that the retest has failed to demonstrate compliance, the Permittee is prohibited from operating the tested emission unit(s) unless written authorization has been received from the Division Manager.

2.5.4 Compliance Demonstration Methods

All records that are required to be kept on site by this condition shall be retained on site for at least five years.

1. Compliance with the VOC emission cap shall be demonstrated daily through the emission tracking and calculations required by section 2.4.6 of this permit and through the methodology described in parts 2 and 3 of this Special Condition.

2. For years 2 through 5 of this permit, the daily VOC emissions as calculated in section 2.4.6 (which includes all VOC emissions from the entire stationary source except the boilers) shall be added to the emissions from the previous 364 days and the total shall be compared to the emission limit in Table A, attached to this permit.

3. Compliance with the VOC limit for the first year of operation under this permit shall be determined based on the following methodology.

The cumulative emission limit for each day is calculated according to the following equation:

$CLn = [(4596 - 120)/364] \times (n-1) + 120$

Where:

CLn = cumulative VOC emission limit
n = number of the day of operation since the date of permit issuance, n is less than or equal to 365

Each day for the first year of operation, the cumulative emissions, from the date the permit was issued to day n, are calculated and compared to CLn as calculated above.

4. The Permittee shall have available within 24 hours of a request by the Division Manager, the results of the FTIR and viscosity or percent solids tests for percent VOC for each lot and tanker of VOC containing material supplied by sources other than 3M. At the request of the Division Manager, the Permittee shall verify the VOC content used in the emission calculations by comparing the percent VOC used in the calculation with the VOC test results for each lot and tanker of VOC containing material supplied by sources other than 3M.

5. The Permittee shall have available within 24 hours of a request by the Division Manager, a certification (see Special Condition 2.10) for each shipment of material supplied by another 3M division stating that the percent VOC of the material is within the range allowed by the product specification. At the request of the Division Manager, the Permittee shall verify the VOC content used in the emission calculations by comparing the percent VOC used in the calculation with the percent VOC documented by other 3M Divisions.

6. The Permittee shall document the weight percent sulfur for each shipment of no. 6 fuel oil received at the stationary source. This documentation shall be used to demonstrate compliance with the fuel oil sulfur limit in Table B.

7. At the request of the Division Manager, the Permittee shall use a smoke generator to determine compliance with Special Condition 2.4.2.2. Part 11. At all other times, compliance with Special Condition 2.4.2.2. Part 11 shall be demonstrated according to the records required to be kept under Special Condition 2.4.5. Part 6.

8. All other compliance demonstration methods are specified in Table E.

2.5.5 Continuous Emission Monitors (CEMS)

The Permittee shall submit to the Division Manager, the CEMS Survey attached to this permit as Exhibit B.1 within 60 days of the effective date of this permit (or at least 30 days prior to any certification test, which ever is earlier).

The Permittee shall notify the Division Manager, in writing, of every scheduled CEMS certification test, at least 30 days before the test. At the same time, the Permittee shall request a pretest meeting with Agency staff.

The Permittee shall operate all continuous monitoring systems and associated equipment so as to maintain 90 percent up-time based on quarterly reporting periods.

2.5.5.1 Total Hydrocarbon Analyzers

1. The Permittee shall install, maintain, calibrate, and operate a continuous monitoring system for measuring total hydrocarbon (THC) emissions discharged to the atmosphere and record the output of the system. The continuous monitoring system shall include Emissions Point Nos. 3 - 9, 14,

15, 27 - 33, 42, 54, and 55. Output for the monitors shall be on a pound of THC emissions per day basis. The installation, maintenance, calibration and operation of the THC monitors shall be in accordance with Attachment 6, and Exhibit B, attached to this permit, except as provided in 2., below.

2. The Permittee shall not be required to meet part 4.10 Attachment 6 regarding sampling frequency, but instead shall be required to sample each emission point once every 15 minutes.

3. The Permittee shall submit a THC CEMS plan as described in Attachment 2 to this permit within 30 days of permit issuance.

4. The Permittee shall certify each continuous THC monitor in accordance with Attachment 6, except as provided in 2., above, and Exhibit B, within 30 days of installation of the monitor. The test report for the certification shall be submitted within 45 days of the date of the certification test.

5. Concurrently with each certification test and annually thereafter, the Permittee shall verify that all velocity meters to be used to determine flow rate on continuously monitored emission units are within 10 percent of the flow rate determined through U.S. EPA method 2. The results from the initial test shall be submitted with the THC CEMS certification test report. If the initial test shows that the flow rate meters are not within 10 percent of the flow rate determined through U.S. EPA Method 2, the Permittee shall take all corrective action that is necessary so that the flow rate meters will be within 10 percent of the flow rate determined through U.S. EPA Method 2. A retest shall be performed within 30 days of the initial test to verify that the flow rate meters are within 10 percent of U.S. EPA Method 2.

6. The Permittee shall report to the Division Manager, each calendar quarter, no later than the thirtieth day of the month following the monitored quarter, a calculation of downtime for the continuous monitoring system while the monitored process equipment is operating. The attached forms, AQD EER 1 (Attachment 4) and EER 3 (Attachment 5), shall be used to report monitor downtime. If no periods of downtime are recorded, the report should include a statement of such. The Permittee may be requested by the Division Manager to submit raw data used to prepare this report at any time. Monitor data, in the form of daily emissions, shall be available upon request by the Division Manager.

7. The data generated by the THC CEMS will be used in conjunction with the emission data generated according to Attachment 2 to determine compliance with the emissions limits established in section 2.2, and with the monitor up-time requirement established in section 2.4.3.

2.5.5.2 Quality Assurance of Continuous Monitoring Systems

The Permittee shall maintain and calibrate the continuous monitoring systems specified in this permit in accordance with equipment manufacturers' recommendations and instructions. The Permittee shall also prepare a QA/QC CEMS plan in accordance with Attachment 2 to this permit.

2.5.6 Boiler Performance Tests

The boiler performance tests required in Table E shall be performed as follows:

1. If there are separate emission limits for burning natural gas and no. 6 fuel oil, the Permittee shall perform separate tests for each fuel.

2. During the performance tests, the boilers shall be operated at maximum fuel burning capacity.

3. For Emission Point No. 70, compliance with the emission limits is demonstrated if the emissions from the combined boiler stack meets the emission limits in Table A.

4. During performance tests for VOC, the maximum achievable volume of solvent laden air from coaters 3A, 4A, and 5A shall be routed to the boiler(s) being tested.

2.6 Residual Materials

The Permittee shall dispose of particulates, sludges, or other wastes generated by the operation of any emission unit(s) and/or air pollution control equipment according to solid waste rules (Minn. Rules ch. 7035) and hazardous waste rules (Minn. Rules ch. 7045).

2.7 Air Toxics Study

The Permittee shall perform the following activities according to the indicated schedules.

2.7.1 Determination of Acute Health Effects

1. For all chemicals listed in the air toxic study dated December 7, 1992, submitted by 3M and as approved by the Agency, for which the maximum second highest one-hour ambient concentration is above the appropriate ambient concentration limit, the Permittee shall determine, through dispersion modeling, one-hour average ambient concentrations. The dispersion modeling shall conform to the approved methods specified in "Guidelines on Air Quality Models (Revised)" (1986), Supplement A (1987) and Supplement B (1990). The Guideline and its Supplements are identified as U.S. Environmental Protection Agency publication number 450/2-78-027R. Any deviations from the Guidelines and Supplements, above, must be agreed to in advance by both the Permittee and the Agency.

2. The measured emission rates to be used in the modeling described by part 1., above, shall be the highest one-hour emission rates as determined using the THC CEMS in the first 180 days of operation of the CEMS after they have been certified. To determine these emission rates, each one-hour period during which each emission point was monitored shall be examined to determine the highest emission rate for each emission point. These highest emission rates for each emission point shall be used in the dispersion modeling.

3. The Permittee shall compare the maximum second highest one-hour ambient concentrations to the appropriate ambient concentration limits.

4. The Permittee shall submit a report to the Agency including all modeling inputs and outputs, all emission rates and the basis used to determine the emission rates, and the result of the comparison performed according to part 2., of this Special Condition. This report shall be received by the Division Manager no more than 9 months after the certification tests for the mogul and churn THC CEMS are completed.

5. The phrase "ambient concentration limits" as used in this permit means the ambient concentration limits listed in the most recent draft air toxics rule or final air toxics rule.

2.7.2 Toxic Emission Reduction Plan and Implementation Schedule

1. If all one-hour modeled maximum second highest ambient concentrations are below their respective ambient concentration limits, this condition (all of section 2.7.2) does not apply.

2. No more than 90 days after the Division Manager has received the report required by Special Condition 2.7.1, part 3., above, the Permittee shall submit a Toxic Emission Reduction Plan (Plan), as described in this Special Condition, to the Division Manager.

3. The Plan shall include the following:

   a. A description of all options that were considered for reducing toxic emissions of all toxic pollutants which were predicted in the report described in Special Condition 2.7.1, part 3., above, to be emitted at rates which would result in one-hour ambient concentrations higher than the ambient concentration limit. The options shall include, as a minimum, process and operational changes and the addition of pollution control equipment.

   b. Identification of all feasible options from the options described in part a., above.

   c. A plan and schedule for implementing all feasible toxic emission reduction activities, that were identified in part b., above, necessary to reduce each one-hour modeled maximum second highest ambient concentration below its respective ambient concentration limit.

2.7.3 Implementation of Toxic Emission Reduction Activities

The Permittee shall implement all feasible toxic emission reduction activities necessary to reduce each one-hour modeled maximum second highest ambient concentration below its respective ambient concentration limit, identified in the Plan according to the schedules identified in the Plan.

2.8 Permit Reissuance and Ownership Transfer or Name Change

2.8.1 Reissuance

Pursuant to Minn. Rules pt. 7001.0040, subp. 3, if the Permittee desires to continue the activities permitted herein beyond the expiration date of this permit, the Permittee is required to submit a permit application for permit reissuance at least 180 days prior to the expiration of this permit. The Permittee must obtain the required permit application from the Permit Section, Air Quality Division. Permit applications shall be sent to the Permit Section Manager.

The Permittee has every intention of continuing the operations of the stationary source beyond the expiration date of this permit and intends to submit a permit application for permit renewal on the terms of this permit, except as the terms may be amended to conform to changes in Minnesota or federal law during the term of the permit.

2.8.2 Ownership Transfer or Name Change

This permit may not be assigned or transferred by the Permittee without written notification to the Commissioner. If there is a proposed transfer of control or ownership, the new owner or operator must submit a permit application to the Commissioner prior to the transfer. The Commissioner may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate any other appropriate requirements.

2.9 Stack Identification

Within 180 days of the issuance of this permit, the Permittee shall permanently label all stacks listed in the Facility Description section of this permit. The labels shall be placed on the stack so that they are easily readable from the roof by a MPCA inspector

2.10 Certifications

All certifications required by this permit shall be submitted on the form included as Attachment 7.

3.0 GENERAL CONDITIONS

The Permittee shall comply with the attached general conditions, attached as Exhibit A, in order to attain, maintain and demonstrate compliance with applicable Minnesota and federal statutes, federal regulations and Minnesota rules.

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TABLE A - EMISSION LIMITS

Pollutant	Emission Points Nos.	Emission Limit	Special Condition (S.C.) or Limitation Basis
VOC	1-17,19,27-33, 36,42-48, 54,55,57-61, 62-66,74-93	4596 tons/year, annual limit rolled each day	Minn. Stat. § 116.07, Subp. 4a and Minn. Rules pt. 7001.0150, subp. 2 and to limit potential to emit
VOC	1-17,19,27-33, 36,42-48, 54,55,57-61, 62-66,74-93	30,600 lb/day when REECO oxidizer is not operating	Minn. Stat. § 116.07, subp. 4a and Minn. Rules pt. 7001.0150, subp. 2 and S.C. 2.4.2.1
PM and PM-10	1	0.031 gr/dscf at 270,000 dry scfm exhaust gas flow rate and varies with the actual exhaust flow rate	Minn. Rules pt. 7005.0470, subp. 1.A.
Opacity	1 and 2	shall not exhibit greater than 20% opacity; except that a maximum of 60% opacity shall be permissible for four minutes in any 60-minute period and that a maximum of 40% opacity shall be permissible for four additional minutes in any 60-minute period, each	Minn. Rules pt. 7005.0470, subp. 1.B.
PM and PM-10	18,20, 26,39, 49,50,67-69	0.02 gr/dscf, each	Minn. Stat. § 116.07, subp. 4a and Minn. Rules pt. 7001.0150, subp. 2 and to reflect the capability of the control equipment

Pollutant	Emission Points Nos.	Emission Limit	Special Condition (S.C.) or Limitation Basis
PM and PM-10	41	0.065 gr/dscf, at design flow rate	Minn. Rules pt. 7005.0480, subp. 1.A.
PM and PM-10	8,15,16,19,22 25,27-32,38,40 51-53,56	0.1 gr/dscf, each at design flow rate	Minn. Rules pt. 7005.0480, subp. 1.A.
PM and PM-10	3,7,33,24	0.096 gr/dscf, each at design flow rate	Minn. Rules pt. 7005.0480, subp. 1.A.
PM and PM-10	17,47,48,23	0.089 gr/dscf, each at design flow rate	Minn. Rules pt. 7005.0480, subp. 1.A.
PM and PM-10	37	0.086 gr/dscf at design flow rate	Minn. Rules pt. 7005.0480, subp. 1.A.
PM and PM-10	9	0.091 gr/dscf at design flow rate	Minn. Rules pt. 7005.0480, subp. 1.A.
PM and PM-10	14	0.087 gr/dscf at design flow rate	Minn. Rules pt. 7005.0480, subp. 1.A.
PM and PM-10	70-73	0.4 lb/million Btu heat input, each	Minn. Rules pt. 7005.0390
Opacity	70-73	shall not exhibit greater than 20% opacity; except that a maximum of 60% opacity shall be permissible for four minutes in any 60-minute period and that a maximum of 40% opacity shall be permissible for four additional minutes in any 60-minute period, each	Minn. Rules pt. 7005.0390
SO_2	70-73	1.6 lb/million Btu, each while burning liquid fuel	Minn. Rules pt. 7005.0390

Pollutant	Emission Points Nos.	Emission Limit	Special Condition (S.C.) or Limitation Basis
NO_x	70-73	0.14 lb/million Btu, each while burning natural gas and 0.37 lb/million Btu, and potential to emit each while burning fuel oil	Minn. Stat. § 116.07, subp. 4a and Minn. Rules pt. 7001.0150, subp. 2
CO	70-73	0.034 lb/million Btu, each	Minn. Stat. § 116.07, subp. 4a and Minn. Rules pt. 7001.0150, subp. 2 and potential to emit
VOC	70-73	57.1 lb/hr, each	Minn. Stat. § 116.07, subp. 4a and Minn. Rules pt. 7001.0150, subp. 2 and potential to emit

TABLE B - FUEL TYPE AND USAGE LIMITATIONS

Emission Points Nos.	Fuel Type Limitation	Usage Limitation	Limitation Basis
1	Natural gas	648,000 cubic feet per day except as specified in Special Condition 2.4.4	Minn. Stat. § 116.07, subp. 4a and Minn. Rules pt. 7001.0150, subp. 2 and to limit increase in NOx to less than PSD significant level
70-73	Natural gas	Rated capacity	Special Condition 2.4.4
70-73	No. 6 fuel oil with a maximum of 1.5% sulfur by weight	Rated capacity	Special Condition 2.4.4
34	Natural gas	Rated capacity	Special Condition 2.4.4

TABLE E - REQUIRED ACTIONS AND SUBMITTALS

Action Required	Emission Point Nos.	Parameter or Pollutant	Compliance Determination Method	Schedule/ Frequency	Special Condition (S.C.) and/or Exhibit
Monitoring	1	Thermal oxidizer minimum temperature	Monitoring	Continuous	S.C. 2.4.2
Thermal oxidizer minimum temperature excursion report	1	Thermal oxidizer minimum temperature	Reporting	Within 14 days of excursion	S.C. 2.4.7
Performance test and calculation	1	Thermal oxidizer retention time	Performance test and calculation	Once no more than 120 days after issuance of this permit and every two years thereafter	Attachment 3 and Exhibit C
Monitoring	2	5B oxidizer minimum temperatures	Monitoring	Continuous	S.C. 2.4.2
5B oxidizer minimum temperatures excursion report	2	5B oxidizer minimum temperatures	Reporting	Within 14 days of excursion	S.C. 2.4.7
Performance test and calculation	2	5B oxidizer retention time	Performance test and calculation	Once no more than 120 days after initial operation of the modified 5B coater and every two years thereafter	Attachment 3 and Exhibit C

