

**INITIAL TITLE V AIR PERMIT APPLICATION REVIEW**

Revised 7/12/99

**DRAFT**

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<b>APPLICANT:</b> SGL Carbon Corporation	<b>SITE LOCATION:</b> Morganton	<b>COUNTY:</b> Burke	
<b>TECHNICAL CONTACT:</b> Mr. Jerry Miller	<b>PHONE:</b> (828)432-5771	<b>RESPONSIBLE OFFICIAL:</b> Mr. Andrew Stinson	<b>TITLE:</b> Plant Manager
<b>REVIEW ENGINEER:</b> Contract-Susan McCarthy, P.E. Kevin Godwin	<b>SIGNATURE:</b>	<b>DATE:</b> xx	
<b>REGIONAL CONTACT:</b> Laura Herbert	<b>REGIONAL OFFICE:</b> Asheville Regional Office	<b>SIC CODE:</b> 3624	
<b>APPLICATION NUMBER:</b> 120028A5.A	<b>EXISTING PERMIT NUMBER:</b> 03287R23	<b>NEW PERMIT NUMBER:</b> <b>03287T24</b>	

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**I. Introduction**

The U.S. Environmental Protection Agency (EPA) has given final approval to North Carolina's Title V operating permits program effective on October 1, 2001. This EPA approval triggered the requirements for Title V facilities to submit permit applications to the Division of Air Quality. Title V facilities are required to obtain an operating permit which addresses all applicable regulations under the State Implementation Plan, Federal Implementation Plan, and other provisions of the Clean Air Act (CAA). The Title V Operating Permit will define all of the facility's obligations under the CAA.

This Initial Title V Air Permit application Review intends to convey all pertinent emissions data, rules, policies, and engineering assumptions used to construct the DRAFT Title V operating permit. The primary source of information used to construct the DRAFT permit is the above referenced air permit application.

**II. Background Information**

The DRAFT Title V operating permit replaces an existing Air Quality Construction and Operation Permit No. 03287R23 issued on September 28, 2001 and is currently scheduled to expire on August 31, 2006.

Pursuant to 15A NCAC 2Q .0506 SGL Carbon Corporation submitted its initial Title V application to the Division of Air Quality on February 12, 1996. The application was considered complete for processing on April 1, 1996. The DRAFT permit is required to go to public notice pursuant to 15A NCAC 2Q .0521.

**III. Facility Description**

SGL Carbon Corporation manufactures synthetic graphite primarily for use in steel and other metal manufacturing. SGL Carbon Corporation is subject to the provisions of Title V due to the fact that they emit greater than 100 tons per year of PM (235 tpy), SO<sub>2</sub> (108 tpy), and CO (717 tpy).

**IV. Statement of Compliance**

The DAQ has reviewed the compliance status of this facility. As per the last facility inspection on March 30, 2001 by Michael Koerschner of the Asheville Regional Office (ARO), the facility was in compliance. However, the facility has the following recent history of noncompliance:

- 1/13/2000 Annual inspection of facility was performed by ARO staff, Michelle Tate and Michael Koerschner. The inspection found the facility to be in compliance except for one dusting fabric filter (ID No. CD-1A-DC2186).
- 2/3/2000 An NOV was forwarded to the facility for the improper operation and maintenance of bagfilter (ID No. CD-1A-DC2186).
- 5/12/2000 A followup inspection of facility, specifically of fabric filter (ID No. CD-1A-DC2186), revealed further problems. The fabric filter (ID No. CD-1A-DC2186) was observed in operation with no visible emissions from the exhaust, but it had an ongoing flapper valve problem. Also, another fabric filter (ID No. CD-1C-DC255) was observed dusting.
- 5/16/2000 A NOV/NOE for improper operation and maintenance of fabric filters (ID Nos. CD-1A-DC2186 and CD-1C-DC255) was forwarded to the facility.
- 8/13/2000 Routine surveillance of the facility indicated another fabric filter problem, as fabric filter (ID No. CD-51-DC2474) was observed dusting.
- 8/16/2000 A NOV/ NOE for improper operation and maintenance of fabric filter (ID No. CD-51-DC2474) was forwarded to the facility.

It appears that the violations regarding improper operation and maintenance of the fabric filters above have been resolved. In air permit No. 03827R23, more visible emissions checks (weekly) and much more extensive inspection and maintenance requirements of the fabric filter units (weekly and monthly) were added as conditions to the permit. The facility is currently in compliance with all applicable requirements. The applicant has certified that the facility will be in compliance with all applicable requirements. The applicant has also certified that the facility will be in compliance with any applicable requirements taking effect during the term of the permit and will meet such requirements on a timely basis.

**V. Summary of Emission Sources and Control Devices**

The following table identifies all emission sources and associated control devices for which the Initial Title V Operating Permit is being issued.

<b>Emission Source ID No.</b>	<b>Emission Source Description</b>	<b>Control Device ID No.</b>	<b>Control Device Description</b>
<b>Extrusion Department - Building 2</b>			
<i>Fabric Filter Controlled Sources in Extrusion Department including:</i>			
ES-1A	Extrusion fines milling operation utilizing two Raymond Mills (ID Nos. ES-RM14 and ES-RM15)	CD-1A-DC2186	One fabric filter (1,588 square feet of filter area)
ES-1C	Emission source consisting of Building #2 materials handling systems	CD-1C-DC225	One fabric filter (2,120 square feet of filter area)

ES-1D	System #2 Milling Process/Material Storage consisting of the exhausts from five weigh scale collection sources (ID Nos. ES-1D-SC201 through 205), five weigh car collection sources (ID Nos. ES-1D-WC201 through 205), two bin drawoffs (ID Nos. ES-1D-BD201 and 202), one conveyor screw (ID No. ES-1D-CS257), one hammermill (ID No. 1D-HM260), one Rotex elevator (ES-1D-RX261), one Rotex screen (ID No. ES-1D-RX262), one double roll crusher (ID No. ES-1D-DRC263), and raw coke handling operations (ID No. ES-1F)	CD-1D-DC254	One fabric filter (6,426 square feet of filter area)
ES-1E	Emission source consisting of System #1 and System #2 extrusion mixers, System #1 milling operations, and System #1 weigh car and scale bin exhausts	CD-02-DFT3-36	one fabric filter (9,144 square feet of filter area)
ES-1G	Scrap stock crushing operation	CD-1G-DC220	One fabric filter (3,848 square feet of filter area)
<i>Electrostatic Precipitator controlled sources in Extrusion Department including:</i>			
ES-1B	Emission source consisting of five extrusion mix coolers [ID Nos. ES-1h-02S1SC (System #1 South Cooler), ES-1h-02S1WC (System #1 West Cooler), ES-1h-02S2SC (System #2 South Cooler), ES-1h-02S2WC (System #2 West Cooler)] and one molding operation (ID No. ES-1h-15AS2EH)]	CD-1B-02-ESP	One electrostatic precipitator (4,877 square feet of collecting plate area)
<i>Thermal Oxidizer Controlled Sources in Extrusion Department including:</i>			
ES-1H	Pitch loading operations to two pitch storage tanks (100,000 gallons capacity each)	CD-1H-DR290A	One natural gas-fired thermal oxidizer (1.6 million Btu per hour maximum heat input)
<i>Uncontrolled Sources in Extrusion Department including:</i>			
ES-1I	22 extrusion mixers [sixteen 1000-pound mixers (System #1) and six 1000-pound mixers (System #2)]	n/a	n/a
<b>Baking Department</b>			
<i>Abrasive Blasting Operations in Baking Department Controlled by Fabric Filters including:</i>			
ES-2A	Steel shot blast electrode cleaning machine (Building 56)	CD-2A-DC-5624	One fabric filter (1,260 square feet of filter area)
ES-2C	Steel shot blast electrode cleaning operation (Building 47)	CD-2C-DC425	One cartridge-type fabric filter (4,944 square feet of filter area)
<i>Other Fabric Filter Controlled Sources in Baking Department including:</i>			

ES-2B	Small-round cleaning operation and media preparation serving baking furnace Nos. 1 through 19 (Building 13)	CD-2B-DC427	One fabric filter (3,090 square feet of filter area)
ES-2F	Furnace packing media recycling processes (Building 55)	CD-2F-DC5524	One fabric filter (6,500 square feet of filter area)
ES-2I	Emission sources from pit furnace sagger handling operations	CD-2I-DC05	One cartridge-type fabric filter (12,192 square feet of filter area)
ES-2J01 and ES-2J02	Two sand receiving silos	CD-BK-SR01 and CD-BK-SR02	Two fabric filters (278 square feet of filter area, each)
ES-2K	Rebaked stock cleaning operation	CD-2D-DC01	One cartridge-type fabric filter (8,128 square feet of filter area)
<i>Thermal Oxidizer Controlled Sources in Baking Department including:</i>			
ES-2D	Three carbottom-type natural gas/LPG-fired carbon electrode baking/rebaking furnaces Nos. 50, 51, and 52; twelve 1.69 million Btu/hour maximum heat input burners per furnace	CD-2D-55F	One natural gas/LPG gas-fired thermal oxidizer (6.5 million Btu per hour heat input)
ES-2E-57F61; ES-2E-57F62 through ES-2E-57F65; and ES-2E-05F66 and ES-2E-05F67	One natural gas/LPG-fired pit-type baking/rebaking furnace (twenty-four 0.5 million Btu per hour heat input burners and six 0.9 million Btu per hour heat input burners); four natural gas/LPG-fired pit-type carbon electrode baking furnaces (six 2.7 million Btu per hour maximum rated heat input burners and three 1.03 million Btu per hour maximum rated heat input burners each all located in Building 57); and two natural gas/LPG-fired pit type carbon electrode baking/rebaking furnaces (nine 1.50 million Btu per hour maximum heat input burners and three 0.33 million Btu per hour burners, each, in Building 5),	ES-2E-57F61; ES-2E-57F62 through ES-2E-57F65;	Seven natural gas/LPG gas-fired thermal oxidizers (5.4, 3.1, 3.1, 3.1, 5.4, 4.9, and 4.9 million Btu per hour heat input, respectively)
ES-2H	Nineteen natural gas/LPG gas-fired baking furnaces Nos. 1-19 (16.38 million Btu per hour maximum heat input, each)	CD-2H-04W4 (installed on baking furnaces 1 through 9) and CD-2H-04E4 (installed on baking furnaces 10 through 19)	Two direct-flame natural gas/LPG gas-fired thermal oxidizers (5.33 and 16.38 million Btu per hour maximum heat inputs, respectively)
<i>Other Sources in Baking Department including:</i>			
ES-2G	Nine movable hoods with ductwork to return fugitive emissions to the furnace for thermal oxidation	n/a	n/a

<b>Specialty Products Department</b>			
ES-3A	Mini rod sagger handling operation (Building 51)	CD-3A-DC5114	One fabric filter (1,056 square feet of filter area)
<b>Pitch Impregnation Department</b>			
ES-4A	Emission source consisting of four natural gas/LPG gas-fired pitch impregnation preheaters (1.69 million Btu per hour maximum heat input rate, each) and three pitch working tanks	CD-4A	One natural gas/LPG gas-fired thermal oxidizer (3.14 million Btu per hour maximum heat input)
<b>Graphite Department</b>			
ES-5A	Graphite Department Equipment consisting of: a) one chip bin hood (ID No. C2331), b) one "T" core drill (ID No. C2347), c) one bucket elevator (ID No. C2330), d) one large cleaning machine (ID No. C2315), e) one large band saw (ID No. C2348), f) one small band saw (ID No. C16143), g) one "L" core drill (ID No. C2346), h) one sample grinder (ID No. C2302), I) rail hoods (ID No. C2304), j) a railcar loading operation, k) by-products material bagging machine, and l) miscellaneous graphite machining operations	CD-5A-DC2324	One fabric filter (10,260 square feet of filter area)
ES-5E	Twelve electric lengthwise graphitizing (LWG) furnaces (Building 24)	n/a	n/a
ES-5I	Packing media recycling process line	CD-5I-DC2474	One fabric filter (11,016 square feet of filter area)
ES-5J	Stock machining and conveying line	CD-5J-DC5803	One fabric filter (813 square feet of filter area)
ES-5L	LWG media crusher system (Building 10)	CD-5L-DC101	One fabric filter (1,829 square feet of filter area)
D-406	LWG media storage bin	CD-5L-BV101	one fabric filter (400 square feet of filter area, Building 24)
<b>Finishing Department - Building 11</b>			
ES-6A	Graphite finishing operation	CD-6A-DC1164	one fabric filter (8,652 square feet of filter area)
ES-6B	Carpentry shop woodworking operation	CD-6B	one fabric filter (200 square feet of filter area)
<b>Salvage Department - Building 25</b>			

ES-7B	Centerless grinder operation for graphite rods	CD-7B-DC2502	one fabric filter (1,056 square feet of filter area)
ES-7C	Vertical boring mill	CD-7C-DC2578	one fabric filter (170 square feet of filter area)
<b>Boilers</b>			
ES-CB230	One natural gas/LPG-fired extrusion boiler (12.041 million Btu maximum rated heat input)	n/a	n/a
ES-PB233N and ES-PB233S  <u>NSPS</u> ES-PB-233	Two natural gas/LPG-fired plant boilers (14.523 million Btu maximum rated heat input each) to be replaced with one natural gas/ LPG-fired (12.247 million Btu per hour maximum heat input; NSPS Subpart Dc),	n/a	n/a

**VI. Emission Source-by-Source Evaluation**

**A. Extrusion Department - Building 2**

**Fabric Filter Controlled Sources in Extrusion Department including:**

- C one fabric filter (1,588 square feet of filter area; ID No. CD-1A-DC2186) installed on an extrusion fines milling operation (ID No. ES-1A) utilizing two Raymond Mills (ID Nos. ES-RM14 and ES-RM-15),**
- C one fabric filter (2,120 square feet of filter area; ID No. CD-1C-DC225) installed on an emission source (ID No. ES-1C) consisting of Building #2 materials handling operations,**
- C one fabric filter (6,426 square feet of filter area; ID No. CD-1D-DC254) installed on the System #2 Milling Process/Material Storage (ID No. ES-1D) consisting of the exhausts from five weigh scale collection sources (ID Nos. ES-1D-SC201 through 205), five weigh car collection sources (ID Nos. ES-1D-WC201 through 205), two bin drawoffs (ID Nos. ES-1D-BD201 and 202), one conveyor screw (ID No. ES-1D-CS257), one hammermill (ID No. 1D-HM260), one Rotex elevator (ES-1D-RX261), one Rotex screen (ID No. ES-1D-RX262), one double roll crusher (ID No. ES-1D-DRC263), and raw coke handling operations (ID No. ES-1F)**
- C one fabric filter (9,144 square feet of filter area; ID No. CD-02-DFT3-36) installed on an emission source (ID No. ES-1E) consisting of System #1 and System #2 extrusion mixers, System #1 milling operations, and System #1 weigh car and scale bin exhausts,**
- C one fabric filter (3,848 square feet of filter area; ID No. CD-1G-DC220) installed on the scrap stock crushing operation (ID No. ES-1G)**

1. Description

The extrusion fines milling operation (ID No. ES-1A), which is a coke milling operation, is controlled by a

fabric filter (1,588 square feet of filter area; ID No. CD-1A-DC2186) with a reported efficiency of 99.9%. The products are conveyed to raw material storage for use in final products.

