

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

PROPOSED Air Permit Review

Permit Issue Date: **XX XX**, 2008

Region: Fayetteville Regional Office
County: Scotland
NC Facility ID: 8300027
Inspector's Name: Robert Hayden
Date of Last Inspection: June 4 and 12, 2008
Compliance Code: C/In Compliance With Procedural Reqr

Facility Data			Permit Applicability (this application only)
Applicant (Facility's Name): Pilkington, NA Facility Address: Pilkington, NA Highway 74 East Laurinburg, NC 28352 SIC: 3211 / Flat Glass NAICS: 327211 / Flat Glass Manufacturing Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V			SIP: 2D .0515, .0516, .0521, 2D .0614 NSPS: N/A NESHAP: N/A PSD: N/A PSD Avoidance: Yes NC Toxics: Yes 112(r): Yes Other: N/A
Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	Application Number: 8300027.07A Significant Modification (Part 2) and 8300027.05A Renewal Date Received: 02/22/2007 Application Type: Modification Application Schedule: TV-Sign-501(d)(2) Existing Permit Data Existing Permit Number: 03873/T26 Existing Permit Issue Date: 12/18/2006 Existing Permit Expiration Date: 08/31/2007
Shaunna Johnson Environmental Manager (910) 291-2737 Hwy 74 East Laurinburg NC, 28353	Christopher DeCerbo Plant Manager (910) 291-2635 Highway 74 East Laurinburg NC, 28353	Shaunna Johnson Environmental Manager (910) 291-2737 Hwy 74 East Laurinburg NC, 28353	
Review Engineer: Charles F. Yirka Review Engineer's Signature: November 13, 2008		Date: XX XX, 2008 Comments / Recommendations: Issue: 03873/T27 Permit Issue Date: XX/XX/2008 Permit Expiration Date: XX/XX/2013	

I. Introduction and Purpose of Application:

Description

Pilkington North America, Inc. (PNA) owns and operates a flat glass manufacturing facility in Laurinburg, Scotland County, North Carolina (PNA Laurinburg). PNA manufactures glass via a float glass process. Last inspection was on March 14, 2007 by Robert Hayden. PNA operates 24 hours per day/ 7 days per week/ 365 days per year. There are approximately 265 employees.

PNA produces flat glass using the float glass manufacturing technique. This process entails mixing the ingredients (sand, soda ash, dolomite, and coloring agents) and melting them in glass furnace. The facility is split into Hot End (where the material is made in furnaces then treated, and cooled in the LEHRs) and Cold End (following Lehrwall where the material is cut and handled). Material is bottlenecked and sized (1/8" to 3/4" thick) and is then processed (i.e. floated) on molten tin. This produces glass with two clean sides. Glass is then coated/treated (as needed) and cooled. Process takes approximately 30 min to 2 hrs depending on the thickness.

There are two float furnaces, referred to as 75f1 (ES01) and 75f2 (ES02). Each float furnace is permitted to operate at 45.8 tons per hour (1100 tons per day). The actual maximum operating rate is based on the physical limits of each furnace and product quality concerns. 75f1 was in their final stages of re-bricking during the inspection. The

inspectors had the opportunity to view the inside the furnace while looking at the heating nozzles. 75f2 furnace was re-bricked in 2002 with a maximum normal operating fill rate of 39.25 tons per hour (due to product quality concerns).

Low-E glass (used for home and commercial buildings to reduce the radiation into and out of the structure) is produced on both furnace lines. Low-E glass is not produced simultaneously on the two furnace lines. The Low-E process and chemicals are proprietary/confidential. The larger “pollution plant” controls fluoride emissions from both furnaces lines. The pollution control equipment consists of a thermal oxidizer followed by a lime neutralization process and bagfilter.

Summary

Following is a description in chronological order of the recent permit applications:

Application No.	Received Date	Processing Procedure	Summary	Public Notice and EPA Review Required?
8300027.02A	March 25, 2002	2Q .0501(d)	Initial title V permit Permit issued	Yes
8300027.05A ^{Note}	November 30, 2005	2Q .0501(d)	Permit renewal	Yes
8300027.06A	July 24, 2006	2Q .0501(c)(2)	Significant modification; Step 1 of 2 Permit issued	No
8300027.07A ^{Note}	February 22, 2007	2Q .0501(d)	Significant modification; Step 2 of 2	Yes

Note: these two applications have been consolidated under the renewal; public notice and EPA reviews are required

Purpose of Application

PNA Laurinburg has been making the following improvements to Furnace 75f1 during a cold repair/rebricking project that is in the final phase:

- Oxy-Boost Firing: Add two “oxy-boost” burners at the top of the melter. The oxy-boost burners shall be fired by natural gas and oxygen (vs. ambient air). Because oxy-boost burners produce a hotter flame temperature than air-fuel burners, generally fuel combustion in the main furnace burners is reduced to maintain the desired heat input and operating pressures in the furnace. The oxy-boost system could potentially increase the hourly production rate at the glass furnace.
- Oxygen Enrichment: Conduct maintenance and improvements to the existing oxygen enrichment system. The oxygen enrichment system adds oxygen to air in the regenerators in order to reduce the natural gas usage required for combustion. PNA Laurinburg indicates that the oxygen enrichment system may improve fuel efficiency in the melter, but may not be used to increase the hourly production rate at the furnace.
- Water Spray: Add a water spray incorporating atomized water particles to the furnace combustion air stream upstream of the heat regenerators. This improves heat transfer from the hot checker brick to the air/water mixture in the regenerators. PNA Laurinburg indicates that the heat recovery achieved through the proposed water spray system is intended to improve fuel efficiency in the melter, but may not be used to increase the hourly production rate at the furnace.

To avoid PSD major modification permitting requirements resulting from the potential hourly production rate increase associated with the oxy-boost system, PNA Laurinburg proposed PSD avoidance limitations pursuant to 15A NCAC 2Q .0317. Issues concerning 75f1 that relate to operating scenarios, such as oxy-boost and oxygen enrichment appear to be resolved pending SSCB approval . The permit required testing on all three operating scenarios before December 15, 2007. This will validate the PSD avoidance status as well as the NSPS non-applicability¹ of that furnace’s modification. To demonstrate compliance with the PSD avoidance

¹ If the addition of the oxyboost system resulted in an emission increase per ton of glass produced, the “capital expenditure” exclusion would not apply, and the change could have triggered applicability of the NSPS to Furnace 75f1. The stack test did not indicate an increase in the emission factor (i.e., >0.82 lbs PM/ton draw), therefore a permit modification will not be required to incorporate the requirements of 15A NCAC 2D .0524 (40 CFR 60, Subpart CC).

limitations, the permit required the Permittee to conduct stack testing of the Furnace 75f1 (**ID No. ES01**) to determine source-specific NO_x and PM-10 emission factors. The stack test must be conducted while firing natural gas (the only fuel PNA Laurinburg is presently able to fire at Furnace 75f1) and while operating both the oxygen enrichment and oxy-boost systems. No stack test is required for SO₂ based on the inherently low sulfur content in natural gas.