Action Required	Emission Point Nos.	Parameter or Pollutant	Compliance Determination Method	Schedule/ Frequency	Special Condition (S.C.) and/or Exhibit
Performance test	1	Building 23 thermal oxidizer capture efficiency	Performance test	Once no more than 120 days after issuance of this permit and annually thereafter except as allowed by Attachment 3	Attachment 3 and Exhibit C
Performance test	36, 1 part 29	Building 20, 19X area enclosure	Performance test	Once no more than 120 days after issuance of this permit and annually thereafter except as allowed by Attachment 3	Attachment 3 and Exhibit C
Performance test	1	Building 22 thermal oxidizer capture efficiency	Performance test	As requested by Division Manager	Attachment 3 and Exhibit C
Performance test	2	Coater 5B, 5B oxidizer capture efficiency	Performance test	Once no more than 120 days after initial operation of the modified 5B coater and annually thereafter except as allowed by Attachment 3	Attachment 3 and Exhibit C
Performance test	1	Thermal oxidizer destruction efficiency	Performance test	Once no more than 120 days after issuance of this permit and every two years thereafter	Attachment 3 and Exhibit C

Action Required	Emission Point Nos.	Parameter or Pollutant	Compliance Determination Method	Schedule/ Frequency	Special Condition (S.C.) and/or Exhibit
Performance test	2	5B oxidizer destruction efficiency	Performance test	Once no more than 120 days after initial operation of the modified 5B coater and every two years thereafter	Attachment 3 and Exhibit C
Performance test	70-73	VOC, NOx, CO, PM	Performance test	Once not more than 180 days after issuance of this permit	Exhibit C and S.C. 2.5.6
Performance test	17	PM and PM-10 and VOC	Performance test	Once not more than 120 days after issuance of this permit	Exhibit C
Performance test	16,19	VOC	Performance test	Once not more than 120 days after issuance of this permit	Exhibit C
Performance test	21	PM and PM-10	Performance test	Once not more than 120 days after issuance of this permit	Exhibit C
Performance test	all	PM, VOC	Performance test	As requested by the Division Manager	Exhibit C
Monitoring	--	Airflow directions	Monitoring	Continuous	S.C. 2.4.5

Action Required	Emission Point Nos.	Parameter or Pollutant	Compliance Determination Method	Schedule/ Frequency	Special Condition (S.C.) and/or Exhibit
Notification of air flow not directed into room	--	Air flow directions	Monitoring	Within 48 hours of discovery	S.C. 2.4.7
Pollution control equipment monitoring devices	1,2,18, 20,22-26,39-41,49, 50,67-69	Downtime Report	Report	Due April 30, July 30, Oct. 30, January 30, each year	S.C. 2.4.7
Monitoring	1	Natural gas usage	Monitoring	Daily	S.C. 2.4.5
Natural gas usage limit exceedance report	1	Natural gas usage	Reporting	Within 14 days of exceedance	S.C. 2.4.7
Emission calculation	1-15,27-33,35,36, 42-48,54, 55,57-61, 62-66	VOC	Emission tracking	Daily	Attachment 2 and S.C. 2.4.6
Exceedance of VOC cap	1-15,27-33,35,36, 42-48,54, 55,57-61, 62-66	VOC	Emission tracking and calculations	Within 24 hours of calculating exceedance	S.C. 2.4.7
Total VOC emissions report	1-15,27-33,35,36 42-48,54, 55,57-61, 62-66,74-93	VOC	Emission tracking and calculations	April 30, July 30, October 30, January 30, each year	S.C. 2.4.7
Summary of all physical and operational changes for the calendar year	1-93	all	---	January 31 each year	S.C. 2.4.7

Action Required	Emission Point Nos.	Parameter or Pollutant	Compliance Determination Method	Schedule/ Frequency	Special Condition (S.C.) and/or Exhibit
Certification of fuel sulfur	70-73	% S	vendor certification	Each shipment received	S.C. 2.5.4
Exceedance of % S limit	70-73	% S	vendor certification	Within 14 days of receipt of shipment	S.C. 2.4.7
		other pollutants	Performance	tests	
Installation and certification of CEMS	3-9,14, 15,27-33, 42,54,55	VOC	---	Within 90 days of permit issuance	S.C. 2.4.2.3 and 2.5.5
Notification of CEMS certification tests	3-9,14, 15,27-33, 42,54,55	VOC	---	At least 30 days prior to test	S.C. 2.5.5
CEMS survey	3-9,14, 15,27-33, 42,54,55	VOC	---	Within 60 days of permit issuance or 30 days prior to certification test, whichever is earlier	S.C. 2.5.5
CEMS certification test report submittal	3-9,14, 15,27-33, 42,54,55	VOC	---	Within 30 days of certification test	S.C. 2.5.5
CEMS quarterly report	3-9,14, 15,27-33, 42,54,55	VOC	---	Within 30 days of the end of the monitored quarter	S.C. 2.5.5
CEM plan	3-9,14, 15,27-33, 42,54,55	VOC	---	Within 30 days of permit issuance	Attachment 2
Presurvey Sample Analysis Report	3-9,14, 15,27-33, 42,54,55	VOC	---	March 1, each year	Attachment 2

Action Required	Emission Point Nos.	Parameter or Pollutant	Compliance Determination Method	Schedule/ Frequency	Special Condition (S.C.) and/or Exhibit
Capture efficiency performance tests	1 and 2	Written notice of test date	---	At least 45 days prior to test	Attachment 3 and Exhibit C
Capture efficiency performance tests	1 and 2	Pretest meeting	---	At least 15 days prior to test	Attachment 3 and Exhibit C
Capture efficiency performance tests	1 and 2	Test report	---	No more than 60 days after test and microfiche due no more than 120 days after test	Attachment 3 and Exhibit C
All performance tests other than capture efficiency	1,2,17, 21,70-73	Written notice of test date	---	At least 30 days prior to test date	Exhibit C
All performance tests other than capture efficiency	1,2,17, 21,70-73	Pretest meeting	---	At least 7 working days prior to test date	Exhibit C
All performance tests other than capture efficiency	1,2,17, 21,70-73	Test report	---	Due no more than 45 days after test date and microfiche due within 105 days of test date	Exhibit C

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EXHIBIT A

GENERAL CONDITIONS

1. The Agency's issuance of a permit does not release the Permittee from any liability, penalty, or duty imposed by Minnesota or federal statutes or rules or local ordinances, except the obligation to obtain the permit.

2. The Agency's issuance of a permit does not prevent the future adoption by the Agency of pollution control rules, standards, or orders more stringent than those now in existence and does not prevent the enforcement of these rules, standards, or orders against the Permittee.

3. The permit does not convey a property right or an exclusive privilege.

4. The Agency's issuance of a permit does not obligate the Agency to enforce local laws, rules, or plans beyond that authorized by Minnesota statutes.

5. The Permittee shall perform the actions or conduct the activity authorized by the permit in accordance with the plans and specifications approved by the Agency and in compliance with the conditions of the permit.

6. The Permittee shall at all times properly operate and maintain the facilities and systems of treatment and control and the appurtenances related to them which are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. The Permittee shall install and maintain appropriate back-up or auxiliary facilities if they are necessary to achieve compliance with the conditions of the permit and, for all permits other than hazardous waste facility permits, if these back-up or auxiliary facilities are technically and economically feasible.

7. The Permittee may not knowingly make a false or misleading statement, representation, or certification in a record, report, plan, or other document required to be submitted to the Agency or to the Division Manager by the permit. The Permittee shall immediately upon discovery report to the Division Manager an error or omission in these records, reports, plans, or other documents.

8. The Permittee shall, when requested by the Division Manager, submit within a reasonable time the information and reports that are relevant to the control of pollution regarding the construction, modification, or operation of the facility covered by the permit or regarding the conduct of the activity covered by the permit.

9. When authorized by Minn. Stat. § 115.04; 115B.17, subd. 4; and 116.091, and upon presentation of proper credentials, the Agency, or an authorized employee or agent of the Agency, shall be allowed by the Permittee to enter at reasonable times upon the property of the Permittee to examine and copy books, papers, records, or memoranda pertaining to the construction,

modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit; and to conduct surveys and investigations, including sampling or monitoring, pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit.

10. If the Permittee discovers, through any means, including notification by the Agency, that noncompliance with a condition of the permit has occurred, the Permittee shall take all reasonable steps to minimize the adverse impacts on human health, public drinking water supplies, or the environment resulting from the noncompliance.

11. If the Permittee discovers that noncompliance with a condition of the permit has occurred which could endanger human health, public drinking water supplies, or the environment, the Permittee shall, within 24 hours of the discovery of the noncompliance, orally notify the Division Manager. Within five days of the discovery of the noncompliance, the Permittee shall submit to the Division Manager a written description of the noncompliance; the cause of the noncompliance; the exact dates of the period of the noncompliance; if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

12. The Permittee shall report noncompliance with the permit not reported under 11. as a part of the next report which the Permittee is required to submit under this permit. If no reports are required within 30 days of the discovery of the noncompliance, the Permittee shall submit the information listed in item 11. within 30 days of the discovery of the noncompliance.

13. The Permittee shall give advance notice to the Division Manager as soon as possible of planned physical alterations or additions to the permitted facility or activity that may result in noncompliance with a Minnesota or federal pollution control statute or rule or a condition of the permit.

14. The permit is not transferable to any person without the express written approval of the Agency after compliance with the requirements of Minn. Rules pt. 7001.0190, subp. 2. A person to whom the permit has been transferred shall comply with the conditions of the permit.

15. The permit authorizes the Permittee to perform the activities described in the permit under the conditions of the permit. In issuing the permit, the State and Agency assume no responsibility for damage to persons, property, or the environment caused by the activities of the Permittee in the conduct of its actions, including those activities authorized, directed, or undertaken under the permit. To the extent the State and Agency may be liable for the activities of its employees, that liability is explicitly limited to that provided in the Tort Claims Act, Minn. Stat. § 3.736.

16. The Permittee shall submit annually or as requested, an emission inventory report to the Agency. The Permittee shall include in the report the number of tons of pollutants emitted during the year, stack gas flow rates (acfm) and velocities (fpm) or any other information required by the Agency to verify the emissions.

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EXHIBIT B

CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS)

I. General

This Exhibit applies as described unless otherwise stated by Special Conditions of the permit.

I.1. CEMS Installations

The measurement location and measurement path of the monitors shall be in accordance with 40 CFR Part 60, Appendix B, Installation Specifications for opacity monitors and 40 CFR Part 60, Appendix B, Performance Specifications for gaseous monitors. The Permittee shall obtain written approval from the Agency for proposed monitor locations prior to installation. The CEMS installation shall provide for a permanent hard copy record such as a digital printer, analog chart recorder or equivalent memory.

I.2. Certification Test Notification

The Permittee shall notify the Division Manager in writing at least 21 days prior to conducting any CEM certification test. The Permittee shall submit to the Agency any CEM certification test within 60 days following the test date.

I.3. Quality Assurance Audit Test Notifications

The Permittee shall notify the Division Manager in writing at least 10 days prior to conducting annual quality assurance audit test procedures. The Permittee shall maintain 5 year records on all quality assurance test results. However, the Permittee shall submit to the Division Manager any quality assurance test results which do not meet specified Exhibit G requirements with the next quarterly monitoring report submittal.

I.4. Pretest Meeting

The Permittee shall request a pretest meeting with Agency staff at least 10 days prior to conducting any CEM certification test.

I.5. Certification Test Conditions

The process or combustion facility shall be operated in a manner representative of normal operation in all respects during the CEM certification test period and at a load of 50% or greater of rated capacity.

The monitors shall be installed, calibrated and operated in accordance with manufacturer's recommended procedures and specifications.

In cases where the monitor is installed not in conformance with 40 CFR Part 60, Appendix B specifications; or where significant stratification is considered likely, an approved test for stratifications shall be conducted. If significant stratification is indicated, the Agency may request that the certification test be terminated.

II. Opacity Monitors

II.A. Operation

The Permittee shall install, maintain, calibrate and operate opacity CEMS in accordance with 40 CFR Part 60 Appendix B and Minn. Rules pts. 7005.1850 to 7005.1880.

II.B. Certification

The Permittee shall conduct certification tests in accordance with U.S. Environmental Protection Agency (U.S. EPA) Performance Specification (PS) 1, 40 CFR Part 60, Appendix B. The monitor is certified when the certification test report is approved by the Division Manager.

II.C. Data Reduction and Record Keeping

The Permittee shall record analog or log digital emission measurements in accordance with the following requirements:

1) Minnesota Exhibit G for all sources plus the requirements of CFR Part 60 Appendix F for sources additionally subject to federal New Source Performance Standards (NSPS) and used for compliance determination.

2) Applicable emission standards and units based on the averaging period specified in the permit or applicable rule if not specified in the permit.

The Permittee shall submit periodic monitoring data reports in accordance with the air emission facility permit and amendments thereto.

The Permittee shall retain all monitoring data for at least three years. The record retention period may be extended as advised in writing by the Division Manager.

III. Sulfur Dioxide (SO_2) and Nitrogen Oxides (NOx) Monitors

III.A. Operation

The Permittee shall install, maintain, calibrate, and operate SO_2 and NO_x CEMS in accordance with 40 CFR Part 60, Appendix B and Minn. Rules pts. 7005.1850 to 7005.1880.

III.B. Certification

The Permittee shall conduct certification tests in accordance with U.S. EPA Performance Specification (PS) 2, 40 CFR Part 60, Appendix B. The monitor is certified when an approvable certification test report is submitted to the Division Manager.

III.C. Data Reduction and Record Keeping

The Permittee shall record analog or log digital emission measurements in accordance with the following requirements:

1) Minnesota Exhibit G for all sources plus the requirements of CFR Part 60 Appendix F for sources additionally subject to federal New Source Performance Standards (NSPS) and used for compliance determination.

2) Applicable emission standards and units based on the averaging period specified in the permit or applicable rule if not specified in the permit.

The Permittee shall submit periodic monitoring data reports in accordance with the air emission facility permit and amendments thereto.

The Permittee shall retain all monitoring data for at least three years. The record retention period may be extended as advised in writing by the Division Manager.

IV. Diluent (O_2 or CO_2) Monitors

IV.A. Operation

The Permittee shall install, maintain, calibrate and operate diluent O_2 or CO_2 CEMS in accordance with 40 CFR Part 60, Appendix B and Minn. Rules pts. 7005.1850 to 7005.1880.

IV.B. Certification

The Permittee shall conduct certification tests in accordance with U.S. EPA Performance Specification (PS) 3, 40 CFR Part 60, Appendix B. The monitor is certified when an approvable certification test report is submitted to the Division Manager.

IV.C. Data Reduction and Record Keeping

The Permittee shall record analog or log digital emission measurements in accordance with the following requirements:

1) Minnesota Exhibit G for all sources plus the requirements of CFR Part 60 Appendix F for sources additionally subject to federal New Source Performance Standards (NSPS) and used for compliance determination.

2) Applicable emission standards and units based on the averaging period specified in the permit or applicable rule if not specified in the permit.

The Permittee shall submit periodic monitoring data reports in accordance with the air emission facility permit and amendments thereto.

The Permittee shall retain all monitoring data for at least three years. The record retention period may be extended as advised in writing by the Division Manager.

V. CO Monitors

V.A. Operation

The Permittee shall install, maintain, calibrate and operate CO CEMS in accordance with 40 CFR Part 60, Appendix B.

V.B. Certification

The Permittee shall conduct certification tests in accordance with U.S. EPA Performance Specification (PS) 4, 40 CFR Part 60, Appendix B. The monitor is certified when an approvable certification test report is submitted to the Division Manager.

V.C. Data Reduction and Record Keeping

The Permittee shall record analog or log digital emission measurements in accordance with the following requirements:

1) Minnesota Exhibit G for all sources.

2) Applicable emission standards and units based on the averaging period specified in the permit or applicable rule if not specified in the permit.

The Permittee shall submit periodic monitoring data reports in accordance with the air emission facility permit and amendments thereto.

The Permittee shall retain all monitoring data for at least three years. The record retention period may be extended as advised in writing by the Division Manager.

VI. Total Reduced Sulfur (TRS) Monitors

VI.A. Operation

The Permittee shall install, maintain, calibrate and operate TRS CEMS in accordance with 40 CFR Part 60, Appendix B.

VI.B. Certification

The Permittee shall conduct certification tests in accordance with U.S. EPA Performance Specification (PS) 5, 40 CFR Part 60, Appendix B. The monitor is certified when an approvable certification test report is submitted to the Division Manager.

VI.C. Data Reduction and Record Keeping

The Permittee shall record analog or log digital emission measurements in accordance with the following requirements:

1) Minnesota Exhibit G for all sources.

2) Applicable emission standards and units based on the averaging period specified in the permit or applicable rule if not specified in the permit.

The Permittee shall submit periodic monitoring data reports in accordance with the air emission facility permit and amendments thereto.

The Permittee shall retain all monitoring data for at least three years. The record retention period may be extended as advised in writing by the Division Manager.

VII. Other Monitors (H_2S, HCl, Total HC, etc.) - Monitors lacking U.S. EPA Performance Specification (PS).

VII.A. Operation

The Permittee shall install, maintain, calibrate and operate CEMS in accordance with manufacturer's recommended requirements, procedures and methods.

VII.B. Certification

The Permittee shall conduct certification tests in accordance with manufacturer's recommended procedures and methods or as approved by the Division Manager. The monitor is certified when an approvable certification test report is submitted to the Division Manager.