The fabric filter (2,120 square feet of filter area; ID No. CD-1C-DC225) is a ‘housekeeping’ fabric filter which picks up particulates from the coke handling operations (ID No. ES-1C) including elevators, conveyors, storage bins, weigh hoppers, and bagging stations.

The fabric filter (6,426 square feet of filter area; ID No. CD-1D-DC254) is a ‘housekeeping’ fabric filter installed on emission source (ID No. ES-1D). All the material collected drops into a fixed ‘supersack’ container which picks up particulates off of coke handling operations, one hammermill, one screen, and one crusher.

The fabric filter (9,144 square feet of filter area; ID No. CD-02-DFT3-36) is a ‘housekeeping’ fabric filter installed on emission source (ID No. ES-1E). All material collected is dropped into a fixed ‘supersack’ container which picks particulates off of mixing, milling, and weighing operations, as well as the loading of the extrusion mixers. The extrusion mixers are controlled when coke and stock are loaded into the process. The mixing system is closed, the pitch is added to the mixers, the contents are mixed, and then vented out of one of two mixing stacks (uncontrolled).

The fabric filter (3,848 square feet of filter area; ID No. CD-1G-DC220) is a ‘housekeeping’ fabric filter installed on the scrap stock crushing operation (ID No. ES-1G). All material collected is dropped into a fixed ‘supersack’ container which picks particulates off of a scrap stock crushing operation consisting of a scrap crusher, two screw conveyors, a feeder bin, a hammermill, an elevator, and an outside bagging station.

## 2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ or $E=55.0P^{0.11}-40$ where E =allowable emission rate in pounds per hour P =process weight in tons per hour	15A NCAC 2D .0515
visible emissions	40 percent opacity	15A NCAC 2D .0521

### a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

#### i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E' 4.10P^{0.67}$$

For process rates greater than 30 tons per hour:

$$E = 55.0P^{0.11} - 40$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

**Evaluation for Compliance with 2D .0515**

Source	Process Rate	2D .0515 Applicable Formula	Allowable Emissions	After Control Emissions (TV application)	Compliance Expected?	Bagfilter Efficiency (Title V application)
ES-1A (Extrusion Fines Milling)	0.375 tons/hr	$E=4.10P^{0.67}$	2.12 lbs/hr <sup>1</sup>  (or 6.16 lbs/hr?)	0.84 lbs/hr <sup>2</sup>	yes	99.9%
ES-1C (Building #2 Materials handling)	183.2 tons/hr	$E=55.0P^{0.11} - 40$	47.5 lbs/hr <sup>3</sup>  (or 20.37 lbs/hr?)	3.6 lbs/hr <sup>4</sup>	yes	99%
ES-1D (System #2 Milling)	16.5 tons/hr	$E=4.10P^{0.67}$	26.8 lbs/hr <sup>5</sup>  (or 10.88 lbs./hr?)	2.89 lbs/hr <sup>6</sup>	yes	99.9%
ES-1E	14.1 tons/hr	$E=4.10P^{0.67}$	24.1 lbs/hr <sup>7</sup> ( or 20.37 lbs/hr?)	3.86 lbs/hr <sup>8</sup>	yes	99.9%
ES-1G (Scrap stock crushing)	12.5 tons/hr	$E=4.10P^{0.67}$	22.3 lbs./hr <sup>9</sup> (or 5.66 lbs/hr?)	5.25 lbs/hr <sup>10</sup>	yes	99%

<sup>1</sup>As per Michael Koerschner's September 28, 2001 permit review, allowable emissions for ES-1A are calculated based on an average process rate of 3,676 pounds per hour as reported in the 2000 emissions inventory (instead of 750 lbs/hr reported in the Title V application). Based on this, the allowable emission rate is 6.16 lbs/hr instead of the 2.12 lbs/hr reported in the Title V application:

$$E = 4.10(3676/2000)^{0.67} = 6.16 \text{ pounds per hour particulate}$$

<sup>2</sup>After control emissions for the source (ES-1A) are apparently (as reported in the 2000 emissions inventory ) based on the 0.03 grains/cubic foot and known air flow rate of 3,270 cubic feet per minute). Using this worst case assumption, average hourly emissions are:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{3,270 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 0.84 \text{ lbs./hr. particulate}$$

<sup>3</sup>As per Michael Koerschner's September 28, 2001 permit review, allowable emissions for ES-1C are calculated based on an average process rate for the year 2000 of 21,892 pounds per hour, reported in the 2000 emissions inventory. Based on this, the allowable emission rate is 20.37 lbs/hr instead of the 47.5 lbs/hr reported in the Title V application.

$$E = 4.10(21,892/2,000)^{0.67} = 20.37 \text{ pounds per hour particulate}$$

<sup>4</sup>After control emissions for ES-1C are apparently (as reported in the 2000 emissions inventory ) based on the 0.03 grains/cubic foot and known air flow rate of 14,000 cubic feet per minute (Title V application). Average hourly emissions are calculated as follows:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{14,000 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 3.6 \text{ lbs./hr. particulate}$$

<sup>5</sup>As per Michael Koerschner's September 28, 2001 permit review, allowable emissions for ES-1D are calculated based on an average process rate for the year 2000 of 8,580 pounds per hour, reported in the 2000 emissions inventory. Based on this, the allowable emission rate is:

$$E = 4.10(8,580/2000)^{0.67} = 10.88 \text{ pounds per hour particulate}$$

<sup>6</sup>The after control emission rate of 7.2 lbs/hr are based on the 0.03 grains/cubic foot and known air flow rate of 28,000 cubic feet per minute (Title V application). Average hourly emissions are calculated as follows:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{28,000 \text{ cubic feet}}{\text{minute}} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 7.2 \text{ lbs./hr. particulate}$$

<sup>7</sup>As per Michael Koerschner's September 28, 2001 permit review, allowable emissions for ES-1E are calculated based on an average process rate for the year 2000 of 8,580 pounds per hour, reported in the 2000 emissions inventory. Based on this, the allowable emission rate is:

$$E = 4.10(21,892/2000)^{0.67} = 20.37 \text{ pounds per hour particulate}$$

<sup>8</sup>The after control emission rate of 3.86 lbs/hr are based on the 0.03 grains/cubic foot and known air flow rate of 15,000 cubic feet per minute (Title V application). Average hourly emissions are calculated as follows:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{15,000 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 3.86 \text{ lbs./hr. particulate per silo}$$

<sup>9</sup>As per Michael Koerschner's September 28, 2001 permit review, allowable emissions for the scrap stock crushing operation (ID No. ES-1G) are calculated based on an average process rate for the year 2000 of 3,236 pounds per hour, reported in the 2000 emissions inventory. Based on this, the allowable emission rate is:

$$E = 4.10(3,236/2,000)^{0.67} = 5.66 \text{ pounds per hour particulate}$$

<sup>10</sup>The after control emission rate of 3.86 lbs/hr are based on the 0.03 grains/cubic foot and known air flow rate of 20,400 cubic feet per minute (Title V application). Average hourly emissions are calculated as follows:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{20,400 \text{ cubic feet}}{\text{minute}} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 5.25 \text{ lbs./hr. particulate}$$

ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilters (ID Nos. CD-1A-DC2186, CD-1C-DC225, CD-1D-DC254, CD-02-DFT3-36, and CD-1G-DC220), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of any pneumatic conveyors, screw conveyors, elevators, ductwork, and the fabric filters noting the structural integrity and visible emissions; and
- B.
  - 1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;
  - 2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and
- C. annual internal inspections of each fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

The above emissions sources (ID Nos. ES-1A, ES-1C, ES-1D, ES-1E, and ES-1G) were established prior to July 1, 1971, and they are subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period. Compliance is indicated with this regulation, because the latest inspection report did not cite any opacity exceedances.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**B. Electrostatic Precipitator controlled Extrusion Sources including:**

**C One electrostatic precipitator (4,877 square feet of collecting plate area; ID No. CD-1B-02ESP) installed on an emission source (ID No. ES-1B) consisting of five extrusion mix coolers [ID Nos. ES-1h-02S1SC (System #1 South Cooler), ES-1h-02S1WC (System #1 West Cooler), ES-1h-02S2SC (System #2 South Cooler), ES-1h-02S2WC (System #2 West Cooler)] and one molding operation (ID No. ES-1h-15AS2EH)**

1. Description

This system pulls air through the extrusion mixes to cool the mix. The volatiles/ semi-volatiles entrained in the air are controlled by the ESP. The ESP is a 2-stage, triple pass unit, with 30 separate compartments. Each compartment utilizes 3 ESP cells which are collection plates. A person on staff at the facility cleans the plates full-time. The cleaning operation uses soapy water to remove the tar-like residue on the plates.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	40 percent opacity	15A NCAC 2D .0521
odors	See Section VII(A)(1); <b>State enforceable only</b>	15A NCAC 2D .1806
volatile organic compounds	See Section VII(B)(1)	15A NCAC 2D .0958
toxic air pollutants	See Section VII.(A)(2); Toxic air pollutant emissions shall not exceed their modeled AAL's; <b>State-enforceable only</b>	15A NCAC 2D .1100

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

## i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E = 4.10P^{0.67}$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

According to the Title V application, the process rate for the extrusion fines milling operation is 53,000 pounds per hour (26.5 tons/hour). Thus, the allowable emission rate is:

$$E = 4.10(26.5)^{0.67} = 36.8 \text{ pounds per hour particulate}$$

The application reports that before and after control particulate emissions from this source to be 36.8 pounds per hour and 1.68 pounds per hour, indicating compliance. (The ESP is reported to have an 85% control efficiency.)

However, as per Michael Koerschner’s September 28, 2001 permit review, allowable emissions are calculated based on the reported average process rate for the year 2000 of 11,856 pounds per hour, reported in their 2000 emissions inventory. Based on this, the allowable emission rate is:

$$E = 4.10(11,856/2,000)^{0.67} = 13.5 \text{ pounds per hour particulate}$$

Michael Koerschner calculates worst case emissions on the assumption that the facility is losing 3% of the tar pitch in the cooling process, and using the standard coal tar pitch to mix ratio of 1: 4.33, the amount going out of the stack would be:

$$\frac{11,856 \text{ lbs. mix}}{\text{hour}} \times \frac{1 \text{ lb. coal tar pitch}}{4.33 \text{ lbs. mix}} \times 0.03 \text{ (worst-case loss)} \times (1 - 0.85) = 12.3 \text{ lbs./hr}$$

Thus, compliance is indicated per Michael Koerschner’s “worst-case” analysis as well.

## ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the electrostatic precipitator (ESP; ID No. CD-1B-02ESP), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the I&M program, and each annual internal inspection, will include the following:

A. a complete internal cleaning of all internal structures and steam cleaning of all internal parts.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 “Control of Visible Emissions”

i. Regulatory Analysis

The above emission sources (ID No. ES-1B) were established prior to July 1, 1971, and they are subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period. Compliance is indicated with this regulation, because the latest inspection report did not cite any opacity exceedances.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**C. Thermal Oxidizer Controlled Extrusion Sources including:**

**C One natural gas-fired thermal oxidizer (ID No. CD-1H-DR290A; 1.6 million Btu per hour maximum heat input) installed on pitch loading operations to two pitch storage tanks (ID No. ES-1H; 100,000 gallons capacity each)**

1. Description

This replacement control device was recently added in a permit modification dated 9/28/01. The facility requested this control enhancement due to insufficient control and excessive maintenance of the old ESP system. The source consists of two 100,000 gallon petroleum pitch storage tanks. The pitch is brought in by railcar to the tanks which are adjacent to the tracks on the southwest corner of the facility. The two tanks are kept at the same level, as they are interconnected. Air emissions occur when the tanks are loaded

and due to breathing and working losses. The breathing and working losses are relatively insignificant when compared to the loading losses, because these tanks are maintained at a constant temperature (350 degrees Fahrenheit), and at that temperature, the vapor pressure of the pitch is 0.0009 millimeters of mercury (reference Mr. W. C. Wood’s letter of 1/3/80 to Mr. Myron Whitley). The fume incinerator is only used when the tanks are loaded and is used mainly as an odor control device. This is in contrast to the previous control device (ESP) that was used around the clock. The permit application indicates a 95% control efficiency (as compared to a 90% control efficiency previously), and this appears to be a very conservative estimate. The permit application indicates an afterburner temperature of 1,800 degrees Fahrenheit with a residence time of 1.12 seconds. At this temperature, at least 99% destruction of organics would be expected (Ref: Table 8.4.6 Temperatures and Residence Times, Odor and VOC Control Handbook and Figure 3-7 Effects of Temperature and Residence Times on Rate of Pollutant Oxidation, EPA 450/2-81-005, Control of Gaseous Emissions).