While testing is *not required* while firing No. 2 or No. 6 fuel oil, the permit allows the Permittee to conduct additional testing while firing these fuels to determine fuel-specific emission factors to be used in the monthly and 12-month rolling emissions calculations. After a DAQ-authorized delay, testing was conducted February 19-21, 2008. Those results were received by DAQ on May 1, 2008, and appear to indicate compliance / non-applicability. The test is still under review at SSCB.

Also as part of that modification, PNA Laurinburg requested that references to emissions sources that have been permanently removed from service (ID Nos. ES06a, ES06c, and ES06d) be removed from the permit, along with associated control devices. DAQ also included existing line-cutting source into the permit (ID Nos. ICLOL, ES-CL1, and ES-CL2). The line-cutting sources are only affected by the VOC work practice standards pursuant to 15A NCAC 2D. 0958.

Since the cold repair/rebricking project of Furnace 75f2 in 2002, visible emissions have been a concern, the following actions were pursued to remedy the situation:

The source now has a 40% opacity limit approved under application 8300027.06A. Method 5 and concurrent Method 9 source testing was completed in December 2004. Method 9 was conducted simultaneously to attempt to correlate and draw a conclusion regarding the relationship of PM10 and opacity. A temporary COMS was also installed to collect stack opacity data during this testing. The source test results were problematic, but DAQ concluded there were sufficient grounds to approve the 40% change, contingent on annual particulate emissions testing to validate. Since then determining PM emissions from Float 2 has been problematic. The permit modification that authorized the change to 40% opacity and included an annual PM test requirement to ensure continued compliance, and provided better QA data than have previous stack tests. The testing conducted on March 25, 2008 produced very unusual results. See Pilkington letter dated June 23, 2008, requesting that test be discarded as invalid. Testing by a different company was conducted and is still pending.

PNA Laurinburg submitted a permit application for renewal of the permit that was consolidated with the significant modification described above. A description of the modification follows:

The application for the significant modification referenced the title V application's CAM plan. CAM is required at renewal for those sources that have an applicable emissions standard, are controlled by control device and have potential before control emissions greater than the major source amounts e.g., 100 tpy of criteria pollutants or 10/25 tons per year of HAPs.

It was determined the CAM would apply to some of the bagfilters associated with small PSEUs and therefore subject to CAM for PM10 emissions.

II. Statement of Compliance

Ms. Sally McKinney of the Fayetteville Regional Office (FRO) conducted an inspection on June 17, 2005. She identified potential visible emissions issues at both float glass furnaces (ID Nos. ES01 and ES02). Subsequent stack tests at Furnace 75F2 (ID No. ES02) indicated that visible emissions from the furnace exceeded the permitted 20% opacity standard (pursuant to 15A NCAC 2D .0521). On August 11, 2006, FRO issued a Notice of Violation (NOV) to PNA Laurinburg for exceeding the standard. However, the permit was modified (Application No. 8300027.06A, Permit No. 03873T25) to change the applicable standard from 20% opacity to 40% opacity. The facility appeared to be in compliance with all other standards and requirements in the Air Quality Permit.

The next inspection was conducted on March 14, 2007 by Mr. Robert Hayden and Mr. Don Burke of FRO. Any concerns expressed therein are addressed by the renewal permit.

The next inspection was conducted on June 4 and 12, 2008 by Mr. Robert Hayden. Current issues are as follows:

1. Excess Visible Emissions from 75f2 – Facility now has a 40% opacity limit. Since re-bricking the furnace in 2002, VE has been a concern. Method 5 and concurrent Method 9 source testing was completed in December 2004. Method 9 was completed simultaneously to attempt to correlate and draw a conclusion regarding the relationship of PM10 and opacity. A temporary COMS was also installed to collect stack opacity data during this testing. The source test results were problematic, but DAQ concluded there were sufficient grounds to approve the 40% change, contingent on annual particulate emissions testing to validate.
2. Issues related to 75f1 relate to operating scenarios, such as oxy-boost and oxygen enrichment. The permit required testing on all three operating scenarios before December 15, 2007 to validate the PSD avoidance status as well as the NSPS non-applicability of that furnace's modification. After a DAQ-authorized delay, testing was conducted February 19-21, 2008. Those results were received by DAQ on May 1, 2008, and appear to indicate compliance / non-applicability. The test is still under review at SSCB.
3. Determining PM emissions from Float 2 has been problematic. The permit modification that authorized the change to 40% opacity and included an annual PM test requirement to ensure continued compliance and provide better QA data than have previous stack tests. The testing conducted on March 25, 2008 produced very unusual results. See Pilkington letter, dated June 23, 2008, requesting that test be discarded as invalid. Testing by a different company was conducted.
4. PM10 testing on Float #2 while firing No. 2 fuel oil and required PM10 testing for Float #1 while firing No. 6 fuel oil. This source testing requirement has been waived until the facility fires fuel oil. Since issuance of TV permit, the facility has fired only natural gas in the furnaces.

The report notes that the facility is in compliance with procedural requirements. The renewal permit retains the testing requirements described above.

On July 30, 2008, Ms. Debra McHargue and Mr. Robert Hayden of DAQ conducted an on-site compliance inspection of the RMP to determine compliance with the Program Level 3 requirements of 40 CFR Part 68. The inspectors documented several violations generally relating to records non-availability and plan currency. Additionally, the inspection revealed that the responsibility for managing the on-site hydrogen has not been determined. A Notice of Violation for 40 CFR Part 68 (Risk Management) was issued

The renewal permit addresses the 112(r) program as required by Part 70.

On October 2, 2008 an NOV was issued for violation of NCAC 2D .0515. With the promulgation of NCAC 2D .2600, "Source Testing," with an effective date of June 1, 2008 the Rule .2609(a) clarified and defined how particulate emissions are to be calculated, requiring that condensable particulate matter be included when determining emissions from sources not addressed by other (federal) regulations. Stack testing results since 2003 from the facility indicates that including the condensable fraction demonstrates an exceedence from both glass melting furnaces (ID Nos. ES-01 and ES-02) of the limit stipulated in NCAC 2D .0515, and a violation of the Air Quality Permit, stipulation 2-1.A.1 and 2-1.B.1.