VII.C. Data Reduction and Record Keeping

The Permittee shall record analog of log digital emission measurements in accordance with the following requirements:

1) Minnesota Exhibit G.

2) Applicable emission standards and units based on the averaging period specified in the permit or applicable rule if not specified in the permit.

The Permittee shall submit periodic monitoring data reports in accordance with the air emission facility permit and amendments thereto.

The Permittee shall retain all monitoring data for at least three years. The record retention period may be extended as advised in writing by the Division Manager.

VIII. Quality Assurance Procedures

The Permittee shall maintain and calibrate the CEMSs in accordance with permit requirements, and shall implement a quality assurance program in accordance with the following standard procedures and guidelines:

A) Minnesota Exhibit G, Quality Assurance Guidelines, shall apply to all sources having permit required CEMSs plus the requirements of CFR Part 60, Appendix F, shall apply for sources additionally subject to federal New Source Performance Standards (NSPS).

B) A Permittee who operates a noncertifiable or nonaffected CEMS shall be required to maintain and calibrate the CEMS in accordance with equipment manufacturer's recommended procedures and instructions, or modified recommended procedures as approved by the Division Manager. The Permittee shall verify calibration as necessary to maintain specified accuracy, or at the request of the Division Manager should any data evaluation or inspection indicate the need for further quality assurance.

IX. Continuous Operation

The Permittee shall operate all CEMs and associated equipment so as to maintain a 90 percent minimum up-time based on quarterly reporting periods.

Demonstration of the percent up-time (operating time) must be made with a report to the Division Manager on the percent down-time for each CEM required in the applicable Special Condition of this permit. This report must include a tabulation of the daily down-times for each CEM on a quarterly basis. Up-time calculations need not include CEM outage due to the following causes:

A. Lightning strikes, earthquakes, tornadoes and similar natural disasters.

B. Special order time for needed parts not included in equipment manufacturer's list of recommended spare parts.

C. Reasonable time periods for scheduled maintenance based on equipment manufacturer's recommended maintenance schedule.

D. Reasonable time periods for return of the CEM to manufacturer if component failure invalidates factory certification.

The Permittee shall submit the down-time report to the Division Manager on a monthly basis by the 30th day of the month following the end of the monitored quarter.

X. Zero and Span Drift Checks

The Permittee shall conduct zero drift and span drift checks on a daily basis in accordance with 40 CFR Part 60.13. The Permittee shall also log the resulting readings using the attached Exhibit F. Records must be retained for a period of three years.

The zero and span must, as a minimum, be adjusted whenever the 24 hour zero drift or 24 hour span calibration drift exceeds two times the drift limits of the applicable performance specification in 40 CFR Part 60, Appendix B.

XI. Reporting

The Permittee shall submit to the Division Manager on a quarterly basis on the 30th day following the end of the calendar quarter, or as specified otherwise under Special Conditions of the permit, the following reports as applicable:

A. All opacity excess emissions in minutes and excess opacity based upon the permit specified averaging period, i.e. one (1) minute or six (6) minutes. Report data on Exhibit B-9.

B. All excess emissions of SO_2 or NO_x emissions in pounds per million Btu heat input based upon the permit specified averaging period. Report data on Exhibit B-9E.

C. All out-of-limits averages of O_2 emissions in % oxygen and corresponding time period.

D. All excess emissions of CO specified in parts per million wet basis and corresponding time period.

E. All exceedance averages of TRS emissions in parts per million dry basis and corresponding time period.

F. All out-of-limits averages of combustion temperature in degrees Fahrenheit and corresponding time period.

G. All out-of-limits averages of combustion efficiency in percent and corresponding time period.

H. All exceedance averages of H_2S emissions in parts per million dry basis and corresponding time period.

I. All exceedance averages of HCl emissions in parts per million wet basis and/or percent HCl and corresponding time period as applicable.

J. A tabulation of daily CEMS downtime periods on a unit or each boiler basis and calculations of the overall quarterly CEM downtime and uptime on a unit or each boiler basis.

TABLE I

COMBUSTION SOURCES

Fuel Input

1. Itemize all fuels and materials that are added to the combustion process during the test period. Attach analysis of the fuel.

FUEL DESCRIPTION Coal: State, City, Mine Oil: Specify Grade	INPUT (LBS/HR) (GAL/HR)	% MOISTURE As Rec'd (coal)	HT. VALUE As Rec'd (BTU/LB) (BTU/GAL)	HEAT INPUT (BTU/HR)
No. 1				
No. 2				
No. 3				
			TOTAL	

2. Are the above fuels substantially the same as those normally burned _____.
   If not, explain _____

3. Are the above fuels normally burned in the proportions shown above _____.
   If not, explain _____

Equipment & Operating Data

1. Furnace No. _____.
2. Furnace Mfg. _____.
3. Type of Firing _____.
4. Furnace operating under normal operating conditions No _____;
   Yes _____.

Air Pollution Control Equipment

1. Type/model control equipment _____.
2. Air pressure drop across the control equipment _____.
3. Air flow through the control equipment _____.
4. Was the control equipment operating normally? _____.
5. Data of last major maintenance/cleaning of control equipment. _____

_____.

Plant Operator's Certification

I certify that the information submitted herein is accurate and correct and that no information requested was withheld from the Division Manager.

By _____, Position _____

TABLE II

PROCESS EMISSIONS

Equipment & Operating Data

1. Process Equip. No./Ident. _____.

2. Process Equip. Description _____

_____.

3. Process equipment operating under normal operating conditions:

No _____. Yes _____.

Instrument Data on Process Equipment

1. Include copy of production records or instrumentation which indicates rate of production or operation of the equipment, i.e. units per hour, lbs. per hour, pressure, air flow, etc.

Air Pollution Control Equipment

1. Type/model control equipment _____.

2. Air pressure drop across the control equipment _____.

3. Air flow through the control equipment _____.

4. Was the control equipment operating normally? _____.

5. Data of last major maintenance/cleaning of control equipment _____

_____.

Plant Manager's Certification

I certify that the information submitted herein is accurate and correct and that no information requested was withheld from the Division Manager.

By _____, Position _____

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EXHIBIT B-1

CONTINUOUS EMISSION MONITORING SURVEY

SECTION I. GENERAL PROCESS AND MONITOR INFORMATION

Instructions: Provide the information required in this Section one time, only.

Source Name: _____ Location _____
(city,state)

List all units / processes at the facility that have continuous emission monitoring systems, and the type(s) of monitor(s) on each unit or process:

Give the location(s) of all of the continuous monitor(s), illustrating with sketches:

If any of the monitored units or processes are combustion sources, give the type(s) of fuel(s) burned in each unit:

Give the design rated heat input capacity of each monitored combustion unit, in million Btu/hr:

Estimate the annual operating time of each monitored process or unit (hrs/yr), and, if a combustion unit, estimate the percentage of design rated capacity at which the unit normally operates:

Comments and Further Explanations:

Give the name of the principal continuous emission monitoring (CEM) contact at the facility:

Name: _____

Title: _____

Telephone Number: _____

SECTION II. SPECIFIC MONITOR AND FUEL SAMPLING INFORMATION

Instructions: Complete one set of Section II forms for each continuous monitoring system at the facility, making photocopies if necessary, to describe all of the CEM's at the plant. If there are multiple monitors of the same type on different units (e.g., if Units 1,2, and 3 all have opacity monitors), it may not be necessary to fill out multiple sets of forms, provided when the information applies to more than one unit this is made clear, and if there are any differences among otherwise identical monitors or units (e.g., if certification dates, permissible emission limits, stack dimensions, etc. are not the same), this is clearly indicated. The space provided below for, "Further Comments and Explanations" may be used for this purpose.

Unit(s) or Process(es) Monitored: _____

Type of Continuous Monitoring System:

_____ Opacity Monitor

_____ Gas Monitoring System (Pollutant + Diluent Monitor)

_____ Gas Monitor (Alone)

_____ Fuel Sampling System

_____ Other (Specify)

Pollutant Monitored: ___ Opacity ___ SO_2 ___ NO_x ___ CO ___ TRS

___ H_2S ___ NH_3 ___ VOC ___ Vinyl Chloride

Diluent Gas Monitored (if applicable): ___ O_2 ___ CO_2

Permissible Emission Limit(s) for Pollutant Monitored (Include Units):

Monitoring System Required by (specify more than one, if applicable):

____ State Regulations ____ NSPS ____ Operating Permit ____ PSD Permit

____ NESHAP ____ Federal Consent Decree ____ Federal Administrative Order

____ State Consent Decree ____ State Administrative Order ____ Other (Specify)

Pollutant Monitor Information:

Manufacturer: _____

Model No.: _____

Serial No.: _____ Date Installed: _____

Design: ____ Extractive ____ Point In-Situ ____ Path In-Situ

Measurement Basis: ____ Wet ____ Dry

Has a performance specification test (PST) of the monitor been done (ref. 40 CFR 60, Appendix B)? ____ yes ____ no

PST Date: _____ PST Status: ____ Pass ____ Fail

For an opacity monitor, specify the following dimensions:

Stack exit inside diameter (give units) _____

Stack or duct inside diameter at the CEM location (give units) _____

Give the value of the stack exit opacity correlation factor (e.g., the OPLR, STR, M factor, etc.) _____

Diluent Monitor Information (if applicable):

Manufacturer: _____

Model No.: _____

Serial No.: _____ Date Installed: _____

Design: ____ Extractive ____ Point In-Situ ____ Path In-Situ

Measurement Basis: ____ Wet ____ Dry

PST Date: _____ PST Status: ____ Pass ____ Fail

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Fuel Sampling and Analysis Information:

For combustion sources, are samples of the fuel(s) regularly taken and analyzed? ____ yes ____ no

At what frequency?

What collection method is used?

What method of analysis is used?

Primary-Data Acquisition System (DAS) Information:

Type of System: ____ Chart Recorder ____ Digital Recorder

____ Computer ____ Microprocessor ____ Telemetry

____ Other (Specify)

Manufacturer(s): _____

DAS Full-Scale value(s) during normal operation (include units): _____ Pollutant monitor _____ Diluent Monitor

DAS Resolution (i.e., Readability) or smallest scale division (give units): _____ Pollutant Monitor _____ Diluent Monitor

Is there a secondary (back-up) DAS? _____ If so, describe it.

Further Comments and Explanations:

SECTION III. QUALITY ASSURANCE INFORMATION

Instructions: Follow the same general instructions as for Section II, above.

Unit(s) or Process(es) Monitored: _____

Type of Monitoring System: _____

A. Drift Checks

How often is the CEMS zero and span drift checked?

Pollutant Monitor _____

Diluent Monitor _____

Briefly describe the calibration procedures. Indicate whether the calibrations are manual or automatic:

Does the CEMS have automatic calibration drift compensation? _____ (Y/N)

Are routine adjustments of the CEMS made when the zero or span drift exceeds certain "control limits"? _____ (Y/N)

If so, state the control limits (include units): _____ Pollutant Monitor

_____ Diluent Monitor

B. Calibration Materials

1. Opacity Upscale Internal Calibration Filter Value: _____ % Opacity

_____ Optical Density

2. Calibration Gas Concentrations: (Include Units)

Pollutant: _____ zero gas _____ span gas

Diluent: _____ zero gas _____ span gas

Are EPA Protocol 1 gases used? _____ (Y/N)

Are cylinder gas concentrations certified by the vendor? _____ (Y/N)

If so, state the % accuracy: _____

Are the cylinder gases periodically analyzed? _____ (Y/N)

If so, at what frequency and by what method(s)?

3. Are other calibration materials (e.g., span cells) used? _____ (Y/N)

If so, describe them and indicate their concentrations.

C. Audits

Are regular performance audits of the monitoring system done? _____ (Y/N)

What type of audits are done? _____ neutral density filter _____ cylinder gas

_____ relative accuracy test audit (RATA) _____ relative accuracy audit (RAA)

At what frequency is each type of audit done?

For RATA's and RAA's, are EPA audit samples analyzed? _____ (Y/N)

By whom are the audits done? _____ source personnel _____ contractor

_____ state agency _____ EPA _____ Other (specify)

D. Quality Assurance Program

Is there a written QA plan or manual for the CEMS? _____ (Y/N)

If so, what information does it include?

Is a "spare parts" inventory kept for the CEMS? _____(Y?N)

Who is responsible for maintaining and servicing the CEMS?

What general procedures are followed to correct malfunctioning monitors?

Further Comments and Explanations:

SECTION IV. CEMS DATA REDUCTION PROCEDURES

Instructions: Follow the same general instructions as for Section II, above.

Unit(s) or Process(es) Monitored: _____

Type of Monitoring System: _____

A. Data Reduction and Validation

For opacity monitors, what averaging period is used? _____ 1 minute

_____ 6-minute _____ Other (specify)

For gas monitors, are the data reduced to hourly averages? _____ (Y/N)

By what criteria (if any) are CEM data averages judged to be valid or invalid?

B. Calculation Methods

For opacity monitors, is a "combiner" system used? _____ (Y/N)

If so, explain how the stack exit opacity is calculated from the monitor signals (include all relevant equations and assumptions):

For gas monitors, explain how the CEMS data are converted to units of the emission standard (e.g., lb/MBtu, equivalent %S-in-fuel, etc.). Include all relevant equations, F-factors, and any assumptions made.

Further Comments and Explanations:

SECTION V. RECORDKEEPING AND DATA REPORTING

Instructions: Follow the same general instructions as for Section I, above (i.e., fill in this Section only once).

A. Recordkeeping

Is an active data file of CEMS measurements kept? _____ (Y/N)

For how long is the file active? _____ 1 year _____ 2 years _____ Other (specify)

What other CEM information is kept in the file?

zero and span drift check results _____ (Y/N)

records of CEM adjustments and maintenance _____(Y/N)

fuel sampling and analysis results _____(Y/N)

results of PST and audits _____ (Y/N)

other (specify)

B. Reporting

Are CEM "self-monitoring" reports regularly prepared? _____ (Y/N)

If so, at what frequency? _____ quarterly _____ semiannually _____ other (specify)

To whom are the reports submitted? _____ state agency _____ EPA

How are excess emission periods defined and determined?

What information is contained in the self-monitoring reports?

incidents of excess emissions _____ (Y/N)

incidents of monitor downtime _____ (Y/N)

source operating time _____ (Y/N)

reasons for excess emissions _____ (Y/N)

reasons for monitor downtimes _____ (Y/N)

corrective actions taken for process malfunctions _____ (Y/N)

corrective actions taken for CEM outages _____ (Y/N)

other (specify)

SECTION VI. CERTIFICATION

I hereby certify that the information given in Sections I-V, above is, to the best of my knowledge, true and accurate.

Name _____

Title _____

Signature _____

Date _____

June 4, 1992

EXHIBIT C

PERFORMANCE TEST PROCEDURES

A. Independent Testing Company

The Permittee shall engage an independent testing company to conduct performance tests. However, performance tests that are not required by the permit or requested by the agency pursuant to Minn. Rules pt. 7005.1860, subp. 1, may be conducted by the Permittee with written permission of the Division Manager. The Permittee may furnish electrical service, laboratory facilities and other such facilities to an independent testing company in any case.

B. Test Location Approval

The location, number of test ports, and the need for straightening vanes must be approved by the Division Manager before any test. Information regarding ports (location from top of stack to bottom, diameter, visual schematic) must be provided seven (7) days before the pretest meeting.

C. Pretest Meeting

For the purpose of establishing conditions and requirements of a performance test, a pretest meeting with the Agency staff, Permittee, and testing company personnel must be held at least seven (7) working days prior to the performance test. The test date must be approved by the Air Quality Division (AQD) Compliance Determination Unit (CDU) staff at least 30 days before the planned testing date. Notification must be given in writing.

D. Test Methods

1. General

Performance tests shall be conducted in accordance with the following requirements:

a. U.S. Environmental Protection Agency (U.S. EPA) Reference Methods (40 CFR. 60.344, Appendix A, 40 CFR 51, Appendix M, and 40 CFR 61, Appendix B);
b. Minnesota Rules;
c. Procedures specified below;
d. Special conditions of the permit or requirements specified by the Division Manager.
e. Deviations from the U.S. EPA Reference Methods, even if authorized under Minnesota Rules, procedures specified below, or special conditions or requirement specified by the AQD Manager, shall be permissible only with the written approval of U.S. EPA.
f. Where Methods are referenced, the most current edition should be used.

2. Particulate Matter - Particulate matter emissions shall be determined by U.S. EPA Methods 1-5.

   a. Condensible matter shall be determined by the Method 5 modification specified in Minn. Rules pt. 7005.0500 in conjunction with U.S. EPA Method 5.
   b. PM-10 (particulate matter less than or equal to 10 micrometers) shall be determined by Methods 201, or 201A, and condensible matter shall be determined by Method 202.

3. Opacity - Opacity shall be determined by U.S. EPA Method 9. Where Method 9 cannot be used to determine compliance with Opacity limitations that permit exceedances of a baseline opacity limit for a specified number of minutes, Method 203B is recommended.