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=55.0P^{0.11} - 40$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu	15A NCAC 2D .0516
visible emissions	40 percent opacity	15A NCAC 2D .0521
nitrogen oxides	See Section VII.(E)(1)	Avoidance of 15A NCAC 2D .0530
odors	See Section VII(A)(1); <b>State-enforceable only</b>	15A NCAC 2D .1806
volatile organic compounds	No applicable requirements.	15A NCAC 2D .0949
toxic air pollutants	See Section VII.(A)(2); Toxic air pollutant emissions shall not exceed their modeled AAL’s; <b>State-enforceable only</b>	15A NCAC 2D .1100

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights greater than 30 tons per hour:

$$E' 55.0P^{0.11}\&40$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

According to the Michael Koerschner's September 28, 2001 permit review (when the thermal oxidizer replaced the old ESP), the process rate for this source is 135 gallons per minute and the pitch density is 10.8 pounds per gallon. The pitch tanks receive approximately 20,000 gallons per load, and the load time is approximately 2.5 hours. The process rate during loading is:

$$\frac{135 \text{ gallons}}{\text{minute}} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{10.8 \text{ pounds}}{\text{gallon}} = 87,840 \text{ pounds per hour}$$

$$E = 55.0(87,840/2,000)^{0.11} - 40 = 43.38 \text{ pounds per hour of particulate}$$

As stated in Michael Koerschner's review, the permit application indicates that particulate emissions are negligible ("particulates are not emitted in any appreciable quantity from these storage tanks.") This agrees with past inspection reports which indicate no visible emissions exiting the stacks. Assuming all the pitch vapor exists as an ideal gas but then exits the tank as particulate, and using the reported vapor pressure of the pitch at 350 degree Fahrenheit storage temperature of 0.0009 millimeters of mercury, and assuming a molecular weight of 200 (conservative estimate), uncontrolled particulate emissions when unloading are:

$$\frac{0.0009 \text{ mm Hg (p pitch)}}{760 \text{ mm Hg (1 atm)}} = \text{mole fraction of pitch} = 0.000001184 \text{ moles pitch/ mole gas exiting}$$

at 350 degrees Fahrenheit, each mole of gas occupies 39.635 cubic feet (ideal gas)

The rate of pitch emissions is then:

$$\frac{0.000001184 \text{ moles pitch}}{39.635 \text{ cubic feet gas}} \times \frac{200 \text{ grams pitch}}{\text{mole pitch}} \times \frac{1.069 \text{ cubic feet gas displaced}}{\text{hour loading (at 8,000 gal/hr)}} = 0.006 \text{ lbs/hr}$$

Thus, compliance is indicated by a wide margin as per Michael Koerschner's 9/28/01 review.

#### ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the thermal oxidizer (ID No. CD-1H-DR290A), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the Permittee shall perform an annual internal inspection of the primary heat exchanger and associated inlet/outlet valves to ensure structural integrity.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

#### iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

#### iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written

request by DAQ.

b. 2D .0516 "Sulfur Dioxide Emissions From Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, chimney shall not exceed 2.3 pounds per million Btu heat input. The natural gas-fired thermal oxidizer installed on this operation is subject to this regulation.

ii. Monitoring/Recordkeeping/Reporting Requirements

There are no testing, monitoring, recordkeeping, and reporting requirements for this source due to the inherently low sulfur content of natural gas.

The AP-42 emission factor for total sulfur dioxide emissions from natural gas combustion is 0.6 pounds of sulfur dioxide per million cubic feet combusted [ref: AP-42 Table 1.4-2; July 1998]. Assuming a heating value of 1,020 Btu per cubic foot, this equates to:

$$\frac{0.6 \text{ lb sulfur dioxide}}{1,000,000 \text{ cubic ft}} \times \frac{1 \text{ cuft}}{1,020 \text{ Btu}} \times \frac{1,000,000 \text{ Btu}}{\text{million Btu}} = 0.0006 \frac{\text{pounds}}{\text{million Btu heat input}}$$

c. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

The above emissions source (ID Nos. ES-1H) was established after to July 1, 1971, and is subject to 2D .0521(d). One of the pitch tanks was installed in 1980 and is manifolded (and interconnected) with the older tank, which pre-dated July 1971.

Per this regulation, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 87 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period. Compliance is indicated with this regulation, because the latest inspection report did not cite any opacity exceedances.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each

year.

d. 2D .0949 “Storage of Miscellaneous Volatile Organic Compounds”

i. Regulatory Analysis

This rule applies to the storage of volatile organic compounds in stationary tanks, reservoirs, or other containers with a capacity greater than 50,000 gallons that are not covered by Rule .0925 or .0933. (Rule .0925 does not apply, because the coal tar pitch stored in these tanks has a vapor pressure less than 1.5 psig, and Rule .0933 does not apply, because these are fixed roof tanks.) This regulation has no regulatory requirements for storage of liquid volatile organic compounds with a vapor pressure less than 1.5 psig.

ii. Monitoring/ Recordkeeping/ Reporting Requirements

No monitoring/ recordkeeping/ reporting will be required for compliance with this regulation.

**STATE ONLY REQUIREMENTS**

e. 2D .1100 “Control of Toxic Air Pollutants”

i. Regulatory Analysis

The following regulatory analysis comes from Michael Koerschner’s 9/28/01 review:

Based on source testing done in 1992 on the vapor space of the tanks, the concentrations of xylene, benzene, toluene, benzo(a)pyrene, and phenol were less than 0.05 ppm (detection limit), each. The “worst-case” scenario assumed that the compounds were present at detection level (0.05 ppm) which yielded the following for those compounds:

Pollutant	Observed Concentration	Worst-Case Concentration (0.05 ppm)	Modeled Emissions
xylene	< 0.05 ppm	0.2176 mg/cubic meter	0.00000089 lb/hr, 0.0000215 lb/day
toluene	< 0.05 ppm	0.1887 mg/cubic meter	0.0000007 lb/hr, 0.000017 lb/day
benzene	< 0.05 ppm	0.16 mg/cubic meter	0.00578 lb/yr
benzo(a)pyrene	< 0.05 ppm	0.516 mg/cubic meter	0.01856 lb/yr
phenol	< 0.05 ppm	0.1928 mg/cubic meter	0.00000072 lb/hr

These are the concentrations which were used in the model, and working and breathing losses were calculated using a 20 degree Fahrenheit diurnal temperature change as well as loading of 109,483 cubic feet per year (1993 usage). The 2000 emissions inventory indicates that 189,053 cubic feet were loaded in 2000, representing a 73% increase over 1992 coal tar usage. The air dispersion model did not take into account any control from the ESP. Therefore, the change in control device does not represent any increase in air toxic emissions. With the fume incinerator, it could be assumed that each of the above TAPs will be reduced 95% from the loading. That

assumption could not be made with the ESP, which could not control VOC's in the gas phase. Therefore, it is probable that emissions of the toxics are reduced by replacing the ESP with a thermal oxidizer. Compliance with 2D .1100 is expected.

ii. Monitoring/ Recordkeeping/ Reporting Requirements

No monitoring/ recordkeeping/ reporting will be required for compliance with this regulation.

**D. Uncontrolled Extrusion Sources including:**

**C 22 extrusion mixers [sixteen 1000-pound mixers (System #1) and six 1000-pound mixers (System #2); ID No. ES-1I]**

1. Description

The twenty-two (22) extrusion mixers were added in the September 28, 2001 permit modification by Michael Koerschner. These were existing sources which were inadvertently left off previous permits, because they have never been controlled.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	40 percent opacity	15A NCAC 2D .0521
odors	See Section VII(A)(1); <b>State enforceable only</b>	15A NCAC 2D .1806
volatile organic compounds	See Section VII(B)(1)	15A NCAC 2D .0958

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E = 4.10P^{0.67}$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

The capacity of each of these batch mixers is 1,000 pounds. Assuming a process rate of 1 ton per

hour, the allowable emission rate is:

$$E = 4.10(1.0)^{0.67} = 4.1 \text{ pounds per hour particulate}$$

Using data collected on a November 17, 1994 stack test, an emission factor for particulate of 0.8 pounds particulate per ton of extrusion mix was developed. The mixers tested were the smaller batch mixers and the greater surface area to mix mass assumably would generate a larger amount of particulate matter than the 22 mixers above. The testing was conducted by Trigon and measured condensibles, non-condensibles, and organics. The majority of the emissions were non-condensable particulates. Compliance with 2D .0515 is expected based on the 1994 stack test.

ii. Monitoring/Recordkeeping Requirements

The Permittee shall maintain production records which specify the types of materials and finishes processed and shall make these records available to a DAQ authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the production records are not maintained or the types of materials and finishes are not monitored. Stack testing is not required to ensure compliance with this regulation. However, the test method condition will be put in the permit in the event that DAQ finds that, due to improper operation, violations, etc., source testing is required.

b. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

The 22 extrusion mixers (ID No. ES-1I) were established prior to July 1, 1971, and they are subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period. Compliance is indicated with this regulation, because the latest inspection report did not cite any opacity exceedances.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**E. Fabric Filter Controlled Abrasive Blasting Units in Baking Department including:**

- a. one fabric filter (1,260 square feet of filter area; ID No. CD-2A-DC-5624) installed on a steel shot blast electrode cleaning machine (ID No. ES-2A; Building 56),
- b. one cartridge-type fabric filter (4,944 square feet of filter area, ID No. CD-2C-DC425) installed on a steel shot blast electrode cleaning operation (ID No. ES-2C)

1. Description

These fabric filters (ID Nos. CD-2A-DC-5624 and CD-2C-DC425) are installed on cleaning operations and are basically housekeeping (vacuum-cleaner) type filters. All material collected from these filters are dropped into fixed ‘supersack’ containers.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=55.0P^{0.11} - 40$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	40 percent opacity	15A NCAC 2D .0521
fugitive emissions	work practice standards	15A NCAC 2D .0541

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process rates greater than 30 tons per hour:

$$E' 55.0P^{0.11} \& 40$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

According to the Title V application, the process rate for the **steel shot blast electrode cleaning machine (ID No. ES-2A)** is 212,544 pounds per hour (106.3 tons per hour). Thus, the allowable emission rate is:

$$E = 55.0(106.3)^{0.11} - 40 = 51.9 \text{ pounds per hour particulate}$$

The Title V application reports before control particulate emissions from this source of 51.9 pounds per hour (based on the allowable emission rate). After control emissions reported in the Title V application are based on the 0.03 grains/cubic foot. Using this worst case assumption, average hourly emissions are:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{9,500 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 2.44 \text{ lbs./hr. particulate}$$

The bagfilter is reported to have a 99% control efficiency. Thus, compliance is expected.

According to the Title V application, the process rate for this **steel shot blast electrode cleaning operation (ID No. ES-2C)** is 366,455 pounds per hour (183.2 tons per hour). Thus, the allowable emission rate is:

$$E = 55.0(183.2)^{0.11} - 40 = 57.6 \text{ pounds per hour particulate}$$

The Title V application reports before control particulate emissions from this source of 57.6 pounds per hour (based on the allowable emission rate) indicating compliance.

After control emissions reported in the Title V application are on the 0.03 grains/cubic foot. Using this worst case assumption, average hourly emissions are calculated as follows:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{10,500 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 2.7 \text{ lbs./hr. particulate}$$

The bagfilter is reported to have a 99% control efficiency. Thus, compliance is expected.

## ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilters (ID Nos. CD-2A-DC-5624 and CD-2C-DC425), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of any pneumatic conveyors, screw conveyors, elevators, ductwork, and the fabric filters noting the structural integrity and visible emissions; and
- B.
  1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;
  2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and
- C. annual internal inspections of each fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 “Control of Visible Emissions”

i. Regulatory Analysis

The above emissions sources (ID Nos. ES-2A and ES-2C) were established prior to July 1, 1971, and they are subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period. Compliance is indicated with this regulation, because the latest inspection report did not cite any opacity exceedances.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

c. 2D .0541 “Control of Emissions from Abrasive Blasting”

i. Regulatory Analysis

Following are the requirements of this Rule. Since the abrasive blasting for the above two sources occur indoors, none of the following requirements in (b) and (c) below are applicable.

- (a) The Permittee shall ensure that any abrasive blasting operation conducted outside or conducted indoors and vented to the atmosphere is performed in accordance with the requirements set forth in 15A NCAC 2D .0521 “Control of Visible Emissions.” For the purposes of this Rule, the visible emissions readings for the abrasive blasting performed outside a building shall be taken at a spot approximately 1 meter above the point of abrasive blasting with a viewing distance of approximately 5 meters.

- (b) An abrasive blasting conducted under one of the following conditions is not required to be conducted within a building. Otherwise, all abrasive blasting operations shall be conducted within a building:
  - (1) when the item to be blasted exceeds 8 feet in any dimension;
  - (2) when the surface being blasted is situated at its permanent location or not further away from its permanent location than is necessary to allow the surface to be blasted; or
  - (3) when the abrasive blasting operation is conducted at a private residence or a farm and the visible emissions created by this abrasive blasting operation do not migrate beyond the property boundary of the private residence or farm on which the abrasive blasting is being conducted.
  
- (c) The Permittee of any abrasive blasting operation conducted in accordance with (b)(2) or (b)(3) of this condition, outside a building, shall take the appropriate measures to ensure that the fugitive dust emissions created by the abrasive blasting operation do not migrate beyond the property boundaries in which the abrasive blasting is being conducted. Appropriate measures include the following:
  - (1) the addition of a wet suppressant to the abrasive blasting material,
  - (2) wet abrasive blasting,
  - (3) hydroblasting,
  - (4) shrouded blasting, or
  - (5) shrouded hydroblasting.

**F. Other Fabric Filter Controlled Sources in Baking Department including:**

- C one fabric filter (3,090 square feet of filter area; ID No. CD-2B-DC427) installed on a small-round cleaning operation and media preparation (ID No. ES-2B) serving baking furnace Nos. 1 through 19 (Building 13),**
- C one fabric filter (6,500 square feet of filter area; ID No. CD-2F-DC5524) installed on the furnace packing media recycling processes (ID No. ES-2F; Building 55),**
- C one cartridge-type fabric filter (12,192 square feet of filter area, ID No. CD-2I-DC05) installed on the emission sources (ID No. ES-2I) from pit furnace sagger handling operations;**
- C two fabric filters (ID Nos. CD-BK-SR01 and CD-BK-SR02; 278 square feet of filter area, each) installed on two sand receiving silos (ID Nos. ES-2J01 and ES-2J02),**
- C one cartridge-type fabric filter (ID No. CD-2D-DC01; 8128 square feet of filter area) installed on a rebaked stock cleaning operation (ID No. ES-2K);**

1. Description

The fabric filter (3,090 square feet of filter area; ID No. CD-2B-DC427) installed on the small-round cleaning operation and media preparation (ID No. ES-2B) serving baking furnace Nos. 1 through 19 (Building 13) controls particulate from the media preparation for the recirculation furnaces. The media preparation consists of milling, mechanical conveying, and storage bins. The media is sand and coke. There are several pick-up points from this fabric filter, and each pick-up point could be construed as a separate operation for 2D .0515.