On October 2, 2008 an addendum to the previous inspection report was submitted by Mr. Steven Vozzo of FRO. Additional issues are as follows:

1. The plant manager has changed the new Plant Manager is Mr. Christopher DeCerbo.
2. Compliance inspection on June 12, 2008 indicated the facility appeared to be in compliance.
3. As per meeting on October 1, 2008 the facility does not appear to be in compliance with the NCAC 2D .0515 since the promulgation of the Rule 2D .2609 on June 1, 2008 which indicates condensable matter shall be considered. As far back as 2003 stack testing indicated that neither of the two furnaces 75f1 or 75f2 can show compliance when the back-half Method 202 condensables are considered. The Division had previously been operating under the May 4, 2001 policy per A. Klimek. A schedule of compliance is being

developed. This Rule is still state enforceable only as it has not been adopted under the Federally approved SIP.

Apparently the Plant Manager was approved to be the Responsible Official by FRO and IBEAM was updated. The permit has been updated by replacing the old rule 2D .0508 with new rule 2D .2600.

III. Regulatory Review:

- A. 15A NCAC 2D .0515, "Particulates from Miscellaneous Industrial Processes" – Particulate matter (PM) standards provided in this regulation are applicable to potential PM emissions from any stack, vent, or outlet for which no other emission control standards are applicable. Furnace 75f1 (ID No. ES01) is currently affected by this standard and will continue to be affected by the standard following completion of the proposed modifications associated with rebricking, oxy-boost, oxy-enrichment, and water spray. The proposed modifications, including the installation of the oxy-boost system at the melter and water spray in the heat regeneration area and repair/improvement of the oxygen enrichment system were not anticipated to increase PM emission rates at the furnace. It appears the testing will confirm this.

Pursuant to the standard, emissions of filterable PM from Furnace 75f1 (ID No. ES01) shall not exceed an allowable emission rate as calculated by the following equations:

For process rates up to 30 tons per hour:

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

For process rates greater than 30 tons per hour:

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

Where E = allowable emission rate in pounds per hour (lbs/hr); and,

P = process weight in tons per hour (tph)

Assuming the maximum fill rate of 45.8 tph, the maximum allowable PM emission rate is 43.76 lbs/hr, as shown below:

$$E = 55.0 \times 45.8^{0.11} - 40$$

$$E = 43.76 \text{ lbs/hr}$$

PNA Laurinburg has shown through source testing that PM is emitted from the melting process at a rate of 0.82 pounds per ton of glass drawn (lbs/ton draw).² Assuming a maximum draw rate of 39 tph, the maximum estimated PM emission rate is 32.0 lbs/hr.³

DAQ is not proposing to add any *additional* testing, monitoring, recordkeeping, or reporting requirements to this section of the permit as a part of this modification because:

1. PM emission rates are not anticipated to be affected by the proposed modifications; and,
2. The maximum estimated PM emission rate is less than 75% of the allowable PM emission rate.
3. The required testing appears to verify that the unit is not subject to NSPS and validate the PSD avoidance status.

The inspection report 6/19/08 indicates;

For the last few years, particulate emissions have been estimated for both furnaces based on results of March 2004, December 2004 and June 2007 stack testing of ES02 (Furnace 75f2), all of which indicated compliance, despite test data issues, and were approved to justify the raising of ES02's opacity limit to 40%. Both furnaces were tested in 2008 for PM but the results are pending DAQ approval. The February 19-21 testing for ES01 (Furnace 75f1) and on ES02 in May. DAQ approval is anticipated on all tests, and those data have been used for the 2007 Emissions Inventory as the most

² Emissions from the melter include waste gas resulting from natural gas combustion at the burners within the melter and from the melting process itself.

³ The "maximum fill rate" (45.8 tph) refers to the maximum rate at which raw material can be charged to the melter. The "maximum draw rate" (39 tph) refers to the maximum rate at which molten glass can be produced in the furnace. The draw rate is less than the fill rate because approximately 15% of the raw material mass is lost from the batch during the glass fusion process.

representative data. It was determined that ES02 is in compliance with the PM BACT limit in air permit 3873T24. When the PM BACT limit was established in 1979, it was based on filterable PM only. The first permit the PM BACT limit was in was 3873R02 on May 1, 1979.

In addition to confirming particulate emissions compliance, the testing was conducted to evaluate the significance of the modification (furnace rebuild, plus additions of two types of oxygen-adding technology) on NSPS applicability. A significant emissions increase would indicate a significant modification and NSPS applicability.

RCO concurs; compliance is assumed.

- B. 15A NCAC 2D .0516 – Sulfur Dioxide Emissions From Combustion Sources – This regulation limits SO₂ emissions to no greater than 2.3 lb/MMBtu of heat input for combustion sources that are unaffected by SO₂ limits in other state or Federal regulations. Furnace 75f1 (ID No. ES01) has SO₂ emissions associated both with fuel combustion and the decomposition of sulfates in the molten glass.

Based on the inherently low sulfur contents of both natural gas and No. 2 fuel oil, the DAQ anticipates compliance with this emission standard. Previous stack testing of the glass melting furnace demonstrated a SO₂ emission rate of 1.1 lbs/ton draw. Assuming a maximum draw rate of 39 tons draw/hr and a maximum heat input rate of 300 MMBtu/hr, the estimated SO₂ emission rate would be 0.14 lbs SO₂/MMBtu, as shown in the following calculation:

$$(1.1 \text{ lbs SO}_2/\text{ton draw}) * (39 \text{ tons draw/hr}) / (300 \text{ MMBtu/hr}) = 0.14 \text{ lbs SO}_2/\text{MMBtu}$$

However, SO₂ emissions from No. 6 fuel oil firing are likely to be higher than emissions resulting from No. 2 fuel oil and natural gas firing. Although Furnace 75f1 (ID No. ES01) is not currently equipped to fire No. 6 fuel oil, PNA Laurinburg is permitted to fire this fuel. The existing permit limits the maximum sulfur content of No. 6 fuel oil fired at the facility to no greater than 1.8 percent by weight, and requires that the Permittee conduct a stack test to determine SO₂ emission rates during No. 6 fuel oil firing within 6 months of initially firing the fuel.

The sulfur dioxide emissions Furnace 75f1 (ID No. ES01) measured during the source testing in March 2005 was 0.174 lb/MMBtu which is well below the 2.3 lb/MMBtu limit.