4. Sulfur Dioxide (SO_2) - SO_2 emissions shall be determined by U.S. EPA Methods 6, 6A, or 6B. For determination of SO_2 removal efficiency, U.S. EPA Method 19 or 20 must be used. The testing company shall analyze audit samples supplied by the U.S. EPA or the Agency.

5. Nitrogen Oxides (NO_x) - NO_x emissions shall be determined by U.S. EPA Methods 7 or 7A. For determination of removal efficiency, U.S. EPA Methods 19 or 20 shall be used. The testing company shall analyze audit samples supplied by the U.S. EPA or the Agency.

6. Odor - Odor shall be determined by ASTM Method D1391-78 and that described by D.M. Benforado et al. in J.A.P.C.A. Vol. 19 No. 2 pgs. 101-105, February 1969. Other methods may be used upon approval by the Division Manager.

7. Volatile Organic Compounds (VOC) - VOC shall be determined by U.S. EPA Method 25. Method 25 may be used for the determination of total hydrocarbon emissions. Method 25A is recommended as an alternative to Method 25 for the measurement of expected concentrations below 50 ppm as carbon. Expected concentrations are calculated using materials balance equations or a limit, if it exists. Method 25A must be approved prior to use. An audit sample shall be required.

8. Inorganic Lead shall be determined by U.S. EPA Method 12.

9. Noise - Noise shall be determined by methods contained in Minn. Rules pts. 7010.0100 to 7010.0700.

10. Other Pollutants - These determinations shall be conducted by U.S. EPA Reference Methods. Other Reference Methods (ASTM, NIOSH, ASME) and non-reference test methods or alternative methods may be used upon approval by the Division Manager.

E. Test Conditions

1. Combustion Sources

   a. Existing Sources and Sources Subject only to State Rules.

1) Combustion emission sources such as furnaces, kilns, boilers, etc. shall be operated during the test at 50-100% of the manufacturer's rated capacity as specified by the Agency.

2) Existing boilers that have been derated shall be operated during the test at a minimum of 50-100% of the derated capacity allowed by the permit as specified by the Agency.

3) For unit sizes below 50 million British thermal units per hour (MMBtu/hr) some of the test conditions and requirements listed in Part E.1.c. of this Exhibit, may be waived by the Division Manager to meet simplified equipment and operating modes of smaller installations.

b. Sources subject to New Source Performance Standards (NSPS).

1) Combustion emission sources such as furnaces, kilns, boilers, etc. shall be operated during the test at 100% of the manufacturer's rated capacity.

2) The only exceptions to this are where the Permittee has documented the fact that the source is physically incapable of operation at design capacity and/or there is a State/Federal enforceable order or permit limiting operation to a reduced capacity. In case the source is derated, the test shall be conducted at 100% of the allowed derated capacity.

3) The amendments to NSPS Subp. A - General Provisions published in the Federal Register of December 27, 1985, require a minimum total time of opacity observations of three (3) hours for the purpose of demonstrating initial compliance. Opacity observations shall be conducted concurrently with the initial performance test for particulates.

4) Where compliance with opacity regulations is to be demonstrated nonconcurrently with stack testing on a subject boiler or stack, three 1-hour sets of opacity observations shall be conducted under the following conditions:

a) Observation shall be performed by a certified opacity evaluator in accordance with Method 9, 40 CFR Part 60, Appendix A.

b) Two opacity observation sets shall be performed while the unit is operated at the conditions required by Part E.1.b and E.1.c. of this Exhibit.

c) One opacity observation set shall be performed while the unit is operated at maximum attainable load during a normal soot blowing cycle which is consistent with maximum frequency and duration normally experienced for the total testing period. Boilers operating in a peaking or cycling mode are required to operate the unit during this run at a changing load representative of normal operation.

5) The source must meet all the conditions found at 40 CFR Part 60, subp. A - General Provisions; as well as the specific NSPS requirements according to source type.

c. The following requirements apply to all combustion sources:

1) At least one of the three test runs shall be conducted during a normal soot blowing cycle which is consistent with maximum frequency and duration normally experienced for the total testing period. The arithmetic average of the three runs will form the basis for a compliance determination.

2) Stoker-fired boilers and other sources as determined by the Division Manager, are required to pull ashes during one or more test runs. The arithmetic average of the three runs will form the basis for a compliance determination. This must coincide with the run when soot is being blown.

3) Boilers operating in a peaking or cycling mode are required to operate the unit at a load change representative of normal operation during one of the test runs. This run may coincide with the run when ashes are being pulled and soot blown. The arithmetic average of the three runs will form the basis for a compliance determination.

4) Sources equipped with only mechanical collector, venturi scrubbers without variable throat and hot-side electrostatic precipitators are required to conduct an additional test for particulate matter, while the combustion source is operating at 50% of the design capacity. Soot blowing and pulling of ashes shall be included during one of the runs as specified in paragraphs E.1.c.1) and E.1.c.2) of this Exhibit.

5) Unless the Permittee is engaged in a compliance schedule that involves rehabilitation before testing, the Permittee shall not conduct any major rehabilitation or cleaning before the test other than normal maintenance operations done on a routine basis. The Permittee shall describe in the test report any maintenance work done before the test and indicate how often this is done.

6) The Permittee shall burn "the worst quality fuel" allowed by permit conditions. Fuel sampling and analysis shall be performed according to ASTM Reference Methods, or as approved by U.S. EPA and the Agency.

7) Each unit shall be operated under parameters as specified by the Agency which shall be defined as maintenance of operational parameters at levels consistent with levels maintained during daily usage of the boiler(s) at maximum load. Operating parameters include:

a) MW gross loading
b) heat input
c) steam flow
d) steam temperature
e) steam pressure
f) combustion air flow (lb/hr)
g) soot blowing cycle
h) coal feed rate to boiler (T/hr)
i) oxygen levels at economizer inlet

8) Operation of electrostatic precipitators (ESPs) shall comply with "normal operating conditions". "Normal operating conditions" for an ESP include:

a) FGC injection rates, where applicable
b) primary and secondary volts
c) primary and secondary amps
d) inlet flue gas temperature
e) ash removal
f) spark rate
g) rapping cycle

9) Operation of other control devices such as baghouses, multiclones or scrubbers shall comply with "normal operating conditions". "Normal operating conditions" include:

a) pressure drop across control device
b) inlet flue gas temperature
c) cleaning cycle
d) ash removal
e) liquid to gas ratio

10) All the operating loads and parameters must be documented in the test report showing chart recordings and calculations.

11) All the continuous monitor strip charts for the day(s) of testing shall be submitted. These shall be dated, signed, and all the chart factors must be sufficiently explained to avoid any kind of ambiguity in reading the charts.

12) Opacity observations shall be performed by a certified observer in accordance with U.S. U.S. EPA Method 9, 40 CFR Part 60, Appendix A, throughout the test period. Opacity shall be observed during the period of the test for sixty consecutive minutes; i.e. one series of readings for each condition tested. The test will comprise 240 consecutive readings and shall be obtained concurrently with the run of the particulate sampling test when soot is being blown and ashes pulled. The appended opacity data form should be used and copies included in the report. U.S. EPA Method 9 as amended in Minn. Rules pt. 7005.1860, subp. 7 shall be followed.

2. Process Sources

a. Non-combustion emission sources not subject to NSPS shall be operated during the test at 50-100% design capacity or maximum capacity allowed by the permit (as specified by the Agency) and the owner/operator of the facility shall furnish adequate demonstration of the production at the time of the test.

b. Sources subject to NSPS shall be operated using the test at 100% of the design capacity. The only exceptions to this are where the Permittee has documented that the source is physically incapable of operation at design capacity and/or there is a State/Federal enforceable order or permit limiting operation to a reduced capacity. The source must meet all the requirements found at 40 CFR Part 60, subp. A - NSPS General Provisions; as well as the specific requirements according to the source type.

c. Sources may be required to conduct additional tests at reduced capacities if the Division Manager defines it as a necessary condition to represent "the worst case operation".

d. NSPS sources, initial test: Pursuant to the amendments to the opacity provisions published in Federal Register of December 27, 1985, sources subject to New Source Performance Standards are required a minimum total time of opacity observations of three (3) hours for the purpose of demonstrating initial compliance. Opacity observations shall be conducted concurrently with the initial performance test for particulates.

e. Opacity shall be observed during the period of the test for sixty consecutive minutes i.e. one series of readings for each condition tested. The test will comprise 240 consecutive readings and shall be obtained concurrently with a run of the particulate sampling test. U.S. EPA Method 9 as amended in Minn. Rules pt. 7005.1860, subp. 7 shall be followed.

f. In case opacity measurements are conducted at a different time than during the particulate test, the observation of opacity shall be conducted at all the conditions required by paragraphs E.2.a., E.2.b. and E.2.c. of this Exhibit.

g. All operating loads and parameters must be documented in the test report showing all chart recordings and calculations. All charts must be dated, signed and all the chart factors must be sufficiently explained to avoid any kind of ambiguity in reading the charts.

3. Runs

A test shall comprise three runs of at least one hour each. The time of sampling at each point shall be a minimum of two (2) minutes, and the minimum sample volume shall be 32 SCF (dry).

4. Pitot Tube Calibration

Pitot tube inspections and necessary calibrations shall be done at least once per year or after any incident which may affect calibration. Gas meter calibrations shall be done at a frequency such that no more than 1000 CFM shall be measured between calibrations. These calibration sheets must be included in the test report.

5. Orsat Analysis

Two gas samples for Orsat analysis must be taken at 1/2 hour intervals, or one continuous sample may be collected for each run.

6. Multiple Particulate Samples

If multiple samples are to be taken using the same nozzle, probe, and cyclone, the particulate collected in these must be removed after each run. Cleaning of this front half of the apparatus should be with distilled water followed by acetone. The probe should be scrubbed with a stiff brush while irrigating with water followed by acetone, as prescribed in U.S. EPA Method 5.

7. Filters

Filters shall be numbered and filter number reported with the initial and final filter weights. Weights should be recorded in a weights book which must be available for inspection. Front half washings shall be reported independently of filter catch.

8. Gas Velocities

The gas velocities used in calculating stack gas flow rates and pollutant mass emission rate shall be those obtained while collecting the sample.

9. Condensible Particulate Matter

In the event that emissions from any industrial process equipment contain condensible organic vapors which condense at standard conditions of temperature and pressure, condensible particulate matter may be determined by U.S. EPA Method 202, or the following changes in U.S. EPA Method 5 for determining particulate emissions shall be made:

a. Paragraph 4.2 (Sample Recovery) in U.S. EPA Method 5 is amended to read as follows:

4.2 Sample Recovery. Exercise care in moving the collection train from the test site to the sample recovery area so as to minimize the loss of collected sample or the gain of extraneous particulate matter. Set aside a portion of the acetone and water used in the sample recovery as a blank for analysis. Place the samples in containers as follows:

Container #1. Remove the filter from its holder, place in this container, and seal.

Container #2. Place loose particulate matter and water and acetone washings from all sample-exposed surfaces preceding the filter paper in this container and seal. The probe and nozzle should be scrubbed with a stiff brush and distilled water, followed by an acetone rinse. If these solvents do not do a good cleaning job, an adequate solvent must be found and used. Use a razor blade or rubber policeman to loosen adhering particles if necessary.

Container #3. Measure the volume of water from the first three impingers and place the water in this container. Place water rinsings of all sample-exposed surfaces between the filter and fourth impinger in this container prior to sealing.

Container #4. Transfer the silica gel from the fourth impinger to the original container and seal. Use a rubber policeman as an aid in removing silica gel from the impinger.

Container #5. Thoroughly rinse all sample-exposed surfaces between the filter paper and fourth impinger with acetone, place the washings in this container and seal.

b. Paragraph 4.3 (Analysis) in U.S. EPA Method 5 is amended to read as follows:

4.3 Analysis. Record the data required on the example sheet shown in Figure 5-3. Handle each sample container as follows:

Container #1. Transfer the filter and any loose particulate matter from the sample container to a tared glass weighing dish, desiccate, and dry to a constant weight. Report results to the nearest 0.5 mg.

Container #2. Transfer the washings to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate and dry to a constant weight. Weigh to the nearest 0.5 mg.

Container #3. Extract organic particulate from the impinger solution with three 25 ml portions of chloroform. Complete the extraction with three 25 ml portions of ethyl ether. Combine the ether and chloroform extracts, transfer to a tared beaker and evaporate at 70°F until no solvent remains. Desiccate, dry to a constant weight, and report the results to the nearest 0.5 mg.

Container #4. Weigh the spent silica gel and report to the nearest gram.

Container #5. Transfer the acetone washings to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate, dry to a constant weight and report the results to the nearest 0.5 mg.

Sampling for condensible particulate will be required unless the Division Manager determines that this type of particulate matter may not represent a significant portion of the particulate emissions. Examples of processes where this modification will be required are (1) Burning of

paper, wood, organic sludges, black liquor, rubbish, paint, organic solvents, plastics, rubber, bark, etc., (2) Chemical or processing operations employing or producing solvents or oils, (3) Operations likely to produce organic vapors such as bakeries, curing operations, asphalt blowing, etc.

For inorganic condensibles, and other operations where the above procedure is either not applicable or not adequate, other procedures such as U.S. EPA Reference Method 8 for sulfuric acid, U.S. EPA Reference Method 25 for Total Organic Non-Methane Organic Emission as Carbon may be specified by the Division Manager.

10. Safety and Access

A safe working platform and access thereto shall be provided at the sampling site.

11. Good Testing Practices

Failure to follow good testing practices will jeopardize the validity of the test and may lead to rejection of one or more runs.

Failure to submit the required information on plant operating conditions, fuel analysis, visible emissions, etc. shall be cause for the Division Manager not to approve the performance test.

F. Witnessing

A compliance test may be witnessed by either Air Quality Division or U.S. EPA staff.

G. Reporting

1. Responsibility to Submit Test Results

The applicable Required Data for Combustion Sources form, or the Required data for Process Emissions form located in Exhibit C shall be signed by the responsible supervisor of the facility and shall be submitted to the Supervisor, CDU with 1 copy of the performance test results.

It shall be the responsibility of the owners/operators of the source to furnish the information required in Exhibit C.

All performance test reports shall be submitted to the Supervisor, CDU whether or not the test data indicates compliance with applicable emission limitations; and whether or not the test was conducted for the purpose of demonstrating compliance with an applicable emission limit.

The report should clearly state members of the testing team and a responsible party should sign the report, as well as the principal author(s).

2. Report Format

a. Summary Tables

The report shall include a summary table(s) showing the most relevant information, data, and results. This should include the applicable emission rate: pounds per million BTU, grains per dry standard cubic foot or pounds per hour calculated by all of the following methods:

1) The dry standard volumetric method
2) The ratio of areas method
3) The F factor method (for pounds per million Btu only)

b. Schematic Drawing

The report shall include a schematic drawing of the entire flue gas exhaust system from the initial starting process (feed) to the top of the stack. Show location of the sampling points and include all pertinent dimensions (inside diameter of stack, and distances below and above sampling ports). Include all flow disturbances, i.e., elbows, dampers, fans, constrictions, collection equipment, etc.

c. Identification of Sources

The report shall clearly state what is being tested; for example, "Babcock & Wilcox Boiler, Model 169, Designated Unit #3 by XYZ Municipal Power Plant, firing pulverized Eastern Kentucky coal at an average rate of 10,000 pounds per hour, and producing an average of 110,000 pounds of steam per hour. This unit exhausts through a Western Multiclone. Flyash reinjection is permanently disconnected."

d. Completion of Forms in Exhibit C

The use of Required Data for Combustion Sources form and Required Data for Process Emissions form located in Exhibit C shall be completed at the time of the test run. Separate forms shall be completed for each run.

e. The Stack Test Report Format Guidelines developed by AQD are recommended for incorporation into testing firm report formats.

3. Report Submittal

The performance test report shall be submitted to:

Supervisor, Compliance Determination Unit
Compliance and Enforcement Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

4. Submittal Schedule

Performance test reports shall be submitted no later than 45 days following completion of the performance test, or as required in compliance document (permit, stipulation agreement, Administrative Penalty Order, etc.), the Supervisor, CDU within 45 days of testing.

The Permittee is also responsible for providing a microfiche copy of the Performance test report within 105 days of testing. To microfiche a copy of a performance test report, contact the State Department of Administration-Micrographics Services Unit at (612)296-9708. The complete permit file number, complete facility name, and the exact date of testing must be provided.

REQUIRED DATA
for
COMBUSTION SOURCES

Company Name _____

C. Fuel Input

1. Itemize all fuels and materials that are added to the combustion process during the test period. Attach ultimate analysis of the fuel.

FUEL DESCRIPTION Coal: State, City, Mine Oil: Specify Grade	INPUT (LBS/HR) (GAL/HR)	& MOISTURE As Rec'd	As Rec'd (BTU/LB) (BTU/GAL)	HEAT INPUT (BTU/HR)
No. 1				
No. 2				
No. 3				

TOTAL _____

2. Are the above fuels substantially the same as those normally burned? _____. If not, explain _____

_____.

3. Are the above fuels normally burned in the proportions shown above? _____. If not, explain _____

_____.

4. Describe any changes anticipated for procurement of fuels within the next twelve (12) months.

_____.

D. Equipment & Operating Data

1. Furnace No. _____.

2. Furnace Mfg. _____.

3. Type of Firing _____.

4. Furnace operating under normal operating conditions: No _____;

Yes _____.