The fabric filter (6,500 square feet of filter area; ID No. CD-2F-DC5524) installed on the furnace packing media recycling processes (ID No. ES-2F; Building 55) controls particulate from the media preparation for the carbottom and pit baking furnaces. The media preparation consists of milling, mechanical conveying, and storage bins. The media is silica sand and coke. There are several pick-up points from this fabric filter, and each pick-up point could be construed as a different operation for 2D .0515.

The fabric filter (12,192 square feet of filter area, ID No. CD-2I-DC05) installed on emission sources (ID No. ES-2I) controls particulate emissions from the media handling/ recycling operations. Formerly, this unit handled the media prep/ recycling from Furnaces 20-28 which have been removed from service; however, this unit is still engaged in the same type of operation as previously (that is, pack media will be milled and/or recycled for use in the pit-type furnaces). There are several pick-up points from this fabric filter, and each pick-up point could be construed as a different operation for 2D .0515.

The two fabric filters (ID Nos. CD-BK-SR01 and CD-BK-SR02; 278 square feet of filter area, each) installed on two sand receiving silos (ID Nos. ES-2J01 and ES-2J02), are new sources added in the 9/28/01 permit modification. These sand receiving silos receive sand from the trucks which will pneumatically load the sand into the silos. The air stream carrying the sand will past through the bin vent filters, and the sand will be entrained in the silo.

The cartridge-type fabric filter (ID No. CD-2D-DC0; 8128 square feet of filter area) installed on a rebaked stock cleaning operation (ID No. ES-2K) is a new source added in Summer of 2001. The purpose of this filter is to control blow down of rebaked material from the carbottom furnaces using compressed air. This 'emission source' is really an improvement to the existing process. Prior to this filter, the rebaked stock was allowed to sit in the holding area where the soot which had collected on the stock would blow off whenever the wind blew.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ or $E=55.0P^{0.11} - 40$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity (ID Nos. ES-2I, ES-2J01, ES-2J02, and ES-2K) 40 percent opacity (ID Nos. ES-2B and ES-2F)	15A NCAC 2D .0521

a. 2D .0515 "Particulates from Miscellaneous Industrial Processes"

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E' = 4.10P^{0.67}$$

For process rates greater than 30 tons per hour:

$$E' = 55.0P^{0.11} - 40$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

**Evaluation for Compliance with 2D .0515**

Source	Process Rate	2D .0515 Applicable Formula	Allowable Emissions	After Control Emissions (TV application)	Compliance Expected?	Bagfilter Efficiency (Title V application)
ES-2B	7.66 tons/hr	$E=4.10P^{0.67}$	16.04 lbs/hr	2.44 lbs/hr <sup>1</sup>	yes	99%
ES-2F	183.2 tons/hr	$E=55.0P^{0.11} - 40$	57.6 lbs/hr	2.7 lbs/hr <sup>2</sup>	yes	99%
ES-2I	17 tons/hr	$E=4.10P^{0.67}$	27.4 lbs/hr	3.14 lbs/hr <sup>3</sup> (or 4.6 lbs/hr?)	yes	99.99%
ES-2J01 and ES-2J02	100 tons/hr per silo	$E=55.0P^{0.11} - 40$	51.3 lbs/hr per silo	0.21 lbs/hr <sup>4</sup> per silo	yes	99.92%
ES-2K	37.5 tons/hr	$E=55.0P^{0.11} - 40$	41.9 lbs/hr	3.86 lbs/hr <sup>5</sup>	yes	99.999%

<sup>1</sup>After control emissions for the source (ES-2B) are apparently (as reported in the 2000 emissions inventory ) based on the 0.03 grains/cubic foot. Using this worst case assumption, average hourly emissions are:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{18,900 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 4.86 \text{ lbs./hr. particulate}$$

<sup>2</sup>After control emissions for the source (ID no. ES-2F) are apparently (as reported in the 2000 emissions inventory ) based on the 0.03 grains/cubic foot. Average hourly emissions are calculated as follows:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{10,500 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 2.7 \text{ lbs./hr. particulate}$$

<sup>3</sup>Although the Title V application reports an after control emission rate of 3.14 lbs/hr for the source (ID No. ES-2I), after control emissions (as reported in the 2000 emissions inventory ) are based on the 0.03 grains/cubic foot. Average hourly emissions are calculated as follows:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{18,000 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 4.6 \text{ lbs./hr. particulate}$$

<sup>4</sup>The permit application predicts an after control emission rate of 0.21 lbs/hr for each of the sources (I D Nos. ES-2J01 and ES-

2J02), based on the 0.02 grains/cubic foot. Average hourly emissions are calculated as follows:

$$\frac{0.02 \text{ grains}}{\text{cubic foot}} \times \frac{1,200 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grain}} = 0.21 \text{ lbs./hr. particulate per silo}$$

If you use the AP-42 emission factor for sand drying with a fabric filter of 0.01 pounds particulate per ton sand dried. If it is assumed that the bin vent fabric filter performs similarly, emissions from loading 10 tons per hour would be 0.1 pound per hour:

$$\frac{10 \text{ tons}}{\text{hour}} \times \frac{0.01 \text{ lb.}}{\text{ton}} = 0.1 \text{ lbs./hr. particulate per silo}$$

From either analysis, compliance is expected.

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<sup>5</sup>The after control emission rate of 3.86 lbs/hr for the source (ID No. ES-2K) are based on the 0.03 grains/cubic foot. Average hourly emissions are calculated as follows:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{15,000 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 3.86 \text{ lbs./hr. particulate per silo}$$


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## ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilters (ID Nos. CD-2B-DC427, CD-2F-DC5524, CD-2I-DC05, CD-BK-SR01, CD-BK-SR02, and CD-2D-DC01 ), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of the pneumatic conveyors, screw conveyors, elevators, ductwork, and fabric filters noting the structural integrity and visible emissions; and
- B.
  1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;
  2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and
- C. annual internal inspections of each fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

## iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

## iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 “Control of Visible Emissions”

## i. Regulatory Analysis

The above emissions sources (**ID Nos. ES-2B and ES-2F**) were established prior to July 1, 1971, and they are subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

The above emissions sources (**ID Nos. ES-2I, ES-2J01, ES-2J02, and ES-2K**) were established after to July 1, 1971, and they are subject to 2D .0521(d). Per this regulation, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 87 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

## ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

## iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

## iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**G. Thermal Oxidizer Controlled Sources in Baking Department including:**

- C one natural gas/LPG-fired thermal oxidizer (6.5 million Btu per hour heat input; ID No. CD-2D-55F) installed on three carbottom-type natural gas/LPG gas-fired carbon electrode baking/rebaking furnaces Nos. 50, 51, and 52 (ID No. ES-2D; twelve 1.69 million Btu/hour maximum heat input burners per furnace),**
- C one natural gas/LPG-fired thermal oxidizer (5.0 million Btu per hour heat input; ID No CD-2E-**

57F61) installed on a natural gas/LPG-gas fired pit-type baking/rebaking furnace (ID No. ES-2E-57F61; twenty-four 0.5 million Btu per hour heat input and six 0.9 million Btu per hour heat input burners); and six natural gas/LPG-fired thermal oxidizers (3.1, 3.1, 3.1, 5.4, 4.9, and 4.9 million Btu per hour heat input, respectively; ID Nos. CD-2E-57F62 through CD-2E-57F65, CD-2E-05F66, and CD-2E-05F67) installed one each on five natural gas/LPG gas-fired pit-type carbon electrode baking furnaces (ID Nos. ES-2E-57F62 through ES-2E-57F65; six 2.7 million Btu per hour maximum rated heat input burners and three 1.03 million Btu per hour maximum rated heat input burners, each in Building 57), and two natural gas/LPG-fired pit type carbon electrode baking/rebaking furnaces (ID Nos. ES-2E-05F66 and ES-2E-05F67; nine 1.50 million Btu per hour maximum heat input burners and three 0.33 million Btu per hour burners, each, in Building 5),

- C nine movable hoods with ductwork to return fugitive emissions to the furnace for thermal oxidation,
- C two direct-flame natural gas/LPG-fired thermal oxidizers (ID Nos. CD-2H-04W4 and CD-2H-04E4; 5.33 and 16.38 million Btu per hour maximum heat inputs, respectively) installed on natural gas/LPG gas-fired baking furnaces Nos. 1-19 (16.38 million Btu per hour maximum heat input, each; ID No. ES-2H; CD-2H-04W4 installed on baking furnaces Nos. 1 through 9, and CD-2H-04E4 installed on baking furnaces Nos. 10 through 19)

1. Description

The electrode baking/ rebaking furnaces Nos. 50, 51, and 52 (ID No. ES-2D) cook the volatiles out of the carbon products. Baking is associated with removing the volatiles portion of the coal tar pitch from the ‘green’ extruded product. Re-baking refers to a second bake after pitch impregnation, which uses petroleum pitch. Both baking and re-baking emit volatiles in a certain temperature range, and while the furnace operates in this ‘critical’ temperature range, the thermal oxidizer (ID No. CD-2D-55F) is used to oxidize the emissions.

The pit-type baking furnaces (ID Nos. ES-2E-57F61 through ES-2E-57F67) cook the volatiles out of the carbon products. Baking is associated with removing the volatiles portion of the coal tar pitch from the ‘green’ extruded product. Re-baking is the densification of the product and only occurs after pitch impregnation. Both baking and rebaking emit volatiles in a certain temperature range and while the furnace operates in this ‘critical’ temperature range, each pit furnace has an associated thermal oxidizer used to oxidize the emissions. The furnaces #66 and #67 are used mainly for rebake, and furnaces #61 through #65 are used mainly for baking.

These ‘recirculation’ type furnaces (ID No. ES-2H) are used to bake green electrodes. Emissions are controlled by the thermal oxidizers which are homemade units consisting of furnaces with burners installed. The facility entered an agreement with the Unifour agency to install these afterburners to reduce visible emissions and comply with the opacity standard. The recirculation furnaces use the off gas of furnaces to heat other furnaces and then incinerate those gases in the thermal oxidizer on the way to the stack. The thermal oxidizers are basically empty furnaces which are refractory lined and approximately 80 feet long.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
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particulate matter	$E=4.10P^{0.67}$ or $E=55.0P^{0.11} - 40$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu	15A NCAC 2D .0516
visible emissions	20 percent opacity (ID Nos.ES-2E-57F61 through ES-2E-57F67) 40 percent opacity (ID Nos. ES-2D and ES-2H)	15A NCAC 2D .0521
nitrogen oxides	See Section VII.(E)(1)	Avoidance of 15A NCAC 2D .0530
odors	See Section VII.(A)(1); <b>State-enforceable only</b>	15A NCAC 2D .1806
volatile organic compounds	See Section VII.(B)(1)	15A NCAC 2D .0958
toxic air pollutants	See Section VII.(A)(2); <b>State-enforceable only</b>	15A NCAC 2D .1100

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E' 4.10P^{0.67}$$

For process rates greater than 30 tons per hour:

$$E' 55.0P^{0.11} \& 40$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

**Three carbottom-type natural gas/ LPG-fired carbon electrode baking/rebaking furnaces (ID No. ES-2D)**

According to the Title V application, the process rate for the three carbottom-type natural gas/ LPG-fired carbon electrode baking/rebaking furnaces (**ID No. ES-2D**) is calculated knowing that there are 400,000 pounds per batch and 156 batches per year for the 3 furnaces:

$$P = (400,000 \text{ pounds/batch}) \times (156 \text{ batches/year} / 3 \text{ furnaces}) \times (\text{year} / 8,760 \text{ hours}) = 2,374 \text{ pounds per hour}$$

$$E = 4.10(2,734/2,000)^{0.67} = 4.60 \text{ pounds per hour particulate}$$

However, as per Michael Koerschner's September 28, 2001 review, the average furnace load for the calendar year 2000 was 312,488 pounds (as per 2000 air emissions inventory). The average cycle time is approximately 75 hours. Thus the average process rate was approximately 4,166 pounds/furnace-hour or 2.08 tons/hr. Based on this the allowable emission rate is:

$$E = 4.10(2.08)^{0.67} = 6.7 \text{ pounds per hour particulate}$$

The Title V application reports that before and after control particulate emissions from this source to be 51.9 pounds per hour (based on the allowable emission rate) and 2.44 pounds per hour (after control), indicating compliance. The bagfilter is reported to have a 99% control efficiency.

Based on Michael Koerschner's 9/28/01 review, the emission factor for this type of operation from 2nd Edition "Air Pollution Engineering Manual," page 516, "Emission Factors for Primary Aluminum Production Processes" (Emission Factor Rating A) is 3.0 pounds of particulate per ton anode paste (coke and pitch). (This is the emission factor for uncontrolled particulate emitted from an anode baking furnace.) Using this emission factor, emissions from one of the furnaces with average load is:

$$\frac{4,166 \text{ pounds}}{\text{furnace-hour}} \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} \times \frac{3.0 \text{ pounds particulate}}{\text{ton charge}} = \frac{6.25 \text{ pounds particulate}}{\text{furnace-hour}}$$

Thus, based on Michael Koerschner's analysis, compliance is expected.

#### **Pit-type baking furnaces (ID Nos. ES-2E-57F61 through ES-2E-57F67)**

According to the Title V application, the process rate for the pit-type baking furnaces (ID No. ES-2E-57F61 through ES-2E-57F67) are 850,000 pounds per batch bake and 550,000 pounds per batch rebake for a total of 1,400,000 pounds per batch each. The batch time is approximately 69 hours per cycle for furnaces #66 and #67, and 296 hours per cycle for furnaces #61 through #65.