The inspection June 19, 2008 report indicates;

Furnace 75f2 (ID No. ES02) is subject to PSD/BACT requirements and is allowed only to burn natural gas and No. 2 fuel oil. To assure compliance, the facility is to monitor the sulfur content of the raw material batch and record this in a log. A semi-annual summary report of the sulfur content of the batch is to be submitted. (note this is not required for Furnace #1. A lab analysis is done on each batch. Current records demonstrated the sulfur content is less than 1%. Facility is not currently submitting results of batch materials sulfur sampling. Appears virtually impossible and very unnecessary. SO₂ emissions were sampled in 2004 and are less than the .0516 limit. Will seek to eliminate the reporting requirement on current permit renewal.

Per BACT requirement, the maximum sulfur content of the No. 2 Fuel oil shall not exceed 0.5 percent by weight. The facility is required to keep records (name of fuel oil supplier, max. sulfur content of fuel oil received during the quarter, method used to determine sulfur content, and certified statement signed by responsible official that records represent all fuel oil fired during the reporting period. The facility is required to submit semi-annual summary reports of the fuel oil supplier certifications identifying all instances of deviations.

Furnace #2 has burned only natural gas since issuance of a TV permit. Sulfur content is 0.1336% by weight, per fuel certification. The sulfur dioxide emission rate measured during the source testing in March 2003 was 0.31 lb/MMBtu.

RCO concurs; the monitoring and submitting of batch materials sulfur sampling is no longer required for Furnace #2; despite material sulfur content of up to 1% stack testing Furnace #2 in 2004 and Furnace #1 in March 2005 indicates compliance. However, the existing records of sulfur content of batch sulfur will continue to be retained.

- C. 15A NCAC 2D .0521 – Control of Visible Emissions – VE standards provided in this regulation are applicable to potential VE emissions from any stack, vent, or outlet for which no other emission control standards are applicable. Under this standard, visible emissions from Furnace 75f1 (ID No. ES01) are currently limited to no greater than 20% opacity when averaged over a 6-minute period, except for one 6-minute period in any hour and four 6-minute periods in any 24-hour period. In no event shall the 6-minute average exceed 87% opacity. The furnace will continue to be affected by this standard. To demonstrate compliance with the standard, the Permittee shall be required to conduct daily visible emission observations of the furnace emission point.

The inspection report 6/19/08 indicates;

Facility has been conducting weekly Method 9 on Furnace 75f2 (ID No. ES02) and submitting these results to FRO monthly. Deviations and violations of the current opacity regulation are reported. NOV's are issued when a violation is documented. No deviations/violations since opacity change for ES02 to 40%.

RCO Concurs; compliance is indicated. In addition the inspection report indicates all other sources of visible emissions are in compliance.

- D. 15A NCAC 2Q .0317 – Avoidance Conditions for 15A NCAC 2D .0530 – Prevention of Significant Deterioration (“PSD”) – PNA Laurinburg is located in Scotland County, which is designated as “attainment” or “unclassifiable” for all regulated air pollutants. The facility has the potential to emit (PTE) more than 250 tpy of several criteria pollutants, including PM-10, SO₂, and NO_x, and is therefore a major source under the PSD program pursuant to 15A NCAC 2D .0530. The Permittee does not anticipate that the proposed project Furnace 75f1 (ID No. ES01) (including repairing the oxygen enrichment system, installing an oxy-boost system, and adding a water spray to the regenerators) will increase the emission factors (in lb/ton draw) for any of the regulated pollutants. However, the installation of the oxy-boost system could increase the potential hourly production rate, and consequently result in an hourly emission increase.

PNA Laurinburg provided a past-actual to future-potential emissions increase analysis, summarized in Table 1 below. PNA Laurinburg’s “past-actual to future-potential” emission increase analysis is based on emission rates from the melting furnace while firing natural gas only. While the melting furnace is also permitted to fire No. 2 and No. 6 fuel oil, the facility is not currently equipped to fire these fuels. In PNA Laurinburg’s analysis, only NO_x emissions increases potentially exceed the 40-tpy significant emission rate.

Table 1. PSD Avoidance Limitations, Assuming Natural Gas Combustion

	PM	PM-10	PM-2.5	NO _x	SO ₂	CO	VOC	H ₂ SO ₄	Lead
Emission Factors for Natural Gas Firing (lbs/ton draw)	0.82 ¹	0.779 ²	0.7462 ²	5.23 ¹	1.104 ¹	6.69 / 0.1 ³	0.1 ²	0.46 ¹	<0.001 ¹
Potential Annual Production Increase (tons draw/yr) ⁴	28,860	28,860	28,860	28,860	28,860	28,860	28,860	28,860	28,860
Past-Actual to Future-Potential Emission Increase (tpy)	11.8	11.2	10.8	75.5	15.9	-943.6	1.4	6.6	<0.1
Significant Emission Rate (tpy)	15.00	15.00	15.00	40.00	40.00	100.00	40.00	7.0	0.60
Avoidance Limit Required?	No	No	No	Yes	No	No	No	No	No
PSD Avoidance Limit (tpy)	N/A	N/A	N/A	777.5	N/A	N/A	N/A	N/A	N/A

¹ Emission factors for PM, NO_x, SO₂, H₂SO₄, and Lead are based on stack testing during natural gas firing.

² Emission factors for PM-10, PM-2.5, and VOC are from the U.S. EPA AP-42, Chapter 11.15 (October 1986, Reformatted January 1995).

³ The “Pre-Repair” CO emission factor (6.69 lb/ton draw) is based on stack testing. PNA Laurinburg believes the elevated CO emission rates are a result of the deterioration condition of the furnace and its regenerators. “Post-Repair” CO emissions are estimated using the CO emission factor from the U.S. EPA AP-42, Chapter 11.15 (October 1986, Reformatted January 1995).

⁴ Because PNA Laurinburg will not be able to operate the oxyboost system continuously without causing degradation to the melter, the “potential annual production increase” is *not* equivalent to the potential hourly production increase time 8,760 hours per year.

Because PM-10 and SO₂ emissions from the melting furnace are likely to be much higher than during fuel oil firing vs. natural gas firing (on a lbs/ton draw basis), DAQ conducted an additional emission increase analysis for PM-10 and SO₂ assuming the same annual production rate increase, but assuming No. 6 fuel oil would be fired in the furnace. Because PNA Laurinburg does not have No. 6 fuel oil-specific emission factors, DAQ used the highest emission factors provided for flat glass furnaces provided in U.S. EPA’s AP-42, Chapter 11.15 (October 1986, Reformatted January 1995). Based on this analysis, which is summarized in Table 2 below, the

potential emission increase for both PM-10 and SO₂ are above the significant emission rates when firing No. 6 fuel oil.