5. Specify normal soot blowing frequency:

   a) source operating time blowing soot: _____ minutes/shift

   b) number of shifts per day _____

6. Specify soot blowing time during the test: start _____ end _____. When was the last time before the test that you blew soot: (date & time) _____.

7. Specify normal ash pulling frequency:

   a) source operating time pulling ashes: _____ minutes/shift

   b) number of shifts per day _____

8. Specify ash pulling time during the test: start _____ end _____. When was the last time before the test that you pulled ashes: (date & time) _____.

9. Date and procedures of last maintenance/cleaning of the boiler (please attach) _____.

E. Instrument Data

1. Include a copy of chart records during test for the combustion efficiency indices (CO, O_2, CO_2, combustibles, steam flow, air flow, etc.)

F. Air Pollution Control Equipment

1. Type/model control equipment _____.

2. Air pressure drop across the control equipment _____.

3. Air flow through the control equipment _____.

4. Was the control equipment operating normally? _____.

5. Date and procedures of last maintenance/cleaning of control equipment.

_____

_____.

Plant Operator's Certification

I certify that the information submitted herein is accurate and correct and that no information requested was withheld from the Division Manager.

By _____, Position _____

REQUIRED DATA
for
PROCESS EMISSIONS

Company Name _____

C. Equipment & Operating Data

1. Process Equipment No./Ident. _____.

2. Process Equipment Description _____

_____.

3. Process equipment operating under normal operating conditions?

No _____. Yes _____. Process rate during the test _____.
(raw materials or finished product)

D. Instrument Data on Process Equipment

1. Include copy of production records or instrumentation which indicates rate of production or operation of the equipment, i.e. units per hour, lbs. per hour, pressure, air flow, etc.

E. Air Pollution Control Equipment

1. Type/model of control equipment _____.

2. Air pressure drop across the control equipment _____.

3. Air flow through the control equipment _____.

4. Was the control equipment operating normally? _____.

5. Data of last major maintenance/cleaning of control equipment _____

_____.

F. Plant Manager's Certification

I certify that the information submitted herein is accurate and correct and that no information requested was withheld from the Division Manager.

By _____, Position _____.

lmb1770

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STACK INFORMATION

STACK NO.	SOURCE NO.	SOURCE NAME	STACK AIRFLOW (SCFM)	CEM	POLLUTION CONTROL METHOD	COMMENTS
1BA	1	BLDG. 1B CHURN ROOM	8,000	X		
20A	2	2F - ABANDONED				
20B	3	4F	4,448			
20C	4	4F HEAD EXHAUST	826			
20D	5	4F AIRWASH INTAKE				
20E	6	5F EXHAUST	5,800			
20F	7	10X 3 rd ZONE OVEN EXHAUST - ABANDONED				
20G	8	10X / 19X BAY EXHAUST	10,000			
20H	9	10 EXHAUST - ABANDONED				
20I	10	11X ROOM EXHAUST	9,000			
20J	11	11X MAIN EXHAUST	11,000			
20K	12	11X HOOD	2,600			
20L	13	11X CATALYST CONVEYOR SYSTEM	689		FF	
20M	14	11X RESIN TANK EXHAUST	2,747		FF	
20N	15	17X EXHAUST - ABANDONED				
20O	16	19X	10,000		R	
20P	17	19X BAY INTAKE				
20Q	18	RUBBER MILLS				
20Q	19	RUBBER TACKER				
20Q	20	RUBBER GRANULATOR				
20Q	21	RUBBER GRANULATOR BAG DUMP				
20Q	22	RUBBER GRANULATOR BAG DUMP CONVEYOR FEEDER				
20Q	23	RUBBER MILL AREA EXHAUST	26,000			
20R	24	ABANDONED				
22A	25	3A OVEN & COATER	25,000		R,SLA	
22A	26	3A LAB			R,SLA	
22B	27	4A OVEN & COATER	22,000		R,SLA	
22C	28	5A OVEN & COATER	25,000		R,SLA	
22C	29	5A LAB			R,SLA	
22D	30	A SECTION CHURN ROOM	8,000	X		
22E	31	A SECTION LAB ROOM	1,200	X		
22F	32	SOLVENT RECOVERY ROOM	5,500	X		
22G	33	MIX ROOM EXHAUST	1,800	X		OLD 1A OVEN STACK
22H	34	1B OVEN	22,000		R	
	35	2B OVEN				SOLVENT RECOVERY
22I	35	2B OVEN PURGE VENT	2,300			
22J	36	2B 3RD ZONE	3,500		R	
22K	37	2B PAN EXHAUST	1,500		R	
22L	38	3B OVEN	22,000		R	
22M	39	3B LAB DRYER	1,000		R	
22N	40	4B OVEN	22,000		R	
22O	41	4B JET DRYER	4,000		R	
22P	42	5B OVEN	17,000		ARI	
22Q	43	5B PRIMER	1,000		ARI	
22R	44	5B LAB	500		ARI	
22S	45	B-SECTION ROOM EXHAUST (EAST)	20,000			
22T	46	1B LAB DRYER				
22T	47	3B PRIMER				
22T	48	3B PRIMER DRYER				
22T	49	3B LAB				
22T	50	4B PRIMER				
22T	51	B-SECTION PROCESS EXHAUST (WEST)	20,000			
22U	52	B-SECTION OVEN ROOM EXHAUST (SOUTH)	10,000			
22V	53	B-SECTION CHURN ROOM	8,000	X		
22W	54	B-SECTION CHURN ROOM AUX.	1,200	X		
22X	55	BLDG. 22 MG ROOM EXH.				
22Y	56	BLDG 22 CHILLER ROOM VENTILATION				
22Z	56	BLDG 22 CHILLER ROOM VENTILATION				
22AA	57	2A MAKER - ABANDONED				
22AB	58	2B MAKER - ABANDONED				

23AC	69	BLDG 23 ELEVATOR VENTILATION				
23A	70	1C OVEN & COATER	13,000		R	
23A	71	1C PRIMER & LAB			R	
23B	72	2C OVEN & COATER	20,000		R	
23B	73	2C PRIMER DRYER			R	
23C	74	2C JET DRYER	6,000		R	
23D	75	3C OVEN & COATER	20,000		R	
23E	76	3C PRIMER JET DRYER	2,000		R	
23F	77	3C LAB DRYER	700		R	
23G	78	4C OVEN & COATER	20,000		R	
23G	79	4C LAB			R	
23G	80	4C LAB DRYER			R	
23H	81	4C PRIMER DRYER	900		R	
23I	82	5C MAKER - ABANDONED				
23J	83	C SECTION CHURN ROOM	9,400	X		
23K	84	1D OVEN	13,000		R	
23L	85	1D ALKABIZE	2,100			
23M	86	2D OVEN	20,000		R	
23N	87	2D HOPPER EXHAUST	1,100			
23O	88	3D OVEN	22,000		R	
23P	89	3D PRIMER DRYER	1,500		R	
23Q	90	4D OVEN	22,000		R	
23R	91	4D PRIMER DRYER	1,400			
23S	92	5D OVEN	14,000		R	
23T	93	5D ALKABIZER	3,400		R	
23U	94	5D LAB	1,200		R	
23V	95	5D LAB OVEN	3,400		R	
23W	96	D - SECTION CHURN ROOM	10,600	X		
23X	97	D - SECTION CHURN ROOM AUX.	4,000	X		
23Y	85	1D ALKABIZE & SATURANT				
23Y	98	1D SATURANT				
23Y	99	3D LAB				
23Y	100	D - SECTION AIR BALANCE (NORTH)	11,000			
23Z	101	1D SATURANT CHURNS				
23Z	102	3D LAB				
23Z	103	5D SATURANT CHURNS				
23Z	104	D - SECTION AIR BALANCE (SOUTH)	11,000			
23AA	105	BLDG 23 MG ROOM EXHAUST				
23AB	106	BLDG 23 CHILLER ROOM VENTILATION				
23AC	106	BLDG 23 CHILLER ROOM VENTILATION				
23AD	107	BLDG 23 ELEVATOR VENTILATION.				
23AE	108	ABANDONED				
23ZZ	109	CATALYTIC THERMAL				
		OXIDIZER (5B T.O.)	20,000		ARI	
24A	115	PIPE CHASE VENTILATION				
24B	116	ABANDONED				
24C	117	Q.C. LAB				
24D	118	PENTHOUSE VENTILATION				
24E	118	PENTHOUSE VENTILATION				
24F	119	SPRAY ROOM EXHAUST	10,000			
24G	119	SPRAY ROOM EXHAUST	10,000			
24H	120	PENTHOUSE VENTILATION				
24I	120	PENTHOUSE VENTILATION				
24J	121	8F	6,000		R	
24K	122	BATHROOM EXHAUST				
24L	123	BATHROOM EXHAUST				
24M	124	4J EXTRUDER	10,000		C	
24N	125	4J CORONA TREATER	1,300			
24O	126	4J RESIN MOVER	500		FF	
24P	127	4J DESSICANT DRYER EXHAUST	395		FF	
24Q	128	4J RESIN MOVER EXHAUST	150		FF	
24R	129	WELDING BENCH EXHAUST	2,087			
24R	130	SHOWER ROOM EXHAUST	573			

24S	131	1J DRYER	200			
24T	132	1J DRYER	200			
24U	133	1J EXTRUDER & CORONA TREATER	4.000		C	
24V	134	L - CALENDER EXHAUST	3.300			
24W	135	L - CALENDER. BANBURY	800		FF	
24X	136	SJ BLENDER EXHAUST	1.600		FF	
24Y	137	SJ EXTRUDER EXHAUST	1.600			
24Z	138	Z - CALENDER RESIN MOVER	500		FF	
24AA	139	Z - CALENDER EXHAUST	10.000			
24AB	140	Z - CALENDER PRE - MIX EXHAUST	8.000			
24AC	141	Z - CALENDER LEAD WEIGHING STATION	2.100		FF	
24AD	142	ABANDONED				
24AE	143	ABANDONED				
24AF	144	ABANDONED				
24AG	145	ABANDONED				
24AH	146	ABANDONED				
24AI	147	SYSTEMS SHOP EXHAUST - ABANDONED				
24AJ	148	RESTROOM EXHAUST				
24AK	149	PENTHOUSE VENTILATION				
24AL	149	PENTHOUSE VENTILATION				
24AM	150	DOCK AREA EXHAUST				
24AN	150	DOCK AREA EXHAUST				
24AO	151	COMPRESSOR ROOM EXHAUST				
24AP	152	ABANDONED				
24AQ	153	TOILET EXHAUST				
24AR	154	LOCKER ROOM EXHAUST				
24AS	155	AIR HANDLER EXHAUST				
24AT	156	AIR HANDLER INTAKE				
24ZZ	157	REECO THERMAL OXIDIZER	270.000			
26A	160	MOGUL ROOM # 1 EXHAUST	3.400	X		
26B	161	MOGUL ROOM # 1 VENT		X		
26C	162	MOGUL ROOM # 2 EXHAUST	3.400	X		
26D	163	MOGUL ROOM # 2 VENT		X		
26E	164	MOGUL ROOM # 3 EXHAUST	3.400	X		
26F	165	MOGUL ROOM # 3 VENT		X		
26G	166	MOGUL ROOM # 4 EXHAUST	3.400	X		
26H	167	MOGUL ROOM # 4 VENT		X		
26I	168	MOGUL ROOM # 5 EXHAUST	3.400	X		
26J	169	MOGUL ROOM # 5 VENT		X		
26K	170	MOGUL ROOM # 6 EXHAUST	3.400	X		
26L	171	MOGUL ROOM # 6 VENT		X		
26M	172	LOCKER ROOM EXHAUST				
26N	173	BLDG. 26 SOLVENT WASH ROOM	6.700	X		
26O	174	BLDG. 26 SOLVENT WASH ROOM	4.500	X		
26P	175	WAREHOUSE EXHAUST				
26Q	175	WAREHOUSE EXHAUST				
26R	175	WAREHOUSE EXHAUST				
26S	175	WAREHOUSE EXHAUST				
26T	176	BATHROOM EXHAUST				
26U	177	BATHROOM EXHAUST				
26V	178	LOCKER ROOM AIR HANDLER INTAKE				
26W	179	WELDING BENCH EXHAUST	2.000			
26X	180	AIR HANDLER INTAKE				
26Y	181	AIR HANDLER EXHAUST				
50A	185	TANK FARM - BLDG. VENTILATION	2.500			
50B	185	TANK FARM - BLDG. VENTILATION	2.500			
50C	185	TANK FARM - BLDG. VENTILATION	2.500			
50D	185	TANK FARM - BLDG. VENTILATION	2.500			
50E	185	TANK FARM - BLDG VENTILATION	2.500			

51A	190	RED LABEL STORAGE EXHAUST	3,500			
51B	191	RED LABEL STORAGE EXHAUST	5,500			
51C	192	VENTILATION AIR				
51D	193	RED LABEL STORAGE EXHAUST	7,700			
51E	194	RED LABEL STORAGE EXHAUST	5,700			
51F	195	RED LABEL STORAGE EXHAUST	3,500			
51G	196	VENTILATION AIR				
51H	197	GENERAL WAREHOUSE EXHAUST	6,600			
51I	198	ELECTRICAL ROOM PURGE AIR				
51J	199	4J RESIN MOVER EXHAUST	700		FF	
51K	200	Z - CALENDER RESIN				
		MOVER EXHAUST	500		FF	
67A	205	Z - CALENDER CAR UNLOADING				
		RESIN MOVER	500		FF	

Attachment 2

VOC Emission Calculations

A. Emissions Calculation for Controlled Units

The Permittee will have a computer which is programmed to contain the following information and to perform the following steps. If the computer is not functioning to the extent that the required emission calculations cannot be completed, the Permittee shall follow the procedures described under part 10. and 11., below.

1. The computer contains a list of all raw materials used at the tape plant that contain VOC and their VOC content.

2. The computer contains a list of the VOC content of all raw materials, intermediate and final products that contain any VOC.

3. A production report is generated every day that lists the products made and all the raw materials and intermediate products and quantities that went into each final product.

4. The list of all products made and raw materials and intermediates used that day is compared to the list referenced in 2., above and the computer determines which products made and which raw materials and intermediates used contain VOC. The amount of VOC used that day is determined by multiplying the amount of product made or raw material or intermediate used by the amount of VOC contained in each product, raw material or intermediate and by adding in a representative amount of clean up solvents.

5. For the 2B coater and oven, during operation of the solvent recovery system, the total amount of solvent used is multiplied by the capture efficiency to determine the amount of solvent that entered the oven. The amount of solvent recovered by the solvent recovery system and the amount of solvent that is emitted during oven purges are each subtracted from the amount of solvent that entered the oven. The remaining amount that entered the oven is assumed to go to the thermal oxidizer and is multiplied by the factor: (1 -destruction efficiency).

   The emissions from oven purges are calculated by multiplying the number of purges that day by the emission factor of 15.3 pounds of VOC per purge.

   The VOC emitted from the 2B coater and oven is the sum of the amount emitted by the thermal oxidizer from the 2B oven, the amount emitted during oven purges and the amount that was not captured by the oven.

6. If the VOC content of any shipment of VOC containing material varies by more than 5 percent of the specified average value for that material, the VOC usage of that material for that day shall be adjusted to reflect the actual VOC content of that shipment. This adjustment shall be made to the emission calculations within 14 days of the original emission calculation for that day.

7. The amount of VOC used is multiplied by the factor: (1 - the overall control efficiency). This is the amount emitted of the specific VOC.

8. The overall control efficiency is equal to the capture efficiency multiplied by the destruction efficiency. There will be three capture efficiencies, one for Building 23 and 22, one for building 20 and one for the 5B coater. There will be two destruction efficiencies, one for the thermal oxidizer and one for the 5B oxidizer. The capture and destruction efficiencies shall be determined as specified in Attachment 3 to this permit, except as provided in 9., below.

9. Prior to Agency approval of the first capture and destruction efficiency tests performed after the issuance of this permit, the overall control efficiency is assumed to be equal to 64 percent.

10. If the computer is not functioning to the extent that the above emission calculation cannot be performed, the electronic recipes of planned schedules will be used in the place of the production report. The VOC emissions will be calculated by using the planned schedule and performing the calculations described in 4., 5., and 6., above without the use of the computer.

11. If the VOC emissions were calculated using the procedure in 10., above, the Permittee must calculate the actual VOC emissions for the time period for which the planned schedules were used. This must be completed no more than 7 days after the day for which the calculations were made.

12. The capture and destruction efficiencies for the thermal oxidizer serving emission point no. 1 shall be applied to the VOC used on coaters venting to the thermal oxidizer. The capture and destruction efficiencies for the 5B oxidizer shall be applied to the VOC used on the 5B coater.