Thus, according to the Title V application, the allowable emission rate for furnaces **#61 through #65** is:

$$P = 1,400,000 \text{ pounds per batch} \times \frac{\text{batch}}{69 \text{ hours}} \times \frac{\text{ton}}{2,000 \text{ lbs.}} = 10.14 \text{ tons/hr}$$

$$E = 4.10(10.14)^{0.67} = 19.36 \text{ pounds per hour particulate}$$

According to the Title V application, the allowable emission rate for furnaces **#66 and #67** is:

$$P = 1,400,000 \text{ pounds per batch} \times \frac{\text{batch}}{296 \text{ hours}} \times \frac{\text{ton}}{2,000 \text{ lbs.}} = 2.36 \text{ tons/hr}$$

$$E = 4.10(2.36)^{0.67} = 7.3 \text{ pounds per hour particulate}$$

However, according to Michael Koerschner's 9/28/01 permit review, the baking furnaces #61 through #65 had an average furnace load of 558,000 pounds according to the 2000 emissions inventory, and the average cycle time was 296 hours. Thus, the average process rate was 558,000 pounds/furnace cycle/ 296 hours/cycle = 1,885 pounds/furnace-hour. Thus, the allowable emission rate for furnaces **#61 through #65** is:

$$E = 4.10(1,885/2,000)^{0.67} = 3.93 \text{ pounds per hour particulate}$$

Based on Michael Koerschner's 9/28/01 review, the emission factor for this type of operation from 2nd Edition "Air Pollution Engineering Manual," page 516, "Emission Factors for Primary Aluminum Production Processes" (Emission Factor Rating A) is 3.0 pounds of particulate per ton anode paste (coke and pitch). (This is the emission factor for uncontrolled particulate emitted from an anode baking furnace.) Using this emission factor, emissions from one of the furnaces with average load is:

$$\frac{1,885 \text{ pounds}}{\text{furnace-hour}} \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} \times \frac{3.0 \text{ pounds particulate}}{\text{ton charge}} = \frac{2.83 \text{ pounds particulate}}{\text{furnace-hour}}$$

Thus, based on Michael Koerschner's analysis, compliance is expected for furnaces #61 through #65.

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Based on Michael Koerschner's 9/28/01 permit review, the average furnace load for the rebaking furnaces #66 and #67 for the calendar year 2000 was 687,000 pounds. The average baking time was 69 hours. Thus, the average process rate was 687,000 pounds/furnace cycle/ 69 hours/cycle = 9,956 pounds/furnace-hour. Thus, the allowable emission rate for furnaces **#66 and #67** is:

$$E = 4.10(9,956/2,000)^{0.67} = 12.0 \text{ pounds per hour particulate}$$

Based on Michael Koerschner's 9/28/01 review, the emission factor for this type of operation from 2nd Edition "Air Pollution Engineering Manual," page 516, "Emission Factors for Primary Aluminum Production Processes" (Emission Factor Rating A) is 3.0 pounds of particulate per ton anode paste (coke and pitch). (This is the emission factor for uncontrolled particulate emitted from an anode baking furnace.) Using this emission factor, emissions from one of the furnaces with average load is:

$$\frac{9,956 \text{ pounds}}{\text{furnace-hour}} \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} \times \frac{3.0 \text{ pounds particulate}}{\text{ton charge}} = \frac{14.9 \text{ pounds particulate}}{\text{furnace-hour}}$$

This emission factor shows actual emissions to be greater than allowable. However, the emission factor does not account for the afterburner controls during the critical stage of the baking/rebaking process, which is 350-550 deg. F, the afterburners are turned on, and the emissions are destroyed with a 99.5% destruction efficiency.

The facility performed stack testing on one of the pit rebake furnaces (Furnace #66) in 1980, and that stack test indicated approximately 80 pounds of particulate emissions from a charge (pitch + coke) of approximately 687,000 pounds furnace capacity, which would indicate a controlled emission factor of 80 pounds/344 tons of anode (pitch + coke) = 0.23 pounds particulate per ton, which would be well below allowable, as follows:

$$\frac{9,956 \text{ pounds}}{\text{furnace-hour}} \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} \times \frac{0.23 \text{ pounds particulate}}{\text{ton charge}} = \frac{1.14 \text{ pounds particulate}}{\text{furnace-hour}}$$

Thus, based on Michael Koerschner's analysis, compliance is expected for furnaces #66 and #67.

#### **'Recirculation' type furnaces (ID No. ES-2H)**

Based on Michael Koerschner's 9/28/01 permit review, the average furnace stock weight is 136,394

pounds packed with 266,0000 pounds media and the average process takes 216 hours per cycle (per the 2000 air emissions inventory). The average process rate per furnace is therefore:

$$\frac{136,394 \text{ pounds stock} + 266,000 \text{ pounds media}}{216 \text{ hours}} = 1,862 \text{ pounds/hour} = 0.93 \text{ tons/hour}$$

Allowable emissions per 2D .0515 are therefore:

$$E = 4.10(0.93)^{0.67} = 3.90 \text{ pounds/ furnace-hour}$$

Based on Michael Koerschner's 9/28/01 review, the emission factor for this type of operation from 2nd Edition "Air Pollution Engineering Manual," page 516, "Emission Factors for Primary Aluminum Production Processes" (Emission Factor Rating: A) is 3.0 pounds of particulate per ton anode paste (coke and pitch). (This is the emission factor for uncontrolled particulate emitted from an anode baking furnace.) Using this emission factor, emissions from one of the furnaces with average load is:

$$\frac{1,862 \text{ pounds}}{\text{furnace-hour}} \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} \times \frac{3.0 \text{ pounds particulate}}{\text{ton charge}} = 2.79 \frac{\text{pounds particulate}}{\text{furnace-hour}}$$

Thus, compliance is indicated.

ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the thermal oxidizers (ID Nos. CD-2D-55F, CD-2E-57F61 through CD-2E-05F67, CD-2H-04W4, and CD-2H-04E4), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the Permittee shall perform an annual internal inspection of the primary heat exchanger and associated inlet/outlet valves to ensure structural integrity.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0516 "Sulfur Dioxide Emissions From Combustion Sources"

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, chimney shall not exceed 2.3 pounds per million Btu heat input. The natural gas-fired thermal

oxidizers installed on the above operations and the natural gas/ LPG gas-fired baking furnaces are subject to this regulation.

ii. Monitoring/Recordkeeping/Reporting Requirements

There are no testing, monitoring, recordkeeping, and reporting requirements for this source due to the inherently low sulfur content of natural gas and LPG.

The AP-42 emission factor for total sulfur dioxide emissions from natural gas combustion is 0.6 pounds of sulfur dioxide per million cubic feet combusted [ref: AP-42 Table 1.4-2; July 1998].

Assuming a heating value of 1,020 Btu per cubic foot, this equates to:

$$\frac{0.6 \text{ lb sulfur dioxide}}{1,000,000 \text{ cubic ft}} \times \frac{1 \text{ cuft}}{1,020 \text{ Btu}} \times \frac{1,000,000 \text{ Btu}}{\text{million Btu}} = 0.0006 \frac{\text{pounds}}{\text{million Btu heat input}}$$

The AP-42 emission factor for total sulfur dioxide emissions from LPG (propane) combustion is 0.1S pounds of sulfur dioxide per 1000 gallons of LPG (propane) fired [ref: AP-42, Section 1-6, 3/98]. Assuming a sulfur content of 1% (higher than expected), the worst case sulfur dioxide emissions from LPG (propane) combustion are:

$$\frac{0.10 (1) \text{ lb sulfur dioxide}}{1,000 \text{ gallon LPG}} \times \frac{1,000 \text{ gallons LPG}}{91.5 \text{ million Btu}} = \frac{0.0011 \text{ lb. sulfur dioxide}}{\text{million Btu heat input}}$$

Thus, compliance with the 2.3 pounds per million Btu limit is expected for natural gas and LPG.

c. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

The above emissions sources (**ID Nos. ES-2E-57F61 through ES-2E-57F67**) were established prior to July 1, 1971, and they are subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

The above emissions sources (**ID Nos. ES-2D and ES-2H**) were established after July 1, 1971, and they are subject to 2D .0521(d). Per this regulation, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 87 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible

emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**H. Specialty Products Department Source including:**

**C one fabric filter (1,056 square feet of filter area; ID No. CD-3A-DC5114) installed on a mini rod sagger handling operation (ID No. ES-3A; Building 51)**

1. Description

This filter controls the particulates generated by the media handling/ recycling from the mini-rod sagger operations. The mini-rod operations are basically a small scale version of the electrodes manufactured in the plant. The media is silica sand and coke. The fabric filter controls the material handling, specifically the sagger barrel dumping.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	40 percent opacity	15A NCAC 2D .0521

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour

$$E = 4.10P^{0.67}$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

The Title V application reports a maximum process rate for this source of 1 ton/hour. Thus, allowable emission rate based on the TV application is:

$$E = 4.10(1.0)^{0.67} = 4.1 \text{ pounds per hour particulate}$$

However, as per Michael Koerschner's 9/28/01 permit review, as per a 3/23/00 letter from Jerry Miller of SGL Carbon, the maximum process rate is 602 pounds per hour. Thus, the allowable emission rate as per Michael Koerschner's analysis is:

$$E = 4.10(602/2,000)^{0.67} = 1.8 \text{ pounds per hour particulate}$$

Reported emissions are based on the 0.03 grains/cubic feet of air. Using this worst-case assumption and the known air flow rate, the maximum hourly emissions are:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{3,168 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 0.81 \text{ lbs./hr. particulate}$$

The Title V application reports before and after control emissions to this sources as 4.10 lbs./hour and 0.81 lbs./hour, also indicating compliance. The bagfilter efficiency is reported to be 99.9%.

ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilter (ID No. CD-3A-DC5114), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of any pneumatic conveyors, screw conveyors, elevators, ductwork, and the fabric filter noting the structural integrity and visible emissions; and
- B.
  1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;
  2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and
- C. annual internal inspections of the fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 “Control of Visible Emissions”

i. Regulatory Analysis

The above emissions source (ID Nos. ES-3A) was established prior to July 1, 1971 and is subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**I Pitch Impregnation Source including:**

**C one natural gas/LPG gas-fired thermal oxidizer (3.14 million Btu per hour maximum heat input; ID No. CD-4A) installed on an emission source (ID No. ES-4A) consisting of four natural gas/LPG gas-fired pitch impregnation preheaters (1.69 million Btu per hour maximum heat input rate, each) and three pitch working tanks**

1. Description

Before the 9/28/01 permit modification, the preheaters previously had heat input capacities of 2.7, 2.7, 2.7, and 2.8 mmBtu/hr heat input rates each, but this was changed to 1.69 mmBtu/hr each in the 9/28/01 modification. The pitch impregnation fills the porous baked electrodes with carbonaceous material to increase the density of the product. The process consists of preheating the electrodes to approximately 275 degrees C (527 degrees F) and then placing the preheated electrodes into the liquid pitch under 150 psig pressure for a given time period (generally between 2.5 and 12 hours). The electrodes are mechanically transferred with steel baskets. The pitch impregnation occurs in one of three pressure vessels known as autoclaves which are uncontrolled. The pitch impregnation occurs at 150 psig, and the autoclaves are injected with city water prior to opening. The majority of the emissions are from the volatilization of the pitch in the preheaters. The preheaters and the three pitch working tanks are vented to a thermal oxidizer to eliminate the particulate/ volatiles/ smoke associated with the volatilization of the pitch. The thermal oxidizer was made by SGL Carbon and consists of two opposing burners in the flue. The combustion

temperature is 1,650 degrees F, and the residence time is greater than 0.5 seconds. SGL Carbon claims a greater than 95% destruction efficiency for the thermal oxidizer, and this is consistent with reference materials for this type of operation. (Ref: Table 8.4.6 Temperatures and Residence Times; Odor and VOC Control Handbook and Figure 3-7 Effects of temperature and residence time on rate of pollutant oxidation; EPA 450/2-81-005; Control of Gaseous Emissions.)

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ or $E=55.0P^{0.11} - 40$  where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
sulfur dioxide	2.3 pounds per million Btu	15A NCAC 2D .0516
visible emissions	40 percent opacity	15A NCAC 2D .0521
odors	See Section VII.(A)(1); <b>State-enforceable only</b>	15A NCAC 2D .1806
nitrogen oxides	See Section VII.(E)(1)	Avoidance of 15A NCAC 2D .0530
volatile organic compounds	See Section VII.(B)(1)	15A NCAC 2D .0958
toxic air pollutants	See Section VII.(A)(2); <b>State-enforceable only</b>	15A NCAC 2D .1100

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E' 4.10P^{0.67}$$

For process rates greater than 30 tons per hour:

$$E' 55.0P^{0.11} \& 40$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
 P = process weight in tons per hour

The Title V permit application reports a maximum process rate for this source of 25.5 tons per hour. Thus, the allowable emission rate per the Title V application is:

$$E = 4.10(25.5)^{0.67} = 35.9 \text{ pounds per hour particulate}$$

However, as per Michael Koerschner's 9/28/01 permit review, as per a 03/23/00 letter from Jerry Miller of SGL Carbon, the process rate for this operation is stated at approximately 71,614 lbs./hour. Thus, the allowable emission rate per 2D .0515 is:

$$E = 55.0(71,614/2,000)^{0.11} - 40 = 41.5 \text{ pounds per hour particulate}$$

The emissions inventories report that the only particulate emissions expected from this operation is from the combustion of natural gas/LPG in the preheaters and the thermal oxidizer. The total heat input of the 4 preheaters and thermal oxidizer is 14.04 million Btu per hour. Thus, the projected emission rate is:

$$\frac{14.04 \text{ million Btu}}{\text{hour}} \times \frac{0.007 \text{ pounds particulate}}{\text{million Btu heat input}} = 0.1 \text{ lbs./hr. particulate}$$

Thus, compliance is expected.

ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the thermal oxidizer (ID Nos. CD-4A), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the Permittee shall perform an annual internal inspection of the primary heat exchanger and associated inlet/outlet valves to ensure structural integrity.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

The above emissions source (ID Nos. ES-4A) was established prior to July 1, 1971 and is subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity

when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**J. Graphite Department**

**C one fabric filter (10,260 square feet of filter area, ID No. CD-5A-DC2324) installed on the following equipment (collectively ID No. ES-5A):**

- i. one chip bin hood (ID No. C2331),**
- ii. one "T" core drill (ID No. C2347),**
- iii. one bucket elevator (ID No. C2330),**
- iv. one large cleaning machine (ID No. C2315),**
- v. one large band saw (ID No. C2348),**
- vi. one small band saw (ID No. C16143),**
- vii. one "L" core drill (ID No. C2346),**
- viii. one sample grinder (ID No. C2302),**
- ix. rail hoods (ID No. C2304),**
- x. a railcar loading operation,**
- xi. by-products material bagging machine, and**
- xii. miscellaneous graphite machining operations**

1. Description

This fabric filter controls the working of converted graphite material. The majority of the controlled emissions are from the cleaning machine, which basically brushes the graphite electrodes.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
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particulate matter	$E=4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	20 percent opacity	15A NCAC 2D .0521

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E = 4.10P^{0.67}$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

The Title V permit application reports a maximum process rate for this source of 30.0 tons per hour. Thus, the allowable emission rate per the Title V application is:

$$E = 4.10(30.0)^{0.67} = 40.0 \text{ pounds per hour particulate}$$

Actual emissions are reported based on the 0.03 grains per cubic foot of air. With a bagfilter air flow rate of 30,000 acfm, actual emissions are reported to be:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{30,000 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 7.71 \text{ lbs./hr. particulate}$$

Thus, compliance is expected.

ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilter (ID No. CD-5A-DC2324), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of the pneumatic conveyors, screw conveyors, elevators, ductwork, and fabric filters noting the structural integrity and visible emissions; and
- B. 1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;

2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and

- C. annual internal inspections of each fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

- iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log.

- iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

- b. 2D .0521 “Control of Visible Emissions”

- i. Regulatory Analysis

The above emissions source (ID Nos. ES-5A) was established after July 1, 1971 and is subject to 2D .0521(d). Per this regulation, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 87 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

- ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

- iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

- iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**K. Graphite Department furnaces consisting of:**

**C twelve electric lengthwise graphitizing (LWG) furnaces (collectively ID No. ES-5E; Building 24)**

1. Description

These are the graphitizing furnaces which convert the carbon to the graphite structure through the use of heat. In this process, the baked carbon stock is loaded into LWG furnaces and covered with media. Electricity is used to generate heat for graphitizing. These LWG furnaces were originally permitted in 1992 and were brought on-line slowly to replace the older Acheson-type graphitizing furnaces. The LWG process is a batch type process. Packing media (petroleum coke with a maximum 0.9% sulfur content) is placed in the furnace, creating a bed of media. The baked stock to be graphitized is placed in the furnace end-to-end from one electrode to the other. Then, more packing media is put in the stock. The packing media prevents oxidation of the stock by keeping out air and also acts as an insulator to keep the heat evenly distributed in the process. Electricity is run through the stock, which generates the heat due to the carbon's resistance, and temperatures up to 2,750 degrees Fahrenheit are obtained. The electricity runs anywhere between 9 and 22 hours per day. All emissions from this source are fugitive in nature (i.e. no stack), and all of the emissions exhaust the building through roof monitors (basically an open area at the peak of the roof).

This is a source of hydrogen sulfide; thus, 2D .1806 applies. Complaints of hydrogen sulfide type ("rotten egg") odors were received in the Asheville Regional Office on 1/22/99 and 4/22/99 soon after the facility implemented the LWG as the sole graphitizing furnace and the Acheson type furnaces were phased out. However, since that time, the ARO has not received any odor complaints and no odors have been noted off-site during compliance inspections (though odors are noticeable at the LWG furnaces), and compliance is expected.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
	See Section VII.(C)(1)	Avoidance of 15A NCAC 2D .0530
sulfur dioxide	See Section VII.(D)(1)	Avoidance of 15A NCAC 2D .0530
visible emissions	20 percent opacity	15A NCAC 2D .0521
toxic air pollutants	See Section VII.(B)(2)	15A NCAC 2D .1100
odors	See Section VII.(A)(1)	15A NCAC 2D .1806

- a. 2D .0515 "Particulates from Miscellaneous Industrial Processes"

## i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E = 4.10P^{0.67}$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

The Title V permit application reports a maximum process rate for this source of 17.0 tons per hour. Thus, the allowable emission rate per the Title V application is:

$$E = 4.10(17.0)^{0.67} = 27.36 \text{ pounds per hour particulate}$$

According to the Title V application, particulate emissions are negligible from this source. However, according to Michael Koerschner's 9/28/01 permit review, the original application for these furnaces reports emissions to be 0.85 pounds/furnace-hour x 12 furnaces = 10.2 pounds per hour. Thus, compliance is expected.

## ii. Monitoring/Recordkeeping Requirements

The Permittee shall maintain production records which specify the types of materials and finishes processed and shall make these records available to a DAQ authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0515 if the production records are not maintained or the types of materials and finishes are not monitored. Stack testing is not required to ensure compliance with this regulation. However, the test method condition will be put in the permit in the event that DAQ finds that, due to improper operation, violations, etc., source testing is required.

b. 2D .0521 "Control of Visible Emissions"

## i. Regulatory Analysis

The above emissions source (ID Nos. ES-5E) was established after July 1, 1971 and is subject to 2D .0521(d). Per this regulation, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 87 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

## ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

## iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**L. Other Fabric Filter Controlled Sources in Graphite Department including:**

- C one fabric filter (11,016 square feet of filter area; ID No. CD-5I-DC2474) installed on a packing media recycling process line (ID No. ES-5I),**
- C one fabric filter (813 square feet of filter area; ID No. CD-5J-DC5803) installed on a stock machining and conveying line (ID No. ES-5J),**
- C one fabric filter (1,829 square feet of filter area, ID No. CD-5L-DC101) installed on a LWG media crusher system (ID No. ES-5L, Building 10),**
- C one fabric filter (400 square feet of filter area, ID No. CD-5L-BV101, Building 24), installed on a LWG media storage bin (ID No. D-406)**

1. Description

The fabric filter (11,016 square feet of filter area; ID No. CD-5I-DC2474) installed on a packing media recycling process line (ID No. ES-5I) is used to recycle the packing media from the LWG operations for reuse. The fabric filter handles the hot media and is controlled to operate at approximately 350 degrees Fahrenheit. The hot media is dumped from hoppers into a bed of a water-cooled belt conveyor, where it is cooled from approximately 1650 degrees Fahrenheit to approximately 750 degrees Fahrenheit. From the belt conveyor, the media is dropped into a fluidized bed 'deduster' which further cools the media and also separates the finer particles which are less than 65 microns from heavier particles via air separation. The fines stream goes to the fabric filter, and the remaining materials go back into the process (mechanically conveyed up a bucket elevator to a silo.)

The fabric filter (813 square feet of filter area; ID No. CD-5J-DC5803) installed on a stock machining and conveying line (ID No. ES-5J) is associated with the LWG operations in that the baked stock is 'faced' prior to entry into the LWG furnaces. The facing is necessary to provide smooth contact between the adjacent pieces of stock.

The LWG media crusher system (ID No. ES-5L, Building 10) and associated fabric filter (1,829 square feet of filter area, ID No. CD-5L-DC101) sizes the LWG media for use in the LWG furnaces.

This operation (LWG media transfer / storage, ID No. D-406) with associated fabric filter (400 square feet of filter area, ID No. CD-5L-BV101, Building 24) is used to transfer the crushed/ classified LWG media from the crushing/ classifying operations and is also capable of processing 10 tons LWG media per hour.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application

was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ or $E=55.0P^{0.11} - 40$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
	See Section VII.(C)(1) (Source ID Nos. ES-5I and ES-5J only)	Avoidance of 15A NCAC 2D .0530
visible emissions	20 percent opacity	15A NCAC 2D .0521

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights up to 30 tons per hour:

$$E = 4.10P^{0.67}$$

For process weights greater than 30 tons per hour:

$$E = 55.0P^{0.11} - 40$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
 P = process weight in tons per hour

**Packing media recycling process line (ID No. ES-5I)**

The Title V permit application reports a maximum process rate for the packing media recycling process line (ID No. ES-5I) of 37.2 tons per hour. Thus, the allowable emission rate per the Title V application is:

$$E = 55.0(37.2)^{0.11} - 40 = 41.9 \text{ pounds per hour particulates}$$

According to the Title V application, the bagfilter was stack tested by Trigon Engineering, and the measured particulate emission rate was 2.5 pounds per hour. Thus, compliance is expected.

**Stock machining and conveying line (ID No. ES-5J)**

The Title V permit application reports a maximum process rate for this stock machining and conveying line (ID No. ES-5J) of 36 tons per hour. Thus, the allowable emission rate per the Title V application is:

$$E = 55.0(36)^{0.11} - 40 = 41.6 \text{ pounds per hour particulates}$$

Actual emissions are reported based on the 0.03 grains per cubic foot of air. With a bagfilter air flow rate of 4,200 acfm, actual emissions are reported to be:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{4,200 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 1.08 \text{ lb./hr. particulate}$$

Thus, compliance is expected.

**LWG media crusher system (ID No. ES-5L, Building 10)**

The maximum process rate for the LWG media crusher system (ID No. ES-5L) as reported in the original application is 10 tons/hour. Thus, the allowable emission rate is:

$$E = 4.10(10)^{0.67} = 19.2 \text{ pounds per hour particulates}$$

Actual emissions are reported based on the 0.03 grains per cubic foot of air. With a bagfilter air flow rate of 10,000 acfm, actual emissions are reported to be:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{10,000 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 2.57 \text{ lb./hr. particulate}$$

Thus, compliance is expected.

**LWG media storage bin (ID No. D-406)**

The maximum process rate for the LWG media storage bin (ID No. D-406) as reported in the original application is 10 tons/hour. Thus, the allowable emission rate is:

$$E = 4.10(10)^{0.67} = 19.2 \text{ pounds per hour particulates}$$

Actual emissions are reported based on the 0.03 grains per cubic foot of air. With a bagfilter air flow rate of 900 acfm, actual emissions are reported to be:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{900 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 0.23 \text{ lb./hr. particulate}$$

Thus, compliance is expected.

ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilters (ID No. CD-5I-DC2474, CD-5J-DC5803, CD-5L-DC101, and CD-5L-BV101), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of any pneumatic conveyors, screw conveyors, elevators, ductwork, and the fabric filters noting the structural integrity and visible emissions; and
- B. 1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper

operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;

2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and

- C. annual internal inspections of each fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

- iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log book.

- iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

- b. 2D .0521 "Control of Visible Emissions"

- i. Regulatory Analysis

The above emissions sources (ID Nos. ES-5I, ES-5J, ES-5L, and D-406) were established after July 1, 1971 and is subject to 2D .0521(d). Per this regulation, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 87 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

- ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

- iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

- iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**M. Source in Finishing Department including:**

- C one fabric filter (8,652 square feet of filter area; CD-6A-DC1164) installed on a graphite finishing operation (ID No. ES-6A)**

1. Description

This fabric filter is used to control the particulates generated by the machining of the finished graphite pieces. Various tools are vented to this device. This is a vacuum cleaner type fabric filter with a bin storing the controlled particulates.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

<b>Regulated Pollutant</b>	<b>Limits/Standards</b>	<b>Applicable Regulation</b>
particulate matter	$E=55.0P^{0.11} - 40$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	40 percent opacity	15A NCAC 2D .0521

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights greater than 30 tons per hour:

$$E' 55.0P^{0.11} \& 40$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

The Title V permit application reports a maximum process rate for this source of 114,000 pounds per hour (57 tons per hour). Thus, the allowable emission rate per the Title V application is:

$$E = 55.0(57)^{0.11} - 40 = 45.8 \text{ pounds per hour particulates}$$

Actual emissions are reported based on the 0.03 grains per cubic foot of air. With a bagfilter air flow rate of 50,000 acfm, actual emissions are reported to be:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{50,000 \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 12.8 \text{ lb./hr. particulate}$$

Thus, compliance is expected.

ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilter (ID No. CD-6A-DC1164), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of the pneumatic conveyors, screw conveyors, elevators, ductwork, and fabric filters noting the structural integrity and visible emissions; and
- B.
  1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;
  2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and
- C. annual internal inspections of each fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log book.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

The above emissions source (ID Nos. ES-6A) was established prior to July 1, 1971 and is subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity

when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**N. Woodworking Source in Finishing Department including:**

**C one fabric filter (200 square feet of filter area; ID No. CD-6B) installed on the carpentry shop woodworking operation (ID No. ES-6B)**

1. Description

This filter is used to control the woodworking operations used to make shipping crates for the various graphite operations.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

<b>Regulated Pollutant</b>	<b>Limits/Standards</b>	<b>Applicable Regulation</b>
particulate matter	adequate ductwork and properly designed collectors	15A NCAC 2D .0512
visible emissions	20 percent opacity	15A NCAC 2D .0521

a. 15A NCAC 2D .0512 “Particulates From Wood Products Finishing Plants”

i. Regulation Analysis

This regulation requires “adequate ductwork and properly designed collectors” for the collection of “particulate matter caused by the working, sanding, or finishing of wood.” This system uses a fabric filter ultimately to control the woodwaste. Properly operated and maintained fabric filters installed on woodworking operations are considered properly designed collectors. Compliance with .0512 is indicated with proper operation and maintenance.

ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilter (ID No. CD-6B), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of the pneumatic conveyors, screw conveyors, elevators, ductwork, cyclones, and fabric filters noting the structural integrity and visible emissions; and
- B.
  1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;
  2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and
- C. annual internal inspections of each fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D .0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log which shall be kept on site.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 "Control of Visible Emissions"

i. Regulatory Analysis

The above emissions source (ID Nos. ES-6B) was established prior to July 1, 1971 and is subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once an hour nor more than four times in any 24-hour period.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**O. Sources in Salvage Department including:**

**C one fabric filter (1,056 square feet of filter area; ID No. CD-7B-DC2502) installed on a centerless grinder operation for graphite rods (ID No. ES-7B), and**

**C one fabric filter (170 square feet of filter area; ID No. CD-7C-DC2578) installed on a vertical boring mill (ID No. ES-7C)**

1. Description

At these sources, the finished material is machined per customer specifications and for in-plant use. A variety of different equipment is used for the finishing, including saws, lathes, drills, and grinders.