Table 2. PSD Avoidance Limitations, Assuming No. 6 Fuel Oil Combustion

	PM-10	SO ₂
Emission Factors for No. 6 Fuel Oil Firing (lbs/ton draw)	3.0 ¹	3.8 ¹
Potential Annual Production Increase (tons draw/yr)⁴	28,860	28,860
Past-Actual to Future-Potential Emission Increase (tpy)	43.3	54.8
Significant Emission Rate (tpy)	15.00	40.00
Avoidance Limit Required?	Yes	Yes
PSD Avoidance Limit (tpy)	124.5	195.52

¹Emission factors for PM-10 and SO₂ during No. 6 fuel oil firing are assumed to be equivalent to the *highest* factor listed for flat glass manufacturing listed in the U.S. EPA AP-42, Chapter 11.15 (October 1986, Reformatted January 1995).

Testing

To demonstrate compliance with the PSD avoidance limitations, the permit requires the Permittee to conduct stack testing of the Furnace 75f1 (**ID No. ES01**) to determine source-specific NO_x and PM-10 emission factors. The stack test must be conducted while firing natural gas (the only fuel PNA Laurinburg is presently able to fire at Furnace 75f1) and while operating both the oxygen enrichment and oxy-boost systems. No stack test is required for SO₂ based on the inherently low sulfur content in natural gas.

While testing is *not required* while firing No. 2 or No. 6 fuel oil, the permit allows the Permittee to conduct additional testing while firing these fuels to determine fuel-specific emission factors to be used in the monthly and 12-month rolling emissions calculations.

Monitoring/Recordkeeping

The permit requires PNA Laurinburg to determine actual NO_x, PM-10, and SO₂ emissions from Furnace 75f1 (ID No. ES01) for the previous calendar month and the previous 12-month period. Emissions calculations are based on monthly production rates (in tons draw) and the fuel-specific emission factors. Emission factors are specified in the permit as follows:

NO_x Emission Factors

- During Natural Gas Firing: **5.23 lbs NO_x/ton draw**, until the emission factor is updated following completion of the required stack test. The **5.23 lbs NO_x/ton draw** emission factor is based on previous PNA Laurinburg stack tests.
- During No. 2 Fuel Oil Firing: **8.3 lbs NO_x/tons draw**. This factor is equivalent to 80% of the upper range NO_x emission rate listed in Chapter 11.15 of the AP-42 (Table 11.15-1, Oct. 1986). The Permittee may revise the emission factor if it chooses to conduct a stack test on the furnace while firing No. 2 fuel oil.
- During No. 6 Fuel Oil Firing: **10.4 lbs NO_x/tons draw**. This factor is equivalent to 100% of the upper range NO_x emission rate listed in Chapter 11.15 of the AP-42 (Table 11.15-1, Oct. 1986). The Permittee may revise the emission factor if it chooses to conduct a stack test on the furnace while firing No. 6 fuel oil.

PM-10 Emission Factors

- During Natural Gas Firing: **0.779 lbs PM-10/ton draw**, until the emission factor is updated following completion of the required stack test. The **0.779 lbs PM-10/ton draw** emission factor is based on previous PNA Laurinburg stack tests and Chapter 11.15 of the AP-42. Previous stack tests show a PM emission rate of 0.82 lbs/ton draw. Table 11.15-3 of the AP-42 indicates that 95% of the total PM emissions have an aerodynamic particle diameter of less than 10 μm (0.82 * 0.95 = 0.779).
- During No. 2 Fuel Oil Firing: **2.4 lbs PM-10/tons draw**. This factor is equivalent to 80% of the upper range PM-10 emission rate listed in Chapter 11.15 of the AP-42 (Table 11.15-1, Oct. 1986). The Permittee may revise the emission factor if it chooses to conduct a stack test on the furnace while firing No. 2 fuel oil.
- During No. 6 Fuel Oil Firing: **3.0 lbs PM-10/tons draw**. This factor is equivalent to 100% of the upper range PM-10 emission rate listed in Chapter 11.15 of the AP-42 (Table 11.15-1, Oct. 1986). The

Permittee may revise the emission factor if it chooses to conduct a stack test on the furnace while firing No. 6 fuel oil.

SO₂ Emission Factors

- During Natural Gas Firing: **1.104 lbs SO₂/ton draw**. This factor is based on previous PNA Laurinburg stack tests. The Permittee may revise the emission factor if it chooses to conduct additional stack testing on the furnace while firing natural gas.
- During No. 2 Fuel Oil Firing: **3.0 lbs SO₂/ton draw**. This factor is equivalent to 80% of the upper range SO₂ emission rate listed in Chapter 11.15 of the AP-42 (Table 11.15-1, Oct. 1986). The Permittee may revise the emission factor if it chooses to conduct a stack test on the furnace while firing No. 2 fuel oil.
- During No. 6 Fuel Oil Firing: **3.8 lbs SO₂/ton draw**. This factor is equivalent to 100% of the upper range SO₂ emission rate listed in Chapter 11.15 of the AP-42 (Table 11.15-1, Oct. 1986). The Permittee may revise the emission factor if it chooses to conduct a stack test on the furnace while firing No. 6 fuel oil.

Emission factors may be updated in the permit through an administrative amendment.

The required testing appears to verify that the unit is to validate the PSD avoidance status though the PM testing has been problematic. See above Section II-Compliance Statement. Compliance is assumed.

- E. 15A NCAC 2D .1806 – Control and Prohibition of Odorous Emissions (State-enforceable only) – The intent of this rule is to provide for the control and prohibition of objectionable odorous emissions. This rule applies to all operations at the facility that may produce odorous emissions that can cause or contribute to objectionable odors beyond the facility’s boundaries. There will be no changes to this requirement as a result of the modification proposed herein, and compliance with the standard is expected.
- F. 15A NCAC 2D .1100 – Control of Toxic Air Pollutants (State-enforceable only) – The addition of the oxyboost system to Furnace 75f1 (ID No. ES01) can potentially increase the hourly production rate at the furnace, which results in potential emissions increases of several state-regulated toxic air pollutants (TAPs). PNA Laurinburg quantified facility-wide emission rates of all affected TAPs, and determined that emissions of benzene, sulfuric acid, n-hexane, soluble chromate compounds as chromium (VI) equivalent, and hydrogen chloride exceed the permitting emission levels pursuant to 15A NCAC 2Q .0700.