B. Emissions calculation for uncontrolled units without continuous emission monitors (CEMS)

The Permittee will calculate VOC emissions from the following units which are not controlled and are not monitored by a CEMS:

Emission Point No.	Facility Stack No.	Description
47 and 48	24F and 24G	Two spray room exhausts
17	24M	4J extruder

16	24U	1J extruder
19	24Y	5J extruder
74-93	none	Aboveground Tank Nos. 1-5 and 8-16 and underground tank Nos. 1-6

The VOC emission for these units shall be determined as follows:

1. For the two spray room exhausts, the actual usage of VOC for each day shall be determined from the records required to be kept under Special Condition 2.4.5. The daily VOC emissions shall be equal to the daily VOC usage.

2. For the extruders, the daily VOC emissions shall be equal to the emission factor multiplied by the amount of raw material extruded that day, in appropriate units. The emission factor from the date this permit is issued until the date the performance test report for VOC on the extruders is approved shall be equal to 1.14 pounds of VOC emitted per ton of raw material input. On and after the date the performance test report for VOC on the extruders is approved, the emission factor shall be equal to the average number of pounds of VOC emitted during the performance test per ton of raw material processed during the test.

3. For the tanks, the daily VOC emissions shall be equal to 11 pounds per day. This is the total estimated annual VOC emissions divided by 365 and rounded.

C. Emissions calculation for uncontrolled units with continuous emission monitors (CEMS)

The Permittee will calculate emissions from all emission units which are continuously monitored by Total Hydrocarbon (THC) CEMS, as described in this section. Prior to the certification of the CEMS, the procedure in part 6., below, will be used, and any time thereafter, when any part of the CEM system becomes nonfunctional to the extent that the emissions cannot be calculated, the procedure in part 5., below, will be used.

1. The THC CEMS shall measure the relative concentration of a predetermined standard mixture of VOC's from the emission points indicated in Special Condition 2.5.5.1 of the permit. The output of the THC CEMS shall be in ppm and shall be combined with a predetermined air flow for each emission point to provide a final output from the Data Acquisition System (DAS) in lb/hr.

2. The Permittee shall prepare and submit a Total Hydrocarbon (THC) Continuous Emissions Monitoring (CEM) Plan within 30 days of permit issuance. This Plan shall be prepared using Attachment 6 as a guideline. The plan, when approved by the Division Manager, will become an enforceable part of this permit.

The plan shall include the following:

a. A description of the sampling sequence for the emissions points, and the frequency that each point will be sampled.

b. A description of the method for averaging individual ppm readings from each point into an overall daily average for the entire system, expressed in lb/hr.

c. The standard mixture of VOC's referred to in part 1 shall be evaluated through a Presurvey Sample Analysis. The Presurvey Sample Analysis shall be derived annually based on annual reported VOC usage for uncontrolled units (determined by January 30 for the preceding calendar year) which will be used to establish the base product formulation and component ratios that will be applied to the daily Total Hydrocarbon Counts provided from the CEMS. The base product formulation and component ratios will remain in effect until March 1 of the next year. The Permittee shall provide to the Agency a Presurvey Sample Analysis Report by March 1 of each year indicating:

   i. The results of the analysis including the percentages of the VOC components in the effluent stream.
   ii. A list of the raw materials used in the analysis.
   iii. Justification for the choice of the materials used in the analysis.

d. A description of the VOC CEMS that will be used. This part shall describe the CEMS, including the sampling system, the calibration system, the analyzer, and the data acquisition system (DAS). This part shall justify the choice of the analyzer in consideration of the results of the Presurvey Sample Analysis. Also, the description of the DAS shall include the calculations it will make, the data it will store, and the reports it will generate.

e. The Presurvey Sample Analysis to be used for the first year of operation under this permit; this Presurvey Sample Analysis shall cover the time period from February 1, 1992, to January 31, 1993.

f. A QA/QC plan for the CEMS in accordance with Attachment 6.

g. A CEMS certification test plan for the THC CEMS.

h. Proposed changes in permit language resulting from approval of this plan. These changes shall be in a format specified by the Agency.

3. The exhaust flow rate for each stack being monitored by CEMS will be measured once each month. This measurement will be made using a velocity meter that has been calibrated according to the Special Condition 2.5.5.1 of this permit. The results of the monthly flow rate tests shall be submitted with the CEMS quarterly reports.

4. During the first year after the certification tests are conducted, the flow rate to be used in the emission calculation shall be the flow rate measured for each stack during the CEMS certification tests. From one year after the date that the original MPCA approvable certification tests are conducted until This permit expires, the flow rate to be used in the emission calculations will be the average of the flow rate measured for that stack during the certification test and all flow rate measurements taken for that stack after the certification test. The flow rate used in the emission calculation shall be updated once per year on the anniversary of the original certification tests. If a modification is made that will affect the flow rate, only measurements made after the modification shall be used in the emission calculation.

5. If any part of the CEMS is not working such that the emissions cannot be calculated as described in 1 through 4 above, the daily VOC emissions will be assumed to be equal to the average actual daily VOC emissions for that day of the week for the previous five weeks.

6. Prior to the installation and certification of the CEMS, the VOC emissions will be calculated by multiplying the number of churn and mogul batches charged by the average emissions per churn and mogul batch, respectively, as determined in part. 7., below.

7. The average emissions per churn and mogul batch will be determined by measuring the change in percent solids of the batch. The starting percent solids of each batch will be calculated based on the actual quantities of each raw material added to each batch. The final percent solids of each batch will be measured at the end of each batch by the Compounding Lead Person. The average solvent loss per batch for all of the churn and mogul batches monitored during this test period will be used to calculate the emissions from the churns and moguls.

The Permittee will collect data from as many batches as possible for a two week period, but in no case will the number of batches from which data is collected be less than 70 percent of the number of all batches charged during the two week period. The two week period shall be begin no later than one week after the issuance of this permit.

CJC:mlp3568

ATTACHMENT 3

Capture and Destruction Efficiency Testing Plan

A. Capture Efficiency Testing for REECO Thermal Oxidizer on Building 23 and Building 20

The capture efficiency testing for the REECO thermal oxidizer shall be performed as follows.

1. The pollutant being measured is VOC.

2. The purpose of the capture efficiency tests is to determine what percentage of the VOC used by the coaters is controlled by the REECO thermal oxidizer.

3. The protocol to be used is described in the attached documents labeled F.2, G.2, and T and is referred to by the U.S. EPA as Protocol 1c Option A. For Building 23, the protocol calls for measuring the background concentration and the flow rate and VOC in six gas streams. The six gas streams consist of the four uncontrolled gas streams exiting through the following exhausts:

   the room exhaust (D section air balance),
   1D alkabize,
   2D hopper exhaust, and
   4D primer dryer,

   and the two controlled gas streams entering the REECO thermal oxidizer, one located just prior to the duct where the 8F foamer exhaust enters the main duct to the REECO and one coming from Building 22.

   For Building 20, 19X area, the protocol calls for measuring the background concentration and the flow rate and VOC in two gas streams, the uncontrolled emissions exiting through the 19X bay exhaust and the controlled gas stream entering the REECO thermal oxidizer just as it exits the 19X area.

4. The Permittee shall meet all the criteria of Procedure T for a temporary total enclosure for both Building 23 and the 19X enclosure in Building 20, except the requirement to have a distance of no less than four equivalent diameters from each natural draft opening to each emission unit.

5. Each test consists of three 3-hr runs.

6. The initial capture efficiency test will be performed on Building 23 and Building 20, 19X area, and the capture efficiency determined for Building 23 will be applied to Building 22. Future capture efficiency testing may be required on Building 22. The emission units in Building 23 are as follows:

1C coater and oven	1D alkabize and saturant
2C coater and oven	2D hopper
2C jet dryer	4D primer dryer
3C coater and oven	1C primer and LAB
3C primer dryer	2C primer dryer
3C LAB dryer	3D primer dryer
4C coater and oven	5D LAB oven
4C LAB dryer	1D saturant churns
4C primer dryer	D section air balance south
1D oven	D section air balance north
1D Saturant	5D oven
2D oven	5D alkabizer
3D oven	5D saturant churns
3D LAB	5D LAB
4D oven	

7. If the sample port where the VOC at the inlet to the REECO thermal oxidizer is being measured is between the 8F duct and the inlet to the oxidizer, the duct connecting 8F to the oxidizer will be blocked off during all capture and destruction efficiency stack testing.

8. The capture efficiency testing for Building 23 will be performed with all equipment listed in 6., above, operating normally during the test.

9. The capture efficiency testing for Building 20 will be performed under the following conditions.

   - All doors and windows in the 19X enclosure must be closed.
   - The 19X coater and oven shall be operated normally during the test.
   - The sample port for the gas stream going to the REECO thermal oxidizer shall be located such that only VOC emissions from the 19X coater and oven will be measured.

10. The following operating parameters must be monitored and recorded during the capture efficiency testing:

    - natural gas usage in the REECO thermal oxidizer,
    - operating temperature of the REECO thermal oxidizer,
    - type and quantity of products manufactured, both intermediate and final,
    - raw materials used,
    - VOC content of all products manufactured and raw materials used,
    - production rate of each coater which was operating during the test,
    - time that each coater is started up and shut down during the test.

11. The Permittee shall bring to the pretest meeting a plan for collecting and a format for recording the parameters described in 10., above.

12. Sampling port locations are as shown on the attached diagrams.

13. The capture efficiency is defined as the ratio of the controlled emissions to the sum of the controlled plus uncontrolled emissions. For the Building 23 capture testing, the controlled emissions are the emissions measured at the inlet to the thermal oxidizer minus the emissions from Building 22, and the uncontrolled emissions are the emissions measured at all other locations. For Building 20, the controlled emissions are the emissions measured at the inlet to the thermal oxidizer and the uncontrolled emissions are the emissions measured at all other locations. Separate capture efficiency calculations shall be performed for Building 23 and Building 20.

14. The capture efficiency shall be determined by averaging the capture efficiency calculated for the current test and all previous independent third party capture efficiency tests that have been approved by the Agency. This average capture efficiency shall be used in the emission calculations required by Attachment 2 to this permit, except as allowed by section 15., below.

15. If the stationary source has been modified such that it may have affected the capture efficiency, the capture efficiency as determined by the tests after the modification shall be used in the emission calculations required by Attachment 2 to this permit.

16. If the results of the second capture efficiency test required by this permit vary by less than 10 percent from the first capture efficiency test required by this permit, capture efficiency testing may be performed every two years rather than every year.

17. All capture efficiency testing shall be performed by an independent testing company.

B. Capture Efficiency Testing for 5B Oxidizer

1. The pollutant being measured is VOC.

2. The purpose of the capture efficiency test is to determine what percentage of the VOC used by the 5B coater is controlled by the oxidizer.

3. The protocol to be used is described in the attached documents labeled F.2, G.2, and T and is referred to by the U.S. EPA as Protocol 1c Option A. The protocol calls for measuring the background concentration and the flow rate and VOC in two gas streams, the uncontrolled emissions exiting through the room exhaust (B section air balance) and the gas stream entering the 5B oxidizer.

4. The capture efficiency is defined as the ratio of the controlled emissions to the sum of the controlled plus uncontrolled emissions.

5. The Permittee shall meet all the criteria of Procedure T for a temporary total enclosure, except the requirement to have a distance of no less than four equivalent diameters from each natural draft opening to each emission unit.

6. Each test consists of three 3-hr runs.

7. The capture efficiency testing will be performed under the following conditions.

   - All VOC emitting equipment in Building 22 except the 5B coater must be shut down during the test
   - The 5B coater shall be operated under non-optimum conditions, which will be defined no less than two weeks prior to the test.

8. The following operating parameters must be monitored and recorded during the capture efficiency testing:

   - natural gas usage in the 5B oxidizer,
   - operating temperature of the 5B oxidizer,
   - type and quantity of products manufactured, both intermediate and final,
   - raw materials used,
   - VOC content of all products manufactured and raw materials used,
   - production rate of the coater,
   - time that the coater is started up and shut down during the test.

9. The Permittee shall bring to the pretest meeting a plan for collecting and a format for recording the parameters described in 8., above.

10. Sampling port locations are as shown on the attached diagrams.

11. The capture efficiency for the 5B coater shall be determined by averaging the capture efficiency calculated for the current test and all previous independent third party capture efficiency tests for the 5B coater that have been approved by the Agency. This average capture efficiency shall be used in the emission calculations required by Attachment 2 to this permit, except as allowed by section 12., below.

12. If the stationary source has been modified such that it may have affected the capture efficiency for the 5B coater, the capture efficiency as determined by the tests after the modification shall be used in the emission calculations required by Attachment 2 to this permit.

13. All capture efficiency testing shall be performed by an independent testing company.

C. Destruction Efficiency for REECO Thermal Oxidizer

1. For the initial test after issuance of this permit, the destruction efficiency testing for the REECO thermal oxidizer shall be performed concurrently with the capture efficiency testing for the REECO thermal oxidizer using the appropriate U.S. EPA test methods.

2. For the initial destruction efficiency test following the issuance of this permit, 16 runs will be performed. The three runs performed concurrently with the capture testing will be 3-hr runs, the remaining 13 runs will be 1-hr runs. All subsequent testing will consist of three 1-hr runs.

3. Sampling port locations are as shown on the attached diagrams.

4. A minimum of one of the three runs for each destruction efficiency test will take place when fewer than six coaters are operating.

5. The destruction efficiency shall be determined by using the following equation:

$$\text{destruction efficiency} = X - t * [s / (n)1/2]$$

Where:

X is the sample average,
n is the number of samples,
s is the sample standard deviation,
and t is the value from the t distribution using n-1 degrees of freedom and a 95% confidence interval

At least sixteen samples will be collected during the first test after the issuance of this permit. As more data becomes available, it will be included in the calculation above.

6. The duct connecting 8F to the REECO thermal oxidizer will be blocked off during all destruction efficiency stack testing on the REECO thermal oxidizer.

7. All destruction efficiency testing will be performed under normal operating conditions, unless it is requested by the Division Manager that a test be performed under different operating conditions.

8. All destruction efficiency testing shall be performed by an independent testing company.

D. Destruction Efficiency for 5B Oxidizer

1. For the initial test after issuance of this permit, the destruction efficiency testing for the 5B oxidizer shall be performed concurrently with the capture efficiency testing for the 5B oxidizer using the appropriate U.S. EPA test methods.

2. For the initial destruction efficiency test following the issuance of this permit, 16 runs will be performed. The three runs performed concurrently with the capture testing will be 3-hr runs, the remaining 13 runs will be 1-hr runs. All subsequent testing will consist of three 1-hr runs.

3. Sampling port locations are as shown on the attached diagrams.

4. All destruction efficiency testing will be performed under non-optimum conditions, which will be defined no less than two weeks prior to the test.

5. All destruction efficiency testing shall be performed by an independent testing company.

E. Retention Time Testing

The Permittee shall determine the retention time (the actual flow rate exiting the oxidizer divided by the volume of the oxidizer) for each oxidizer during the initial destruction efficiency testing and every two years thereafter.

CJC:mlp

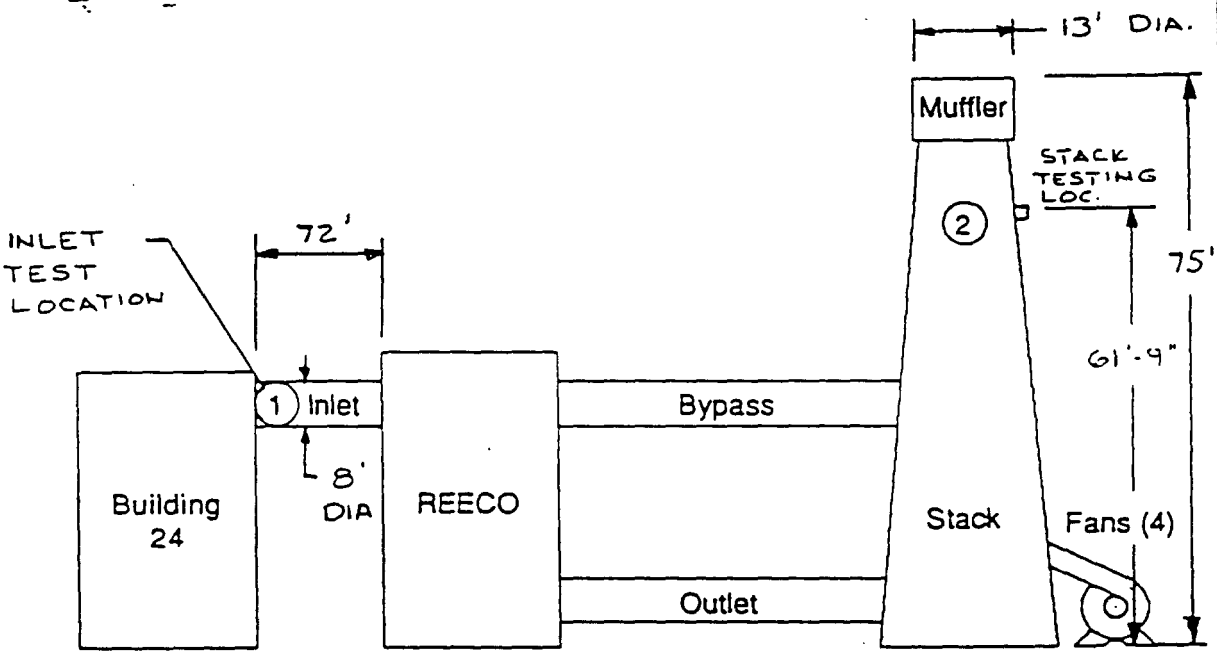
DESCRIPTION OF INSTALLATION

The 3M Company facility in St. Paul, Minnesota manufactures Specialty Tape.