2. Applicable Regulatory Requirements

The following provides a summary of limits and/or standards for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	$E=4.10P^{0.67}$ where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
visible emissions	40 percent opacity	15A NCAC 2D .0521

a. 2D .0515 “Particulates from Miscellaneous Industrial Processes”

i. Regulatory Analysis

The allowable particulate emission limit is calculated by the following equation:

For process weights greater than 30 tons per hour:

$$E = 4.10P^{0.67}$$

where: E = allowable emission rate for particulate matter in pounds per hour, and  
P = process weight in tons per hour

The Title V permit application reports a maximum process rate for this source of 15,220 pounds per hour. Thus, the allowable emission rate is:

$$E = 4.10(15,220/2,000)^{0.67} = 15.97 \text{ pounds particulates per hour}$$

Actual emissions are reported based on the 0.03 grains per cubic foot of air. Using this assumption and the known airflow rates for both collectors of 3,168 acfm and 475 cfm, maximum hourly emissions are:

$$\frac{0.03 \text{ grains}}{\text{cubic foot}} \times \frac{(3,168 + 475) \text{ cuft}}{\text{minute}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{\text{pound}}{7,000 \text{ grains}} = 0.93 \text{ lb./hr. particulate}$$

Thus, compliance is expected.

## ii. Monitoring Requirements

To ensure that optimum control efficiency of particulate matter is obtained by the bagfilters (ID Nos. CD-7B-DC2502 and CD-7C-DC2578), inspections and maintenance will be performed as recommended by the manufacturer. As a minimum, the inspections will include:

- A. weekly external inspection of any pneumatic conveyors, screw conveyors, elevators, ductwork, and fabric filters noting the structural integrity and visible emissions; and
- B.
  1. monthly preventative maintenance (PM) on cartridge-type fabric filters including checking filter cartridges, screw flights, drive units, pressure drop readings, checkerboard panel for any alarms and/or problems which may have been detected, checking for fatigue cracks in the collector housing and fan housing, checking pulse valves for proper operation, checking screw and rotary valves for proper operation, checking fan bearings, belts, and sheaves;
  2. monthly preventative maintenance (PM) on bag-type fabric filters including recording pressure drop readings, checking collector housing and fan housing for cracks, checking blow down system, checking fan sheaves, belts, and bearings, checking screw conveyor for proper operation, checking pump valves for proper operation, checking bins for content levels; and
- C. annual internal inspections of each fabric filter noting the structural integrity and the condition of the filters.

Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required. Testing requirements are specified in 2D

.0501(c).

iii. Recordkeeping Requirements

The results of the inspection and maintenance shall be recorded in a log, which shall be kept on-site.

iv. Reporting Requirements

A summary report of the monitoring will be submitted by January 30 and July 30 of each year. The results of any maintenance to the ductwork and filters shall be reported within 30 days of a written request by DAQ.

b. 2D .0521 “Control of Visible Emissions”

i. Regulatory Analysis

The above emissions sources (ID Nos. ES-7B and ES-7C) were established prior to July 1, 1971 and is subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute averaging not more than 90 percent opacity may occur not more than once any hour nor more than four times in any 24-hour period.

ii. Monitoring Requirements

The Permittee will either observe the emission points of the sources above once a week for visible emissions above normal or perform a Method 9. Weekly observations should provide reasonable assurance of compliance. The Permittee will establish what normal visible emissions are through recordkeeping.

iii. Recordkeeping Requirements

The results of the observations and tests along with any corrective actions taken to reduce visible emissions shall be recorded in a log.

iv. Reporting Requirements

A summary report of the observation results will be submitted by January 30 and July 30 of each year.

**P. Boilers including:**

**C one natural gas/LPG-fired extrusion boiler (12.041 million Btu maximum rated heat input; ID No. ES-CB230), and**

**C two natural gas/LPG-fired plant boilers (14.523 million Btu maximum rated heat input each; ID Nos. ES-PB233N and ES-PB233S) to be replaced with one natural gas/LPG-fired (12.247 million Btu per hour maximum heat input; ID No. ES-PB-233; NSPS Subpart Dc)**

1. Description

The boilers at this facility are used for process and space heat. The proposed boiler (ID No. ES-PB, 12.247 million Btu per hour heat input capacity) will be used as replacement for the two boilers (ID Nos. ES-PB233N and ES-PB233S, 14.523 million Btu per hour heat input rate each). The replacement boiler (ID No. ES-PB) is NSPS-affected since it was constructed after June 9, 1989.

In addition to the boilers listed, there are four small hot oil heaters which are insignificant activities but have a combined heat input capacity of 5 million Btu per hour as per the Title V application. These hot oil heaters are used to keep the petroleum and the tar pitch in a liquid state.

2. Applicable Regulatory Requirements

The following provides a summary of emission and/or operation limits for the emission source(s) described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Regulated Pollutant	Limits/Standards	Applicable Regulation
particulate matter	0.41 pounds per million Btu heat input for the one natural gas/LPG-fired extrusion boiler (12.04 million Btu per hour rated heat input; ID No. ES-CB-230)	15A NCAC 2D .0503
	0.41 pounds per million Btu heat input for the two natural gas/ LPG-fired plant boilers (14.52 million Btu per hour maximum rated heat input each, ID Nos. ES-PB233N and ES-PB233S)	
	0.45 pounds per million Btu heat input for the one natural gas/ LPG-fired plant boiler (12.247 million Btu per hour maximum rated heat input, ID No. ES-PB233 (replacing ES-PB233N and ES-PB233S))	
sulfur dioxide	2.3 pounds per million Btu heat input	15A NCAC 2D .0516
visible emissions	20 percent opacity	15A NCAC 2D .0521
NA	recordkeeping only; monthly fuel records  (applies only to the natural gas/LPG-fired plant boiler (12.247 million Btu per hour maximum rated heat input, ID No. ES-PB233 (replacing boilers ES-PB233N and ES-PB233S))	15A NCAC 2D .0524 (40 CFR Part 60 Subpart Dc)
nitrogen oxides	See Section VII.(E)(1)	Avoidance of 15A NCAC 2D .0530

a. **2D .0503(a) "Particulates from Fuel Burning Indirect Heat Exchangers"**

i. Regulatory Analysis

This rule applies to installations burning fuel, including natural gas and fuel oils, for the purpose of producing heat or power by indirect heat transfer.

Allowable emissions of particulate matter from fuel combustion shall be calculated as follows:

$$E = 1.090 Q^{0.2594}$$

where: E = allowable particulate emission rate, pounds per million Btu  
 Q = maximum heat input rate (total at plant site), million Btu per hour

**Boilers (ID Nos. ES-CB-230, ES-PB233N, and ES-PB233S)**

Allowable particulate emissions for boilers (ID Nos. ES-CB-230, ES-PB233N, and ES-PB233S) are determined based on a total plant site heat input rate from the fuel-fired indirect heat exchangers before the replacement boiler is added. Following are the heat inputs:

Boiler (ID No. ES-CB-230): 12.04 million Btu per hour  
 Boilers (ID Nos. ES-PB233N and ES-PB233S): 14.52 million Btu per hour each = 29.04 million Btu per hour

Hot Oil Heaters: 5 million Btu per hour

Total = 46.08 million Btu per hour

$$E = 1.09 \times (46.08)^{0.2594} = 0.41 \text{ pound per million Btu}$$

**Boiler (ID No. ES-PB233)**

Allowable particulate emissions for the boiler (ID Nos. ES-PB233) are determined based on a total plant site heat input rate from the fuel-fired indirect heat exchangers after the replacement boiler is added. Following are the heat inputs:

Boiler (ID No. ES-CB-230): 12.04 million Btu per hour  
 Boilers (ID Nos. ES-PB233): 12.247 million Btu per hour

Hot Oil Heaters: 5 million Btu per hour

Total = 29.29 million Btu per hour

$$E = 1.09 \times (29.29)^{0.2594} = 0.454 \text{ pound per million Btu}$$

The AP-42 emission factor for total particulate emissions from natural gas combustion is 7.6 pounds of particulate per million cubic feet combusted [ref: AP-42 Table 1.4-2; July 1998]. Assuming a heating value of 1,020 Btu per cubic foot, this equates to:

$$\frac{7.6 \text{ lb particulate}}{1,000,000 \text{ cubic ft}} \times \frac{1 \text{ cuft}}{1,020 \text{ Btu}} \times \frac{1,000,000 \text{ Btu}}{\text{million Btu}} = 0.007 \frac{\text{pounds particulate}}{\text{million Btu heat input}}$$

Thus, compliance is indicated while firing with natural gas.

The AP-42 emission factor for total particulate emissions from LPG gas combustion is 0.6 pounds of particulate per million 1000 gallons of LPG (propane) fired [ref: AP-42 Table 1.5-1; 10/96]. Assuming a heating value of 91.5 million Btu per 1000 gallons LPG, this equates to:

$$\frac{0.6 \text{ lb particulate}}{1,000 \text{ gallons LPG}} \times \frac{1,000 \text{ gallons LPG}}{91.5 \text{ million Btu}} \times \frac{1,000,000 \text{ Btu}}{\text{million Btu}} = 0.007 \frac{\text{lbs particulate}}{\text{million Btu}}$$

Thus, compliance is indicated while firing with LPG.

ii. Monitoring/Recordkeeping/Reporting Requirements

Since the potential particulate emissions are less than the allowable, no monitoring, recordkeeping

or reporting are required. Stack testing is not required to ensure compliance with this regulation. However the test method condition will be put in the permit in the event that DAQ or EPA finds that due to improper operation violations, etc, source testing is required.

b. **2D .0516 "Sulfur Dioxide Emissions From Combustion Sources"**

i. Regulatory Analysis

Sulfur dioxide emissions from any source of combustion that is discharged from any vent, stack, or chimney shall not exceed 2.3 pounds per million Btu heat input.

ii. Monitoring/Recordkeeping/Reporting Requirements

There are no testing, monitoring, recordkeeping, and reporting requirements for this source due to the inherently low sulfur content of natural gas and LPG.

The AP-42 emission factor for total sulfur dioxide emissions from natural gas combustion is 0.6 pounds of sulfur dioxide per million cubic feet combusted [ref: AP-42 Table 1.4-2; July 1998]. Assuming a heating value of 1,020 Btu per cubic foot, this equates to:

$$\frac{0.6 \text{ lb sulfur dioxide}}{1,000,000 \text{ cubic ft}} \times \frac{1 \text{ cuft}}{1,020 \text{ Btu}} \times \frac{1,000,000 \text{ Btu}}{\text{million Btu}} = 0.0006 \frac{\text{pounds}}{\text{million Btu heat input}}$$

The AP-42 emission factor for total sulfur dioxide emissions from LPG (propane) combustion is 0.1S pounds of sulfur dioxide per 1000 gallons of LPG (propane) fired [ref: AP-42, Section 1-6, 3/98]. Assuming a sulfur content of 1% (higher than expected), the worst case sulfur dioxide emissions from LPG (propane) combustion are:

$$\frac{0.10 (1) \text{ lb sulfur dioxide}}{1,000 \text{ gallon LPG}} \times \frac{1,000 \text{ gallons LPG}}{91.5 \text{ million Btu}} = \frac{0.0011 \text{ lb. sulfur dioxide}}{\text{million Btu heat input}}$$

Thus, compliance is expected.

c. **2D .0521 "Control Of Visible Emissions"**

i. Regulatory Analysis

Visible emissions shall not exceed 20 percent opacity when averaged over a six-minute period for sources established after July 1, 1971. Compliance with this regulation will be indicated by inspection of the facility.

ii. Monitoring Requirements

There are no monitoring/recordkeeping/reporting requirements for natural gas/LPG-fired boilers.

d. **2D .0524 "New Source Performance Standards" (40 CFR 60 Subpart Dc)**

i. Regulatory Analysis

The **replacement boiler only (ID No. ES-PB233)** is subject to the visible emission and sulfur dioxide limitations in NSPS Part 60 Subpart Dc since it was constructed after June 9, 1989 and has a

maximum design heat capacity greater than 10 million Btu per hour. **Note:** There are no Subpart Dc emission limitations for natural gas combustion.

This boiler is subject to the initial reporting requirements of Subpart Dc. The only other NSPS Subpart Dc requirement is the requirement under 40 CFR 60.48c(g) which requires that “the owner or operator of each affected facility shall record and maintain records of the amounts of each fuel burned each day.” EPA has since determined that monthly accounting of the amount of natural gas fired in a given unit is acceptable. [ref: 12/7/2000 letter from R. Douglas Neeley, Chief, Air and Radiation Technology Branch’ Air Pesticides, and Toxics Management Division, to Rob Raney, P.E.]

ii. Monitoring Requirements/ Recordkeeping/ Reporting Requirements

As stated above, the facility must keep monthly records of the amount of natural gas fired in a given unit. No reporting shall be required

**VII. Multiple Emission Source Limits**

**STATE-ONLY REQUIREMENTS**

**A. Facility-wide affected sources**

The above emission sources are subject to this multiple emission source limit.

<b>Regulated Pollutant</b>	<b>Limits/Standards</b>	<b>Applicable Regulation</b>
odors	odorous emissions must be controlled; <b>State enforceable only</b>	15A NCAC 2D .1806
toxic air pollutants	Toxic air pollutant emissions shall not exceed their modeled acceptable ambient levels; <b>State - enforceable only</b>	15A NCAC 2D .1100

**STATE-ONLY REQUIREMENT: ODOR REQUIREMENTS**

**1. 15A NCAC 2D .1806: CONTROL AND PROHIBITION OF ODOROUS EMISSIONS**

- a. The Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

**2. TOXIC AIR POLLUTANT EMISSIONS LIMITATION AND REPORTING REQUIREMENT - Pursuant to 15A NCAC 2D .1100 "Control of Toxic Air Pollutants," and in accordance with the approved application for an air toxic compliance demonstration, the following permit limits shall not be exceeded:**

<b>Emission Source(s)</b>	<b>Toxic Air Pollutant(s)</b>	<b>Emission Limit(s)</b>
graphitizing furnaces (ID Nos. ES-5E)	hydrogen sulfide	15.0 lb/hr

- a. To ensure compliance with the above limits, the following restrictions shall apply:

- i. the total material weight processed in each of the three carbottom-type carbon electrode baking furnaces Nos. 50, 51, and 52 (ID No. ES-2D; Building 55) shall be limited to no more than 5,753 pounds per hour.
- b. For compliance purposes, within 30 days after then end of each calendar year quarter, regardless of actual emissions, the following shall be reported to the Regional Supervisor, Division of Air Quality:
  - i. the total monthly material weight processed in each of the three carbottom-type carbon electrode baking furnaces Nos. 50, 51, and 52 (ID No. ES-2D; Building 55).