PNA Laurinburg submitted a SCREEN3 air dispersion modeling analysis for the five affected TAPs to demonstrate compliance with Acceptable Ambient Levels (AALs) pursuant to 15A NCAC 2D .1100. The pollutants were modeled at emission rates far greater than rates anticipated actual emission rates so that the modeled ambient impacts are approximately 95% of the AAL. Table 3 summarizes the results of the TAP compliance demonstration, including affected sources, maximum permitted emission rates (equivalent to the modeled emission rates), and anticipated actual emission rates.

Table 3. TAPs Compliance Demonstration Summary (15A NCAC 2D .1100)

Pollutant (averaging period)		Emission Source		
		ES01	ES02	ES06b
Benzene (annual)	Permitted Emission Rate	26,017 lbs/yr	26,017 lbs/yr	-
	Potential Emission Rate	4.38 lbs/yr	4.38 lbs/yr	-
Sulfuric acid (1-hour)	Permitted Emission Rate	152 lbs/hr	229 lbs/hr	-
	Potential Emission Rate	17.96 lbs/hr	26.95 lbs/hr	-
Sulfuric acid (24-hour)	Permitted Emission Rate	1,077 lbs/day	1,617 lbs/day	-
	Potential Emission Rate	430.98 lbs/day	646.71 lbs/day	-
n-Hexane (24-hour)	Permitted Emission Rate	6,768 lbs/day	6,768 lbs/day	432 lbs/day
	Potential Emission Rate	11.29 lbs/day	11.29 lbs/day	0.72 lbs/day
Chromium (VI) (24-hour)	Permitted Emission Rate	72 lbs/day	72 lbs/day	-
	Potential Emission Rate	0.16 lbs/day	0.16 lbs/day	-
Hydrogen Chloride	Permitted Emission Rate	110 lbs/hr	110 lbs/hr	4.4 lbs/hr

(1-hour)	Potential Emission Rate	5.79 lbs/hr	5.79 lbs/hr	0.23 lbs/day
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The permitted emission rates are sufficiently higher than the potential emission rates that DAO does not anticipate that PNA Laurinburg will exceed any of the permitted rates during normal operations, provided exhaust conditions are consistent with the conditions provided in the compliance demonstration. To demonstrate compliance with the state-enforceable TAP limitations, the Permittee shall maintain exhaust conditions (i.e., stack heights, temperatures, and flow rates) from the affected facilities as specified in the TAP compliance demonstration.

G. 15A NCAC 2D .0614 – Compliance Assurance Monitoring (CAM)

The applicability of the Compliance Assurance Monitoring (CAM) provisions, codified in 40 CFR Part 64, must be evaluated for "other" pollutant-specific emission unites (PSEUs) as part of an application for the renewal of a Title V permit, with respect to all PSEUs. Small PSEUs are those units with the pre-control potential-to-emit greater than 100% of the amount required for a source to be classified as a major source. With the elimination of all sources that are not controlled such as the Furnaces 75f1 and 75F2, the remaining controlled sources with an applicable standard must be evaluated for CAM.

The renewal application indicates bagfilters CD-17, CD-22, CD-23 and CD-06f are subject to CAM for PM10. All other controlled sources potential before control emissions are less than the major source amounts.

a. Per 40 CFR 64 and 15A NCAC 2D .0614, the Permittee shall comply with the following.

b. **Background.**

i. **Emission Unit(s).**

A. Description.

1. Float #1 cullet yard transfer and bin operation ID No.ES-21 fabric filter with 7,232 square feet of filter area ID No. CD-22;
2. Hot end cullet handling/return operation, ID No. ES-23 fabric filter with 7,450 square feet of filter area ID No. CD-23; and
3. Hot end cullet handling/ return operation ID No. ES-17 fabric filter with 2,856 square feet of filter area ID No. CD-17
4. Low E glass coating operation ID No. ES-06b fabric filter with 3,876 square feet of filter area ID No. CD-06f

ii. **Applicable Regulation(s), Emission Limit(s), and Monitoring Requirements.**

A. Regulation(s):

1. 15A NCAC 2D .0515 - Particulates from Miscellaneous Industrial Processes;
2. 15A NCAC 2D .0521 - Control of Visible Emissions; and
3. 15A NCAC 2D .0530 - Prevention of Significant Deterioration

B. Control Technology.

1. Fabric filter (ID No. CD-22);
2. Fabric filter (ID No. CD-23);
3. Fabric filter (ID No. CD-17); and
4. Fabric filter (ID No. CD-06f)

c. **Monitoring Approach.** The key elements of the monitoring approach for particulate matter, including parameters to be monitored, parameter ranges, and performance criteria are presented in the following table. The selected performance indicators are the pressure drop across the bagfilters and visible emissions.

	Indicator 1	Indicator 2
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	Indicator 1	Indicator 2
I. Indicator	Pressure drop (ΔP) across bagfilters (CD-22, CD-23, CD-17 and CD-06f)	Visible emissions (CD-22, CD-23, CD-17 and CD-06f)
Measurement Approach	Pressure drop across the fabric filters is continuously measured with differential pressure gauges	Visible emissions from the control equipment will be monitored daily using EPA Reference Method 22-like procedures
II. Indicator Range	An excursion for the bagfilters is defined as any operating condition where the ΔP is less than 0.5" H ₂ O or greater than 8" H ₂ O. Excursions trigger an inspection and corrective action.	An excursion is defined as the presence of visible emissions. Excursions trigger an inspection and corrective action.
QIP Threshold	The QIP threshold is six excursions in a 6-month period.	Visible emissions greater than normal for more than 30 minutes 3 times within a 6-month period
III. Performance Criteria		
A. Data Representativeness	Pressure taps are located at the control device inlet and outlet. The gauges have a minimum accuracy of 0.5 inches of water.	Measurements are being made at the emission points of the control devices.
B. Verification of Operational Status	NA	NA
C. QA/QC Practices	The pressure gauges are checked daily for operation according to manufacturer's criteria for operation and maintenance.	The observer will be familiar with Reference Method 22 and follow Method 22-like procedures.
D. Monitoring Frequency	Pressure drop is monitored daily.	Observations are done daily.
Data Collection Procedures	Pressure gauge readings are manually recorded daily.	VE observations are documented by the observer.
Averaging Periods	NA	NA

Reporting [15A NCAC 2Q .0508(f)]

- d. The Permittee shall submit a summary report of all monitoring activities postmarked on or before 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.