A REECO Thermal Oxidizer controls voc emissions from 14 tape coaters throughout the facility. Testing was conducted under a synthetic load situation.

The bypass was closed during testing.

A schematic of the system is shown below.



ATTACHMENT 4

Minnesota Pollution Control Agency

AQD File #_____

EXCESS EMISSION AND CEM REPORTING FORM

POLLUTANT - SO_2, NO_x, CO, CO_2, O_2, TRS, H_2S, HCl, Opacity (Circle One)

OTHER _____

REPORTING QUARTER_____

FACILITY:_____

_____

_____

Monitor Model:_____

Mfr.:_____

Emission Limit and Avg. Time: _____

_____

_____

EMISSION UNIT(S)_____

TOTAL OPERATING HOURS OF EMISSION UNIT_____

EMISSION DATA SUMMARY		CEM PERFORMANCE SUMMARY	
1. DURATION OF EXCESS EMISSIONS		1. DURATION OF CEM DOWNTIME DURING SOURCE OPERATION	
A. STARTUP/SHUTDOWN	_____	A. MONITOR MALFUNCTION	_____
B. CONTROL EQUIPMENT	_____	B. NON-MONITOR MALFUNCTION	_____
C. PROCESS PROBLEMS	_____	C. QA CALIBRATION	_____
D. OTHER KNOWN CAUSES	_____	D. OTHER KNOWN CAUSES	_____
E. UNKNOWN CAUSES	_____	E. UNKNOWN CAUSES	_____
F. SOOT BLOWING	_____		
G. FUEL PROBLEMS	_____		
2. TOTAL DURATION	_____	2. TOTAL DURATION	_____
3. PERCENT OF TOTAL EXCESS EMISSIONS	_____	3. PERCENT OF TOTAL CEM DOWNTIME	_____

FOR OPACITY RECORD ALL TIMES IN MINUTES. FOR GASES, RECORD ALL TIMES IN HOURS.

$$\% \text{ Total Excess Emissions} = \frac{\text{Total Duration of Excess Emissions}}{\text{Total Operating Time - CEM Downtime}}$$

$$\% \text{ CEM Downtime} = \frac{\text{CEM Downtime}}{\text{Total Operating Time}}$$

If no exceedances: I certify that the required analyses were made, that I am familiar with the results, and that to the best of my knowledge there were no exceedances during the reporting period.

I certify that I am familiar with the information contained in this report and that to the best of my knowledge the information is valid.

SUBMITTED BY: _____ DATE: _____

AQD EER1

128

200607-01 (10/90)

ATTACHMENT 5

CONTINUOUS MONITOR DOWNTIME REPORT
QUARTER _____

EMISSION UNIT(S) _____

Date	Start/Stop Time	(Pollutant) Monitor	Reason/ Corrective Action

EMISSION UNIT(S) _____

Date	Start/Stop Time	(Pollutant) Monitor	Reason/ Corrective Action

EMISSION UNIT(S) _____

Date	Start/Stop Time	(Pollutant) Monitor	Reason/ Corrective Action

ATTACHMENT 6

Performance Specifications and QA/QC for THC CEMs

PART 6A - PERFORMANCE SPECIFICATIONS FOR VOLATILE ORGANIC COMPOUND CONTINUOUS EMISSION MONITORING SYSTEMS IN STATIONARY SOURCES.

1. Applicability and Principle

1.1 Applicability

1.1.1 These requirements apply to continuous emission monitoring systems (CEMs) that measure volatile organic compound (VOC) emissions. The analyzer may operate by flame ionization detection (FID), photoionization detection (PID), nondispersive infrared (NDIR) absorption or other detection principles that respond to VOC levels. The requirements include procedures to evaluate the acceptability of the CEMs at the time of its installation and whenever specified in regulations or permits. The procedures evaluate CEMs performance at the time of installation and not over an extended period of time. Quality assurance procedures for calibrating, maintaining and operating the CEMs properly at all times are given in Part 6C.

1.1.2 In most cases, VOC monitors provide only a measure of the relative concentration level of a mixture of organics, rather than quantitation of the organic species present. This trait necessitates the use of VOC CEMs more as a relative indicator than a conventional emissions monitor. However, it may be possible to consider the VOC monitor as a conventional CEMs in some instances. These instances include cases where only one organic species is present, or where equal incremental amounts of each of the organic species present generate equal instrument responses.

1.2 Principle. Calibration error, response time and performance audit tests are conducted to determine conformance of the CEMs with these specifications. The requirements include specifications for installation and measurement location, equipment and performance, and procedures for testing and data reduction.

2. Definitions

2.1 Instrument Range. The minimum and maximum concentrations that can be measured by a specific instrument. The range statement often assumes the minimum to be zero and expresses the range only as the maximum.

2.2 Instrument Span or Span Value. Full scale range of interest.

3. Installation and Measurement Location Specifications

3.1 CEMs Installation and Measurement Locations. Same as in Section 3.1 of Part 6B. The CEMs shall be installed in a location where measurements give representative indication of the source's emissions.

3.2 Stratification Test Procedure. To determine whether VOC stratification exists, use a dual probe system as follows: Measure the VOC concentration at each traverse point according to Method 1 (40 CFR Part 60, Appendix A) with one probe and the VOC concentration at the stack or duct centroid with the other probe. Alternately measure 5-minute VOC concentrations at each traverse point and at the centroid. Normalize the data using the measurements at the centroid. Then calculate the deviation of the VOC concentration at each traverse point from the overall average. The installation location is unacceptable if the VOC concentration deviation at any point more than two inches from the duct or stack wall exceeds 10 percent. If the location is acceptable, then locate the CEMs probe at a point of average concentration that is within or closest to the centraloid area.

4. CEMs Performance and Equipment Specifications

4.1 Presurvey Sample Analysis. Use Method 18 (40 CFR 60, Appendix A), process chemistry, or previous studies to determine at least 90 percent of the VOC components in the effluent stream. Then select an appropriate CEMs for measuring the VOC. If applied in highly explosive areas, exercise caution in choosing and installing the CEMs.

4.2 Sampling System. Unless the source owner or operator can demonstrate otherwise to the satisfaction of the Permitting Authority, the sampling system shall require heating to maintain the temperature of the sample gas above 150°C (300°F) throughout the system. This means heating all system components such as the probe, calibration valve, filter, sample lines, pump and the analyzer to prevent moisture from condensing. In addition, the sampling system shall include an in-stack or heated out-of-stack filter.

4.3 Instrument Span. For a CEMs intended to measure uncontrolled emissions, the instrument span must be between 1.1 and 1.3 times the average potential emission. For a CEMs installed to measure controlled emissions or emissions that comply with an applicable regulation, the instrument span must be between 1.5 and 2 times the level of the emission limit.

4.4 Calibration Gases.

4.4.1 Zero Gas. High purity air with less than 0.1 ppm by volume of hydrocarbons as methane or carbon equivalent or less than 0.1 percent of the span, whichever is greater.

4.4.2 Upscale Calibration Gases. Same as in Section 4.1.3 in Part 6B. Have the manufacturer of the cylinder provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change by more than two percent from the certified value. Prepare mid-level (40 to 60 percent of span) and high-level (80 to 100 percent of span) calibration gases by source type containing the following components:

4.4.2.1 Process Source. Use the VOC components in the same proportion that make up 90 percent of the VOCs in the effluent stream.

4.4.2.2 Combustion Source. Use propane gas.

4.5 Performance Audit Gas. A certified EPA audit gas shall be used, when possible. A Protocol 1 gas mixture within the calibration range may be used when EPA performance audit materials are not available.

4.6 Data Recorder Scale. The strip chart recorder, computer or digital recorder must be capable of recording all readings within the CEMs measurement range and shall have a resolution of 0.5 percent of span.

4.7 Response Time. The response time for the CEMs must not exceed two minutes to achieve 95 percent of the final stable value.

4.8 Calibration Error. The CEMs must allow the determination of daily CE at all three calibration levels. For the initial 7-day CE test, the CEMs calibration response must not differ by more than 5 percent from the calibration gas value at each level after each 24-hour period.

4.9 Performance Audit Specification. The instrument relative error shall be less than or equal to 10 percent.

4.10 Measurement and Recording Frequency. The sample shall flow continuously through the measurement section of the analyzer. The detector shall measure the sample concentration at least once every minute, and the data acquisition system shall compute and record from these determinations an average hourly VOC concentration.

5. Performance Specification Test (PST) Periods

5.1 Pretest Preparation Period. Install the CEMs, prepare the test site according to the specifications in Section 3, and prepare the CEMs for operation and calibration according to the manufacturer's written instructions. To verify the operational status of the CEMs, the owner or operator should conduct a pretest conditioning period similar to that of the 7-day CE test.

5.2 7-day CE Test Period. Same as in Section 4 of Part C.

5.3 Response Time Test Period. Conduct the response time test once during the 7-day CE test period and quarterly thereafter.

5.4 Performance Audit Test Periods. Conduct the performance audit once during the initial CE test and quarterly thereafter.

6. Performance Specification Test Procedures

6.1 7-day CE Test.

6.1.1 Sampling Strategy. Conduct the 7-day CE test at 24-hour intervals for seven consecutive days following Section 4 of Part 6C, except determine CE at the specified three levels.

6.1.2 Calculations. Summarize the results on a data sheet. Average the differences between the instrument response and the certified cylinder gas value for each gas. Calculate three CE results according to Equation 1 of Section 4.3 of Part 6C. The CE calculations do not use a confidence coefficient.

6.2 Response Time. Same as in Section 5 of Part 6C.

6.3 Performance Audit.

6.3.1 Testing Strategy. Conduct the performance audit following the daily calibration of the instrument. Introduce the audit gases into the sampling system at the sampling probe. The gas shall pass through all CEMs components used during normal sampling.

6.3.2 Calculation. Calculate the CEMs relative error using the following Equation 1:

$$RE = \frac{C_m - C_a}{C_a} \times 100$$

where: RE = Relative error of the performance audit test, percent.

C_m = Average CEMs response, ppm.

C_a = Audit gas reference value, ppm.

B3

PART 6B - GENERAL EQUIPMENT, INSTALLATION AND CALIBRATION GAS SPECIFICATIONS FOR ENHANCED MONITORING PROTOCOLS

1. Introduction

This part covers the equipment, installation and (if applicable) calibration gas specifications for an enhanced monitoring protocol (EMP). A EMP may include a continuous emission monitoring system (CEMs); a continuous parameter monitoring system (CPMS); a continuous flow rate monitoring system (CFRMS); raw material or product testing and material usage recordkeeping or a combination of these techniques.

2. Equipment Specifications

2.1 CEMs EMPs.

2.1.1 The CEMs includes the pollutant (e.g. SO_2, VOC or NO_x) concentration monitor and the data acquisition and handling system (DAHS). The design of the equipment shall allow for checking the entire system for sample line losses and calibration changes. The pollutant monitor and DAHS must be able to measure and record information over the measurement span. In addition, the CEMs must allow the detection of changes in the instrument calibration and applicable accuracy requirement.

2.1.2 The design of the pollution concentration monitor shall include an injection port for calibration gases to check all components of the entire measurement system. The components include, as applicable, sample lines, filters, scrubbers, conditioners and as much of the probe as is practicable. For extractive monitors, the injection port must be at a point no closer to the analyzer than the back of the probe. For dilution probe equipped monitors, the injection port must be placed before dilution occurs to allow a check of the dilution system. For eductor or aspirator equipped monitors, the injection port must be before the port for the sample slip stream.

2.2 Continuous Parameter Monitoring System (CPMS) or Continuous Flow Rate Monitoring System (CFRMS). The CPMS or CFRMS includes the parameter or flow sensor and the DAHS. The design of the equipment shall allow for checking the entire system for calibration changes, which affect measurement accuracy and precision. The CPMS and CFRMS must be able to measure and record information over the measurement span. In addition, the CPMS or CFRMS must allow the detection of changes in the instrument calibration and applicable accuracy requirement.

2.3 Calibration Error (CE) Determination. The design of the EMP must allow determinations of CEs, positive or negative, at the low and high measurement levels. For a CEMs, daily determinations are required and are done using the calibration gas injection ports. For CFRMS, daily determinations are required. For a CPMS, determinations shall be conducted prior to CPMS installation. Thereafter, CE determinations for a CPMS shall be as frequently as practicable. If the EMP automatically adjusts (mechanically or electronically) the calibration, the EMP must record: (a) the amount of adjustment in measurement units (i.e., the difference of data output before adjustments from the reference value); or (b) the output in measurement units before calibration adjustments to allow the determination of the amount of adjustment in the measurement units.

2.4 Data Acquisition and Handling System. The DAHS must record the desired data over the range of operation. The DAHS must allow the detection of changes in the instrument calibration and applicable accuracy requirement.

2.5 Measurement Frequency. Refer to Section 2 of Part 6A.

3. CEMs Installation and Measurement Locations Specifications

Sections 3 and 4 are primarily for a CEMs and, as applicable, a CFRMS. Where an EMP is composed of a combination of parameter measurements, periodic sampling, and recordkeeping, locations and measurements are to be finalized as they are verified through the validation demonstrations of Part 6C. These specifications assure that the EMP will provide measurements that are representative of the source's compliance status with emission limitations or standards. Representativeness is defined by the performance verification test procedure (see Part 6C). These specifications are guidelines, except for those cases where reference method (RM) tests are not required.

3.1 Installation. Install the CEMs, CFRMS, or components of the EMP in a location where the measurements are representative as defined in Part 6C. Several other factors determine the optimum location. These include ease of access for calibration, quality control (QC) checks, maintenance, readability and the degree of sample conditioning required. The location should be as free from in-leakage influences as possible.

For CEMs, the exhaust gas sample location should be at least two equivalent duct diameters downstream from the nearest control device, point of pollutant generation, or other point at which a change in the pollutant concentration or emission rate occurs and at least 0.5 diameter upstream from the exhaust or control device. Method 1 of 40 CFR 60, Appendix A, provides the equation for calculating the equivalent duct diameter.

3.2 Stratification Check. Pollutant concentration or flow rate stratification may cause the selection of nonrepresentative locations. Therefore, the source owner or operator should check the location for possible stratification before installing the CEMs, CFRMS or exhaust gas parameter instrumentation. **Note:** Some performance specifications may not have a relative accuracy specification. If this is the case, the installation specification shall require a stratification check and allow only locations that provide representative measurements (i.e., nonstratified locations).

4. CEMs Calibration Gas Specifications

4.1 Calibration Gases. Gases used for initial and quarterly 3-point CE tests shall be any of the following:

4.1.1 Standard Reference Materials (SRMs). These calibration gases may be obtained from the National Institute of Standards and Technology (NIST), Gaithersburg, MD 20899 (301/975-2208; Fax 301/975-2183).

4.1.2 Certified Reference Materials (CRMs) See "A Procedure for Establishing Traceability of Gas Mixtures to Certain National Bureau of Standards Standard Reference Materials," joint publication by NBS [now NIST] and EPA [EPA-600/7-81-010, available from the U.S. Environmental Protection Agency, Quality Assurance Division (MD-77), Research Triangle Park, NC 27711].

4.1.3 EPA Traceability Protocol No. 1 Gases. See Citation 1 of the bibliography.

4.2 Concentrations. Three levels of concentrations shall be used: low, mid and high.

4.3 Dilution Systems for Calibration Gases. Gas dilution systems may be used if their operation is consistent with the protocol distributed through the EPA Emission-Measurement Technical Information Center entitled "Verification of Gas Dilution Systems for Field Instrument Calibrations," by Rima Dishakjian. A copy of the protocol may be obtained by calling (919)541-0200 and asking for EMTIC CTM-007 (April 2, 1991).

5. Bibliography

1. "Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol Number 1)," June 1978. Section 3.0.4 of the Quality Assurance Handbook for Air Pollution Measurement Systems. Volume III. Stationary Source Specific Methods. EPA-600/4-77-027b. U.S. Environmental Protection Agency. Office of Research and Development Publications, 26 West St. Clair Street, Cincinnati, Ohio 45268.