**Note: In 1993, facility-wide modeling was conducted which demonstrated compliance with 2D .1100. In Michael Koerschner’s September 28, 2001 permit review, he revisited the modeling that was conducted in 1993 to see which modeled emission rates had changed.**

Following are the estimated toxic air pollutant emissions after the removal of No. 2 fuel oil:

Toxic Air Pollutant	Modeled Facility-Wide Emission Rate	Estimated Emissions After Removal of No. 2 Fuel Oil at Facility	Contribution from Revised Natural Gas Combustion Emission Factor	Still under AAL?
arsenic	7.7 pounds per year	0 pounds per year	n/a	yes and now less than 2Q .0711 TPER
benzene	165.41 pounds per year	165.41 pounds per year	10.41 pounds per year	yes, 37% of AAL
benzo(a)pyrene	5.1 pounds per hour	5.1 pounds per hour	decrease	yes
beryllium	4.58 pounds per year	0 pounds per year	n/a	yes and now less than 2Q .0711 TPER
cadmium	1.92 pounds per year	0 pounds per year	n/a	yes and now less than 2Q .0711 TPER
chromium VI	0.312 pounds per year	0 pounds per year	n/a	yes and now less than 2Q .0711 TPER
formaldehyde	0.308 pounds per hour	0.308 pounds per hour	decrease	yes
hydrogen sulfide	1.36 pounds per hour	1.36 pounds per hour	n/a	yes, but since hydrogen sulfide was only modeled at 7% of AAL, the facility requested a higher limit of 15 lbs./hour in their last permit modification of 9/28/01 which is 79% of AAL
mercury	0.054 pounds per day	0 pounds per day		yes and now less than 2Q .0711 TPER

Toxic Air Pollutant	Modeled Facility-Wide Emission Rate	Estimated Emissions After Removal of No. 2 Fuel Oil at Facility	Contribution from Revised Natural Gas Combustion Emission Factor	Still under AAL?
nickel	3.08 pounds per day	nickel emissions only from material processing	n/a	yes and now less than 2Q .0711 TPER

**B. Facility-wide Affected Sources:**

The above emission sources are subject to this multiple emission source limit.

Regulated Pollutant	Limits/Standards	Applicable Regulation
volatile organic compounds	Work Practice Standards	15A NCAC 2D .0958

\*Note: 2D .0958 “applies to all facilities that use VOCs as solvents, carriers, material processing media, or industrial chemical reactants, or in other similar uses or that mix blend or manufacture volatile organic compounds, or emit volatile organic compounds as a product of chemical reactions.” These operations consist of the mixing of pitch and coke, and pitch is considered a VOC. Thus, this rule does apply. However, there are no control requirements under 2D .0958 that would apply to this operation.

**1. 15A NCAC 2D .0958: WORK PRACTICES FOR SOURCES OF VOLATILE ORGANIC COMPOUNDS**

**a. Pursuant to 15A NCAC 2D .0958, for all sources that use volatile organic compounds (VOC) as solvents, carriers, material processing media, or industrial chemical reactants, or in similar uses that mix, blend, or manufacture volatile organic compounds, or emit volatile organic compounds as a product of chemical reactions, and whose emissions of VOC are greater than 15 pounds per day; the Permittee shall:**

- (1) store all material, including waste material, containing volatile organic compounds in tanks or in containers covered with a tightly fitting lid that is free of cracks, holes, or other defects, when not in use,
- (2) clean up spills of volatile organic compounds as soon as possible following proper safety procedures,
- (3) store wipe rags containing volatile organic compounds in closed containers,
- (4) not clean sponges, fabric, wood, paper products, and other absorbent materials with volatile organic compounds,
- (5) transfer solvents containing volatile organic compounds used to clean supply lines and other coating equipment into closable containers and close such containers immediately after each use, or transfer such solvents to closed tanks, or to a treatment facility regulated under section 402 of the Clean Water Act,
- (6) clean mixing, blending, and manufacturing vats and containers containing volatile organic compounds by adding cleaning solvent and close the vat or container before agitating the cleaning solvent. The spent cleaning solvent shall then be transferred into a closed container, a closed tank or a treatment facility regulated under section 402 of the Clean Water Act. [15A NCAC 2D .0958(c)]

- b. When cleaning parts with a solvent containing a volatile organic compound, the Permittee shall:
- (1) flush parts in the freeboard area,
  - (2) take precautions to reduce the pooling of solvent on and in the parts,
  - (3) tilt or rotate parts to drain solvent and allow a minimum of 15 seconds for drying or until all dripping has stopped, whichever is longer,
  - (4) not fill cleaning machines above the fill line,
  - (5) not agitate solvent to the point of causing splashing. [15A NCAC 2D .0958(d)]

**Monitoring**

- c. To assure compliance with paragraphs (a) and (b) above, the Permittee shall, at a minimum, perform a visual inspection once per month of all operations and processes utilizing volatile organic compounds. The inspections shall be conducted during normal operations. If the required inspections are not conducted the permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0958.

**Recordkeeping**

- d. The results of the inspections shall be maintained in a log (written or electronic format) on-site and made available to an authorized representative upon request. The log shall record the following:
- i. the date and time of each inspection; and
  - ii. the results of each inspection noting whether or not noncompliant conditions were observed.
- If the required records are not maintained the permittee shall be deemed to be in noncompliance with 15A NCAC 2D .0958.

**Reporting**

- e. The Permittee shall submit a summary report of the observations by January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

**Explanation of PSD Avoidance Conditions for PM-10 and Sulfur Dioxide Below in Sections 2.2(C) and 2.2(D)**

*Below are PSD avoidance conditions for PM-10 and Sulfur Dioxide. As per Tony Pendola's permit review for Air Permit No. 03827R21 which was issued on 4/14/99, following is the history of the PSD avoidance conditions when the PSD avoidance conditions were revisited.*

*In 1991, this facility requested a permit modification for the addition of 12 Lengthwise Graphitizing (LWG) Furnaces concurrent with the removal of 19 of the older Acheson type furnaces. The permit application demonstrated that the net sulfur dioxide increase was less than 40 tons per year; thus, the modification was not a "significant" modification for PSD (for SO<sub>2</sub>). Air Permit No. 3287R14 was issued on 4/3/92. The permit contained a PSD-avoidance condition for PM<sub>10</sub> because at that time, the facility was unsure what percent of the PM generated by the process was less than or equal to 10 microns. In addition, to assure that the SO<sub>2</sub> increment was not "PSD-significant," the permit limited the sulfur content of the petroleum coke to be used in the LWG's to 0.9% sulfur or less. The facility eventually removed all of the remaining Acheson-type furnaces (19 + 61 = 80 total Acheson furnaces removed from service) and currently 'graphitizes' with the 12 LWG furnaces only. When the PSD avoidance condition was revisited with Tony Pendola's permit modification in 1999, the facility reviewed production records for the calendar years prior to 1999 and estimated that the annual average sulfur dioxide emissions for the 24-month period from January 1, 1987 through December 31, 1998 was 419.53 tons (ref: January 12, 1999 letter from Mr. Jerry Miller). To avoid PSD, the facility requested a limit on sulfur dioxide emissions from graphitizing of the baseline (419.53 tons) plus significance (39.9 tons) or 459.4 tons per year.*

**C. LWG furnaces (ID No. ES-5E), packing media recycling department (ID No. ES-5I), and machining department (ID No. ES-5J)**

The above emission sources are subject to this multiple emission source limit.

<b>Regulated Pollutant</b>	<b>Limits/Standards</b>	<b>Applicable Regulation</b>
PM <sub>10</sub>	Less than 15 tons per year	Avoidance of 15A NCAC 2D .0530

**1. LIMITATION TO AVOID 15A NCAC 2D .0530 "PREVENTION OF SIGNIFICANT DETERIORATION"**

- a. To comply with this permit and avoid the applicability of 15A NCAC 2D .0530, "Prevention of Significant Deterioration," as requested by the Permittee, PM<sub>10</sub> emissions from the LWG furnaces (ID No. ES-5E), packing media recycling department (ID No. ES-5I), and machining department (ID No. ES-5J) shall be less than 15 tons per consecutive twelve (12) month period.
  - i. To ensure enforceability of this limit the following restrictions shall apply:
    - A. total usage of petroleum coke shall not exceed 11,400,000 pounds per consecutive twelve (12) month period, and
    - B. total monthly 80-ton batches of petroleum coke processed by the packing media recycling department shall not exceed 150.
- b. For compliance purposes, within thirty days after each calendar year quarter, the following shall be reported to the Regional Supervisor, Division of Air Quality:
  - i. the monthly PM<sub>10</sub> emissions for the previous fourteen (14) months. The emissions must be calculated for each of the three twelve month periods over the previous fourteen months,
  - ii. the total weight in pounds of petroleum coke (including packing media) processed in the LWG furnaces, and
  - iii. the total weight in pounds of petroleum coke processed in the packing media recycling department.

**D. Graphitizing operations (ID No. ES-5E; Building No. 24)**

The above emission sources are subject to this multiple emission source limit.

<b>Regulated Pollutant</b>	<b>Limits/Standards</b>	<b>Applicable Regulation</b>
sulfur dioxide	Less than 459.4 tons per year	Avoidance of 15A NCAC 2D .0530

**1. LIMITATION TO AVOID 15A NCAC 2D .0530 "PREVENTION OF SIGNIFICANT DETERIORATION"**

- a. To comply with this permit and avoid the applicability of 15A NCAC 2D .0530, "Prevention of Significant Deterioration," as requested by the Permittee, sulfur dioxide emissions from the graphitizing operations (ID No. ES-5E; Building No. 24) shall be less than 459.4 tons per consecutive 12-month period.
- b. For compliance purposes, within thirty days after each calendar year quarter, the following shall be reported to the Regional Supervisor, Division of Air Quality:
  - i. the monthly sulfur dioxide (SO<sub>2</sub>) emissions from the graphitizing operations (ID No. ES-5E; Building No. 24) for the previous 14 months. The emissions must be calculated for each of the three 12-month periods over the previous 14 months.

**E. Coal Tar Pitch Storage (ID No. ES-1H), Car Furnaces 50-52 (ID No. ES-2D), Carbon Baking/Rebaking Furnaces (ID No. ES-2E), Carbon Baking in Recirculation Furnaces (ID No. ES-2H), Pitch Impregnation (ID No. ES-4A), Boilers (ID Nos. ES-CB230, ES-PB233N and ES-PB233S to be replaced with ES-PB233), and Hot Oil Heaters**

The above emission sources are subject to this multiple emission source limit.

Regulated Pollutant	Limits/Standards	Applicable Regulation
nitrogen oxides	Less than 200 million Btu per hour heat input from LPG combustion to avoid triggering "significant increase"	Avoidance of 15A NCAC 2D .0530

**1. LIMITATION TO AVOID 15A NCAC 2D .0530 "PREVENTION OF SIGNIFICANT DETERIORATION"**

- a. To comply with this permit and avoid the applicability of 15A NCAC 2D .0530, "Prevention of Significant Deterioration," as requested by the Permittee, nitrogen oxide emissions from combusting LPG gas instead of natural gas shall be less than the PSD significance levels. To ensure this, facility-wide LPG combustion shall not exceed 200 million Btu per hour heat input.

**VIII. MACT Applicability and Requirements**

Based on a review of the facility's current operations and emission sources, the facility will not be subject to any MACT standards.

**IX. Permit Shield (including non-applicable requirements)**

In accordance with 2Q .0512 the permit will contain a provision stating that compliance with the terms, conditions, and limitations of the Title V permit shall be deemed in compliance with applicable requirements specifically identified in the permit, as of the date of permit issuance. If the permit does not expressly state that a permit shield exists then it shall be presumed not to provide such a shield.

**X. Other Applicable Requirements**

None.

**XI. General Conditions**

The “General Conditions” section of the Title V Operating Permits lists additional applicable rule requirements that the permittee must adhere to, as with any other permit condition. These requirements in general are common to all Title V facilities. The general conditions include provisions such as annual fee payment, permit renewal and expiration, transfer of ownership or operation, property rights, submission of documents, inspections and entry procedures, reopen for cause, and severability.

**XII. Insignificant Activities**

The insignificant activities listed in the application have been reviewed and verified. Because an emission source or activity is insignificant does not mean that the emission source or activity is exempted from any applicable requirement or that the owner or operator of the source is exempted from demonstrating compliance with any applicable requirement.

<b>Emission Source Description</b>	<b>Basis for Exemption</b>
four natural gas/ LPG (propane)-fired hot oil heaters (1.269 million Btu per hour maximum rated heat input each)	NCAC 2D .0503(8)
one special products natural gas/ LPG (propane)-fired boiler (1.26 million Btu per hour maximum rated heat input)	NCAC 2D .0503(8)
one softwood, steam-heated, lumber kiln (12 feet x 12 feet x 16 feet)	NCAC 2D .0503(8)
pitch impregnation autoclaves and liquid ring vacuum pump	NCAC 2D .0503(8)
pitch railcar unloading	NCAC 2D .0503(8)
permatrode operation	NCAC 2D .0503(8)
pitch tank maintenance operations	NCAC 2D .0503(8)

**XIII. Public Notice**

Pursuant to 15A NCAC 2Q .0521, a notice of the draft Title V Operating Permit shall be placed in a newspaper of general circulation in the area where the facility is located. The notice will provide for a 30 day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA.

**XIV. Recommendations**

The initial Title V application for SGL Carbon Corporation has been reviewed by the DAQ to determine compliance with all procedures and requirements under 15A NCAC 2Q .0500 and 40 CFR Part 70. The DAQ has made a preliminary determination that the facility is complying or will achieve compliance as specified in the draft permit with all applicable requirements. Therefore, the DAQ is proposing to issue the Title V Operating Permit upon completion of the public comment period and the EPA review.