V. NSPS Applicability – 40 CFR 60, Subpart CC: Glass Manufacturing Plants (15A NCAC 2D .0524)

The NSPS for Glass Manufacturing applies to each glass melting furnace that commences construction, reconstruction, or modification after July 15, 1979. Furnace 75f1 (ID No. ES01) was originally constructed in 1972 and 1973, which is prior to the 1979 applicability date. As presented by PNA Laurinburg, the proposed activities at the furnace, including rebricking, various cold repairs, improvement of the oxygen enrichment system, and addition of the oxy-boost and water spray systems, do not meet the NSPS definitions of “reconstruction” or “modification”, as detailed below.

- “Reconstruction” is defined in 40 CFR 60.15 as the replacement of components of an existing facility, irrespective of any change in emission rate, that costs more than 50% of the fixed capital cost that would be required to construct a comparable entirely new facility. PNA Laurinburg estimates that the cost of a new glass furnace would be \$26,354,250.⁴ The total cost of the cold repair [less the cost of rebricking, which is excluded from the cost analysis pursuant to 40 CFR 60.292(c)] is estimated to be approximately \$5 million, or less than 20% of the fixed capital cost for a comparable new facility.
- “Modification” is defined in 40 CFR 60.14 as any physical or operational change to an existing facility that results in an increase in hourly emissions. As presented by PNA Laurinburg, only the installation of the oxyboost system, which could potentially increase the hourly production rate, could potential result in an hourly emission increase. However, pursuant to 40 CFR 60.14(e)(2), **an increase in production rate** of an existing facility shall not be considered a modification if that increase can be accomplished **without a capital expenditure** on that facility.

“Capital expenditure” is defined in 40 CFR 60.2 as a means an expenditure for a physical or operational change to an existing facility which exceeds the product of the applicable “annual asset guideline repair allowance percentage” specified in the latest edition of IRS Publication 534 and the existing facility’s basis, as defined by section 1012 of the Internal Revenue Code. The estimated facility basis for Furnace 75f1, derived from PNA Laurinburg’s asset inventory and not adjusted to current dollars, is approximately \$21.5 million, and the “annual asset guideline repair allowance percentage” for the manufacture of glass products is 12%. Therefore, “capital expenditure” for Furnace 75f1 is greater than \$2.5 million. The estimated cost to add the oxyboost system to the melting furnace is less than \$250,000, and therefore does not require “capital expenditure” as it is defined in the NSPS.

Because the addition of the oxyboost system does not require “capital expenditure” and is only expected to result in an increase in hourly emissions as a result of an increase in production rate, the addition is excluded from the definition of “modification” under the NSPS.

HOWEVER: If the addition of the oxyboost system results in an emission increase per ton of glass produced, the “capital expenditure” exclusion shall not apply, and the change shall trigger applicability of the NSPS to Furnace 75f1. The revised permit requires that PNA Laurinburg conduct a stack test while operating the oxy-boost and oxygen enrichment systems (Part II, Specific Condition No. 3) to determine whether the PM emission factor has increased as a result of the change. If the stack test indicates an increase in the emission factor (i.e., >0.82 lbs PM/ton draw), the Permittee shall apply for a permit modification to incorporate the requirements of 15A NCAC 2D .0524 (40 CFR 60, Subpart CC).

Pending concurrence with the SSCB and based on testing there was not an emissions increase therefore it is likely this NSPS will not apply.

VI. Other Regulatory Considerations:

- An application fee of \$834.00 is required and was received by the DAQ.
- The appropriate number of application copies was received by the DAQ on July 24, 2005.
- Air Toxics Modeling was received by the DAQ on September 15, 2006.

⁴ It appears that the estimated cost provided by PNA Laurinburg includes all furnace components, including the melter, refiner, Lehr, and regenerator. To judge the cost of the “affected source” (i.e., the melter), Ms. Paterson spoke with a sales representative at KTG Systems, Inc. in Wexford, PA. KTG Systems indicated that over 80% of the cost would likely be dedicated to the melting end of the furnace, and further indicated that the cost proposed by PNA Laurinburg seemed to low-ball the actual cost of a new furnace.

- The application contained the Reduction and Recycling Form.
- The application was signed by an authorized official as defined by 15A NCAC 2Q .0304(j).
- A zoning consistency determination is not required for this application.
- Public notice is required for this application.

XI. Pilkington Comments (September 10, 2007) on Draft Permit:

Comments were received from the Permittee on September 11, 2007. Following are the major points:

- Breakdown list of generators to five diesel and four natural gas fired units. Concur; see insignificant activities list.
- Add three diesel storage tanks. Concur; see insignificant activities list.
- Change terminology for the part washing system. Concur; see insignificant activities list.
- Add four natural gas fired boilers. Concur; see insignificant activities list.
- Move the Lime storage silo to insignificant activities list. Concur; see insignificant activities list. The DAQ does not concur requires calculations.
- Two kilns decommissioned. Remove one and change the other to indicate heat soak. Concur; see insignificant activities list
- Add hydrogen generation process. Concur; see insignificant activities list.
- Change terminology for the two furnaces in their emissions source descriptions. Response; the source list description for ES-01 and ES-02 was changed somewhat. However, DAQ left in the firing rate and capacity description leaving in the draw rate and not excluding the Lehr. The sources may be fugitive sources however that is not a compelling reason to remove these sources from the description as they are sources of emissions.
- Section 2.1A.4.b. - Particulate matter testing, Pilkington has stack tested for total particulate and with DAQ consent has reported 95% of total PM as PM-10 (per EPA's guidance in AP-42).
- Section 2.1D.2.d.i. - Recordkeeping request to remove the word "time". Response, DAQ is required to state that "time" is required. EPA had indicated we must require this as I think it may be found in Part 70. This is in all of DAQ's permits recordkeeping.
- Section 2.1E. - Lime Storage Silo requesting removal from permit to insignificant activities list. Response; requires justification that potential before control emissions to be less than 5 tons per year.
- Section 2.3B.1 - CAM requesting revisions to CAM for CD-22 and CD-23 also adding CD-17. Response; the CAM language as the selected language was misapplied by DAQ. The new language requires daily observations however.
- Section 3. JJ - General Condition JJ Emissions Testing and Reporting Requirements, changes to language indicating permit should trump the General Conditions. Response; the permit specific conditions should be all that is needed to address these concerns therefore the condition has not changed.

Additional Permit Issues - CAM Applicability, Pilkington suspects particulate emissions could trigger CAM. The DAQ agrees since the application (Coating Process Emissions) indicates before control emissions of 208.36 tpy particulate therefore are greater than 100 tons per year. Also subject to particulate standard and uses control devices. Response; The CAM now includes the bagfilter.