PART 6C - GENERAL PERFORMANCE VERIFICATION TEST PROCEDURES FOR AN ENHANCED MONITORING PROTOCOL

1. Introduction

This part provides (a) the procedures to be used by an owner and operator for validating the representativeness of an Enhanced Monitoring Protocol (EMP) to emission standards or limitations and (b) performance verification procedures for continuous parametric monitoring systems (CPMSs), continuous emission monitoring systems (CEMs), continuous flow rate monitoring systems (CFRMSs) or a combination of these systems used in EMPs. All EMPs proposed in a permit application by a source owner and operator shall include validation of the representativeness of the EMP to the emission limitations or standards.

2. Reference Method (RM) Test Location

The reference method testing locations for EMP validation may include stacks, ducts, application or storage containers for coatings, leak detection procedures or other appropriate sampling locations. Where exhaust gas emission testing is necessary to validate the EMP, the following requirements shall apply to the EMP performance verification demonstration:

2.1 Measurement Location. The RM location must provide a representative measurement of the source emissions or effluent flow rates. The location must be (1) accessible, (2) at least two equivalent diameters downstream from the nearest control device or other point at which a change in the pollutant concentration or flow rate may occur, and (3) at least one-half equivalent diameter upstream from the effluent exhaust. A source owner or operator may select other locations if the Permitting Authority is satisfied that the locations provide a representative measurement over the stack or duct cross-section. For example, the data from a stratification test may be satisfactory to justify using one measurement point. The EMP (as appropriate) and RM measurement locations need not be coincident.

2.2 Relative Accuracy (RA) Traverse Points.

2.2.1 Gas Concentrations. For gas concentrations, locate three traverse points at 16.7, 50.0 and 83.3 percent of a "measurement line" that passes through the centroid. If the location of this measurement line affects the EMP measurements, the tester may displace the measurement line by up to 12 inches (or 5 percent of the equivalent diameter of the cross-section, whichever is less) from the centroidal area. Conduct the RM measurements within an inch (but no less than an inch from the stack or duct wall) of the three traverse points.

2.2.2 Effluent Flow Rates. Locate the traverse points according to Method 1 of 40 CFR Part 60, Appendix A.

3. Test Periods

3.1 Pretest Preparation Period. The source owner and operator shall identify the test site and demonstration procedures according to the general specifications in Section 2, and prepare the EMP (as appropriate) for operation and calibration according to the owner, operator and manufacturer's written instructions as specified by the source owner or operator in the EMP.

3.2 Operating Conditions for RA and EMP Validation Testing. The source owner and operator shall conduct the RA evaluation and demonstration of representativeness testing during periods specified by the source owner and operator as representative of the affected emission unit's normal operating conditions as specified in the permit and approved by the permitting authority.

3.3 CEMs and CFRMS. The source owner and operator shall ensure that the following general provisions are met in addition to other requirements as specified by the permitting authority.

3.3.1 7-day CE Test Period. While the affected facility is operating under normal permitted operating conditions, determine the CE of the EMP at 24-hour intervals for seven consecutive days according to the procedure given in Section 4.1. All CE determinations must be made following a 24-hour period during which no unscheduled maintenance, repair or manual adjustment of the EMP took place. Where periodic automatic or manual adjustments are made routinely to the EMP zero and calibration settings, conduct the CE test immediately before these adjustments, or conduct it in such a way that the longest period of nonadjustment can be measured. If the emission unit is taken out of service during the test period, record the onset and duration of the downtime and continue the CE test when the unit resumes operation.

3.3.2 Three-Point CE Test and Response Time Test Periods. Conduct the three-point CE and response time tests once during the initial 7-day CE test period of the EMP.

3.4 CPMS. The source owner and operator shall demonstrate and validate the representativeness of the parameter monitoring system EMP in accordance with the following requirements and those additional requirements specified by the permitting authority.

3.4.1 The test period of the parameter monitoring system for the EMP shall consist of the operation period during which the parameter system output (e.g., representative emission level as represented by the parameter monitoring system) is directly compared to RM emission levels during a correlation test (see Section 6, Relative Accuracy Test, below) comprised of a minimum series of three emission test runs or samples.

3.4.2 The operation of the parameter monitoring system EMP shall be uninterrupted during the test period. During this period, there will be no unscheduled maintenance, repair or adjustment of the EMP.

3.5 Periodic Material Sampling, Recordkeeping and Multiple Point Monitoring. An EMP which relies on a combination of periodic material sampling and analysis, and material use recordkeeping procedures must include demonstration of its known relationship to the permitted emission limitations (e.g., ink VOC content and gallons used to determine VOC emission in pounds per day). Multiple point monitoring protocols must utilize appropriate measurement technique procedures. Examples of appropriate measurement technique procedures are: Method 9 of 40 CFR Part 60, Appendix A, for opacity and particulate emission limitations; Method 21 of 40 CFR Part 60, Appendix A, for VOC leak detection and repair programs; use of emission factors; and a demonstrated relationship between production and emissions.

3.6 If the above test periods are interrupted because of EMP failure, restart the entire test when the EMP becomes operational.

4. Calibration Error (CE) Test

4.1 7-day CE Test Procedure. Determine the magnitude of the CEs at the low- and high-level values once each day (at 24-hour intervals) for seven consecutive days. For EMPs described in Section 3.5, the 7-day test shall consist of an as-tested emission level comparison of the specified RM values and the predicted emission level of the EMP. Before making any periodic automatic or manual adjustments to the CMS zero and calibration settings, determine the CE at the low- and high-measurement levels of the EMP. Record the CMS responses of each (i.e., the output from the data recorder).

4.2 3-Point CE Test Procedure. Determine the CE at the low-, medium- and high-measurement levels three nonconsecutive times at each measurement point. Operate the EMP in its normal sampling, analysis and data recording mode as nearly as possible. Record the EMP responses (i.e., the output from the data recorder or DAHS). To demonstrate sampling system integrity, conduct these tests after a conditioning period of at least one hour of parametric, emission or flow measurements.

4.3 Calculations. Summarize the results on a data sheet. Average the differences between the instrument responses and the certified calibration values. For an EMP which is comprised of parameters, periodic sampling and analyses and material use recordkeeping, the differences between the specified reference method values and the predicted EMP values shall be used for the overall CE evaluation. Calculate the CE results according to Equation 1. The CE calculation does not use a confidence coefficient.

$$\text{Equation 1:} \quad CE = \frac{(R_m - R_v)}{R_v} \times 100$$

where: CE = Calibration error of the CMS, percent

R_m = Average CMS response.

R_v = Reference value.

5. EMP Response Time Test

5.1 Continuous Emission Monitoring System (CEMs). The source owner and operator shall conduct existing performance specification test requirements (e.g., 40 CFR Part 60, Appendix B). The source owner and operator shall conduct the following requirements for the proposed EMPs. Conformance with existing requirements may be used at the discretion of the Administrator as demonstrating conformance with these requirements.

5.1.1 Introduce the calibration gases through the injection port. For time-shared systems, use the system with the shortest cycle mode and with the longest line from injection to the analyzer (this may involve two systems). Introduce the low-level gas into the system. When the system output stabilizes (no change greater than one percent of full scale for 30 seconds), switch to monitor stack effluent and wait for a stable value. Record the time required (upscale response time) from the moment of switching until 95 percent of the final stable value is achieved.

5.1.2 Next, introduce the high-level gas and repeat the above procedure. Record the time (downscale response time) required from the moment of switching until 95 percent of the final stable value is achieved.

5.1.3 Repeat the entire procedure three times and determine the mean upscale and downscale response times. The longer of the two means is the system response time.

5.2 CPMS and CFRMS. In most cases, these monitors have such rapid response times that a response time test is not necessary. The source owner or operator shall evaluate each monitor and provide justification to the Permitting Authority that a response time test is not necessary.

5.3 Other EMPs. The source owner or operator shall demonstrate to the permitting authority's satisfaction that the system produces a valid output that represents the emissions unit's emission level, considering averaging time, within the specified response time of the emissions unit's operating permit.

6. Relative Accuracy Test

The source owner and operator shall provide a determination of the relative accuracy of the EMP with respect to the emission limitation or standard. The relative accuracy determination shall form the basis for identification of the known relationship of the EMP to the permitted emission limitation or standard. The confidence in the recorded and reported compliance status shall include the incorporation of the uncertainty in the data as reflected by the demonstrated relative accuracy (e.g., and EMP output in terms of an emission limitation or standard shall include the raw output number plus the absolute RA value adjustment). Optimally, the RA determination should result in an EMP that is very accurate (e.g., a level such that the raw number plus the RA is less than the standard). The demonstrated RA also shall be used by the source owner and operator to establish the range of indeterminate compliance identified in Section 7.

6.1 Performance Verification Methods. The permitting authority and the performance specifications of this part specify the reference methods (RM) for the RA tests (see Part 6A).

6.2 Number of RM measurements.

6.2.1 Conduct a minimum of nine sets of all necessary RM runs (e.g., coating analyses, pollutant, moisture, O_2, etc.). Conduct each set between 30- and 60-minute intervals. The source owner or operator may choose to perform more than nine sets of RM runs. If more than nine RM runs are performed, the source owner or operator may reject a maximum of three sets of the test measurements as long as the total number used to determine the RA is equal to or greater than nine. All data, including the rejected data, must be reported.

6.2.2 The source owner and operator shall compare the EMP data output obtained (in terms of the emission limitation or standard) to the concurrent RM results as follows:

6.2.2.1 Non-variable CPMS. In some CPMSs, the emission rate is correlated at "fixed" parameter levels. In these cases, conduct at least three measurements at the specified levels of these parameters. To support the specified allowable variations for these "non-variable" parameters, use empirical relationships based on previous studies or theoretical relationships with sensitivity analyses.

6.2.2.2 Variable CPMS. Since RA testing is costly, a CPMS is practical if the number of variable parameters is minimal. Using the specified range of applicability, select at least three points over the range, and conduct at least three measurements of the RA test at each point. If the source owner and operator wishes to extend the CPMS applicability and relationships beyond the tested range, the source owner or operator must provide empirical data based on past studies or predicted data based on theory to justify the extension.

6.3 Correlation of RM and EMP. The source owner and operator shall conduct the specified RM measurements to obtain results representative of the emissions from the affected emission unit and to correlate the results to the output data of the EMP. Mark the beginning and end of the test period and each RM measurement (including the exact time of day) on the individual chart recorder(s) or other permanent recording device(s) for the EMP recorder. Take into account appropriate response times.

6.4 Calculations.

6.4.1 Arithmetic Mean ($\bar{d}$). The source owner and operator shall calculate, record and report $\bar{d}$ of the difference of a paired EMP and RM data set using Equation 2. If applicable, correct the data for moisture.

$$\text{Equation 2:} \quad \bar{d} = \frac{1}{n} \sum_{i=1}^{n} d_i$$

where: n = Number of data pairs.

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual differences d_i between the pair of EMP and RM values.

6.4.2 Standard Deviation (S_d). The owner and operator shall calculate, record and report S_d using Equation 3.

$$\text{Equation 3:} \quad S_d = \sqrt{\sum_{i=1}^{n} x_i^2 - \frac{\left[\sum_{i=1}^{n} x_i\right]^2}{n}}{(n-1)}$$

6.4.3 Confidence Coefficient (CC). The source owner and operator shall calculate, record and report the 2.5 percent error CC (one-tailed) using Equation 4.

$$\text{Equation 4:} \quad CC = t_{0.975} \frac{S_d}{\sqrt{n}}$$

where: $t_{0.975}$ = t-value (see Table 1)

Table 1. t-Values

n^a	$t_{0.975}$	n^a	$t_{0.975}$	n^a	$t_{0.975}$
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.662	15	2.145
6	2.571	11	2.228	16	2.131

[a] The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of individual values.

6.4.4 Relative Accuracy. The source owner and operator shall calculate, record and report the RA of the set of data using Equation 5.

$$\text{Equation 5:} \quad RA = \frac{|\bar{d}| + |CC|}{\overline{RM}} \times 100$$

where: $|\bar{d}|$ = Absolute mean of the differences (Equation 2).
CC = Confidence coefficient (Equation 4).
$\overline{RM}$ = Average reference value or applicable standard.

6.5 Notes. If the 3-point RM result differs greatly from the CEMs or CFRMS result, make a 1-point RM measurement close to the CEMs or CFRMS measurement point to check for stratification. Agreement between the 1-point RM result and the CEMs or CFRMS result would indicate that stratification might exist; therefore, relocate the CEMs or CFRMS measurement point to a point of average value. If there is disagreement, the cause for the high mean difference might be significant losses of pollutant in the sample lines. A way to check for line losses is to calibrate the CEMs or CFRMS at the analyzer and through the probe and compare the results. Other causes of high mean differences include erroneously labeled calibration gases, interferences and errors in conversion factors or assumed values (e.g., moisture content) used in calculations. Also, check NO_x CEMs for NO_2 losses.

PART 6D - GENERAL QUALITY ASSURANCE PLAN FOR AN ENHANCED MONITORING PROTOCOL

1. Introduction

The quality assurance (QA) plan is the basis for assessing and maintaining the quality of data for the Enhanced Monitoring Protocols (EMPs). Good quality EMP data is essential since EMP data will be used for certifying compliance with permitted emission limitations or standards. A quality assurance plan has two functions: (1) assessment of the quality (accuracy and precision) of the EMP data, and (2) quality control (QC), which involves activities to maintain or improve data inquiry. Both functions form a control loop. When accuracy or precision is unacceptable, QC must increase until the quality of the EMP data is acceptable.

2. Basis Elements of a QA Plan

The quality assurance plan must include a program of frequent (e.g., daily) and less frequent (e.g., quarterly and annual) checks of the EMP. Quality control programs used for the certification of emissions and EMP output verification may include daily, quarterly and annual evaluations. Such programs are not limited to just instrumental sampling and analysis, but also quality assessments of material inventories used for establishing affected unit emissions. The rigorousness and frequency of assessment must be commensurate with the EMP and shall be proposed by the source owner or operator at the time of permit application for incorporation into the permit.

2.1 Quality Control (QC) Checks and Error Assessments. QC checks and error assessments (e.g., temperature and pressure recording devices have failed) shall be done daily, unless the permit applicant can justify less frequent assessments to the Permitting Authority.

2.1.1 For recordkeeping components of an EMP, the QC checks shall involve checking the data forms to see that all required information is recorded and the information is recorded correctly.

2.1.2 For an EMP that involves instrumental measurements, the QC checks shall describe the procedure for checking the calibration error of each instrument at the zero (low) and span (high) levels. Alternatives may be used subject to the approval the Permitting Authority.

2.1.3 The criteria for excessive error, i.e., when the EMP's data are invalid (e.g., outside performance specifications including recording of insufficient information), shall be stated in the QC plan. The plan owner or operator shall ensure that the beginning and ending times of the invalid data period are identified.

2.2 Data Accuracy Assessment. The QA plan must include procedures (e.g., calibration error, relative accuracy testing, inventory assessment, or fugitive emission assessment plan review) for a quarterly and annual assessment of the EMP's data accuracy and must specify the criteria for excessive error (e.g., does not meet the relative accuracy requirement, failed to statistically prove that leaks were less than one percent of all potential leaks).

2.3 Minimum Data Availability. The QA plan submitted by the owner or operator as a part of the EMP shall include an identification of the minimum periods (projected time if a new system) of EMP downtime associated with the quality control program.

2.4 Reporting and Recordkeeping. The QA plan proposed by the owner or operator and approved by the permitting authority shall assure that the information necessary for conformance with Sections 2.5.5 of the permit and Attachment 2 are obtained and maintained. The plan should also include the following provisions as applicable to the QA plan for the EMP:

2.4.1 Recording of parameter data and downtime of the process and control systems and reasons for downtime.

2.4.2 Recording of reasons for deviations from the permitted operational conditions.

2.4.3 Recording of downtime, adjustments and repairs of EMP components or procedures.

2.4.4 Reviewing and editing of the EMP data.

3. Demonstration of Permitted Operational Condition

3.1 Demonstrating Permitted Operational Conditions. The owner or operator shall include procedures in the QA plan for demonstrating that a permitted operational condition correlates to compliance with the emission limitations or standards. An optimal demonstration for a parameter based EMP would be to verify through testing acceptable relative accuracy (RA) of the EMP at or near, but not in excess of, the permitted emission limitation or standard; then under normal operations, operate at parameters or monitored emission levels well below the emission limitation or standards.

4. Quality Assurance

4.1 QA Plan Organization. The source owner and operator shall submit a description of the QA plan. This document shall include, at a minimum, the following: (a) QA responsibilities (including maintaining records, preparing reports and reviewing reports) among the various departments, groups or individuals at the facility; (b) schedules for the daily

checks, periodic audits, and preventive maintenance; (c) check lists, data sheets and a spare parts inventory; (d) preventive maintenance procedures specified by the monitor manufacturer; and (e) description of the media, format and location of all records and reports for submission to the Permitting Authority.

4.2 QA Plan Revision. The QA plan shall include provisions for a review at least once a year of all data generated by the EMP. Based on the results of the annual review, the source owner or operator shall revise or update the QA plan, if necessary.

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ATTACHMENT 7

Certifications

I certify under penalty of law that the following statement and/or attached information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete.

_____

Signature

_____

Printed name of person signing

_____

Title

_____

Date

Statement (Attach additional information as necessary):