VII. Recommendations This renewal permit modification application (combined with a Part 2 for the previous 2Q .0501(c)(2) application) for the PNA Laurinburg flat glass manufacturing facility in Laurinburg, Scotland County, North Carolina, has been reviewed by NC DAQ to determine compliance with all procedures and requirements. NC DAQ has determined that this facility is complying or will achieve compliance as specified in the permit with all applicable requirements. The Permits Section recommends issuance of Permit No. 03873T27.

List of Changes to the Previous Permit (Permit No. 03873T26):

Old Page No.	New Page No.	Condition No.	Changes
Cover letter	Cover letter	-	<ul style="list-style-type: none"> - Change Responsible Official to Christopher DeCerbo - Change permit revision numbers and issuance/effective dates.
Attachment	Attachment	Insignificant Activity List	<ul style="list-style-type: none"> - Moved lime storage silo to insignificant list - Listed emergency generators; 5 diesel 4 natural gas-fired - Added one heat soak oven - Listed parts washers; indicating 3 washers - Add three vehicular diesel storage tanks
Permit Cover	Permit Cover		<ul style="list-style-type: none"> - Change app no., permit revision numbers and issuance/effective dates - Remove notes and references to Part II and renewal due date - Add hydrogen generation process
TOC	TOC		<ul style="list-style-type: none"> - Remove references to Part II
Pages 3-4	Pages 3-4	Source Table	<ul style="list-style-type: none"> - Removed references to Part II - Changed description of ES-01 and ES-02 - Remove five raw material storage silos - Remove raw materials conveyor ES-04a - Add CAM designation to ES-16 and 17 - Remove raw material cullet mixing ES-04b - Added CAM designation to ES-06b - Move ES-06e to insig. list - Remove asterisk to modified Furnace 75F1 (ID No. ES01) - Added "CAM" designation to sources with subject controls. - Added footnotes to table 1-4 with explanatory (former Part II) notes from previous modification - Removed footnotes to table to provide information on permit shield applicability to the modified furnace.
Page 5 and throughout	Page 5 and throughout		<ul style="list-style-type: none"> - Changed cite for all "Testing" from this point forward as per rule change to 2D .2601
Page 6	Page 6	Sec. 2.1 A.2. e. " " A.3. a.	<ul style="list-style-type: none"> - Removed reference to repealed rule .0508 aa. - Changed incorrect reference to .0521(c) to (d) - 20%
Page 7	Page 7	Sec. 2.1 A.3. c. Sec. 2.1 A.4. b Sec. 2.1 A.4. c	<ul style="list-style-type: none"> - Updated monitoring language for stack observation e.g., (3 missed observations); correct above "normal" emissions as soon as practicable - Updated testing to indicate actual approved method M5 and M202 w 95% conversion to PM10 - Updated testing to indicate actual approved method M5
Page 7	Page 8	Sec. 2.1 A.4. c.	<ul style="list-style-type: none"> - Moved test requirement from Part II re: NSPS CC - Renumbered remaining Section
Page 11	Page 11	Sec. 2.1 B.1.b.	<ul style="list-style-type: none"> - Change test results date to July 15, 2007 based on extension as granted by FRO.
Page 11	Page 11	Sec. 2.1 B.2.	<ul style="list-style-type: none"> - Removed requirement to monitor sulfur content of material
Page 11	Page 11	Sec. 2.1 B.3. a.	<ul style="list-style-type: none"> - Changed reference to .0521(d) to (c) - 40% noted variance from 20 % standard was granted per .0521(f)
Page 12	Page 12	Sec. 2.1 B. 4.e.	<ul style="list-style-type: none"> - Removed reference to repealed rule .0508 aa.

Old Page No.	New Page No.	Condition No.	Changes
Pages 13	Pages 13	Sec. 2.1 C. Table Sec. 2.1 C.1. c. Sec. 2.1 C.1. d.	<ul style="list-style-type: none"> - Insert reference to CAM as applicable to the bagfilters - Remove ES-04b and bagfilter-discharge inside - Updated monitoring language for stack observation; e.g., correct above "normal" emissions as soon as practicable - Updated the recordkeeping requirements with non-compliance statement
Page 14	Page14	Sec. 2.1 C.2.c.	<ul style="list-style-type: none"> - Remove ES-04b and bagfilter-discharge inside - Change monitoring to "site specific maintenance plan"
Page 15	Page 15	Sec. 2.1 D.1. Table	<ul style="list-style-type: none"> - Remove state enforceable designation for 2D .0958 and insert CAM reference
Page 16	Page 16	Sec. 2.1 D. 2. c. Sec. 2.1 D. 2. d.	<ul style="list-style-type: none"> - Updated monitoring language for stack observation; e.g., correct above "normal" emissions as soon as practicable - Updated the recordkeeping requirements with non-compliance statement
Page 17	Page 17	Sec. 2.1 D. 3.g.	<ul style="list-style-type: none"> - Updated PSD avoid reporting from quarterly to semiannual
Page 18	Page 18	Sec. 2.2 E.	<ul style="list-style-type: none"> - Remove the Section 2.2 E. lime storage silo moved to insig. act. List. Renumber all references from this point forward
Page 20	Page 19	Sec. 2.2 E. Sec. 2.2 E.1.c. Sec. 2.1 E. 2. c. Sec. 2.1 E. 2. d.	<ul style="list-style-type: none"> - Remove CD-03cb, CD-03cc, CD-03d, CD-03e, CD-03f - ES-04a, CD-04a - Change monitoring to "site specific maintenance plan" - Updated monitoring language for stack observation; e.g., correct above "normal" emissions as soon as practicable - Updated the recordkeeping requirements with non-compliance statement
Page 21	Page 20	Sec. 2.1 F. Table	<ul style="list-style-type: none"> - Remove state enforceable only designation for 2D .0958
Page 23	Page 22	Sec. 2.2 B. 1	<ul style="list-style-type: none"> - Add cites to 2D .0958
Page 24	Page 23	Sec. 2.3 B. <i>New Section</i> Sec. 2.3 B.1	<ul style="list-style-type: none"> - Add new section "CAM affected sources" - Add CAM for CD-22, CD-23, CD-17, CD-06b
Pages 29-36	Pages 26-35	Sec. 3 Replace General Conditions and Acronyms list with latest version	<ul style="list-style-type: none"> - V 2.22.1 e.g., revised cites and quarterly deviation report in lieu of 2 day deadline, add new condition NN.
Pages 33-35	NA	NA	<ul style="list-style-type: none"> - Remove Part II